MARITIME TRADE AND SEAFARING
OF THE PRECOLUMBIAN MAYA

A Thesis

by

RAHILLA CORINNE ABBAS SHATTO

Submitted to the Office of Graduate Studies of
Texas A&M University
in partial fulfillment of the requirements for the degree of

MASTER OF ARTS

August 1998

Major Subject: Anthropology
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August 1998

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ABSTRACT

Maritime Trade and Seafaring of the Precolumbian Maya. (August 1998)
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This literature review consolidates information about Maya maritime trade and seafaring from Spanish documents, archaeology, artistic representations of canoes, and twentieth-century descriptions of Maya watercraft. Precolumbian Maya used small and large canoes for trade, transportation, communication, warfare, and fishing. Wealthy rulers maintained trade relationships with one another, while independent merchants moved trade goods and information between distant locations, observing conventional trade practices, currency, and credit. Coastal sites provide abundant evidence for maritime trade, but a lack of information from the western peninsula prevents conclusive documentation of a circumpeninsular route. Maritime networks originated in the Preclassic period, grew throughout the Classic, and became paramount in the Postclassic period. By the sixteenth century networks encompassed all of the Yucatán Peninsula, central Mexico, and Central America. Theoretical models aid interpretation of data for trade routes, organization and characteristics of trade, functions of Precolumbian trading communities, and the identity of specialized seafarers. Models that propose elite control of maritime trade fail to explain the distribution of goods at Lowland sites. Maritime trade developed outside elite control, relying on seafaring petty and professional traders who moved goods along the coasts with stops at small trade stations, ports, and transshipment points. Mexican culture traits among the Postclassic Maya did not result from an aggressive takeover of maritime routes by seafaring foreigners. Pan-Mesoamerican material culture emerged from regular communication between central Mexico and the Yucatán Peninsula. Maya watercraft were dugout canoes propelled by poles or paddles. To the Maya, canoes were important for maritime trade and fishing but also for supernatural journeys to the underworld. Classic-period artistic representations are associated with such journeys. Watercraft are consistently portrayed as flat-bottomed and flat-sheered with platform-like ends, but the actual canoes perhaps had various designs. Special construction in support of seafaring possibly included canals, a man-made harbor at Isla Cerritos, a jetty at Nohmul, landmarks, and navigation aids on the east coast.
Dedicated to my parents,
Tariq and Cynthia Abbas
ACKNOWLEDGEMENTS

I wish to extend my heartfelt thanks to several people who have helped me complete this thesis. The members of my committee, Kevin Crisman, Harry Shafer, and Clarissa Kimber, gave me valuable advice, guidance, and support. I thank them especially for their patience while I finished this lengthy project. I owe a special debt of gratitude to Dorie Reents-Budet and Gordon McEwan for giving me my start in Precolombian archaeology. Priceless support and encouragement through years I worked on this thesis came from friends, family, colleagues, and co-workers—special thanks to Elizabeth Robinson Baldwin for being my cheerleader, my inspiration, and one of my proofreaders, and to Edward Rogers for his advice and encouragement. My two wonderful sisters, Amber and Tania Abbas, also deserve special mention for their friendship. I also thank Dr. David Brooks and Dr. George Jackson in the Department of Oceanography, not only for their genuine interest in my project and constant support, but also for allowing me time off from work when I needed it to complete crucial portions of this thesis. In addition, I sincerely appreciate the extra efforts of Amy Warren, who took over my office responsibilities during those times. I thank Don, my husband and friend, for helping me make time to work on this project, and for his unfailing support, encouragement, and dedication. Finally, there are two people for whom the words "thank you" remain woefully inadequate—my parents, Tariq and Cynthia Abbas. They have always supported me in every endeavor, but most of all in my education and intellectual pursuits. The personal rewards that come with completing this research are possible only because of their hard work, guidance, generosity, patience, and love.
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CHAPTER I

INTRODUCTION AND BACKGROUND

INTRODUCTION

The Precolombian Maya viewed the sea as a source for food and raw materials, a conduit for trade and transportation, and as a danger-filled transition zone between the living world and the afterlife. Dugout canoes provided the medium through which the Maya negotiated subsistence, trade, and metaphysical journeys through their encircling maritime environment. In the last decade archaeologists studying the Maya turned considerable attention to the Yucatán Peninsula’s coasts where Precolombian populations thrived by taking advantage of the sea’s tangible and supernatural gifts. Most of this scholarly attention focuses on maritime trade, now known to be a complex and critical component of the Precolombian economy. This literature review synthesizes much of the research pertaining to Maya maritime trade and seafaring into a single work designed to provide a condensed starting point for future research.

Seafaring activities of the Maya included fishing, collecting shellfish, hunting marine mammals, transporting people and trade goods, communicating, warfare, and ritual. The evidence available to inform us about these activities comes from the Spanish chronicles, sixteenth-century documents in which the Spanish described indigenous societies, as well as from iconography encoded in art and architecture, and material remains from archaeological excavations. These lines of evidence reveal the Maya as able seafarers and point to a strong maritime component of the Maya economy and worldview. In some places Maya communities might have invested labor and resources in support of seafaring by constructing harbors, waterways, and aids to navigation.

Trade is widely held to be a motivating force in development of social complexity among the Maya and in precipitating change in later periods. Archaeologists acknowledge a critical role for maritime trade in the course of Maya prehistory, but the mechanics of that trade are only now coming to light. Data from historical documents and the archaeological record remain fragmented and incomplete.

Spanish chronicles and ethnohistorical documents provide a wealth of detail about Maya

This thesis follows the style and format of American Antiquity.
seafaring at the time of contact, but archaeologists are wary of relying on them too heavily. Many chronicles are not eyewitness accounts and some were written decades later, after memories had faded or mutated. Later ethnohistoric accounts suffer the same frailties and, furthermore, the systems they describe had been heavily altered by Spanish domination of the economic system since the conquest.

Archaeological data for exchange of goods extend to the Preclassic period. With continuing excavations they will be the richest source of information, able to supplement and clarify data from the historical record. Archaeological evidence compiled in this thesis testifies to the importance of Maya seafaring, but Maya nautical technology and seafaring practices remain a largely neglected area of investigation in Mesoamerican archaeology. The study of Maya watercraft, the organization and extent of Pre Columbian maritime trade, and the infrastructure that supported that trade adds layers of detail to our understanding of Maya social, economic, and political systems.

A thorough understanding of Maya seafaring technology will bring us closer to locating a significant nautical archaeological site. Ideally such a site would consist of an abandoned or sunken Pre Columbian canoe loaded with trade goods from diverse sources. Perhaps it would include ceramic vessels still holding residues of the perishable trade goods once contained in them. An empty canoe could lie amidst the harbor debris accumulated through centuries of loading and unloading. Such sites have potential to reveal much more information about maritime trade and how it helped shape Maya history.

This overview offers a critical analysis of published evidence for Maya seafaring, with emphasis on Pre Columbian maritime trade in and around the Yucatán Peninsula. It assesses the importance of maritime routes in the Maya economy overall, and the impact of seafaring on culture change in the Maya region. This study also catalogs extant remains from coastal sites and certain inland sites that pertain to the study of seafaring, in an effort to both consolidate the data into a useful whole and reveal significant gaps that affect our understanding of Maya prehistory. Finally, an analysis of Maya canoe design and construction sheds light on the size, shape, functions, and capabilities of Maya watercraft.

BACKGROUND

Before the arrival of the Spanish and subsequent colonization of the Americas by Europeans in the sixteenth and seventeenth centuries, “new world” lands bustled with the activity of indigenous societies. Mesoamerica served as home to vibrant civilizations of the Olmec region, Teotihuacan, Monte Albán, and many others that rose and fell both prior to and contemporaneously with the popularly known Aztecs and Maya (Figure 1). The Maya occupied southern Mexico, all of Belize, all of Guatemala, and the northern parts of Honduras and El Salvador for over 2000 years before Spanish colonization, and continue to live there today (Figure 2).
Scholarly study of the Maya began in the early 1900s, but exploded in the late 1950s with early breakthroughs in hieroglyph decipherment (Coe 1986:1). Swift progress in deciphering the glyphs followed, and today nearly all extant texts are translated. Reading Maya texts transformed our image of their civilization from that of a peaceful, sedentary, static society to one of self-determining, active, competitive city-states with rulers who pursued wealth and power zealously through political, economic, and military means.

Decipherment focused attention on Late Preclassic and Classic periods, during which scribes and artisans created the colorful cylinder vases and exquisite monumental carvings for which the Maya are famous. More recently interest turned to the subsistence base of the Maya, their economic systems, and their political relationships with neighboring cultures. Evidence has come to light for intensive agriculture, dense urban populations (Adams 1991:140, 145-146), mass-production of utilitarian goods, complex long-distance trade, and far-reaching communication networks.
Figure 2. Map of the Maya region. Lands occupied by the Precolombian Maya included the Mexican states of Tabasco, Chiapas, Campeche, Yucatán, and Quintana Roo, all of Guatemala and Belize, and the northwest portion of Honduras.
Table 1. Maya Lowland chronology.

<table>
<thead>
<tr>
<th>Period</th>
<th>Time Period</th>
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<tbody>
<tr>
<td>Archaic Period</td>
<td>Before 2000 B.C.</td>
</tr>
<tr>
<td>Early Preclassic Period</td>
<td>ca. 1500 - 900 B.C.</td>
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<tr>
<td>Middle Preclassic Period</td>
<td>ca. 900 - 300 B.C.</td>
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<td>Late Preclassic Period</td>
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<td>Early Classic Period</td>
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<tr>
<td>Late Classic Period</td>
<td>ca. A.D. 600 - 900</td>
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<td>Terminal Classic Period</td>
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<tr>
<td>Early Postclassic Period</td>
<td>ca. A.D. 1000 - 1200</td>
</tr>
<tr>
<td>Late Postclassic Period</td>
<td>ca. A.D. 1200 - 1532 (Contact with Europe)</td>
</tr>
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</table>

Maya Lowland chronology (Table 1) begins with the Formative Period, during which people settled the Maya region and began to cultivate plants. The Late Preclassic period brought substantial population growth and increased interaction among neighboring groups (Garber 1989:1). Complex society and class structure emerged at that time, and with it came impressive monumental architecture (Sidrys 1983:395), long-distance trade in exotics such as jade, rare marine products, and other goods, which had become important media for the expression of social relationships. Expansion of long-distance trade went hand-in-hand with increased communication and cultural interaction (Freidel 1978:253-254). By the end of the Preclassic period full-time craft specialization, a glyphic writing system, and a calendrical system were established.
During the Classic period in the southern Lowlands, elite rulers provided military, administrative, and religious leadership to powerful city-states. Both professional and popular audiences often see the Classic period as the height of Maya civilization due to the explosion of artistic expression in durable media such as pottery, sculpture, and architecture that characterized the period. Although the process of deciphering the Maya hieroglyphs during the last fifty years focused attention on southern Lowland sites such as Tikal and Palenque, the northern Lowlands also boast impressive architectural and cultural accomplishments that can be seen at the famous centers of Uxmal, Kabah, and others.

Historically Mayanists have viewed the Terminal Classic period as a time of dramatic decline, or “collapse.” During this time many southern cities were depopulated, probably due to a variety of social, economic, political, and environmental changes. In tandem with the traditional view of an abandoned south during the Postclassic period, the northern Lowlands were typically characterized as degraded remnants of the prior Classic glory even though Mayanists acknowledged northern cities as densely populated metropoli.

Excavations of the last two decades show that sites in Belize such as Lamanai, Santa Rita, and Marco González continued to thrive through the Terminal Classic-Early Postclassic transition. Other sites such as Cerros and Colha even experienced resurgence of activity after a relative lull during the Classic period. Northern Lowland occupation did not suddenly explode during the Postclassic, but merely continued to expand and change from its Preclassic- and Classic-period phases. Both in Belize and in the northern Lowlands greater participation in a pan-Mesoamerican culture manifested itself in art, architecture, and artifacts that reflect regular, important communication with central Mexican groups. Clearly these factors point to a much more complex series of events and changes in the Terminal Classic and Postclassic periods than simply the collapse or “fall” of the Classic Maya and a northward shift in occupation.

ENVIRONMENT

The Mesoamerican environment features steep sierras and high plateaus of the Highlands contrasting with adjacent coastal and peninsular Lowlands (Figure 3). The juxtaposition of different ecosystems was once credited with necessitating the exchange of goods and ideas and thus promoting the emergence of complex society in Mesoamerica. Today researchers view local environmental diversity as far more significant to individual communities than large scale differences between the Highlands and Lowlands (McAnany 1986:69). Nevertheless, precious objects and materials with restricted sources were traded between the two zones and form a significant part of the archaeological record for trade, including maritime trade.
Figure 3. Topography and rivers of the Maya region.

The southwest corner of the Yucatán Peninsula consists of an extensive, seasonally flooded plain created by five large river systems, the Coatzacoalcos-Uspanapa system, and the Tonalá, Grijalva, Usumacinta, and Candelaria rivers (Figure 4). East of the alluvial plain the Yucatán Peninsula consists
Figure 4. Mouth of the Grijalva-Usumacinta river system. At the southwest corner of the Yucatán Peninsula, near the Laguna de Terminos, the two rivers intertwine in a network of meandering channels (From Berlin 1960:Figure 1).

entirely of a flat karst platform. Karst topography forms when limestone dissolves in water containing carbon dioxide, leaving pits and holes in the stone surface. The northern third of the Yucatán Peninsula is almost completely flat, but pits and sinkholes in the rock combine with sharply-edged low limestone ridges and depressions to hinder travel across it. The southern two-thirds of the peninsula consist of older, hilly limestone reaching a maximum elevation of approximately 300 m in eastern Campeche, Mexico (West 1964b:70, 72; 1964a:376-377; Back 1985:100, 102; Weidie 1985:1-3).

On the north and northwest coasts barrier beaches enclose long lagoons and tidal swamps. The wide Río Lagartos lagoon along the northeast coast measures 70 km long, but the longest one stretches 190 km from near Celestún in Yucatán to beyond Dzilam on the north shore. The northeast coast also includes long curved beaches defined by rocky points that touch the coastal barrier reef as well as stretches of rocky headlands. The east coast of the peninsula is characterized by numerous inlets called caletas. Inlets such as the one at Xelha in Quintana Roo, Mexico, protrude 100-800 m into the shore and
often have attached side channels or lagoons. The longest barrier reef in the Atlantic tropics lines the coast for 650 km, enclosing shallow lagoons along the eastern shore. The reef frequently touches the northern coast, but in the south it reaches 40-65 km offshore. Numerous cays and islands protrude above the surface along the reef, while coral banks and patches of reefs occasionally form atolls on the seaward side (West 1964b:73; Andrews and Andrews 1975:2; Ward 1985:24; Weidie 1985:2, 16).

Along the east coast a northeasterly longshore current predominates. It moves relatively slowly along the coast except where it accelerates between the mainland and the islands, such as through the straits between Isla Mujeres or Cozumel and the peninsula (Ward 1985:30). In the latter case the current can reach velocities up to four knots (Sabloff and Rathje 1975:50). Through the Yucatán Channel the current can reach a velocity of five knots approximately 20-30 nautical miles from the tip of the Yucatán Peninsula, and as fast as four knots near the peninsular coast (Dirección General de Oceanografía y Sensoramiento Marítimo 1974:7).

Dense Pre-Columbian populations on the Yucatán Peninsula had to overcome the limitations of life on a karst plain where surface water is rare. Seasonal rainwater readily percolates through the porous limestone bed to an underground network of channels, through which it flows out to sea through springs just off the coast. The Lowland Maya relied primarily on access to groundwater for survival. In the north settlements grew around cenotes, a type of sinkhole, and other features that provided limited access to water. Coastal Pre-Columbian populations also reportedly used freshwater springs, or pozas, found just offshore.

**Rivers of the Yucatán Peninsula**

To Pre-Columbian coastal traders, rivers in the southern part of the Yucatán Peninsula were undoubtedly critical for gaining access to trade goods from the interior (Figure 3 and Figure 4). The Caribbean-draining Motagua River is the largest in Guatemala. Its upper courses form torrential rapids but waters slow down and widen through the lower courses as the terrain flattens toward the coast. Nearby the combination of waterways formed by the Río Dulce, Lake Izabal, and the torrential Río Polochic provided valuable access to interior highland volcanic resources for Pre-Columbian traders (Tamayo 1964:94, 96; Guderjan 1988:11; 1995c:1).

Of the rivers that drain the eastern Maya Mountains, most flood seasonally and shrink during the dry season to small, clear streams (Tamayo 1964:94). Stann Creek, the Monkey River, and the Grande River are only sufficient to serve as trade routes for a limited area, while the Azul and Bravo rivers are navigable by canoe to the village of Blue Creek (Guderjan 1995c:1). Both the Río Hondo and the New River are navigable along their entire lengths, except for a few rapids (Dreiss 1988:57). North of
the Río Hondo the northern karst plain of the Yucatán Peninsula begins and surface water becomes scarce.

Fewer rivers drain into the Gulf of Mexico from the west coast, but they include the Grijalva and Usumacinta Rivers, the two largest in Mesoamerica. Both originate in the Guatemalan Highlands. Through Guatemala and Chiapas the Usumacinta is joined by its many tributaries, and in Tabasco it breaks into a maze of wandering streams interspersed with swamps and marshes. The main channel joins the Grijalva River about 20 km inland, and together they carry 30 percent of all water discharged from Mexican rivers. The Candelaria River is the only other major river to drain the southwest coast (Tamayo 1964:93-94). Peninsular trade perhaps depended heavily on the Candelaria and Usumacinta River systems. Only 100 km separates the head of the Caribbean-draining Río Hondo from the Gulf of Mexico-draining Candelaria River, while the circumpeninsular route spans 1600 km (Guderjan 1988:9).

Sea Level Rise and Coastal Ecology

Information from submerged Preclassic and early Classic deposits indicates that sea level around the Yucatán Peninsula rose about 1 m at the end of the Classic period and reached the current height ca. A.D. 950 (Graham 1989:136; Mock 1994a:32; McKillop 1995b:216). A concurrent rise in the water table of the Lowlands submerged the low-lying portions of coastal sites such as Isla Cerritos (Andrews et al. 1988:199), Wild Cane Cay, and Cozumel, and most likely also filled Precolumbian rock quarries at the inland site of Cobá, creating the “lakes” that exist there today (Folan et al. 1983:455-456).

Few underwater sites and deposits have been excavated, so the current state of information about coastal occupation and trade reflects only activity at sites that were either well above sea level during the Preclassic and Classic periods, or escaped inundation due to sediment accretion as the shoreline changed shape, as it did at Marco González on Ambergris Cay (Graham 1989:136). In the Port Honduras area, the Classic rise in sea level altered coastal topography and vegetation considerably. Land once extended farther out to sea from the current shore and was drier than it is today. The coastal zone was not overgrown with tangled mangrove swamps, and was more desirable for occupation than it is now (McKillop 1995b:217-218).

Coastal and island environments and the activities conducted in them varied from place to place. In their early, Preclassic-period stages, fishing-camp sites on the coast and on the Belizean cays were occupied only seasonally, if at all, but some gradually became suitable for agriculture and permanent settlement as rich, anthropogenic organic matter accumulated. Maya interaction networks had roots in local resource availability, so understanding local resources remains essential to the study of trade.
Nevertheless, we know little about local resources the Maya had at coastal sites or elsewhere (Graham 1989:139, 147).

Climate and Vegetation

Mesoamerica generally consists of three climatic zones, called tierra fria (cold land), tierra templada (temperate land), and tierra caliente (hot land).¹ The tierra caliente of southern Mexico and the Yucatán Peninsula includes the northern Lowlands as well as tropical rainforest of the Guatemalan Petén and the upper Río Hondo basin. Northern Yucatán experiences the long and distinct dry season and the northwest tip of the peninsula receives only enough rain to support grass cover and some dry farming. The rainy season in southern Mesoamerica can last from May to September or October and the winter dry season lasts from December to April or May (Hartshorn 1988:367; Ward 1985:25; West 1964a:375; Vivó Escoto 1964:192, 201, 208-209).

Northeast trade winds prevail during the dry season although along the coastlines light diurnal breezes blow onshore during the day and offshore at night. Storms can bring rain to Mesoamerica at all times of year. During the dry season nortes, or northerners, occasionally cause violent storms along the west coast of the Yucatán Peninsula. Although many hurricanes sweep over northern Yucatán, it is unlikely they deterred Precolumbian populations from living on the islands and coasts (Vivó Escoto 1964:193-197, 212; Scholes and Roys 1968:55; Hartshorn 1988:366-367; Ward 1985:25).

In the northern Lowlands thin but fertile soil often barely covers limestone bedrock. Vegetation consists of dry deciduous scrub forest, composed of low tree cover with dense shrubs on the ground (Hartshorn 1988:377). Today, mangroves and swamp vegetation line the coasts of the peninsula. In the southern and eastern sections of the Lowlands, there is tropical rain forest, with rich plant communities that include trees up to 70 m high (Back 1985:100; Vivó Escoto 1964:213) and hundreds of useful and significant plants. Trees probably used in Maya canoe construction include ceiba (Ceiba pentandra) and mahogany (Swieten macrophylla), among others. The ceiba held special meaning in the Maya belief system and mahogany supplies particularly good quality timber (Wagner 1964:224; West 1964a:376).

¹Tierra fria includes highland regions over 2000 m above sea level that remain cold most of the year. Tierra templada falls between 1000 m and 2000 m above sea level, and experiences a humid but temperate climate with distinct rainy and dry seasons. Tierra caliente consists of the remaining lands below 1000-1200 m with hot, humid, or dry climate and vegetation that cannot tolerate a frost (Vivó Escoto 1964:188, 210-212; West 1964a:375).
DISTRIBUTION OF NATURAL RESOURCES

A few durable materials with geographically restricted sources appear repeatedly at archaeological sites throughout the Maya Lowlands. Among the various volcanic products from the Highlands, the Maya sometimes used basalt from Guatemala for ground-stone tools. It served particularly well for manos and metates, the grinding tools with which the Maya process corn, because it does not disintegrate easily. Basalt tools appear in archaeological contexts as far north as the tip of the Yucatán Peninsula, but appear to be rare in the northern region (Guderjan 1988:18-19).

Higher quality volcanic products held places of prestige in Maya society. Obsidian, a normally gray or black volcanic glass, was the preferred material for sharp blades and ceremonial objects. The Maya exploited three separate sources in the Guatemalan Highlands, outcrops at El Chayal, Ixtepeque, and San Martin Jilotepeque. Archaeologists continue to find obsidian from these sources at sites throughout the Maya area. Natural outcrops of obsidian did occur elsewhere, however, and a source at Pachuca in central Mexico produced distinctly green, fine obsidian that the Maya valued highly (Figure 5).

Jade, a general term referring to jadeite or nephrite, constituted perhaps the most rare and highly prized raw material for ceremonial objects and elite ornaments. This very hard stone occurs naturally in the Motagua River Valley. Evidence from archaeological sites indicates other sources existed but they have not been identified yet (Hammond 1991c:199-203). Jade appears in archaeological contexts throughout the Maya area and Mesoamerica (Guderjan 1988:17).

Chert occurs in several locations on the Yucatán Peninsula but most notably in the Chert Bearing Zone of northern Belize. Recent research into the production and distribution of chert tools indicates the Maya probably relied much more heavily on them than on obsidian for everyday tasks associated with forest clearing and agriculture. Craftsmen exported chert tools regionally in northern Belize and traded elite chert artifacts to locations as far away as southern Belize and the Petén of Guatemala (Hester and Shafer 1989:12-13; Shafer 1994b:151).
Coastal populations had access to marine products for which the highland Maya had great need. Stingray spines and mollusk and conch shells played important roles in ritual life and art. Lowland Maya collected them along the coast then transported them inland, where archaeologists often find them in ceremonial contexts. Purple dye made from mollusks traveled the same routes. *Purpura patula* from the Pacific coast supported a dye-making industry there, while *Melongena melongena* from the Caribbean coast served the same purpose and was also good to eat (Guderjan 1988:28-29). Other coastal products traded inland included fish, corals, pearls, and many other marine items.
CHAPTER II

MAYA SEAFARING THROUGH THE EYES OF THE SPANIARDS

EARLY ENCOUNTERS WITH MAYA CANOES

Bartolomé de las Casas

The true story of Maya seafaring told in the Spanish chronicles and colonial-period documents begins with an epilogue to thousands of years of prehistory. The earliest known descriptive account of Maya maritime activity comes from the Spanish chronicler Bartolomé de las Casas, who documented the fourth voyage of Christopher Columbus. The journey took Columbus and his crew from Cuba to the Bay of Honduras in 1502, and thus constituted the first European foray into peripheral Maya territory. The canoe and people that they encountered near the Bay Island called Guanaja (Figure 6) may have exemplified the critical role of the Bay of Honduras in regional trade. The bay sat at a convenient confluence of riverine and coastal canoe routes on which the Maya once brought obsidian and cacao from the Highlands and salt and cotton from the Lowlands. Las Casas described the encounter at Guanaja:

...there came a canoe full of indians, as long as a galley, and eight feet in width; it came loaded with goods from the west and must certainly have been from the land of Yucatán, because it was close to there, a journey of 30 leagues or a little more; it was carrying in the middle of the canoe an awning of palm mats, which are called petates in New Spain, in and under which there came their women and children and property and goods, without the water from the sky nor the sea being able to wet the things. The goods and things that they were bringing were many cotton blankets, painted in many colors and designs, and sleeveless shirts, also painted and worked, and the almaizares which the men covered their private parts were also painted and worked...wood swords with grooved edges and certain flint blades attached with pitch and thread, copper hatchets for cutting wood and bells and some crucibles and patens for casting copper; many cacao nuts, that they have for currency in New Spain and in Yucatán and elsewhere. Their nourishment was corn bread and some edible roots, that must have been those that we called ajes and batatas in Española and camotes in New Spain; their wine was also of corn, it looked like beer. There came in the canoe almost 25 men, and they did not venture to defend themselves nor did they flee the Christian ships... (Las Casas 1965:274-275).
The Las Casas account does not conclusively show the “nationality” of the canoe, or whether it was going to or coming from the Bay Islands. Early transcriptions that seemed to confirm the canoe had come from Yucatán were found to be erroneous. Tozzer stated there is no reason to believe the canoe was from Yucatán, and suggested it could have been from Honduras or elsewhere (1957a:227; 1957b:276).
The inclusion of copper-working tools in the canoe’s cargo points to a Honduras origin, as there is no evidence that the peninsular Maya ever smelted copper (Lothrop 1952:24). Fernando Columbus, the son of Christopher, was also on board the Spanish ship and wrote that the explorers understood from the canoe navigators that the vessel had been on a long voyage which took them to different ports with rich products and well-populated countries and towns where their cargoes were made (Real Academia de la Historia 1967:xxxiii).2

Later accounts indicated the manufactured items on board were associated with culturally different groups of people. The decorated cotton was perhaps produced by inhabitants of northern Yucatán, while the copper and copper hatchets are associated with the Tabascans. Wooden swords with stone blades set into their edges are a central Mexican weapon. Therefore, the canoe contents represent interaction among diverse Mesoamerican societies and probably also exchange of raw materials and manufactured goods.

**Early Colonial Chroniclers**

In the decades that followed Columbus' fourth voyage, other explorers made their way to the Yucatán Peninsula. The chronicler Bernal Díaz del Castillo recorded the 1517 expedition of Hernández de Córdova as well as the expedition of Juan de Grijalva the following year. Córdova's first landfall took place at Cape Cotoche, the northeast tip of the peninsula. As with Columbus' encounter at the Bay Islands, the Spaniard's first impression of Yucatán was of native people in canoes. Díaz del Castillo described the events:

> On the morning of the fourth of March, five Canoes came off to us. These vessels are like troughs, made of one entire tree, and many of them capable of containing fifty men. We made signals of invitation to those on board, with which they readily complied, not shewing the least apprehension... After admiring the vessels for some time their chief desired to return, saying that he would on the ensuing day come again to us with more Canoes, in order to bring us to land... On the ensuing day, the same chief came with twelve large Canoes, and made signals to our Captain that he would bring us to land (Díaz del Castillo 1966:3-4).

The next day the Maya inhabitants ambushed Córdova and his men, but they escaped the area and headed west along the coast. After suffering repeated attacks they finally sailed back to Havana in defeat.

In 1518, a second expedition left Cuba, this time under the command of Juan de Grijalva. Two eyewitness accounts of this voyage survive, one by Díaz del Castilló and another by Juan Díaz, the

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2 Another record of the event by Cogolludo (1867:8 [1688]) does not provide additional details.
ship's *capellán mayor*, or chaplain. The expedition landed first at Cozumel Island. Two canoes with three occupants in each came out to see the ships, coming within range of a *bombarda*. They did not go aboard the Spanish vessels but communicated to the Spaniards that they would return the next day with their chief. The canoes returned the next day, this time with a *cacique*, or chief, on board to establish formal relations (Díaz 1972:58).

Díaz goes on to describe the Spaniard's journey along the coast, during which they saw numerous buildings and large towns near the water. Inhabitants signaled to the Spaniards with white flags, inviting them to come ashore which they did not do. On their way to Champoton, an important town on the west coast of the peninsula, the party frequently saw canoes navigated by armed Maya ready to attack. Artillery shots from the ships deterred the warriors as the party made its way to the mouth of the Grijalva River. Díaz stated that in one case they sank a canoe in this manner. He also mentioned a stop along the way at a place they called Puerta Deseada, where they found plenty of water, fish, and game, and where inhabitants used canoes to travel between the mainland and a nearby island (1972:61-73).

Díaz and Díaz del Castillo both stated that local inhabitants were prepared to attack the Spanish ships from their canoes at the mouth of the Grijalva River. Díaz wrote that more than 100 canoes approached them, carrying a total of 3000 people, with one of the canoes clearly in command (1972:66). Díaz del Castillo, however, estimated that about 50 canoes were involved in the attack, and added that the Spaniards took fish from nets that were set in the path of the ships. According to both accounts the situation was defused and the Spaniards began to trade with the inhabitants in an effort to acquire gold. Díaz del Castillo commented that "...it is the custom of that country in amicable treaties to make presents...," and that the Indians began to bring them fish, fowl, fruit, maize bread, braziers, gold birds and lizards, gold-bead necklaces, cotton blankets and other clothing. The Indians told them that while little gold was available in that region, much more could be found to the west in "Mexico" or "Culua" (Díaz del Castillo 1966:16-17), indicating that they were familiar with the products of that distant region. Díaz also mentioned that beautifully decorated cotton blankets were brought to the Spaniards in a canoe, and worked gold items and bits of jewelry and stones of many colors were given to them (1972:69). Díaz del Castillo related that the inhabitants of the area habitually carried copper hatchets both as weapons and ornaments, which the Spaniards mistook for gold and enthusiastically collected (1966:22).

Tozzer cited a number of other references to seafaring in the Contact-period documents. Both Juan de Torquemada and Antonio de Herrera wrote that traders from Yucatán came to Honduras by sea in canoes. Gonzalo Fernandez de Oviedo y Váldes referred to a coastal; canoe-borne trade in which canoes would journey to the Ulua River loaded with clothing and other goods and leave with cacao (Tozzer 1957a:227).
Cortés' Fifth Letter

More details concerning the importance of canoes in the daily life of the Maya and their neighbors come from the fifth letter of Hernán Cortés to Charles V of Spain. After conquering the Mixteca in the Valley of Mexico Cortés traveled to Honduras to address the notorious misconduct of a Spaniard there and restore loyalty in the area. Cortés heard details of the atrocities being committed in Honduras from local “men of rank” in Tabasco and Xicalango, who described the harm done to the region in terms of violence and the debilitating cessation of commerce along the coasts:

...there were certain Spaniards who did them much harm, for besides burning many villages and killing some of the inhabitants, as a result of which many of them had abandoned those places and fled to the hills, they had most severely harmed the merchants and traders; for, because of them the trade which had once flourished along that coast had now ceased (Pagden 1971:339).

The difficult overland route took Cortés through two very active trading centers in Mesoamerica, Acalán near the west coast of the Yucatán Peninsula, and Nito on the Bay of Honduras. The route began in the low-lying flood plains of Tabasco, which he described as beautiful and productive albeit so marshy that in the winter rainy season one could only travel through it by canoe (Pagden 1971:343). Throughout this journey Cortés and his men relied heavily on borrowed or stolen canoes and custom-built rafts to cross the numerous rivers and swamps in their path. During an early leg he recorded an event in which twenty canoes were used to transport approximately 200 people as well as an unspecified quantity of provisions and supplies.

As Cortés ventured inland he encountered difficulty "as there was not a single road to be found anywhere in the whole country nor any evidence to show that it had been trod by human feet, because the Indians travel only by canoes on account of those great rivers and marshes." He inquired after a road to Chilapan (Chilapa) but "they would not tell [him], saying that they did not travel by land but by the rivers and marshes in their canoes, and therefore could reach that place by no other way" (Pagden 1971:346-347).

Cortés and his men made the arduous journey to Acalán, the name of which is a derivation of the Nahuatl word acalli, meaning “canoe.” In Maya, the province was probably known as Tamactun (Scholes and Roys 1968:389), but Cortés probably used the Mexica’s word because his information came from Mexican guides and interpreters (Pagden 1971:517). Cortés described Acalán as a rich and well-populated province:
...there are numerous merchants and traders who travel to many places and are rich in slaves and other things with which they barter in this land. The province is completely surrounded by lagoons and estuaries, all of which stretch as far as the bay or harbor called Los Términos, by which they have great commerce with Xicalango and Tabasco, and it has even been said, although the truth of it is not yet known, that they pass through there to the other sea, thus making the land called Yucatán an island.

I was informed there is no other chieftain in the land except the most prosperous of the merchants, and the one who does most trading by sea, who is in fact Apaspolon, of whom I have already made mention to Your Majesty; the reason for his prosperity is that he carries his trade to distant places, as far as the town of Nito... where he had a whole district peopled by his agents in the charge of one of his brothers. The chief articles of trade in those parts are cacao, cotton materials, dyes, a certain kind of ink with which they stain their bodies to protect them against the heat and the cold, torches for light, pine resin for censing their idols, slaves and certain colored beads made from shells, which they hold most precious for decorating their bodies during their feasts and celebrations. They also trade in a little gold, but it is mixed with copper or other metals (Pagden 1971:367-368).

Penetrating further inland, Cortés encountered more evidence for regional trade and Acalán’s role. Between Itzamkanac on the Candelaria River and Lake Petén-Itzá he captured two Indians who said they were from Acalán but had been trading salt for cloth at Lake Petén-Itzá. Confirmation lay in the fact that “they were indeed laden with cloth” (Pagden 1971:169). When Cortés himself arrived at Lake Petén-Itzá he encountered a local lord and his entourage of about 30 people in five or six canoes. The lord explained that he had heard much of the delinquent Spaniards whom Cortés sought, as traders frequently traveled between the lord’s interior territories and the coast bringing goods and information. The lord offered to map a route to Nito that Cortés could follow for the rest of the journey but suggested that he travel by sea instead as the road was steep and difficult. Recalling that Cortés was communicating through more than one interpreter, it is possible that the lord actually meant to encourage travel by water, as the sea route would have taken the Spaniards on a long detour (Pagden 1971:519, 376). Instead Cortés seems to have gone southeast over the Maya Mountains to the Sarstoon River, a route which Scholes and Roys described as possibly a popular trade route (1968:60). The Sarstoon carried the travelers to the Bay of Amatique near to Nito on the Río Dulce.

Approaching Nito, Cortés met yet another Acalán merchant who told him Nito had been the center of “extensive trade with all parts of the country” where “the merchants from Aculan [sic] had had a district of their own where there lived a brother of their chief Apaspolon” until Spaniards sacked the town. These invaders forced the merchants to establish a smaller center in another province and continue their trade at a greatly reduced volume. Other villagers also described Nito as a trade center and told Cortés that news of the city was widely known because of this role (Pagden 1971:383, 386).
Upon reaching the coast, Cortés' men captured a canoe at sea with four people on board who provided more information about trade and maritime activity in the area:

One of them said that he was a merchant, and the others his slaves, and that he had gone that way many times in his ships to trade and knew of a bay that reached from there to a great river, which all the merchants crossed whenever bad weather prevented them from navigating on the open sea. Beside that river there were many large settlements with very rich people, well supplied with provisions. (Pagden 1971:390)

Cortés probably expected such a city when he finally arrived at Nito, but he found instead a bedraggled group of Spaniards, hungry and barely surviving. The group for which Cortés searched had already moved to the city of Naco, an inland trade center with riverine access to the coast (Pagden 1971:398, 520-521). Cortés corrected his course to head toward Naco, and after that point his account turns away from matters of the terrain and indigenous people and toward issues concerning the affairs of the Spaniards in the region and the king of Spain. Before concluding, however, Cortés left another clue to the breadth of Mesoamerican trade, for which canoes were used extensively, when he instructed messengers to tell local Honduran chiefs that “it was [he himself] who had come to these parts, for the numerous native merchants have carried news of me and of my doing in Mexico along the trade routes to many lands” (Pagden 1971:403, 417).

**PRECOLUMBIAN MAYA SEAFARING**

Although information from these early accounts must be treated carefully, the three chroniclers cited here can be considered fairly reliable. They all witnessed the events they described, they recount similar details of their respective encounters with the Maya and with Maya seafaring capability, and the details are corroborated by later accounts. The passages quoted hold considerable detail concerning the size and construction of Maya canoes, possible routes and voyage lengths, cargoes, provisions, trade, long-distance cultural and commercial contact among Mesoamerican groups, Maya diplomatic practices, and the use of canoes in fishing, warfare, communication, and transportation.

*Canoe Size and Construction.* The first dimensions of a Maya canoe recorded by the Spanish tell us that the vessel encountered at the Bay Islands was equal in length to a European galley and 2.4 m wide. Mat awnings kept passengers and probably some cargoes dry. The canoes were made of a single tree trunk and were shaped like a trough. While the Bay Island canoe carried at least 25 people, perhaps not including the women and children who were on board, Díaz del Castillo stated that some held up to 50 people. Díaz
wrote that at one point the Grijalva expedition encountered canoes holding three people each. Later the expedition was reportedly attacked by 3000 people in 100 canoes. If true, each canoe would have held 30 people. Díaz del Castillo, however, throws doubt on Díaz’s numbers saying that only 50 canoes participated in the attack. Cortés implies that the normal capacity of a canoe in Tabasco was approximately 10 people per vessel with room for provisions, while inland lacustrine canoes carried 5-6 people each when he encountered them.

*Canoes Voyages*. Clues to the magnitude of a canoe voyage come again from the accounts of the Bay Island encounter. Las Casas noted that the vessel was 30 leagues from Yucatán and felt it must surely have come from there, while Fernando Columbus wrote that the canoe had been on a long voyage with stops in many ports. The presence of manufactured items from diverse sources supports the conclusion that the canoe was indeed traveling between Yucatán and Honduras and perhaps beyond. Provisions included corn bread, edible roots and tubers, and perhaps corn wine or beer.

*Trade and Social Interaction*. The list of trade items documented by the Spaniards included painted cotton blankets and clothes, wooden swords with inlaid flint blades, copper hatchets, copper bells, copper working tools, cacao, worked gold, beaded necklaces, jewelry, and colored stones. Cortés’ list of items traded by the Acalán residents included cacao, cotton, dyes, body paint, torches, pine resin for rituals, slaves, shell beads, salt, and small amounts of gold mixed with copper.

Cultural contact among geographically separated groups in Mesoamerica was also evident in the early encounters. Mexican-style swords on the Bay Island canoe indicate contact with the Mexican Highlands, as does the fact that people in what is now Tabasco told the Spaniards that quantities of gold were available in that region. Neither copper nor gold could be found locally.

Trade flourished on and around the Yucatán Peninsula. Acalán stood out to the Spaniards as an opulent city, populated by busy merchants and ruled by the richest among them, Apaspolon (also known as Paxbolon or Paxbolonacha). Their specialty was maritime trade, which they carried out with the nearby cities of Xicalango and Tabasco as well as the far-flung city of Nito where Paxbolon’s brother led an entire district of agents. They traveled between the west and east coasts along the large rivers that crisscross the base of the Yucatán Peninsula (Roys 1972:52).

Like Acalán, Nito was described as a widely-known exchange center that traded not only with the Acalán merchants who lived there, but extensively throughout the land. Naco constituted an inland trade center accessible from the coast by riverine and terrestrial routes. The Spanish found the city well-stocked with items that figure prominently as trade items in the ethnohistorical sources: cotton, cacao, and salt (Pagden 1971:398, 520-521).
Active commerce facilitated communication throughout Mesoamerica, as Cortés noted when he commented that the merchants had carried word of his prior activities all the way from central Mexico. Similarly, interior polities sent merchants to the coast not only to trade but to gather information, presumably from other traders whose travels extended much farther. Merchants throughout the Maya area could be relied upon for timely news from their far flung destinations.

In sum, the chronicles paint a picture of society so dependent on canoe navigation and commerce that disruption to either would invoke severe economic trauma, as had already happened in Nito when Cortés arrived there. Cortés' account shows that not only did the Maya depend on canoes to the exclusion of travel by foot in Tabasco, but canoes were also used on interior lakes such as Lake Petén-Itzá. Indeed, Cortés complained bitterly about the lack of roads in the Maya Lowlands throughout his fifth letter to Charles V. Terrestrial routes probably did supplement waterborne routes, but it seems canoe transport was overwhelmingly preferred, particularly during the rainy season.

The Maya evidently encountered foreigners often in their waters and their lands, as we see from the calm reaction to the Spaniards by the navigators of the Bay Island canoe. The Córdova and Grijalva expeditions were greeted by fleets of canoes, and Díaz recounts having seen the Maya signal their ships from shore with white flags. The encounters at sea were not always peaceful. Díaz wrote that they frequently battled fleets of canoes that had been waiting, ready to attack. Among these fleets one canoe usually held a leader. Thus, warfare joins transportation, communication, trade, and fishing as Maya seafaring activities documented in these earliest Spanish records.

**COLONIAL-PERIOD DOCUMENTATION OF MAYA MARITIME TRADE AND COMMERCIAL INFRASTRUCTURE**

In the troubled decades that followed these initial forays the Spanish colonized much of the Yucatán Peninsula and Mesoamerica. As New World colonialism developed and the Maya struggled to find their role under the new order, information became a valued commodity and the over-extended Spanish government generated mountains of documents. Spanish colonial residents made several attempts during the sixteenth century to describe the Maya people and their environment as it existed in the early days of the contact period and before it. This body of literature, written by Spanish and Maya individuals or combinations of both, now constitutes the ethnohistoric sources which provide more indications of Pre Columbian trade with abundant clues to its extent, content, organization, and importance at the time of contact and immediately before.

For the purposes of discussing commerce, the ethnohistoric sources effectively divide the trade sphere of the Maya area into three sections, the southwest, the north, and the southeast portions of the
pensinsula. For the southwest region a primary source is the *Relaciones de Yucatán*. The *Relaciones de Yucatán* is a compilation of replies of Spanish encomenderos to their king’s request for answers to specific questions about the people, environment, history, resources and economies of the colonies. The *relación* of Alfaro Santa Cruz, a Spanish land holder, is quite detailed in its description of the Tabasco region and constitutes a major source of information for that area in the sixteenth century. It is supplemented by *The Maya Chontal Indians of Acalán-Tixchel* (1968), by Frances Scholes and Ralph Roys, a highly-regarded summary of the history and organization of Acalán which draws on colonial-period legal documents describing the Chontal Maya, also called the Acalán or Putun Maya. Scholes and Roys used the documents in conjunction with their command of other ethnohistoric sources to assemble a thorough account of the Chontal, their role in the southwest region, and their interaction with other groups.

The *Relaciones de Yucatán* also provides the greatest detail available from the sixteenth century for the northern area. Unfortunately, not all the king’s subjects took his survey request equally seriously, and suspicious similarities among several of the most detailed essays from Mérida are believed to be the work of a single literate Maya, Gaspar Antonio Chi, who was enlisted by several *encomenderos* to help fulfill the king’s burdensome orders (Edwards 1974:2, 4-7). Gaspar Antonio Chi also helped Bishop Landa write *Yucatán Before and After the Conquest*, a treatise on the people and customs of Yucatán. Despite the bishop’s own history of brutality toward the Maya, Landa’s book has proven to be a crucial source of information. The *relación* of Antonio de Ciudad Real (1588) about Fray Alonzo Ponce is considered very valuable and seemingly even more accurate than many statements attributed to Chi (Tozzer 1957a:21).

Fewer ethnohistorical sources dealt with the southeast area, and as a result we must rely heavily on the brief descriptions of Cortés and a few others for information. Fortunately much consolidation of the bits and pieces from these less focused sources has been carried out by Ralph L. Roys and compiled in his book, *The Indian Background of Colonial Yucatán* (1972).

As a whole, the ethnohistoric sources identify important cities in each of the three areas as commercial hubs, and the list of these cities reads like a guide to circumnavigation of the Yucatán Peninsula: Xicalango, the three Cimatans, Potonchan, Champoton, Itzamkanac, Chichén Itzá, Mayapán, Cozumel Island, Chetumal Bay, Nito, and Naco. Some cities boasted ethnically diverse populations, as they were home to neighborhoods of merchants from distant trading partners.
The Southwest Area

The southwest region consisted of the areas now encompassed by the eastern part of Tabasco, northern Chiapas, and the southern half of Campeche, which includes the mouths of the Grijalva and Usumacinta, and Candelaria rivers as well as the Laguna de Términos.

In Pre-Columbian times the lands now called Tabasco were famous for commerce. The dense population prospered from the region's prime conditions for cultivating cacao, which allowed them to reap four harvests of the coveted bean each year. The convenient network of navigable rivers upon which they lived was so extensive and ephemeral that the inhabitants marked trees with signs to indicate the canoe routes. At least eight towns in Tabasco used Nahuatl as the daily language of choice, an indication of strong ties to central Mexico if not actual occupation by central Mexican people (Landa 1991:24; Scholes and Roys 1968:15, 21, 28).

Tabasco was well-situated to participate in trade with Mexico, Yucatán, and what is now Guatemala and Honduras via its universally accessible water routes. The Tabascans imported fabrics, ornaments, gold spindle cups, copper and obsidian objects, dyed rabbit hair, and slaves from the Mexican Highlands; possibly gold from Veracruz and Honduras; and salt, cotton cloth, slaves, and flint weapons and tools from Yucatán. In addition to exporting surpluses of these items the southwesterners sold cacao, jaguar and cougar skins, carved tortoise shell, precious stones, yellow topaz from highland-Chiapas mines, and jade and greenstones from the Guatemalan Highlands. Of all these luxuries cacao constituted by far their most important export (Roys 1972:104-107; Scholes and Roys 1968:21, 29-30, 39, 325).

A few prominent southwestern cities enjoyed especially advantageous locations. The powerful and important Xicalango (Xicalanco) sat slightly west of the Laguna de Términos. Scholes and Roys noted Torquemada's description of Xicalango as a place "...where there used to be much commerce; for from various parts and distant lands merchants assembled, who went there to trade" (1968:27, 34), and Roys suggested that the city dominated the coastal trade route to northern Yucatán (Roys 1972:101). Xicalango was not part of the Mexican empire, but at least part of the city was Nahuatl-speaking, and perhaps housed a contingent of Mexican traders. Some evidence even suggests that Xicalango was the next target of Mexican aggressors had they not been preempted by the arrival of the Spanish (Scholes and Roys 1968:27, 34-35). Thomas Gage wrote of his travels through the region, describing another town at the opposite end of the lagoon as a port of call for canoes en route from Jonuta, on the Usumacinta River to Yucatán (Thompson 1970:131).

The second commercial center of the southwest region was the large, densely populated city of Potonchan, located at the mouth of the Grijalva River, which participated in much of the same trade. Together with Xicalango this city could trade along the coast of the Gulf of Mexico, up the mighty
Usumacinta River, inland along the Grijalva, inland along the Candelaria to reach the Chontal Maya of the Acalán region, and north to Yucatán (Scholes and Roys 1968:24, 27, 33).

Three more towns of the southwest region, Cimatán, Conduacan, and Cuaquitltega, were known collectively in colonial times as “the three Cimatans.” Scholes and Roys proposed that from their strategic location near where the Río Dos Bocas branches off from the Grijalva River, the Cimatans dominated key towns along the routes inland to highland Chiapas and west toward the Valley of Mexico which enabled them to control the trade routes into those areas. Spanish chronicler Sahagún wrote that Aztec merchants journeying to the southwest region habitually sent advance word of their arrival in order to secure an armed escort through the lands between the Coatzacoalcos River and the Laguna de Terminos as far as either Cimatán or Xicalango. Travel likely took place in canoes, as was necessary and customary in Tabasco. Once escorted into the region the Aztec merchants could sell their goods to local merchants in other towns such as Meacoacan, Chilateupa, Teuttitlan, and Copilco for distribution to the public (Tozzer 1957a:226; Scholes and Roys 1968:31).

Northeast of the Laguna de Terminos lies the region of Acalán, with its capitol at the city of Itzamkanac, between Tabasco and Yucatán and separate from both. The population of this important province spoke primarily Chontal Maya, but may have been bilingual with Nahuatl. The word “Acalán” means “the place of canoes” in Nahuatl, but the inhabitants called themselves “Mactun” and their language “Chontal.” Neighboring Yucatec Maya speakers referred to the Chontal language as “Putun,” and this situation has led to the group being called alternately Acalán, Chontal, or Putun Maya in academic literature (Roys 1972:102; Scholes and Roys 1968:51, 52, 60; Thompson 1970:134).

Itzamkanac constituted an important commercial center despite its inland location. Scholes and Roys suggest that the Candelaria River and its tributaries were navigable in Precolumbian times, even if only during the rainy season. The Chontal of Itzamkanac traded with Potonchan and Xicalango, as well as other towns to their west and east, into Yucatán and perhaps as far as Chetumal and further to the Ulu River Valley in Honduras. Cortés noted that Acalán was completely surrounded with waterways providing access to the Laguna de Terminos which the inhabitants used for canoe-borne trade with Xicalango and other parts of Tabasco (Scholes and Roys 1968:49-50, 58, 411). Their eastern endeavors extended to Nito, at the mouth of the Río Dulce on the Bay of Honduras, where the brother of Acalán’s ruler led a ward of Acalán merchants in commerce there. According to the Relaciones de Yucatán the Chontal Maya had been able to obtain everything they needed or desired through trade since Precolumbian times (Real Academia de la Historia 1967:371). Among the many goods in which they dealt were cacao, cotton cloth, dyestuffs, body paint, pine pitch for torches, pine resin for incense, red shell beads, slaves, and gold alloyed with copper. The tribute which the Spaniards took from them after many trade routes had been disrupted by conquest still included local products such as canoes, paddles, honey, copal gum for
incense, fowl, cotton, cloth, beans, corn, squash seeds, chiles, and calabashes (Scholes and Roys 1968:58-59, 396).

The coastal towns of Champoton and Campeche mark the northern end of the southwestern area. Ethnohistoric sources refer to them primarily in association with the aforementioned commercial centers. Situated closer to Yucatán and farther from the Mexican merchants at the Laguna de Terminos, these coastal junctures probably had access to products from both regions. It is likely that they served as links between inland towns and maritime trade routes, but lacked the status of commercial centers due to their less strategic locations. The Chontal and Yucatec dialects were, to some extent, mutually intelligible which would have facilitated trade (Tozzer 1957a:223).

The Northern Area

The northern trade area of the Maya Lowlands stretches north roughly from the line that connects the city of Campeche on the west coast to the Bay of Chetumal on the east coast. The lack of inland waterways, navigable or otherwise, constitutes the defining characteristic of the region.

One of the questions which prompted the Relaciones de Yucatán requested a description of Maya trade and contracts, and a list of tribute items the Maya were paying to the Spaniards. The Spanish listed salt, honey, wax, slaves, and cotton mantas as products of northern Yucatán. A manta is a 8.6-m² piece of cloth that could be elaborately decorated with paint, feathers or both. Roys felt that the textile industry was the most important Yucatecan endeavor, noting that the Yucatecans were famous for their beautifully decorated mantles. Cotton was grown all over Yucatán and everyone wore cotton clothes (Real Academia de la Historia 1967:70, 87, 92, 101; Roys 1972:46, 53; Scholes and Roys 1968:511).

Despite the tremendous importance of cotton export in the north, some argue the region was relied upon for an even more vital resource, salt. Landa wrote that salt was a domestic and foreign trade item and was traded as far as Mexico, Honduras, and Havana in the Early Colonial period. An early Colonial reference to control of northern salt pans by the rulers of Mayapán hints that salt resources might have been controlled by interior polities (Tozzer 1957a:226). Due to the near invisibility of salt in the archaeological record, most information about salt production comes from the ethnohistoric sources and ethnographic studies of contemporary Maya. The early Spanish colonists were evidently impressed with the capacity of Maya salt works and with the extensive trade networks used to export the product (Andrews 1983:36).

Northern Maya also dealt in honey, wax, flint (chert), slaves, and feathers from birds found in Yucatán. Little honey was evidently available in the southwest as the early Spanish settlers there obtained all their wax from the north. Neither did the southwesterners have local sources of flint, which
was probably preferred over fragile obsidian for agricultural tools. The slave trade reportedly grew out of necessity for labor to transport the bulky northern exports southward. Yucatecan Maya procured slaves through warfare with their neighbors, used them to carry goods and paddle canoes to commercial centers of the south, then traded them away along with the other goods. The imports they brought home were much smaller and lighter, eliminating their need for slave labor on the return trip (Roys 1972:53, 105).

Known imports to northern Yucatán tended to include precious items which carried high value and conferred elite status upon their owners (Feldman 1985:23, 73). Large amounts of cacao from the southwest and southeast regions were used as currency to purchase other exotic merchandise and to make a prized chocolate drink. Sheets of copper, and copper bells and axes probably arrived from Honduras or Oaxaca, and small amounts of gold in either worked or unworked form could have come from Mexico or Panama and Costa Rica. Tuchumite, or dyed rabbit hair, was also brought from Mexico via Tabasco for use in the manufacture of decorated cloth. Turquoise was imported from its only known source in the Americas, in what is now called New Mexico and Arizona, and green stones, jade, quetzal feathers, yellow topaz, and obsidian came from highland Guatemala. Red shell beads from the Pacific coast also constituted a valued import to the wealthy northern cities (Roys 1972:52-55).

The early Spanish explorers mentioned a large commercial town at the northeast tip of the Yucatán Peninsula. Although most contemporary sources agree the town may have been Ecab, no details of its role in trade survive. Roys mentions only that the population of Ecab was so accustomed to long-distance trade that they were used to foreigners and foreign ways. Throughout the peninsula, the Spaniards observed that the coastal peoples were more "advanced" than their interior counterparts, with greater proportions of stone buildings and more refined language and manners (Real Academia de la Historia 1967:14, 22; Roys 1972:14, 17; Landa 1991:30).

Two other northeastern commercial centers, Cachi and Chauacha, evidently also boasted large markets in plazas or buildings (Roys 1972:50). Two northern-area centers appear repeatedly in the ethnohistorical sources, Cozumel Island and Chetumal. Cozumel Island housed the Precolumbian shrine of Ix Chel, the goddess of childbirth and the moon, to which pilgrims from all over the Maya Lowlands would come to pay respects. The large city of Chetumal dominated the Bay of Chetumal, the northernmost cacao-producing area. Chetumal probably constituted a major trading region between the Bay of Honduras and the northeastern Yucatán Peninsula.

The Southeast Area

The southeastern area encompasses the rich lands from the southern end of the Bay of Chetumal along the coast to the Ulua River in Honduras and inland to the Motagua River Valley and the headwaters
of the Usumacinta River, including the Bay of Honduras, Lake Izabal and the Río Dulce. These immense waterways provided routes of trade and communication between the coast and the interior Highlands. Early explorers to the region reported that inhabitants were culturally and economically linked to peoples throughout the base of the Yucatán Peninsula as far as Tabasco (Roys 1972:113).

Nito and Naco are often mentioned as prosperous trading cities. Contingents of merchants from the southwest and northern areas were stationed in Nito permanently (Pagden 1971:383, 386; Scholes and Roys 1968:320). It served as a coastal outlet for communities along the Motagua, Cahabón, Polochic, and Dulce Rivers, and constituted an important source of trade items valued highly throughout the Maya Lowlands. Nito itself produced large amounts of cacao, and enjoyed access to the macaw feathers bred on the Bay Islands. Inland of Lake Izabal, the Polochic and Cahabón rivers provided access to Verapáz, the only place in Mesoamerica where coveted quetzal feathers could be found (Roys 1972:114, 119; Thompson 1970:130).

Although the mouth of the Motagua River lies east of Nito, there seems to have been an inland waterway to it from the Bay of Amatique. The first Spanish explorers on the waterway found it impassably swampy, but this could have been due to limitations such as the draft of their vessels. Pre-Columbian inhabitants navigated routes that the Spanish sometimes labeled impassable. If such a link between the Motagua and the bay existed, then Nito also had nearly total riverine access to the prosperous Motagua Valley (Roys 1972:115-116). Thus Nito likely served as the commercial gateway to the Maya Highlands where many exotic products originated.

Farther east the Chamelecon and Ulua Rivers empty into the Caribbean Sea. Naco, a commercial center on the Chamelecon, dominated the rich and thickly populated valley. Spanish newcomers to the region described the people of that city as refined and urban, with wide roads for traversing their city that were beautifully bordered by fruit trees. Díaz del Castillo wrote that he had traveled a direct road from Nito to Naco, implying numerous travelers between the two cities. A report that the Maya around Chetumal Bay sent fifty “war canoes” to aid Ulua residents when they were under attack by the Spanish hints that political alliances between Yucatán and the southwest also existed. Ethnohistorical sources point to a close trade relationship between the Ulua Valley and environs and the Yucatán Peninsula—members of ruling families in Chichén Itzá and Mayapán journeyed to Honduras personally to trade. Honduran trade items included exports of cacao, feathers, feather work and birds exchanged for imports of salt, cloth, and a Yucatecan seasoning called achiote (Roys 1972:116-117, 120-121).
Merchants

Direct royal participation in regional and long-distance trade helped strengthen political ties among trading partners in Mesoamerica (Roys 1972:116). Paxbolon in Acalán had sent his own son to preside over his commercial interests in Nito and local rulers around Chetumal Bay clearly perceived benefits to defending the Ulua territories, which were their trading partners. Soon before the arrival of the Spanish the son of Cocom, ruler of Mayapán, was away on a trading mission in Ulua when his father was overthrown (Scholes and Roys 1968:3, 34, 317). In highland Guatemala it was still common in the early Colonial Period for representatives from one town to live in another to maintain a continuous commercial relationship (Feldman 1985:19). Members of royal families did not dominate commercial activity, but rather constituted some of its most wealthy participants.

Independent merchants existed at all echelons of society, from rich nobles who owned their own canoes and slaves, to poor itinerant merchants (Roys 1972:33, 50). Ethnohistoric sources do not provide detailed descriptions of the roles of Lowland Maya merchants in the ethnohistoric sources, information from highland Mexico and Guatemala can illuminate their position. In highland Mexico, under the Aztecs, an elite guild of merchants called the pochteca enjoyed government sanction and a monopoly on long-distance trade. In turn they paid the government in goods and political services. By the time of contact, their routes extended to the Laguna de Terminos on the gulf coast, and through the Isthmus of Tehuantepec to the Pacific-coast region of Soconusco. The latter was already an Aztec territory by the sixteenth century, the former was not.

There is no indication that a unified guild of traders like the pochteca existed in the Maya area. Aspects of Maya mercantilism were evidently similar however, such as the traders' rights to operate independently from, but in cooperation with their rulers. Ethnohistoric sources refer to the pplom, a class of professional merchants, many of whom traveled long distances to trade (Tozzer 1957a:223). They also described a range of types of merchants, from “wealthy and noble wholesalers, who had their own factors, trading canoes and slave carriers to the petty itinerant who carried his own pack” (Roys 1972:51). Lawrence Feldman described three types of traders that existed in highland Guatemala in the early Colonial Period. “Professional traders” typically sold goods wholesale to other merchants but not to the individual consumer, regardless of the distance they traveled to market their goods. These Highland Maya traders were not government representatives; they may have been wealthy members of the elite, but did not act in an official capacity (Feldman 1985:20-21). “Petty traders” could deal in limited types of goods, and made short trips within the local market area to sell their wares, while the “retailer” sold only the products of his or her own labor in the immediate locality.
In early Colonial times travelers, presumably including merchants, reportedly had to obey certain rules when they visited a town. In each place there would be someone designated to provide supplies and the travelers were not to go around asking for what they needed or stay in private houses (Tozzer 1957a:223). Landa described travelers’ religious practices:

And travellers even carried incense on their journeys and a little dish to burn it in; so that at night, wherever they came they erected three little stones, and placed on each several grains of the incense; and in front they placed three other flat stones, on which they threw incense, as they offered prayers to God whom they called *Ek Chuah*, that he would bring them back home again in safety. And this they did every night until they returned to their own houses, where there was always some one to do the same thing for them and even more (Tozzer 1957a:228).

According to Tozzer, *Ek Chuah* is the God M designated by scholars and appears as a traveler with a staff and tumpline in the Madrid Codex (Figure 7). Some argue that the north star, *Xaman Ek*, was a
cosmological as well as practical guide for merchants, and that traders burned copal offerings to Xaman Ek at roadside altars (1957a:228).

Commercial Institutions and Standards

Commercial institutions such as a standard currency bolstered the merchants’ abilities to carry out regional and long-distance trade. Ethnohistorical sources are uniform in identifying the cacao (Theobroma cacao L.) bean as a standard of value accepted throughout Mesoamerica (Tozzer 1957a:224; Feldman 1985:86). The value of the bean could inflate or deflate, but remained a standard unit with known purchasing power and equivalencies. It was also the main ingredient for a beverage which was only consumed by elites, probably because they alone could afford to consume their wealth in such an ostentatious manner. Other goods that were high in value and low in volume could also serve as currency. Red beads of Spondylus shell from the Pacific coast (Spondylus princeps), jade, other green stones, small copper hatchets, copper bells, quetzal feathers, and pieces of cotton cloth all had known equivalencies (Cogolludo 1867:291; Blom 1932:541, 546; Roys 1972:52). Oral contracts were made and kept, and the Maya “gave credit and made loans, for which payment was made courteously and without interest” (Roys 1972:52).

Little information exists in the ethnohistoric sources to illuminate the other ways the Maya quantified their trade, but Roys reported that certain sizes of loads of cacao were recorded by the sixteenth-century Spaniards. The Maya used a vigesimal counting system, and cacao was evidently sold in at least the two quantities of 400 and 8000 kernels each. Roys suggested that 8000 kernels constituted a “load” of cacao, and pointed out that a highland Maya group called the Cakchiquels used the word cala to refer to 20 loads of cacao beans (1972:86). Mesoamerican ideological organization expressed itself in commerce, so that different types of goods were counted using different counting systems and could only be traded for certain other types of goods. Las Casas recorded that the Maya traded corn for beans and beans for cacao, while cotton cloaks could be traded for gold or copper axes and gold could be traded for green stones, turquoise and feathers (Feldman 1985:21, 23).

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3 Oviedo y Vázquez, a Spanish chronicler in the Maya region, noted that cacao beans could be used to buy anything. In Nicaragua 10 beans purchased a rabbit, while for four beans one could enjoy eight pieces of fine fruit. Counterfeit beans, consisting of the cacao skin filled with dirt and resoled, had to be ferreled out by hand-counting and pinching each bean at the time of sale. The importance of cacao beans was still so strong during the early years of Spanish incursion that the conquistadors sometimes had to pay their troops with them. Frans Blom wrote that at one time 80 to 100 beans were worth one eighth of Spanish peso (Blom 1932:537-538).
The Marketplace

All well populated communities had markets, but the writings of the early Spaniards in the area suggest that the ones located on or near the coast were larger and more impressive. Chauacha, in the northeast, housed a large market and Ecab is reported to have boasted a very impressive one as well (Roys 1972:14, 51-52). The periodic market system in place throughout Mesoamerica today probably existed in Precolumbian times too. Market days are staggered through the week among small towns in a certain region, so that merchants can sell their wares in different places by traveling. If all other factors are constant, sellers decide in which markets to participate by weighing the cost of the added travel time against the benefit of higher prices they can charge due to the distance of the market from the source of the goods (Feldman 1985:15). Larger towns have daily, permanent markets housed in specially designated plazas or buildings. Early colonial markets included officials for settling disputes and housing for out-of-town traders. The officials reportedly knew the acceptable values for everything sold there (Tozzer 1957a:227; Roys 1972:17, 51).

From his study of sixteenth-century highland Guatemalan exchange Feldman believes that a commercial institution comparable to the European fair existed in that region. Fairs took place in easily accessible locations and their dates would coincide with an important event in the ritual calendar, turning the merchants’ journeys into pilgrimages (Blom 1932:545; Feldman 1985:20). It is possible that Cozumel Island served the east coast in this way or in some way similar, due to its strategic location between the northeastern salt beds and the cacao-bearing regions around Chetumal Bay and Nito. The island housed the shrine of Ix Chel,4 and the pilgrims who ventured from as far away as Acalán probably came with commercial as well as pious purposes (Roys 1972:109; Scholes and Roys 1968:34).

Official Exchange: Tribute and Gift-Giving

Aside from the myriad merchants plying the network of Mesoamerican trade routes, official exchange served as a medium for the dissemination of products. In early colonial highland Guatemala, official exchange could involve taxes, fines, or gifts from citizens to a local ruler, from the community to a district lord, and from such a lord to the rulers above him (Feldman 1985:21). The tribute system is well known as a Precolumbian institution. At the local level tributes consisted of the same goods normally sold in the markets, such as corn, beans, chile, poultry, honey, cotton cloth, game, salt, and

4Ix Chel is described as the wife of the sun god and the goddess of the moon, childbirth, weaving, medicine, divination, and illicit love (Roys 1972:77).
perhaps fish (Roys 1972:61). At the higher political levels it may have taken the form of official gifts, such as the gold necklaces, gold trinkets, foods, and cloths.

**Canoes**

Other aspects of the Precolumbian infrastructure for trade included boats, trade routes, and navigation. Although nearly all trade networks involved some transport over land, the organization of trade in the Lowlands relied heavily on maritime and riverine transport in canoes. Roys suggested that boat-building itself was a significant manufacturing industry. The people of Mazanho near Lake Bacalar reportedly were boat-building specialists and that they supplied canoes to their entire region (1972:50, 105). It is reasonable to expect that other boat-building communities or groups of specialists were scattered throughout the Lowlands, particularly along the coasts. Canoes and paddles were listed among several items that the Spanish took as tribute from the inhabitants of Acalán in early Colonial times (Tozzer 1957a:229). For more information about canoe construction see Chapter V.

**Trade Routes**

Trade routes in the southwest reached from Xicalango to the Laguna de Terminos, up the Candelaria River to Acalán and farther up the coast to Campeche and Champoton. Canoes were consistently used all along the extensive networks of waterways (Roys 1972:56).

Cortés encountered merchants from Acalán between their home and the interior province of Cehache who were returning with the cotton cloth that they had traded for salt from the northern peninsula (Scholes and Roys 1968:59). In a likely scenario, the Acalán probably obtained their salt from the northwestern tip of Yucatán. This region constituted a rich salt-producing area but has only bad agricultural lands, and therefore could not produce cotton. Rather than continue along the maritime route around the peninsula to areas that had better access to cotton, the Acalán merchants took the Yucatecan salt back home then up the Candelaria River where they could trade it for cotton cloth available in the interior (Roys 1972:52). Indeed, Andrews cites early Spaniards who encountered waterborne salt trade along the gulf coast extending from Celestun all the way to Veracruz (1983:41).

Some propose that salt from the northeastern salt beds was carried by boat along the east coast as far as the Gulf of Honduras where it could be exchanged for cacao and also inland along the numerous southern rivers (Andrews 1983:41). Canoe transportation there extended from Cozumel Island and the Bays of Ascensión and Chetumal to the important rivers Dulce, Motagua, Chamelecon and Ulua, and thus access to the Highlands and the trade centers of Nito and Naco. Three other eastern rivers figured prominently in trade: the Hondo, New, and Belize Rivers which reach from Chetumal Bay to the Petén of
Guatemala. During his first journey to Yucatán, Cortés encountered merchants on Cozumel who had recently been in Chetumal and who carried news and information from there. On the mainland near Cozumel there were large market towns whose inhabitants were called “the lords of the sea,” indicating that their livelihood depended on maritime activity (Roys 1972:6, 56).

Ciudad Real, a contributor to the *Relaciones de Yucatán*, also wrote of a coastal route between Honduras and the protected part of the Bay of Ascensión, saying that in Pre-Columbian times “lords” from Chichén Itzá would embark and disembark at that port when they traveled to Honduras for cacao, feathers, and other things. Ciudad Real also noted that there were stone buildings at the bay, and that the lords would make offerings there as they came and went (Tozzer 1957a:227).

Evidence from Cortés’ journey through the Lowlands shows that trade routes did exist across the base of the peninsula. Setting out for Chetumal Bay from Tabasco, Cortés opted to travel by land rather than the much easier sea route in order to see as much of the country as possible and initiate efforts to bring it under Spanish domination. To find the way he first asked directions in Xicalango and Tabasco. At that stage Cortés was given a henequen-cloth map to show a route to Itzamkanac and all the towns along the route. The merchants of Xicalango and Tabasco undoubtedly knew that their counterparts in Acalán would be able to provide directions for the remainder of the journey due to their commercial familiarity with the east. At Itzamkanac he obtained information of Spaniards in Nito and decided to travel there. Neither the customary path to the southeast nor the exact route that Cortés took are clear today (Tozzer 1957a:225-226; Roys 1972:56; Scholes and Roys 1968:340, 430-433).

Traveling over land Cortés encountered what Scholes and Roys described as probable rest houses for travelers. Despite this reference to structural support for overland travel, Scholes and Roys nevertheless maintain that the Itzamkanac merchants had probably recommended that he go either by sea or by the riverine routes on the basis that the Maya would have preferred canoe travel (Roys 1972:106-107; Scholes and Roys 1968:30, 60). One logical route would have taken Cortés up the Usumacinta River, overland to the Sarstoon, and downriver into the Bay of Amatique. Two nineteenth-century accounts indicate that the route to the headwaters of the Pasion River then overland to the Belize River could also be used for canoe voyages between the western peninsula and northern Belize (Roberts and Shackleton 1983:60, 61).

Evidence for a circumpeninsular route is less direct, but nevertheless there is reason to believe that this route existed and warrants further investigation. In early Colonial times, the primary export from the north was salt, which is so heavy and bulky that it was probably transported by water whenever possible (Roys 1972:52). Furthermore, people from the southwest districts of Potonchan, Xicalango, Champoton, and Campeche all visited Cozumel to honor the goddess Ix Chel, which indicates travel and communication between the two regions was probably routine (Scholes and Roys 1968:57, 77, 321).
Sixteenth-century sources also refer to a network of paved roads used by traders that crisscrossed the peninsula. These roads, called saches, undoubtedly facilitated land travel, particularly during the rainy season. There are even references to Pre Columbian bridges over streams and swamps, and the archaeological remains of two of these have been found in southern Belize and Guatemala (Tozzer 1957a:225).

Scheduling

Some scholars have suggested that the scheduling of trade depended on the agricultural calendar, and that Maya did not concern themselves with trade unless the farming for the year was complete, particularly in the interior (Roys 1972:46). This argument finds support in the fact that a major article of trade, salt, was produced during the dry season between January and June. Salt making in the north did not require year-round attention, and the salt workers were typically farmers who lived inland on more fertile land and traveled to the coast to gather salt. The annual lull in agricultural work coincided precisely with the peak season for salt-gathering. Salt was easily stored under shelters, however, or gathered into piles and glazed with torches to protect it from moisture, so producers could ship it whenever they wished. On the other hand, the accessibility of riverine routes probably fluctuated greatly, allowing navigation much farther upstream during the rainy season. Merchants might have preferred to transport salt inland on the rivers during late summer and early fall when the production season had ended and the rivers were full (Andrews 1983:112-113).

Trade-Related Conflict

According to Roys, “It was the policy of each state to exploit its own commerce, as far as possible, at the expense of its neighbors.” Indeed several references to fortified coastal towns bolster this theory. Roys noted that Champoton was surrounded by dry stone walls and a ditch, and that he had seen a similar fortification at Ake on the east coast. Tulum and Mayapán in the east were also surrounded by walls, and Potonchan and Cimatan in the west were fortified with palisades of thick tree trunks (Roys 1972:17, 65, 68, 102).

The Yucatecan states conducted slave raids on one another in order to simultaneously procure labor and trade goods. They also battled for control of the salt beds, and these conflicts could disrupt the flow of salt to the south if not resolved quickly (Andrews 1983:3). One rivalry in northeast Yucatán is particularly well recorded in the ethnographic sources. The eastern provinces of Cupul, Ah Kin Chel and Chinkinchel were constantly in conflict with one another over control of coastal resources. While the Cupuls had access to fruit and game products from the interior, the Ah Kin Chels and Chinkinchels
controlled salt production and fishing along the coast. Cupul raids on the salt beds regularly prompted Ah Kin Chel to cut off Cupul access to coastal trade and to stop selling salt or fish to them. The Cupul reacted by refusing to sell fruit and game to the coastal provinces.

The early Spanish chronicler Herrera y Tordesillas wrote of conflicts in the southwest as well, stating that groups in what is now Honduras would constantly war with one another, and that salt was sometimes difficult to obtain because the merchants would be killed on the routes. When at peace, however, commerce proceeded as usual with birds, cloth, feather-work, salt, and spices all flowing freely into and out of the region (Roys 1972:53, 68-69, 120-121).

DISCUSSION

The ethnohistoric sources provide a wealth of information about the state of Maya maritime trade and commercial systems at the time of contact and during the decades that followed. These accounts do not provide exhaustive or highly accurate descriptions, but they show us the enormous breadth and depth of trade in the Lowlands, and its role in the everyday life of the Maya and their neighbors. By the sixteenth century, the Maya economy was composed of geographically separated specialized components, which together constituted an integrated system. Lengthy disruption of any one of the components had far reaching political and economic consequences for every sector of the population. Canoe transportation was paramount in the southwest, and coastal or riverine canoes were important for moving trade goods throughout the Yucatán Peninsula.
CHAPTER III

MODELS FOR PRECOLUMBIAN MARITIME TRADE

Due to the lack of Maya sites discernibly related to seafaring, archaeologists must rely on evidence from terrestrial sites to reveal the nature and extent of Precolumbian maritime activity. Beginning in the early 1970s, scholars enthusiastically applied archaeological data and information from ethnohistoric sources to study Maya economics, trade, and seafaring. Studies that reached grand conclusions about maritime trade sometimes relied rather uncritically on scant archaeological data and broad application of ethnohistorical evidence, but still greatly influenced starting assumptions of subsequent research. This overview of models and scenarios for the development of Precolumbian Maya maritime trade, combined with the summary of current archaeological data from coastal sites in Chapter IV, identifies the conclusions based on archaeological facts and distinguishes them from conclusions based largely on speculation.

The Precolumbian Maya traded with one another on local, regional, and long-distance scales. Local trade consisted of exchange among individuals in communities or between neighboring communities (Guderjan 1995c:5), or within a single ethnic and political unit. Within a local zone, production-distribution systems for different items could coexist and involve mutually beneficial relationships among the central places in the zone (Sidrys 1983:376).

Regional trade consisted of trade between communities with differential access to desirable resources for which local alternatives were not available (Tourtellot and Sabloff 1972:132; Hammond 1982b:222). Long-distance exchange refers to exchange that crosses cultural and linguistic boundaries (Sidrys 1983:389). This form of exchange has been alternately described as trade in goods with restricted origin but wide demand carried out by a merchant class (Hammond 1982b:222-223; Guderjan 1995c:5), or as a type of exchange involving only elites of different communities trading objects that demonstrated the relationships among them but had limited economic significance (Tourtellot and Sabloff 1972:132).

Research into Maya exchange systems has historically focused on long-distance exchange. Many scholars gave credit to maritime trade for expanding exchange networks beyond the local and regional spheres, and spurring the interregionally integrated economic system that the Spaniards described at Contact. Local and intraregional trade was probably more common and more economically important through most or all of Maya prehistory, and form the focus of more recent studies (Marcus 1983:477-480; Leventhal 1990:127-128; Mock 1994a:325). Although much less attention has been dedicated to the
importance of water-borne trade and transportation in local and regional networks, Maya canoe navigators probably played an important role.

The limited economic impact of long-distance exchange on individual communities does not preclude its significant indirect effect on everyday life in the Maya Lowlands. On the contrary, long-distance trade in luxury or status goods allowed the elite social system to exist and maintained the broad uniform characteristics that we identify with Maya Lowland culture (Tourtellot and Sabloff 1972:128; Leventhal 1990:127). The archaeological distribution of elite or exotic goods constitutes a record of communication, which undoubtedly had a profound impact on how the Maya viewed themselves, their neighbors, elite–non-elite relationships, and the course of regional events.5

Making Sense of Trade Evidence

Trade models generalized from available data offer useful mechanisms for handling the abundant trade evidence already reported and for testing conclusions with new lines of inquiry.6 Trade models and scenarios proposed for the Precolumbian Maya typically address at least one of four research themes: 1) Identification of trade and transportation routes; 2) Description of the organization and characteristics of trade and its role in culture change, particularly concerning the rise of complexity among the Maya and the Classic-to-Postclassic-period shifts; 3) Identification and differentiation of functions of sites that participated in trade; 4) The role of the Putun Maya (a.k.a. the Chontal, Acalán, or Itzá). Models usually incorporate more than one theme and conclusions drawn in one area nearly always entail conclusions or assumptions pertaining to others. This review of trade-model literature organizes the material according to the four themes to ease the task of dealing with large amounts of information, but there is considerable overlap among them.

IDENTIFYING TRADE AND TRANSPORTATION ROUTES

The distribution of goods at Maya sites shows that raw materials and finished products circulated throughout the Yucatán Peninsula, south into the Highlands, east and southeast to Honduras and Central America, and west and northwest to Central Mexico. If we assume the Precolumbian Maya always

5When the distribution of an elite good occurred through a series of exchanges, however, it probably does not represent direct communication. Information not embedded in the traded artifact itself would likely be lost or distorted as the item repeatedly changed hands.
maximized resources, then we can view trade and transportation routes as dependent on their ability to link sites that needed to be served, and the time and effort required to transport goods to them. Variables such as cargo weight and bulk, route conditions, distance, and the need for transshipment can be considered "transport costs" even though the Maya may not have made decisions explicitly in terms of costs and returns. Routes also depended on the organization of trade and would have accommodated central places or other sites with roles in the exchange system. Routes changed as old centers declined and new ones arose to take their places (McKillop 1987:21).

We do not know if the Maya distinguished between maritime and overland trade the way archaeologists have done. Maritime trade probably integrated with overland and riverine networks, and seafaring practices of the Maya probably responded to the same social and organizational changes in Maya communities as other components of the economy.

**Maritime Routes as a Choice for Efficiency**

The configuration of the Yucatán Peninsula and neighboring coasts does not provide obvious advantages to maritime routes. Straight-line routes nearly always traverse land or follow rivers. Three exceptions where the maritime route was the direct and logical option include the route from mainland Quintana Roo, Mexico, to Cozumel Island, and two potential offshore routes (Figure 8). The first offshore route could connect the Stann Creek District of Belize with the north coast of Honduras and the second could connect the west coast of the Yucatán Peninsula with coastal Veracruz, Mexico. Of these, the 17.6-km voyage to Cozumel Island is the only one the Maya definitely used. Use of the Stann Creek to Honduras route would be consistent with the evidence from Maya archaeological sites, but use of the potential Yucatán-Veracruz offshore route seems unlikely. It would have been difficult to make such a long journey without landfall, and there is no ethnohistorical or archaeological evidence for PreColumbian use of this route. On the contrary, ethnohistoric evidence suggested the Laguna de Terminos region enjoyed a prominent role in trade because it sat at the convergence of routes from central Mexico, the Guatemalan Highlands, and northern Yucatán. An offshore route between northern Yucatán and Veracruz would have bypassed the area and traders would have missed the opportunity to obtain goods from the southern Highlands. None of the evidence suggests that the Maya navigated the treacherous, 220-km passage from Cabo Cotoche to the Greater Antilles.

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6The best trade models account for physical differences in exchanged materials, constraints on distribution, energy cost of production and transport, and demand structure, or the perceived social and economic value of items being traded (Fry 1980:3-4). Thorough knowledge of production, labor, and social systems must also be obtained before we can understand trade and other interactions (Hodder 1980:154).
Figure 8. Schematic map of Mesoamerica showing three potential offshore canoe routes.

Due to the fact that maritime trade in Mesoamerica was not critical for interregional contacts or distribution of geographically restricted goods, scholars often frame the use of sea routes as a matter of efficiency (Hammond 1972:1093) or political will (Thompson 1970) rather than necessity. Thus questions about the use of maritime trade dovetail with discussions of social stratification, complexity, and change.

Larger quantities of goods moving longer distances in a shorter time over maritime routes translates into lowered transportation costs (McKillop 1987:20, 41). Andrews saw bulk coastal transportation of a subsistence item, salt, as the impetus for regular long-distance trade (1983), but later studies challenge his conclusions (McAnany 1986; Graham 1994). Others credit maritime trade with expanding the availability of luxury, status-conferring items to a broader spectrum of social ranks (Sidrys 1983:313; McKillop 1989a:19; Guderjan and Garber 1995a:185). In addition, seafaring skill allowed the
Precolumbian Maya to range farther to collect subsistence resources by fishing or hunting manatee (McKillop 1984:30).

The Maya also used watercraft to ply networks of rivers in the southern Lowlands. Large urban centers were often located on or near rivers, where proximity to convenient transportation was one of many advantages. The choice of riverine routes was often logical and archaeologists have not tried to frame it as part of larger socioeconomic changes in the Maya region. We cannot simply assume the Maya used river routes when they were easier than overland alternatives, however, and if they did use them we cannot assume it was for long-distance trade. Routes described in the ethnohistoric sources or which seem to be topographical “natural routeways” need to be verified with archaeological evidence (McKillop 1987:21-22).

Calculating Transport Costs and Routes

Calculating transport costs of exchanged items requires tracing Maya trade routes. It is important to remember that raw materials present at a site could arrive there from more than one source, multiple routes could operate simultaneously, and preferred sources and routes could change through time (McKillop 1989a:26).

Sidrys advocated the use of linear distances in comparing routes and costs, arguing that the farther a good was transported, the greater the likelihood that multiple routes existed. For any distance longer than 50 km, he maintained, routes proposed by archaeologists constitute little more than guesses. Linear distances between endpoints, while not realistic, at least constitute standardized units with which to calculate transport costs (Sidrys 1983:382-383). McKillop disagreed, noting that we can compare transport costs of land and water routes only by using transportation distances actually traveled by the Maya (McKillop 1989a:26-27).

A better understanding of Precolumbian Maya watercraft can advance the study of exchange and communication by illuminating how much canoes could really carry, how far, and how fast. Another variable in the choice and development of maritime routes was undoubtedly the degree of community effort required to maintain maritime routes with navigation aids, artificial waterways, or harbor facilities. If maritime trade had the tremendous economic importance that some scholars suggest, then all discussions of transport efficiency and exchange infrastructure that do not address these variables must be considered incomplete. Documentary sources and ethnographic studies provide limited information on these topics, but they refer primarily to Maya practices after contact with the Spanish, when trade had been disrupted and watercraft design and construction might have been substantially altered by the spread
of the use of sail. Sound archaeological evidence is required to define these parameters for each period and region in the Maya Lowlands.

The Traditional View: Temporal Patterns in Route Choice

Until the last decade the prevailing view of Pre Columbian Maya trade, as summarized by McKillop (1987), gave greatest importance to coastal routes in the Preclassic and Postclassic periods. For the Preclassic period, archaeologists associated long-distance trade in exotic, luxury goods with the rise of social stratification in Maya society. Occupation of coastal zones consisted of large sites such as Cerros (Figure 9) and small ones like those in the Stann Creek District of Belize or the north coast of the Yucatán Peninsula. During the Classic period large, powerful centers developed in the central southern Lowlands. In the prevailing view these drew trade routes inland, where elites at the large centers generated the greatest demand for exotic goods. Overland trade routes to these sites were shorter than coastal routes and they could be designed with stops at several communities in one journey. Once the central southern Lowlands declined in the Terminal Classic and Early Postclassic periods, settlement again focused on coasts and rivers of northern Belize and the northern Yucatán peninsula, and maritime trade routes recovered. Coastal and riverine routes reemerged as the best way to connect large Early Postclassic communities such as Lamanai on the New River and Chichén Itzá near the north Yucatán coast (McKillop 1987:7, 40-41).

New evidence and interpretations indicate that boat travel and at least some maritime trade also took place during the Classic period (Dreiss 1988:87; McKillop 1987:7-8, 41-43; 1989b:1). Some of the evidence for coastal settlement and seafaring in the Classic period lies submerged by sea level rise that occurred before ca. A.D. 1000. In addition, transport of goods from the coasts to inland communities is now recognized as a vital component of Classic Maya ceremonial life, so riverine canoe travel was probably important for subsistence, trade, and communication during that time.

Tracing Trade Routes with Obsidian Evidence

As early as the Early Preclassic, ca. 1700-1200 B.C., the Maya transported obsidian over long distances, conceivably by canoes on riverine routes (McKillop and Jackson 1989:61; Fowler 1991:9). In 1971 Norman Hammond first proposed that obsidian from different Highland sources was distributed separately over either a combination of land and river routes or a mostly coastal route. His suggestion sparked 26 years of obsidian-distribution studies designed to expand and test his hypothesis. These studies form the most significant body of work dedicated to identifying and evaluating Maya maritime trade.
Figure 9. Selected Maya archaeological sites.

Obsidian occurs at archaeological sites throughout the Maya Lowlands in all periods and nearly always had to be brought there from great distances. It was usually transported as cores then converted to blades and other artifacts at the final destination or a redistribution center (McKillop and Jackson 1989:61). Mayanists continue to debate whether or not obsidian artifacts were elite or ritual items (Sidrys ...
1983:388; Jackson and McKillop 1989:95), or if obsidian tools were practical goods used by Maya at all levels of society (Nelson et al. 1977:218; McKillop 1996:59). The socio-economic implications of obsidian perhaps changed through time, with access becoming less restricted in the Late and Terminal Classic periods, and some even argue that its increasing availability resulted from reduced transportation costs associated with expanding use of maritime trade routes in those periods (Sidrys 1983:388; McAnany 1989b:359; McKillop 1987:41, 43; Mock 1994a:230).

Methods for measuring and comparing obsidian at sites across Mesoamerica include: analysis of the distribution of source-specific obsidian, measurement of relative abundance of source-specific obsidian at Lowland sites, and measurement of the efficiency of obsidian blade production in terms of cutting edge-to-mass ratio (CE:M) or blade width. Studies assume that greater abundance of obsidian reflects greater access to the material through direct procurement or exchange, or that greater efficiency in blade production reflects the knapper’s need to conserve a scarce resource. Thin blades that have more cutting edge with respect to the mass of obsidian suggest greater production efficiency than wide blades with less cutting edge for the same amount of obsidian. Archaeologists assume that with greater distance from the obsidian source blade producers increasingly needed to conserve raw materials and maximize the number of blades yielded by each core, leading to higher CE:M ratios (Sidrys 1979:595; Jackson and McKillop 1989:106; McKillop 1995a:165). A simple measurement of blade width is also used to measure blade production efficiency, with narrower blades reflecting greater conservation of raw materials than wider blades.

Factors affecting the conservation of obsidian in blade production include real transportation distance from the source, the accessibility of a site with respect to land and water routes, commercial control of sources by nearby centers, the role of redistribution centers, and the impact of alternative materials such as chert on a knapper’s incentive to conserve raw materials (McKillop 1995a:166-167; Hester and Shafer 1980:810). When these variables are considered, efficiency measurements of blade production become a more useful tool for studying land- and water-based trade routes. For example,

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7The revelation that chert tools were mass produced and widely distributed weakens the hypothesis that obsidian was a necessary commodity used by everyone, at least for the zone of northern Belize and southernmost Quintana Roo, Mexico, where Colhá-made chert tools were distributed. In trade studies obsidian is often treated as an exotic trade good, even if use was not always restricted to elites, simply because from the Lowland point-of-view the material had a distant origin and was comparatively difficult to obtain. The ambiguity of current evidence suggests that obsidian was neither an elite nor non-elite good, but its value was somewhere between the two. This issue will need to be resolved before inferences based on obsidian distribution can be applied to non-elite goods.
Jackson and McKillop (1989) suggest we can distinguish between coastal and inland trade routes using measurements of efficiency in blade production.\footnote{Few investigators have reported efficiency measures of obsidian blades from their excavations, and few have used it to study trade routes. If more efficiency data were available in the literature it would undoubtedly prove to be a useful tool in testing hypotheses concerning the use of riverine and maritime trade routes and the organization of Maya exchange.}

Using data from Wild Cane Cay and Moho Cay as examples, Jackson and McKillop proposed that if the Maya used maritime routes to transport obsidian to these and other coastal sites, and if there was no difference in the production of cores at the obsidian sources, then blades at coastal sites should generally exhibit less conservation than ones at inland sites. The coastal sites should yield wider blades and lower CE:M ratios than inland sites, with a gradual decrease in blade width and increase in CE:M ratios with distance from the supply zone. If coastal routes were used, coastal sites should also have different patterns of obsidian source use than inland sites and higher overall densities of exotic artifacts than inland sites. Finally, use of a coastal route would be supported by the absence of a nearby inland center that could have distributed goods to the coast. If inland routes were used, on the other hand, we would expect wider blades and lower CE:M ratios at inland sites than at coastal sites, as well as similar patterns of obsidian source use at inland and coastal sites (Jackson and McKillop 1989:106-107; McKillop 1996:51).

Despite the utility of efficiency measures in identifying trade routes, most reports document only the presence and relative abundances of obsidian from different sources. Conclusions about trade stem from the assumption that each type of obsidian will be most abundant close to its source and near its distribution route, with declining abundance with distance from each.

To develop his original model of obsidian trade, Hammond observed from evidence available in 1972 that obsidian from El Chayal was typically found west of the source in southern Belize, in northeastern Petén, Guatemala, and along the Usumacinta River. Obsidian from Ixtepeque was usually found east and north of the source on the Belizean cays, along the Belize River Valley into northeast Petén, and in Yucatán. Hammond proposed that the Maya transported El Chayal obsidian from the source into the Petén or the south coast of Belize via riverine and overland routes (Figure 10). He further proposed that obsidian from Ixtepeque was transported down the Motagua River and north along the east coast by canoe, as well as inland along rivers in the south and land routes in the north. Hammond originally maintained that the two distribution networks operated simultaneously and in competition with one another. In this model obsidian from Ixtepeque was typically distributed farther than that from El Chayal because the water routes used to transport it allowed larger loads and hence decreased costs (Hammond 1972:1092-1093).
In 1976 Hammond revised his model slightly. Noting higher than expected concentrations of El Chayal obsidian at Lubaantun (100 percent) and Wild Cane Cay (18 percent), he moved the zone of overlap for the two distribution networks from the northeast Petén to Wild Cane Cay. He also added that by the Classic period or earlier a long-distance maritime route extended up the east coast of the Yucatán Peninsula and linked to other routes stretching all the way to Xicalango near the Laguna de Terminos as well as east to Costa Rica and Panama (1976:72-73).

Hammond’s model faltered as researchers published more information about obsidian procurement at Lowland sites. At first, evidence from northern Campeche, Mexico, seemed to support the model (Nelson et al. 1977:218-219, 223). In 1983 and 1985, however, Nelson et al. compiled obsidian source data from a large number of sites and concluded that the Maya exploited different obsidian sources in different periods (Nelson et al. 1983; Nelson 1985). The authors correctly warned that results from their studies would require confirmation or revision with additional data.9

In the Middle Preclassic period, nearly all obsidian at lowland sites came from the San Martin Jilotepeque source. In the Late Preclassic period, the preferred source generally changed from San Martin Jilotepeque to El Chayal10 and Lowland Maya also started to use obsidian from Ixtepeque. By the Early Classic period, El Chayal obsidian dominated most Lowland collections (Nelson et al. 1983:214-216; Nelson 1985:637-640).

In the Terminal Classic period, El Chayal remained the most important source but Lowland use changed to include significant amounts of Ixtepeque obsidian at most sites. The percentage of Ixtepeque obsidian in sampled collections seemed to be greatest near the east coast of the peninsula and at the southernmost sites in Nelson’s study. By the Early Postclassic period Ixtepeque emerged as the dominant obsidian source for sites along the Caribbean coast, and by the Late Postclassic period nearly all obsidian documented from northern Lowland sites came from Ixtepeque, including that from a string of coastal sites formed by Cancún, Cozumel, Tulum, and Cerros (Nelson et al. 1983:216; Nelson 1985:642-644).

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9 The paucity of representative sampling remains a perennial problem with obsidian source data. Samples are small, sometimes consisting merely of one or two artifacts, and inconsistently reported from excavations. Until recent decades Mayanists often neglected to record obsidian entirely, and even now reported source information rarely differentiates obsidian artifacts from elite and household contexts or between tools and debitage. Statistical tests executed by McKillop and Jackson indicate that sample sizes of less than 10 artifacts tend to show less diverse use of sources at a site than the Maya actually practiced (1989:75).

10 Sites in northern areas converted to El Chayal first while sites in the southern Lowlands continued to rely primarily on San Martin Jilotepeque.
Figure 10. Trade routes El Chayal and Ixtepeque obsidian proposed by Hammond in 1972 (After Hammond 1972:Figure 1).

In summary, Nelson et al. proposed that the Maya switched obsidian sources twice, first from San Martin Jilotepeque to El Chayal in the Late Preclassic and later from El Chayal to Ixtepeque in the
Early Postclassic (Nelson et al. 1983:217). Data from a single group of structures at Nohmul confirmed a temporal component to obsidian source use—El Chayal was the exclusive source in the Late Preclassic and Early Classic and Ixtepeque appeared and became dominant in the Late and Terminal Classic (Hammond et al. 1984:815-818).

Nelson et al. agreed with Hammond that El Chayal obsidian was transported mostly over inland routes and Ixtepeque obsidian was transported mostly by canoe along the Motagua River and the east coast. Thus, the shift in source use meant a concomitant shift from inland routes in the Preclassic and Classic periods to maritime ones in the Terminal Classic and Postclassic periods, with overlaps during the transitions (Figure 11) (Nelson et al. 1983:217-218; Nelson 1985:643-644).

Hammond et al. argued the coastal route existed earlier, at least by the Early Classic, pointing to Early Classic Altun Ha where fine jades and metal work likely originated in the Motagua Valley or northwest Honduras respectively. Furthermore, isolated examples of Ixtepeque obsidian appeared at Santa Rita in Late Preclassic contexts, and the importance of the Ixtepeque source really started to grow in the Late Classic. Hammond et al. maintained that in the Late Classic the coastal route for obsidian became much more important than it had been, as indicated by the increase in Ixtepeque obsidian at the Nohmul group during that time (Hammond et al. 1984:818). Nelson preferred to assume the overland route was used throughout the Classic at least until more evidence from coastal sites becomes available (Nelson 1985:641-642).

The temporal dichotomy between overland and coastal routes proposed by Nelson et al. is particularly pronounced because the investigators did not consider obsidian evidence from many coastal sites, despite the fact that extant east coast sites such as Xelha and Tancah were occupied in the Classic period (Miller 1986). Some even proposed that the Classic center of Cobá was involved in maritime trade at that time (Andrews 1983:128; Andrews et al. 1989). Recent evidence indicates that even more Preclassic and Classic coastal sites probably lie submerged by sea-level rise. If and when obsidian data emerges from them it could reveal greater use of maritime routes to transport Ixtepeque obsidian in earlier times.

Nelson argued that the apparent concentration of Ixtepeque obsidian at coastal sites in the Postclassic supports documentary evidence for a circumpeninsular route at the time of contact with the Spanish, even though he presents no obsidian data from coastal sites in the north or northwest peninsula. As evidence for the circumpeninsular route Nelson referred to the canoes observed by Columbus during his fourth voyage, evidence for Putun trade practices, and the presence of important coastal trade centers at Xicalango, Cozumel, and Nito (Nelson 1985:643).
Figure 11. Routes for obsidian distribution according to Nelson's model for changing patterns of source use through time (After Nelson 1985:Figures 5-7).
None of this evidence can be considered conclusive. The canoe Columbus met did seem to be involved in trade, but the encounter occurred near the Bay Islands of Honduras rather than a location that would suggest a circumpeninsular route. Evidence of any action by Putun seafaring merchants remains to be seen in the archaeological record. Sites presumed to have been the Xicalango and Nito of ethnohistory have not been excavated, and trade evidence from Cozumel does not definitively show that the island was a trade center. If all three sites are shown to have been trade centers by future investigations, these facts alone still would not prove the existence of a circumpeninsular route. To document such a route archaeologically requires obsidian efficiency measures and other trade data from intermediate sites all around the peninsula.

More studies of obsidian trade appeared in the late 1980s, including one that focused on Belize (Dreiss 1988) and another than drew data from throughout the Lowlands (McKillop and Jackson 1989). Dreiss tried to overcome the problem of small obsidian sample sizes by grouping sites into geographical zones and comparing obsidian source data among the zones (Figure 12). This allowed her to compare procurement patterns of sites in the coastal zone with those of the inland zones.

For the Middle Preclassic period, obsidian evidence from coastal sites remained too limited to use in comparison with inland zones. Data from Belize supported the pattern of overland distribution of obsidian from San Martin Jilotepeque, but Colha stood out as an anomaly with 12 obsidian artifacts from a variety of sources. Dreiss concluded the Colha evidence reflects the beginning of a complex exchange network in which coastal and overland routes overlapped (1989:84).

In the Late Preclassic period, more than half the obsidian overall came from El Chayal (Dreiss 1988:62). In the Belize River Valley zone obsidian from San Martin Jilotepeque dominated the Late Preclassic collection, in contrast to coastal sites which yielded almost no obsidian from there. Dreiss proposed that the Maya transported obsidian from San Martin Jilotepeque over land from the source and then distributed it along riverine routes. She speculated that Tikal might acted as a redistribution center for obsidian from San Martin Jilotepeque during the Middle and Late Preclassic periods, and that its distribution network did not reach the coast of Belize (1988:62-63; 1989:84, 86).

El Chayal obsidian was found in small samples from the coastal zone, but at Cerros all 16 obsidian artifacts came from there. Dreiss proposed that Cerros received El Chayal obsidian from the coastal route then distributed it inland along the New and Hondo Rivers (1988:63; 1989:84), but there was no convincing evidence to support the claim. El Chayal obsidian at Cerros could be interpreted as evidence for either coastal or overland distribution of El Chayal obsidian.
Figure 12. Dreiss’s five zones, used to group obsidian data from sites in Belize into significant sets. Zone I includes the New-River Río Hondo Basins, Zone II includes the coastal sites, Zone III includes the Belize River Valley Basin, Zone IV includes the North Coastal Plains, and Zone V includes the Maya Mountains and their foothills (After Dreiss 1989:Figure 6.2).

A large sample of 55 obsidian artifacts from Cuello, a Preclassic site near the New River, revealed an unexpected pattern—only 29 percent of the sample came from El Chayal, 47 percent came from Ixtepeque, and a surprisingly high 24 percent came from unknown sources (Hammond 1991d:198). The procurement pattern at Late Preclassic Colha was similar, with 54 percent from Ixtepeque (Dreiss
San Martín Jilotepeque and Ixtepeque obsidian also occurs there in fairly large percentages. The Preclassic Maya of Belize clearly did not all rely on the same obsidian source at the same time.

During the Late Preclassic period Colha was an important center. Residents mass-produced chert tools for distribution throughout northern Belize and participated in a far-reaching trade network. Dreiss stated that the high percentage of Ixtepeque obsidian at Colha reflects coastal trade in both Ixtepeque and El Chayal obsidian in the Late Preclassic period. She proposed that overland and coastal obsidian trade routes overlapped at Colha, where traders congregated in pursuit of chert tools. She tentatively proposed that Moho Cay served as Colha’s coastal trade node, based on Colha-made chert tools recovered at the site (1988:63-64; 1989:86). Northern River Lagoon has also been proposed as the coastal outpost or trade partner of Colha (Mock 1994a:94, 200). In view of the obsidian evidence from Cuello, a third possibility remains: Colha’s obsidian procurement depended more on the network serving sites in the New River/Río Hondo zone than the north coastal plains zone.

Data reflecting the efficiency of blade production at Cerros, Cuello, and Colha has the potential to reveal the direction of the flow of obsidian. If Cerros received El Chayal obsidian from the coastal route and redistributed it, knappers there should have conserved El Chayal obsidian less than their inland counterparts at Cuello and Cerros.

In the Early Classic period El Chayal obsidian continued to dominate samples from sites in Dreiss’s coastal zone, including Moho Cay, Cerros, Kakalche, and Santa Rita, but enough Ixtepeque obsidian existed in the coastal zone to indicate a coastal route had been established. As evidence that the Maya also moved El Chayal obsidian along the coast, Dreiss pointed to its dominance at Moho Cay. She noted that Moho Cay had a large number of non-local artifacts and that it might have been a way station on the coastal trade route.

Also in the Early Classic period, obsidian from central Mexican sources appears in Belize, notably large amounts of green obsidian from Pachuca in a cache at Altun Ha. Green obsidian was also recorded at Edzna, Becan, the Central Petén Lakes, and Tikal. A single obsidian point from the Otumba source was recovered from Pulltrouser Swamp. In the Late Classic period, obsidian from El Chayal continued to dominate everywhere in Belize except the coastal zone, where Ixtepeque dominated. El Chayal obsidian was present at coastal sites, however, which might support Dreiss’s proposal that it was also transported via the maritime route (1988:67; 1989:86-88).

Overall Dreiss proposed that a complex trade network supplied obsidian to Belize sites in the Early Classic period. The network consisted of simultaneously operating coastal and overland routes. She proposed that the Maya traded obsidian from both El Chayal and Ixtepeque along the maritime route in the Preclassic and Postclassic periods, and probably during the Classic as well. While maritime trade
routes for obsidian enjoyed the greatest importance in the Preclassic and Postclassic periods, it also operated during the Classic period alongside inland and riverine routes. In the Belize River Valley zone, the river forms a conduit between the coast and the Petén. Coastal and overland obsidian distribution networks probably overlapped in that region. Dreiss suggested that dominance of Ixtepeque obsidian at coastal sites indicates they had some autonomy from Petén-centered trade networks, not that the trade routes were specific to the sources of obsidian (1988:57-60, 70; 1989:81, 88).

In the Postclassic period Belize sites imported larger amounts of obsidian than ever before. Some argued that the increase resulted from greater reliance on efficient water-borne trade routes (Sidrys 1983:388; Dreiss 1988:75), while others argued that a change to an elite power structure that relied less on obsidian for ritual and status made it more accessible to the general population (Rice 1986:281-282), or that obsidian started to be used as a commodity and currency monopolized by trading cartels (Freidel 1986:414-415). Obsidian from Ixtepeque overwhelmingly dominated collections everywhere in Belize except in the New River/Río Hondo zone where prior reliance on El Chayal obsidian continued and Ixtepeque obsidian constituted 43 percent of the sample. Also in the Postclassic, Belize sites imported numerous other exotic, long-distance trade goods, including tumbaga, gold, copper, volcanic rock, Mexican obsidian, and ceramics from Cholula and Tabasco. Dreiss cited the presence of these trade goods as evidence for “maritime networks linking northern Belize with distant controlling centers” (Dreiss 1988:75-77; 1989:88).

Evidence from coastal sites did not support Hammond’s proposal that an inland route for El Chayal obsidian overlapped with a coastal route for Ixtepeque obsidian. In the Preclassic period 100 percent of obsidian at coastal sites came from El Chayal, as did 74 percent in the Early Classic, including 90 percent El Chayal obsidian at the coastal site of Moho Cay. Instead, trade routes were more complex and obsidian from El Chayal probably also moved along the coastal route. The coastal and inland routes Hammond proposed probably did exist, but may not have been associated with exclusive sources of obsidian. They might have overlapped slightly inland, for example in northern Belize where complex procurement patterns occur at Colha (Dreiss 1988:87, 91-92) and Cuello.

Dreiss summarized the obsidian source patterns she observed in Belize. Sites in the Belize River Valley and the northern coastal plains exhibited temporal patterns in source use similar to that documented for sites in the Petén. Dreiss explained the diverse sample from Colha as the product of its strategic location in the zone where coastal and overland routes overlapped (1989:90).

Patterns of obsidian use at coastal sites differed during the Late Preclassic and Late Classic periods. In the Late Preclassic, obsidian from El Chayal dominated but by the Late Classic, sites along the coast had converted to the Ixtepeque source. Sites in the Belize River zone mirror patterns documented for Tikal, while other sites in Belize do not. Dreiss concluded that El Chayal obsidian moved along
coastal routes early in Maya prehistory, and that the Petén's sphere of influence did not reach all the way into northern Belize or to the coast in either period (1988:83-84).

McKillop and Jackson conducted a similar study comparing obsidian procurement patterns at coastal and inland sites. Again there was too little evidence for the Preclassic period, but for the Classic Period El Chayal constituted a major source both inland and on the coast, and it even dominated samples from some coastal sites. Furthermore, obsidian from Ixtepeque appeared at many inland sites during the same period. Like Dreiss, McKillop and Jackson differentiated between the procurement pattern in the central Lowlands and eastern Belize. In Belize, Ixtepeque obsidian constituted a significant secondary source at many sites throughout the Classic, while in the central Lowlands it remained rare until the Terminal Classic. They agreed that this could mean the two regions relied on different trade networks. For the Postclassic period, Ixtepeque obsidian dominated at coastal and inland sites, but the pattern was particularly pronounced at coastal sites (1989:70-72).

Hammond eventually agreed with a basic temporal pattern in obsidian procurement, but with variations in which all three Guatemalan obsidian sources were used and obsidian was distributed in a complex overall pattern from the Late Preclassic onwards (1991d:197). Recent summaries of obsidian distribution confirm that the Maya probably transported El Chayal and Ixtepeque obsidian by coastal routes in the Classic period. Inland and coastal distribution networks probably overlapped in the coastal zones, and there was a general trend toward use of Ixtepeque obsidian in the Postclassic period. Regarding the transport of obsidian to sites in northern Yucatán, it remains possible that Guatemalan obsidian was traded along the Usumacinta River corridor then north along the Gulf Coast and inland over land in the west. Large amounts of obsidian from eastern sites still suggest, however, that the east coast was the normal route (McKillop 1995a:163, 172).

Analyses of the efficiency of blade production from Guatemalan obsidian indicate that conservation of the raw material decreased from the Classic to Postclassic periods, perhaps indicating that costs associated with procurement had declined. In the Postclassic period more obsidian from sources in Mexico appeared in the Maya Lowlands, and blades made from it show a high degree of conservation in accord with the longer transportation distance (McKillop 1995a:167, 171).

Trade Routes for a Commodity—Salt

In his book, *Maya Salt Production and Trade*, Anthony Andrews argued that the southern Lowlands lacked the natural resources to produce enough salt for its dense Classic-period populations. The north coast of the peninsula, on the other hand, boasts prime locations for large-scale production of high quality salt (1983:8). Documentary sources from the Contact and early Colonial periods referred to
considerable infrastructure and organization dedicated to salt production, as well as its use as a dietary supplement, a component of ritual and medical practices, and a trade item. Efforts to study salt in the archaeological record, however, remain complicated by its perishable nature (Andrews 1983:3-5).

We now know salt production and exchange can be associated with durable ceramics used to produce it (Mock 1994a; McKillop 1995b) but problems abound. Ceramic cauldrons and molds associated with salt production survive only as nondescript utilitarian sherds and are unlikely to be recognized and recorded by archaeologists. Furthermore, these artifacts pertain only to salt production by the boiling method used in coastal Belize (sal cocida), whereas large-scale salt production in northern Yucatán relied on evaporation in large coastal salt pans (sal solar). No durable artifacts are clearly associated with the distribution or exchange of salt, which probably packed easily into baskets or cloth bundles.

Nonetheless, Andrews argued that Preclassic sites on the north coast proliferated to exploit salt and marine resources in response to increasing demand by a growing Lowland population. Little early evidence from the north coast indicates long-distance trade was underway at that time, but exotic goods from the southern Lowlands do appear in significant quantities later in the Classic and Postclassic periods. Andrews proposed that during the Classic period the large population of the southern Lowlands spurred huge demand resulting in a regular north-south, long-distance salt trade that would logically take advantage of water routes whenever possible (1983:118-119).

To describe Precolumbian Maya trade in salt, Andrews delimited northern and southern trade spheres. He characterized salt making of the southern sphere as small-scale production and distribution over short distances in highly localized trade networks. In the northern sphere most salt came from northern Yucatán but some came from Gulf and Caribbean coasts as well as an important inland source at Nueve Cerros. Some salt was produced in the southern Lowlands and even in the Highlands, but Andrews maintained it remained insufficient to meet demand. He argued that large areas of the Lowlands relied on long-distance trade networks moving salt along the coasts and up rivers as far as possible, then over land to interior sites (1983:114, 116). Other Mayanists disagreed, and we now know of specialized, salt-producing sites in southern Belize that seemingly generated enough for inland consumption (Mock 1994a; McKillop 1995b).

Coastal-Inland Trade Routes

Mayanists recently renewed interest in coastal-inland trade routes as early and important components of the Lowland economy (McKillop 1996:59). Coastal-inland trade might have been the predominant form of inter-regional exchange in Maya society, rather than trade between Highlands and
Lowlands, north and south, or around the peninsula. Chase and Chase maintained that the Preclassic Maya probably lent more importance to rivers as routes of communication and integration than as sources of water and food, and that this had more to do with the rise of complex society among the Maya than trade in other exotics or commodities, which they characterized as incidental (Chase and Chase 1989:19, 21, 32).

McKillop suggested that coastal-inland trade was important in a different way—the significance of marine products to Maya everywhere forged the key to integration of long-distance trade with regional economies (1996:59). Maya cosmology includes a prominent role for water and water imagery. The Maya associated the sea with birth, death, and the afterlife. They treated the sea as a geographical and supernatural frontier—a gateway to the underworld. Marine items had considerable importance in Maya rituals, and during the Classic period sites of the southern Lowlands imported large amounts of marine shell from the Gulf, Caribbean, and Pacific coasts. *Spondylus princeps*, a Pacific species, was particularly desired for its deep red color unequalled in its Atlantic-side counterparts. Other marine items imported to Tikal included pearls, corals, bryozoans, gorgonians (sea fans), sand dollars, sponges, chunks of coquina, stingray spines, fish vertebrae, spines, and scutes. Perhaps the earliest Maya trade dealt not in luxury goods or commodities, but rather in these ritually significant marine items (Andrews 1969:42-43, 48, 52-53; Chase and Chase 1989:22, 32; Andrews 1990:162). The Maya created inter-regional communication and exchange links to distribute marine products for use in rituals, and subsequently cemented the links by expanding the inventory of long-distance trade as other goods became important.

In addition to ritual goods, salt was still an extremely important basic necessity that came from the coasts (Chase and Chase 1989:22), and as noted above coastal salt-producing sites are now known on the east coast of Belize. Maya at these sites probably produced salt for transport to and consumption at inland sites in addition to providing for their own needs. Coastal-inland trade could have involved salt, salted fish, and other marine products. Few remains of marine foods have been documented at inland sites, however, so there is no corroborating evidence for regular inland trade of salted fish (McKillop 1995b:219-220).

McKillop proposed that the coastal-inland trade in salt made coastal routes in southern Belize more attractive for transportation of obsidian and other exotic artifacts in the Late Classic period. McKillop speculated that Maya leaders involved in trade saw the ritual significance of the sea as a valuable mechanism to bring a regular flow of traders to their settlements for pilgrimage fairs and shrine visits. Thus they could create a situation in which “it was not only the use of the sea as a transportation highway, or relative ease of long-distance trade that governed the relative importance of coastal vs. inland trade, but the contribution of the sea itself—for food, ritual and subsistence items, and ritual ideology—that made coastal trade both viable and enduring” (McKillop 1996:58-59).
Discussion

The three types of canoe trade routes that received substantial attention in the literature of Maya maritime trade include Highland-Lowland routes for obsidian, north-south coastal routes for salt, and coastal-inland routes for marine products that expanded to include other goods. For now, the basic temporal model for obsidian trade proposed by Nelson et al. continues to apply, but not uniformly to all sites. Sites along the coasts of Belize and throughout northern Belize exhibit complex obsidian procurement patterns. If they truly did use more diverse sources of obsidian than other Lowland sites, then it supports the notion that the northern and coastal Belize lay outside the distribution networks centered in the Petén.

Some evidence indicates the Maya exploited obsidian from both El Chayal and Ixtepeque in both the Classic and Postclassic periods, and that maritime trade was used for both types. At minimum, it is clear that obsidian from Ixtepeque was distributed along a canoe route that began on the Motagua River and then followed the east coast of the peninsula northward as far as Chetumal Bay in the Postclassic period, and probably earlier. There is no question that Ixtepeque obsidian was an important item in Maya canoe cargoes.

The case for salt as a long-distance trade good is much weaker. There remains no convincing archaeological evidence for a regular, economically significant north-south salt trade. On the contrary, evidence is accumulating to show the southern Lowlands were able to supply salt for their own needs. The possibility for north-south trade still remains, but the focus of study has shifted from salt to other exchanged goods.

Salt probably did figure prominently in coastal-inland trade routes, however, and quantities of it might have been moved by canoe along riverine routes and hauled by porters over land. Recent research into coastal-inland trade networks shows that these routes probably had greater salience in Maya daily life than either Highland-Lowland trade or north-south trade. Coastal-inland routes perhaps constituted the cornerstone that made construction of long-distance coastal trade networks feasible in the Maya economy.

Although many scholars take for granted the existence of a circumpeninsular maritime trade route, such a route did not emerge in the various scenarios for economically important networks. This could be another product of archaeological documentation skewed toward Belize and the Petén. The possibility for a circumpeninsular route in addition to or instead of north-south routes on each coast still stands as a gap in our knowledge of maritime trade that needs to be filled by more coastal excavation in Mexico. Extant archaeological evidence for this route is discussed in Chapter IV.
ORGANIZATION AND CHARACTERISTICS OF TRADE

Literature that addresses the organization of Maya maritime trade frequently dovetails with discussions of social change, particularly the rise of complex society and the dramatic shifts in the southern Lowlands at the end of the Classic period. At different times researchers have named maritime trade as a factor in both transitions.

The rise of complexity and the details of the Classic-to-Postclassic transition are two of the most debated topics in Maya archaeology, and thorough coverage of either lies beyond the scope of this study. This section summarizes the proposed roles for trade, and focuses instead on models for the organization and character of trade as it functioned in daily Maya seafaring.

The Port-of-Trade Model

Virtually every modern review of Maya trade literature begins with a description of the port-of-trade model proposed by Anne Chapman in 1957. Chapman's application of the Port of Trade model grew out of an effort by Karl Polanyi to describe the organization of long-distance trade without relying on the modern concept of market forces.

Polanyi developed the port-of-trade model after noting that archaeologists tended to view ancient economies under the assumption that trade always takes the form of free market exchange with prices set according to rational decision-making by individual merchants. He defined an alternative; marketless exchange between rulers that took place at special meeting places called "ports of trade." The meeting places would maintain political neutrality to provide an equitable environment for business between the emissaries of different governments. Leaders of the distant polities would set prices by treaty in advance and administered all exchange. In Polanyi's model, traders would act chiefly as representatives of the rulers and not as merchants or entrepreneurs.

Ports of trade normally emerged on the boundaries between ecological zones, and frequently flourished on waterfronts. Local inhabitants carried out the logistics, such as accounting. Traders did not live at the port of trade but went specifically to exchange their goods. The centers tended to develop in politically weak areas so military powers would not subjugate them, and security for all traders could be guaranteed. Ports of trade enjoyed immunity from invasion, as warring parties cherished the common ground as their primary access to goods from distant lands (Chapman 1957:116; Polanyi 1963:30-37).

Following Polanyi, Chapman applied the port-of-trade model to study to trade between the Aztecs and the Maya. Since her first proposal Mayanists have used the model to study coastal sites of the Yucatán Peninsula, albeit without much success. Chapman emphasized that foreign traders in a port of
trade do not act individually but on behalf of their ruler and under the scrutiny of their professional organization. She stated that long-distance trade did not overlap with "any other form of exchange, such as the important local market complex itself, corner food-stalls, peddlers, the sale of services, or the variants of neighborhood trade." Long-distance trade took place exclusively at ports of trade, it excluded the general population, and dealt only in luxury items. In the Maya region, Chapman identified several possible ports of trade in the Xicalango region of the western Yucatán Peninsula, the Gulf of Honduras, and possibly in Chetumal Bay, Belize, noting that each area was also rich in cacao (1957:115-116, 120, 132).

Frances Berdan suggested some alterations to make the port-of-trade model more suitable to the study of Maya long-distance trade. For example, Berdan proposed that Mesoamerican ports of trade arose in connection with previously established trade networks. Due to the success of those networks, areas with access to desirable resources gained prosperity and became trade centers. The resource itself, in this case cacao, did not cause a windfall but attracted merchants who brought desirable goods from other regions, and in turn attracted more merchants (Berdan 1978:191). Towns' strategic locations certainly aided their rise as trade centers.

Berdan also argued that the actual role of Maya traders differed from Chapman's description. Chapman implied that the Maya ppiom closely identified with the ruling families of their home regions, and traded primarily in raw materials (1957:132). Other documentary evidence, however, shows that the Maya merchants traded more as individuals than as a squadron of royal representatives. They associated themselves with the rulers at times, but may have had varying financial means that caused them to trade at all levels of wealth (Berdan 1978:195).

Berdan raised questions concerning the neutrality of some of Chapman's suggested ports of trade. One area, Soconusco on the Pacific coast, constituted a tribute-paying arm of the Aztec empire. Chapman accepted this as the sole exception to the neutrality requirement, and nevertheless retained it as a port of trade (1957:141). Some researchers suggested that the Aztecs also had substantial interests in Xicalango, but this remains uncertain (Berdan 1978:196). Of all the ports of trade worldwide, only the Xicalango region contained several close to one another (Polanyi 1963:36). The existence of several small and large trading centers along a stretch of coastline supports the notion of a long-distance trade route with many stops or way stations at which traders exchange some goods in the local markets or with people from the interior. Such a scenario, however, does not fit the port-of-trade model as defined by Polanyi and Chapman, in which exchange of long-distance trade goods takes place only under the specific conditions they described. More recently archaeologists pointed out several other problems with the port-of-trade model. McKillop stated that the model simply does not address the "variability in trade relations
of prehistoric complex societies” and reiterated the fact that it is a synchronic view with no provisions for development of the system or subsequent change (1987:30).

The Core Zone-Buffer Zone Model

After the port-of-trade model, modern studies of Maya trade dutifully cite the core zone-buffer zone model for long-distance exchange advanced by William Rathje et al. This model characterized the central southern Lowlands as essentially lacking basic subsistence resources such as salt, obsidian, and hard volcanic stone, as well as access to efficient riverine or coastal transportation. In this scenario the core zone was an inhospitable place occupied only due to population pressure along the coasts. The buffer zone consisted of the rest of the Maya Lowlands, purportedly enjoying rich natural resources and convenient access to efficient transportation routes (Rathje et al. 1978:152, 154, 157). The core-buffer model postulated that people in the core area needed to satisfy demand for basic necessities by importing them. To do this they developed organized, ranked society designed to collect commodities in the buffer zone then transport and redistribute them in the core area. Core area residents created Maya ideology, the calendar, and other social constructs to help them organize exchange and develop an “intelligence complex” that formed their exportable product\(^1\) (Rathje et al. 1978:157, 164). Thus the core-buffer model articulated the notion that the Maya used long-distance trade to acquire basic subsistence goods, and it advanced the portrait of long-distance trade as an organized, elite-controlled system. Both ideas survived in the literature until recent years.

We now know that complex society developed in the “buffer area” earlier than in the “core area,” complete with complex social and economic systems, regional centers, and elite status symbols (Dreiss 1988:52-53). Information about resource diversity not only demonstrated that the core area had plenty of basic subsistence resources, (Andrews 1983:134; Graham 1994:332-333) but local rather than regional environmental variability probably held much more importance for the Maya, who relied primarily on locally available goods for subsistence (McKillop 1989a:29).

\(^1\)The core-buffer model borrowed concepts from cultural geography and economics. The researchers characterized the core as a “point of initiation,” or a community that decides to market its product, in this case the intelligence complex, to other communities. Success of this strategy in the core area caused labor, capital, and commodities to flow into the point of initiation from surrounding areas. Eventually, growth at the point of initiation causes so much demand for products from surrounding areas that those areas themselves attracted labor, capital, and commodities. Unlike the port-of-trade model, the core-buffer model allowed mercantile systems to grow, shrink, and change. Expansion at core centers contributed to growth elsewhere through feedback relationships that connected points of initiation to surrounding supply networks (Rathje et al. 1978:151, 157, 162).
Supply and Demand in Maya Maritime Trade

The failure of the port-of-trade model to provide useful results in the Maya area caused an overall return to the economic approach that preceded Polanyi and Chapman. Investigators often took the stance, implicitly or explicitly, that prehistoric economies were substantively similar to modern ones, and reacted largely to the market forces of supply and demand. All resources were considered scarce, and investigators made interpretations based on the assumption that the Maya always made decisions in selecting resources that maximized benefit to themselves (McKillop 1987:11-12; 1996:52).

Andrews proposed that earliest long-distance trade involved exotic luxury goods among elites of Maya society. Trade in these items linked elites throughout the Lowlands to one another, but did not require an organized system and did not play a role in the development of social complexity (Andrews 1983:132-133). At the same time Andrews argued that Late Preclassic growth in salt production on the north coast of the Yucatán Peninsula was driven by demand from an exploding population throughout the Lowlands. Although he acknowledged it would be difficult to prove with archaeological evidence, he believed salt was traded under market conditions, not redistributed by a central authority. In Andrews’ scenario, southern Lowland elites controlled the distribution of wealth, but not production of salt or the mechanism that delivered it to them from distant sources. The salt trade was a mixed system with market-style trade feeding local redistribution networks (1983:132).

In Andrews’ scenario the sheer quantities of salt traded necessitated maritime trade networks. As social stratification and urban centers developed among the Maya during the Preclassic, increasing organization of salt exchange mirrored increasing organization in communities (1983:119, 122-123, 133). Large sites located 20 to 30 km inland controlled salt production during the Classic period, and this enabled development of urbanism in northern Yucatán during that time. Trade infrastructure developed to distribute salt provided a mechanism for exchange of other goods, and in greater quantities than possible previously. Complex organization engendered by trade spurred development of Maya cities such as Uaxactun, Tikal, Becan, Dzibilchaltun, Cerros and Lamanai. Tikal grew advantageous connections to central Mexico that allowed the community to become a middle link in west-east oriented trade across the base of the peninsula as well as south-north oriented trade between the Highland sources of exotic stones and the northern salt-producing zone. Thus Tikal’s position enabled it to exert control over the flow of goods in four directions (Andrews 1983:32, 199, 124-125, 133-134).

By the Terminal Classic-Early Postclassic transition, traders plying maritime routes acquired so much wealth that they gained the ability to bypass intermediary sites in the southern Lowlands in their quest for Highland jade and obsidian. This isolated Classic cities of the central area from long-distance trade networks and caused the shift in obsidian distribution networks that was accepted at that time—from
inland and riverine routes through Tikal in the Classic period to Motagua River and coastal routes in the Postclassic. Meanwhile, on the west coast of the peninsula successes of the Putun Maya enabled salt trade to flourish (Andrews 1983:125-127). By the Conquest, salt exchange required thousands of people operating in an organized system, including specialized merchants who could acquire personal wealth and power.

As Mock bluntly stated, "the noted absence of proof has not hindered the investigation of salt as a commodity in exchange systems nor its role as a catalyst in cultural change" (1994a:55). It is tempting to imagine fleets of salt-bearing canoes plying coastal waters, but no archaeological evidence for long-distance coastal transport of salt from north to south has emerged. Furthermore, studies across Mesoamerica show that increasing social complexity actually correlates with shrinking trade networks. "The tendency for long-distance exchange networks to diminish both in scale and in quantities of circulated goods as local polities crystallize is highly significant since it negates the notion that complex systems can be built on exchange networks" (McAnany 1986:67).

In the 1990s, discovery of salt-making settlements along the Belize coast further weakened Andrews' scenario for north-south salt trade. Salt-producing sites such as Northern River Lagoon, Point Placencia, Plantation Creek, Indian Hill Lagoon (Mock 1994a:75), and Stingray Lagoon (McKillop 1995b) were specialized economic enterprises; they did not limit themselves to supplying only local household needs. Even the suggestion that Yucatecan salt was preferred for its superior quality overestimates the economic importance of the north coast as a salt source. Salt produced by various techniques and in various locations could have been desired for different uses, depending on its color, composition, taste, and texture (Mock 1994a:58, 68-70, 92).

McAnany maintained that we are wrong to assume the Maya economy reacted primarily to market forces of supply and demand and characterized our common-sense notions of economics and capitalism as predeterminations of our own culture which are inappropriate for investigating the past. She argued that in the past, political policy did not necessarily arise out of the economic system. Instead, political and economic systems could have been completely disassociated from one another or organized differently (1986:223).

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12 Folan also proposed that the rise in sea level flooded the northern salt pans in the Classic period (Folan et al. 1983:459, 461-462), rendering them useless precisely when they were supposed to be supplying huge quantities of salt to the southern centers.
The Characteristics of Maya Trade

Deducing economic behavior from material remains is still one of the toughest problems facing archaeologists, but promising results are now coming from studies of production as well as local and intra-regional exchange. Colin Renfrew proposed ten trade mechanisms that could produce artificial distributions of goods in prehistoric economies (Renfrew 1975:41; Renfrew and Bahn 1991:322) (Figure 13). He saw the modes as evolutionary, with reciprocal mechanisms evolving into down-the-line trade, and subsequently into middleman trade as the quantities and bulk of traded goods increased (1975:44). The middleman matched buyers to sellers, provided information, guaranteed the quality of the goods, and added a transaction fee to the buyer’s costs. Middlemen could have varying degrees of independence, from free itinerant merchants to state representatives or agents for ruling elites (McKillop 1987:26-27). As the scale of exchange increased even further, the state might develop an interest in controlling traders and might organize exchange by establishing remote trade centers such as colonial enclaves. The port of trade would constitute a relatively late institution, and play the role of a special kind of trading center with the set of characteristics originally described by Polanyi (Polanyi 1963; Renfrew 1975:41-45).

Even if centralized trade dominated, other forms could operate simultaneously (Lee 1978:1; McKillop 1987:23). For example, down-the-line trade could exist as a component of any exchange system even if trade goods move primarily via some other mechanism. If a good was distributed mostly through central place redistribution or central place market exchange, down-the-line trade probably still moved the item away from the central place in all directions and, to a lesser degree, away from its tributary sites in all directions. Overlapping tendrils of the concurrent trade mechanisms can blur the distribution of traded goods considerably.

Long-distance trade was important for distributing prestige items, often made from exotic materials, that expressed social and political relationships between communities. It did not originate to meet a need for subsistence resources with restricted source areas. While trade in elite artifacts was economically insignificant, it traces culture contacts and diffusion of ideas (Tourtellot and Sabloff 1972:128-133). Redistribution of iconographically loaded objects maintained the uniform core of Maya culture. Such trade was restricted to elite social ranks except when an elite good was given as a gift or payment to a person of lower rank (Leventhal 1990:128).
DIRECT ACCESS. B has direct access to the source of the material without reference to A. If a territorial boundary exists, it can be crossed with impunity. There is no exchange transaction.

RECIPIROCITY (HOME BASE). B visits A at A's home base, and they exchange the special product each of them controls.

RECIPIROCITY (BOUNDARY). A and B meet at their common boundary for exchange purposes.

DOWN-THE-LINE TRADE. Reduplicated home-base or boundary reciprocity (shown here for clarity as one-way only), so that a commodity travels across successive territories through successive exchanges.

CENTRAL PLACE REDISTRIBUTION. A takes produce to the central place as tribute for the central person (no doubt receiving something in exchange, then or subsequently). B likewise takes produce to the central place and receives some of A's produce.

CENTRAL PLACE MARKET EXCHANGE. A takes produce to the central place an there exchanges it directly with B for B's produce. The central person is not immediately active in this transaction.

FREELANCE (MIDDLEMAN) TRADING. The middleman exchanges with A and with B, but is not under the control of A or B.

EMISSARY TRADING. B sends an emissary, who is under B's control, to exchange goods with A.

COLONIAL ENCLAVE. B sends emissaries to establish a colonial enclave near A, in order to exchange with A.

PORT OF TRADE. Both A and B send their emissaries to a central place (port of trade) which is outside the jurisdiction of either.

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Figure 13. Renfrew's 10 trade modes (After Renfrew and Bahn 1991:322).
Patricia McAnany agreed that Maya everywhere enjoyed local access to subsistence resources. In the Maya Lowlands corn was universally available and residents could easily substitute chert for obsidian, hard limestone or shell for volcanic rock building materials and tools, and locally made sal cocida for northern sal solari. Indeed, no zone in the Maya Lowlands could be considered “resource deficient” unless it lacked arable land to grow food for the local population. Nonetheless, McAnany developed a sound model for regional Maya trade of utilitarian items. The model, called the producer-consumer model, rests on the idea that exchange creates inequities in the distribution of subsistence resources rather than balancing them, and it portrays trade in obsidian, volcanic stone, and other goods not as a necessity but as a social convention (1986:84, 87).

McAnany’s model for exchange begins with production, specifically production of chert tools at Colha, Belize. She proposed that once production becomes specialized at a site, producers there attain a high level of proficiency and skill in their craft. On the other hand, nearby villages that consume the good abandon their own production of it and lose their skills. “There is an undeniable tendency for a system of component specialists to reinforce and perpetuate itself, and thus become completely entrenched.” This situation creates a pattern in the archaeological record—evidence from consumer sites reflects an inability to properly refurbish or maintain goods that residents acquired in finished form, in this case stone tools13 (1986:89).

By causing nearby towns to depend on a specialized production site for any item, well established craft specialization creates a pattern of differential access to knowledge and resources. The inequity causes the exchange network to expand and include more communities. Artificial “resource deficient” zones overshadow natural ecological variations in the landscape (McAnany 1986:84, 89).

By the Late Preclassic, ca. 100 B.C., Colha residents were engaged in large-scale production of standardized products in formal workshops.14 Ample evidence exists for specialized production of utilitarian chert tools, which the Maya redistributed through tribute or other mechanisms. At the same time, distribution of elite chert artifacts produced by the same community relied on a separate network of Late Preclassic administrative elites integrated in a web of trade relationships that moved goods beyond

13 In studies of production and regional distribution of chert tools from Colha, investigators compared quantitative measurements of chert tools and debitage from different sites in northern Belize and demonstrated that it is possible to distinguish production of chert tools from a pattern of recycling and reuse of imported tools (McAnany 1986; Dockall and Shafer 1993). This type of chert evidence can indicate whether a site was a producer or consumer in the regional exchange network, and determine whether or not sites participated in the same or different networks (Dockall and Shafer 1993:176).

14 Production of both utilitarian and non-utilitarian goods did not necessarily take place at large centers, but rather at small communities that surrounded them. At least sometimes these smaller communities were located close to the source of raw materials, as in the case of Colha (Shafer 1994a:27). Consumption or distribution at large centers such as Tikal could still depend on producer-consumer relationships that included production both at the center and in outlying areas (Fry 1980:16; Moholy-Nagy 1991:200).
consumption zones for ordinary tools (Shafer 1994a:25-26). In the Colha example regional trade networks for utilitarian goods thrived side-by-side with regional and long-distance networks for elite goods made of the same material in the same production center.¹⁵

McAnany proposed that the real purpose of exchange networks is not to circulate scarce goods, but to perpetuate the act of circulating them. People involved in the network do not just trade tools and other items, but they establish “network cohesion;” socially and politically important connections with one another. Exchange networks are conventions that link participating communities through the circulation of commodities. They are not basic mechanisms for survival and their limits do not necessarily coincide with social and political boundaries (1986:89, 92).

Drawing from ethnographic studies of exchange McAnany outlined five possible interfaces between political structures and exchange networks (Figure 14). In McAnany’s fourth and fifth mechanisms (“Primate polity with hierarchical organization of market exchange and centric transfer” and “Inter-polity, high-level exchange and low-level, market exchange with Intra-polity centric transfer”) goods move between polities not through brisk trading but through tribute systems in which strong polities demand and receive goods from weaker ones. Tribute constituted a major tenet of redistribution in Mesoamerica, but did not suffice for supplying an entire community a necessary commodity. Low-level exchange continued to occur within dominant and tributary states. When tributaries surrendered goods, they were taken directly from the source to the central place. Intermediate exchanges did not take place, but an organizational structure might have been required to transport the goods (Freidel 1986:414; McAnany 1986:94-102; McKillop 1987:24).

McAnany’s fourth mechanism resembles Renfrew’s central place redistribution (Figure 13). This trade mode is associated with complex societies in which residents of centers play a role in centralizing and controlling trade, particularly in exotic artifacts (McKillop 1987:24). At least by the Classic period, most Maya sites received their exotics from regional distribution centers, so locations of central places constitute a significant factor in identifying Maya trade routes for elite goods (McKillop 1987:21; Jackson and McKillop 1989:93). Centers redistributed exotic goods to satellite communities, binding households and villages to the central place and its elites in a social and economic fabric (Freidel 1986:414).

¹⁵Fry proposed that Tikal exported pottery in two different trade systems that operated at the same time in the same place but which were mutually exclusive (1980:8). He concluded that during the Late Classic period Tikal ceramics were distributed in a complex system that was not centralized, but rather took place mostly through localized distribution subsystems (1980:16).
1. Open system: Low level reciprocal exchange

2. Bounded polity: Vertical centric transfer

3. Inter-polity, high-level exchange

4. Primate polity with hierarchical organization of market exchange and centric transfer

5. Inter-polity, high-level exchange and low-level market exchange with intra-polity centric transfer

Figure 14. McAnany’s proposed interfaces between political structures and exchange networks (After McAnany 1986:Figure 8).
The fifth mechanism described by McAnany (Figure 14) resembles Renfrew’s central place market exchange (Figure 13). In this case two parties bring their goods to a central place and meet there to trade with one another. A central person does not have to be present or involved in the transaction. Instead, the central person is disassociated from the trade, but functions as the authority providing security for the market (Renfrew 1975:11, 25). “Pilgrimage fairs” proposed for Mesoamerica are a trade mechanism in this category. The Maya produced goods at dispersed sites and gave them as tribute to a central place, which in turn redistributed them. In addition to the tribute system, merchants from distant locales might periodically gather at the central place to exchange goods they brought from far-flung sources, perhaps in conjunction with ritual events or religious celebrations. Authorities at central places organized pilgrimage fairs expressly to attract people with surplus goods from distant sources. Thus the fair served as an organizational mechanism for exchange and the anchor of a central place’s role as a trade node (Freidel 1986:415-418).

McAnany proposed that Maya circulation spheres for trade, began as medium-sized trade networks, extending over areas of roughly 12,000 to 13,000 km². Using overland and water routes the Maya likely exchanged large quantities of goods through mechanisms including delayed exchange, presentation, and barter so that “utilitarian and luxury goods are moved in a weblike fashion down the line among sedentary exchange partners.” The exchange system promoted network cohesion, creating networks of political and social alliances. Face-to-face encounters among individuals held great value for alliance-building, so middlemen could play no role in this early form of exchange. Individual trade partners moved within a radius of about 19 to 24 km² in sparsely settled areas or 13 to 16 km² in densely settled areas. The network consisted of multiple trade-partner relationships and was much larger than an individual’s range of travel (McAnany 1986:107-108).

Consolidation of local polities created a threshold for exchange mechanisms. Vertical community alliances formed that were oriented toward a ruling elite at a central place. Low-level movement of goods lost its value for creating alliances. Exchange could then take place in a market setting using barter as a trade mechanism rather than delayed or immediate reciprocity (McAnany 1986:258).

McAnany pointed to the Colha regional distribution network for stone tools as an example of such a Maya exchange network. This network remained relatively small, perhaps due to a lack of reliable water routes reaching Colha, and operated over an area at least 3000 km² in northern and coastal Belize. The network involved relatively short transport distances, but they were long enough to require more
than one day for a trip from the producer to the consumer.\textsuperscript{16} We do not know what exchange mechanism the Maya used, but McAnany suggested the network probably allowed goods to change hands through barter within the parameters of market exchange. She further proposed that petty traders (Feldman 1985:20-21) moved and exchanged the tools.\textsuperscript{17} The petty traders could have transported goods point-to-point from Colha to Pulltrouser Swamp, or via central marketplaces at nearby centers such as San Estevan or Nohmul where resident consumers also used chert tools. Alternatively, individuals could acquire stone tools through a lineage head, an economically important figure at the consumer site (McAnany 1986:109, 268-269).

McAnany stated that we lack the right kind of archaeological evidence from the Maya area to distinguish which option would dominate in the Maya economy, marketplace exchange or distribution through lineage heads. Maya political organization consisted of multiple polities with an entrenched social hierarchy, so market exchange probably did operate, but marketplaces are ambiguous in the archaeological record and the possibility remains that exchange was less structured (McAnany 1986:109, 269).

In contrast to Colha's regional distribution network for chert tools, obsidian distribution from Highlands to Lowlands in the Maya area constituted an example of a long-distance exchange system. The long-distance trade network covered over 87,000 km\textsuperscript{2} and consisted of large-scale but low frequency circulation. McAnany noted that, despite huge obsidian deposits at a few sites, estimates of Lowland obsidian consumption hover around 1-2 g/yr for each structure, and obsidian is rare compared to chert in archaeological contexts. This suggests circulation of obsidian was organized differently than regional trade in chert (1986:110).

Overall McAnany described a few general trends in the development and organization of exchange networks. As a population grows, small groups within it become craft specialists as a subsistence mechanism, as was the case with early chert production at Colha. Exchange begins not as a product of elite control, but rather as a system dependent on non-institutionalized forms of leadership.\textsuperscript{18} As a population begins to form polities, the scale of the circulation sphere for a good diminishes and different forms of exchange develop. The transition from delayed exchange to barter as the mechanisms of trade coincides with the shift in social organization from a structure in which community alliances are horizontal to one in which alliances orient vertically. Pathways for the distribution of goods must then

\textsuperscript{16}Based on ethnohistoric evidence for overland portage speeds of about 23 to 31-35 km/day (McAnany 1986:268).

\textsuperscript{17}McAnany based this conclusion on the scale of exchange networks, the limited resource zone that constituted the origin of the chert tools, and the hypothesized lineage-based organization of production at Colha (1986:269).
develop across political boundaries. In an non-hierarchical society exotic, elite goods and utilitarian goods flow between polities through the same channels. Once stratification develops, each flows through different channels and their availability with respect to one another is socially controlled\textsuperscript{19} (McAnany 1986:111; 1989b:363).

**Discussion**

Maya maritime trade did not develop as a quest for subsistence resources, as suggested by the core-buffer model and Andrews' salt-trade proposals. Instead, they emerged out of the need for individuals and communities to create politically advantageous relationships with one another. Early use of coastal, maritime routes probably consisted of petty traders moving their own products, most likely marine products or salt, within a zone of consumer sites. In journeys one or two days long the traders could move along the coast in either direction or inland along rivers.

It could prove helpful to study the act of trade using an approach similar to that employed in the study of craft specialization. McAnany argued that craft specialization for manufactured goods was a grass roots response to localized environmental diversity in the Maya area. Small groups of people developed manufacturing specializations as a matter of subsistence as Lowland populations grew. As neighbor sites increasingly acquire manufactured items from the specialists, an artificial distribution of resources can be created that reinforces and expands the need for exchange. In this way, cottage specializations developed without the patronage of elites. Craft specialists did not necessarily enjoy high status. In fact, in economies without currency they might more often be the disenfranchised members of society, marginalized and pushed out of the highly preferable land-based subsistence (McAnany 1986:79, 92-93; 1989b:363).

Specialized traders described in ethnohistoric sources might have similarly deep roots. The first merchants perhaps engaged in trade part-time while continuing to farm or manufacture products, then gradually developed into full-time middlemen or merchants in tandem with expanding trade networks and the development of centralized polities. Early Maya maritime traders perhaps found themselves in a unique position. Due to the greater speed and efficiency of their transportation maritime producer-traders could travel farther and faster with larger loads than petty traders on land. This perhaps allowed them to venture into distribution areas for goods made by other craft producers; goods not readily available within

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\textsuperscript{18}In the Maya Lowlands evidence for intensifying production is often located away from political centers (McAnany 1989b:364).
the ordinary, local network. Thus maritime traders could acquire specialized, corporate knowledge of routes, products, markets, conditions, and hazards involved in water-borne trade. Other assets could include personal contacts at production and consumer sites and perhaps specialized knowledge related to transportation including canoe construction and navigation. As coastal traders gained more skills in maritime navigation and acquisition of desirable products from distant consumer areas, recipients of their cargoes perhaps lost their seafaring and business skills, thus allowing an occupational specialization to develop.

As maritime trade became entrenched as a specialty, its scale and volume could grow. The rise and fall of centralized polities would have had short-lived or localized impacts on trade, but overall the maritime trade system could continue functioning despite political fluctuations. Marketplaces at regional centers provided locations where traders could gather and barter with one another, and in some cases religious events could coincide with or precipitate trade fairs. In a political environment characterized by centralized polities, social alliances were negotiated by elites and as a result low-level maritime trade in utilitarian goods no longer had value for building relationships. Under these circumstances the community of seafarers could include middlemen (trade specialists) who moved goods to and from marketplaces but did not produce anything. There was no need for elites to control the exchange of such goods except in order to collect tribute.

Specialized traders differed from manufacturers in that their travels allowed them to gather and manipulate information. It is conceivable that some specialized traders developed close relationships with elites, for whom news and information perhaps constituted a valuable by-product of exchange. In such a scenario elite cooperation with merchants could benefit all parties. Access to information would create incentive for elites to allow traders to accumulate wealth and status comparable to their own lineage-based positions in the community. Wealthy merchants would not have had to operate under the control of Maya rulers, or even act on their behalf, in order to enjoy similarly high status.

Simultaneously, separate elite-operated maritime trade could coexist with the uncontrolled networks. To forge political links with one another elites needed to meet face-to-face. At such meetings they could exchange gifts that both communicated their relationships and survived as long-lasting proof of them. Members of noble lineages perhaps plied the maritime and riverine routes to carry meaningful gifts to their counterparts elsewhere. Such gifts had value that stemmed from exotic raw material or

19 Graham also pointed out that a Maya community's relationship to its immediate environment would shape its behavior and interactions with other sites. Thorough understanding of local ecology and Maya adaptations to it constitute fundamental starting points for the study of exchange relationships (Graham 1994:1). Detailed ecological studies have been reported from very few sites so far.
special artistic and iconographic qualities. The volume of trade would have been comparatively small, and the distribution of goods it created does not necessarily reflect the bulk of maritime trade.

This scenario remains highly speculative and requires the support of archaeological evidence before it can be considered further. Viewing the act of exchange as an occupational specialization, analogous to the manufacture of crafts, provides one possible avenue for the development of high-status merchants described in ethnohistoric documents.

IDENTIFYING AND DIFFERENTIATING THE FUNCTIONS OF SITES THAT PARTICIPATED IN TRADE

A substantial portion of Maya maritime-trade literature is dedicated to the search for archaeological criteria that will demonstrate whether or not a site participated in the networks, to what degree, and in what capacity. Theoretically, a few of Renfrew's trade modes (Figure 13) should create distinct patterns in the distributions of traded goods (Renfrew and Bahn 1991:323). For example, trade oriented around central places brings the largest amounts of exchanged items to the central place, with central places close to the source enjoying greater access than those farther from the source. A central place might have had storehouses or other indicators of redistribution of goods (McKillop 1987:4-5).

A major problem in deducing the mode of trade arises because the distribution of exchanged items can be created by more than one exchange mechanism operating simultaneously. Individual sites probably functioned on two or more levels simultaneously rather than occupying a single, specialized niche in trade networks. Likewise, different mechanisms operating alone can produce similar distributions of traded goods (Hodder 1980:152).

A number of sites on the coasts were marginal to central places but had unexpectedly rich deposits of traded goods. Researchers typically interpreted this pattern as evidence the site played an active role in maritime trade. Rathje and Sabloff noted that we cannot identify trade hubs based on abundance of valuable trade goods at a site. On the contrary:

This assumption ignores the constraints upon the function of trading centers, not as final destination of goods, but merely as facilities which rapidly effect their transshipment. A trading system that "leaks" large quantities of goods locally would not be functioning as a useful trading center. Potential leakages are sealed by merchants and a mercantile attitude toward wealth. (Sabloff and Rathje 1975:13)

McKillop proposed a model for Wild Cane Cay in which the island trade node charged a fee to seafaring traders in exchange for services such as storage. The fee was paid in trade goods, which the site
accumulated (1987:52). In this situation, McKillop proposed that it is possible to measure the relative intensity of trade at different sites by comparing the densities of obsidian and other exotic artifacts recovered per unit of excavation, and by recording information about the efficiency of raw-material use in manufacturing. The weight of the raw material, the time of occupation at the site, as well as source location and distance all need to be considered as components of transportation cost in interpreting trade intensity. Furthermore, intensity indices can be skewed by recovery technique, sampling strategy, context, and post-depositional processes at the site (1989a:28). McKillop’s specific suggestions for collecting accurate trade data from a terrestrial site should serve as a guide for future Lowland excavations.

Testing the Port-of-Trade Model

Chapman did not suggest specific ways to identify ports of trade in the archaeological record, but merely stated that storage facilities should be plentiful (1957:116). McKillop proposed that according to Chapman’s description, ports of trade should sit near harbors and far from any major polities. The sites should include a separate housing area located away from the local community, identifiable by foreign artifacts such as household items that belonged to the traders. Exotic trade goods at the site should be limited to either those separate housing areas or the elite structures at the site. If the general population at a site had access to exotics, then the port-of-trade model does not apply there (McKillop 1987:37-38).

Sabloff and Rathje proposed that the characteristics of trading centers and trading ports should include: location in a transition zone, location among small-scale political units rather than powerful centers, a population that exceeded the carrying capacity of local resources requiring that basic necessities be imported, and little evidence for retail distribution of trade goods in the area surrounding the port (1975:7). This description recalls Chapman’s port-of-trade model and the now outdated notion that the availability of subsistence resources was a motivating factor in Mesoamerican trade. The criteria Sabloff and Rathje listed for trading centers have been imprecisely applied in identifying ports of trade (Andrews 1990:164; Guderjan 1995c:6).

The Cozumel Archaeological Project, directed by Rathje and Sabloff, was designed specifically to test Chapman’s port-of-trade model. In the 1970s excavations on Cozumel Island focused on illuminating its role as a trade center from its material remains. The first problem was simply to specify what could constitute evidence for an active role in trade. An inventory of trade goods is inadequate to describe the organization and institutionalization of trade, markets probably took place in open plazas leaving little indication of their presence, warehouses needed for perishable items are difficult to
distinguish in the archaeological record, and trade canoes probably did not require specially constructed harbor facilities (Sabloff and Freidel 1975:371).

Sabloff and Freidel observed that sites on Cozumel formed a single social, cultural, and economic unit with an administrative center at San Gervasio and strong ties to Mayapán. San Miguel could have been a port due to its good location on a protected lagoon and variety of exotic trade goods, including copper and obsidian. Lagoons at the north end of the island perhaps served as docking areas, and raised causeways leading toward the south probably eased travel to storage facilities located elsewhere (1975:376, 388, 401-402).

At Buena Vista they tentatively identified Late Postclassic storage facilities, but found none from the previous periods even though the site had significant occupation in earlier times. Buena Vista was located away from the political center at San Gervasio. Sabloff and Freidel proposed that decentralized storage is compatible with centralized administration. They argued that the variety of economic activity taking place on the island required a strong central authority to coordinate the system components, and that making storage facilities inaccessible would make them more defensible. Storage facilities should also be located away from the island’s ports, also to increase defensibility (1975:375-378, 403).

Overall Sabloff and Freidel felt that the settlement pattern on Cozumel supports the notion it was a centralized trade port in the Late Postclassic, but they acknowledged that the evidence remains inconclusive. Cozumel excavations revealed no abundance of luxury goods and no evidence for separate living quarters for traders (McKillop 1987:30). Evidence for storage facilities on the island remains inconclusive (Guderjan 1995c:7) and no evidence for wholesale markets or transshipment of goods has emerged. The political status of Cozumel with respect to mainland centers remains obscure, but it could have had some relationship with Terminal Classic-Early Postclassic Chichén Itzá (Andrews 1990:164).

Other archaeologists have casually applied the port-of-trade label to sites in Quintana Roo and Belize. In his proposal for competing coastal and inland obsidian trade routes, Hammond speculated that Wild Cane Cay and other east-coast islands functioned as ports of trade on the basis that they provided neutral ground for the safe transition of goods from coastal to inland routes. With respect to Wild Cane Cay he noted a natural harbor at the site and abundant exotic trade goods, but unimpressive architecture. These features suggested to Hammond that the site was a subsidiary to some central place, and a convenient place for large seagoing canoes to meet small riverine ones (1976:73).

The port-of-trade designation has been assigned to both Xelha for the Classic period and Tulum for the Late Postclassic. How either site fits the criteria for the port-of-trade model remains unclear. Neither yielded evidence for exchange, storage, or transshipment of large amounts of long-distance trade
goods. We do not know the political status of either site, although Andrews suggested Xelha could have been under the control of the inland center, Cobá (Andrews 1990:164-165).

Even Colha was proposed to be a port of trade “as defined by Sabloff and Rathje (1975), as a manufacturing and marketing facility” (Eaton 1982:17). While a few of the characteristics Sabloff and Rathje listed for trading centers may apply at Colha, the notion of a port of trade as a production and distribution center runs counter to the entire port-of-trade premise. Decades of imprecise use by archaeologists had transformed the original definition so that the term that once described an extremely specialized trade mechanism now loosely applied to almost any site to suggest an active role in long-distance exchange.

The possibility remains that Chapman’s port of trade cannot be identified from the archaeological record and limited historical evidence, because it requires knowledge of economic and political subtleties which we do not have for Maya ports. Although Tulum, Xelha, and Cozumel have been labeled ports of trade by archaeologists, current evidence indicates only that these were probably major locations for trade, but not that they were formal ports of trade (Andrews 1990:165). The original port-of-trade model does not work well in the Maya area. The model predicts that long-distance trade was controlled by rulers and that the goods exchanged were, by definition, elite items. Instead obsidian appears widely in non-elite contexts and McAnany’s study of Colha chert distribution showed that long-distance trade could develop outside elite control (McKillop 1987:38-39; McAnany 1986).

Classification of Coastal Sites: Alternatives to the Port of Trade

After Chapman’s port of trade, other scholars suggested different classification schemes for coastal settlements. Hammond suggested that critical features of a circumeninsular trade network were “transshipment nodes” at Cozumel and the Bay of Honduras and “way stations” at various points along the east coast where large seagoing canoes could offload goods for transport to the mainland and riverine routes (1976:73). Transshipment points and way stations would have been located on the small islands off the east coast of the peninsula that were not suitable for large settlements. The list of trade-related activities said to take place at transshipment points came to include the transfer of goods from seafaring to riverine boats, trade between merchants coming from riverine and coastal sites, and locally oriented coastal-inland trade that coexisted with the long-distance route. Transshipment points also functioned as way stations for traders plying the coastal and riverine routes (Jackson and McKillop 1989:104).

True “way stations” would have been located at the mouth of each major river draining to the coast, and they would be identifiable by the disproportionate quantities of exotic artifacts for such small settlements. Where locations of the destination sites required that goods be offloaded and transported
overland, way stations could be located on the coastline and have facilities for docking both large and small canoes. One way station perhaps served several inland sites or riverine routes, and suggested several possible links between coastal and inland sites (Hammond 1976:73, 78).

Andrews advanced a more comprehensive typology of coastal sites which drew from old classification schemes and added new types. He acknowledged that few sites fall into a single category but engaged instead in a range of activities (1990:162). Andrews’ site types included Coastal Communities, Religious Coastal Centers, Island Necropoli, Ports of Embarkation for Offshore Islands, Ports of Trade, Coastal Transshipment Points, and Seaports of Inland Polities.

Coastal Communities exploited marine and coastal resources for subsistence while trading some marine goods to nearby inland sites in exchange for food, pottery, and stone. They constituted ports for local and occasionally long-distance trade, with most of the latter being diverted to inland sites (Andrews 1990:162).

As noted previously, the sea had a prominent role in Maya ideology. Many coastal sites had ceremonial architecture and functioned as Religious Coastal Centers. Andrews suggested that in the Late Preclassic period only Cerros fell into this category, but numbers of religious coastal centers increased through time. By the Classic period they included Jaina, Cozumel, Xelha, and probably others; and in the Postclassic there were many ceremonial complexes on the northeast and east coasts from Isla Cerritos to Chetumal Bay. Isolated coastal shrines also line the shore from Isla Mujeres to Ascensión Bay, and Andrews concluded that these reflect a religious orientation to the sea. The shrines sit on promontories or next to small inlets that formed natural harbors, and they are usually associated with a nearby inland site. In fact, Andrews stated the coastal shrines are extensions of sites set back a safe distance from the shore. The shrines have been described as navigation aids for seafarers plying the coastal waters, but Andrews maintained they would still have a religious component (Andrews 1990:162-163). For more information about possible navigation aids on the coast see Chapter IV.

Andrews explained the Island Necropoli type of coastal site with reference to the old idea that Jaina and other islands off the Yucatecan coast were Maya burial grounds. This notion emerged from the writings of early explorers in the Maya Lowlands, who interpreted the islands as burial grounds based on the large numbers of interments there. In two cases, Isla Jaina and Isla Cerritos, we now know the sites were permanent communities with long occupation histories. Large numbers of burials there constitute the remains of the sites’ populations. Three other possible “Island Necropoli,” Isla Piedras, Isla Uaymil, and Isla Tamalca, have not been excavated (Andrews 1990:163).

Ports of Embarkation for Offshore Islands, Ports of Trade, Coastal Transshipment Points, and Seaports of Inland Polities all constitute coastal sites regularly involved in trade. Andrews described Points of Embarkation as mainland sites that served both as places where large canoes embarked for
offshore islands, and as those islands' primary trade links with the mainland. Several sites he suggested as possible points of embarkation also have significant religious architecture. The sites possibly served as locations for special pre-voyage rituals, particularly Cozumel and Isla Mujeres which were religious pilgrimage destinations. Andrews proposed the following sites as embarkation points and corresponding offshore destinations: Xcaret and Playa del Carmen for Cozumel; El Meco for Isla Mujeres; Chiquila for Holbox; a variety of sites for Isla del Carmen in the Laguna de Terminos; a variety of sites for the Belizean Cays; Santa Rita, Cerros, and Sarteneja for Ambergris Cay; and finally San Manuel, Oxtancah, or Ixpaatun for Tamaulipas in Chetumal Bay (Andrews 1990:163-164).

Andrews listed Ports of Trade as one type of coastal site, referring both to Chapman's definition (1957) and the four characteristics of trading centers proposed by Sabloff and Rathje (1975). Andrews reiterated that although numerous ports of trade have been proposed in the literature, none have been validated with conclusive evidence, and in fact the types of evidence available from Maya sites and the ethnohistoric record is probably insufficient for a reliable identification (1990:164-165).

Coastal transshipment points are easier to document, and Andrews argued that many proposed ports of trade were probably this type of port. These could be occupied for long periods and they gradually increased in number from the Late Preclassic period to the Conquest, including a dramatic increase on the east coast of the Yucatán Peninsula in the Late Postclassic. Sites that Andrews suggested as transshipment points included: Xicalango, Isla Jaina, Isla Cerritos, Ecab, El Meco, Cancún, Xcaret, Tulum, Tancah, Moho Cay, Point Placencia, Wild Cane Cay, and Ambergris Cay. He also proposed that the following sites were well positioned at the mouths of navigable rivers to function as trade conduits between the coast and the interior: Moho Cay, Cerros, Santa Rita, Ixpaatun, Champoton, and sites on the Laguna de Terminos (1990:164-166).

Other less prominent transshipment points possibly included Canbalam, a site at the mouth of the Celestun estuary and on the route to Chunuchmil, and sites next to natural harbors on the central coast of Quintana Roo between Playa del Carmen and Tulum. At least 10 sites have been reported south of Tulum on the Xkalak Peninsula that might have been stopping points on the coastal trade route, but none has been surveyed. Andrews also mentioned a canal south of Tulum connecting Boca Paila Lagoon to Chunyaxché (also known as Muyil) that perhaps functioned as a major trade conduit between the coast and the interior (1990:165).

Andrews included coastal sites that have been suggested as outposts of inland communities in the transshipment-point category, including Ramonal and Condemned Point for the interior site of Shipstern, Northern River Lagoon for Colha, and Marlowe Cay for Altun Ha. Other investigators have assigned the transshipment point label to Isla Cerritos, Ambergris Cay, Moho Cay, Point Placencia, and Wild Cane Cay (Andrews 1990:165; Guderjan 1995c:8).
Andrews’ “Seaports of Inland Polities” consist of coastal sites linked to inland capitals. He maintained that two documented examples in the Maya area include Isla Cerritos and Xelhá. Abundant strong evidence for Isla Cerritos as a coastal port of Chichén Itzá is detailed in Chapter IV. The evidence for Xelhá as the seaport of an interior center includes substantial ceramic and architectural links to Cobá and the Petén, its existence as the closest major site to Cobá, and its location next to a natural harbor formed by the largest and deepest rocky inlet on the east coast (Andrews 1990:166).

Several other sites perhaps had links to inland polities but remain undocumented by the current archaeological evidence. For example, Chunyaxche or Tancah might have played roles as ports in the Classic period, but the former has not been excavated and the latter had no major architectural complexes until its most significant occupation in the Postclassic period. Canbalam, a coastal site on the entrance to Celestún estuary, was occupied at the same times as Chunchucmil, 25 km inland. According to Andrews Canbalam might have been the interior center’s seaport if Chunchucmil controlled coastal salt beds (1990:166).

Andrews also proposed that Emal both administered the Las Coloradas salt beds and served as a coastal presence for the nearby inland site of San Fernando. Emal boasted continual occupation from the Late Preclassic period to the Conquest and San Fernando, which is 14 km inland and among the largest Precolumbian communities in the region, had a major Classic-period occupation. Finally, Andrews suggested Marlowe Cay perhaps constituted a seaport for Altun Ha (1990:166-167).

With few exceptions Andrews relied on mostly circumstantial evidence in classifying coastal sites as one or more of his four trade-related types and refrained from predicting which specific activities taking place at them would leave distinctive marks in the archaeological record. Andrews’ work regarding coastal sites contributed greatly to our knowledge of coastal activity and trade (see Chapter IV) but the lack of a correlation between the material record and the types of coastal sites listed here exemplifies the weakness of a great deal of Maya literature on maritime trade. The shortcoming is even more remarkable in light of McKillop’s suggestions for specific archaeological criteria for evaluating coastal sites’ trade roles (1987).

McKillop described coastal trade stations or ports as places where traders would stop for transshipment of goods, safe harbor, or to engage in trade. Suitable coastal locations were small settlements in populated regions along a long-distance trade route. McKillop proposed that sites charged a fee to traders for services residents provided, which traders often paid in kind with trade goods. Local residents perhaps loaded and unloaded goods, provided shelter for traders, or functioned as middlemen in exchange. Though desirable to everyone, exotic trade goods paid to the site would have concentrated in the hands of elites who had sufficient wealth and influence to acquire them in quantity. These elites could acquire their status symbols more easily from the traders who visited their towns than from their regional
redistribution center. Trade sites can be distinguished archaeologically by comparing the abundance of a trade good in the material record to that of other sites similarly distant from the source of the good. At a small or medium-sized coastal site involved in trade, the per capita access to trade goods can closely resemble that of elites living in large cities. Residents of a coastal trade site might enjoy greater access to exotics than any residents of small or medium-sized, non-trading sites, and also greater access than non-elites in large cities, where wealth concentrated (McKillop 1987:31-34, 39).

McKillop also proposed that transshipment points, safe harbors, and trade stations can be distinguished by the nature of the trade goods present and geographic features at that location. Transshipment stations will be located on the boundaries between ecological zones where a change in transportation is required, such as portages and offshore debarkation points for canoes. River mouths do not necessarily require a change in transportation and therefore do not constitute prime locations for transshipment of goods. McKillop argued that archaeological remains at a true transshipment station should include trade goods from only one location, but might yield goods from more sources over time if the traders passing through changed the sources of their wares (1987:31-32, 35). It is possible, however, that inbound traders collected goods to sell from numerous, diverse sources and would leave an equally diverse collection at the transshipment point.

Safe harbors would emerge at sheltered locations used repeatedly—at river mouths, on the harbors of offshore islands, and on coastal inlets and lagoons or similar spots. Trade goods found at these sites can be considered payments for services rendered since traders would have typically left all the trade goods in their canoes during a layover, reducing the possibility of loss and the incidental deposition of the goods in the archaeological record (1987:35).

According to McKillop, transaction stations, or trade stations, are harder to identify. These had to lie at points convenient for traders from at least two different places, such as along territorial boundaries, mid-points of trade routes, or river mouths where seafaring and river-going traders might meet. A transaction station should include a designated location for trade and perhaps also warehouses or some other form of storage facilities. Transaction stations would have superior abilities to survive social change if they could flexibly align themselves with trade networks passing nearby which moved goods from source areas to large centers (1987:32-35, 44).

Trade goods can appear at other sites along long-distance routes. Certain locations could have been campsites, unsettled transshipment points, portages, or other types of constrictions in trade routes. Permanent populations did not reside at these locations and any trade goods found there do not constitute payment for services but rather broken and lost items. A few exotic items might be present, but overall trade goods would be rare at these sites (McKillop 1987:35).
McKillop applied these predictions to interpret trade data from Wild Cane Cay to determine whether or not it was a trading port, and whether or not an analysis of trade goods could be used to distinguish coastal from inland trade. Her well-documented approach and techniques demonstrate that due to inconsistencies in recovery and reporting of trade data from other sites, most obsidian data documented to date has limited potential for studying coastal trade (1989a, 1989b).

Summarizing her methods for using obsidian to identify trade ports, McKillop proposed that trade ports on the east coast of the Yucatán Peninsula can be distinguished by the following criteria: abundant obsidian at the site, which indicates it had easy access to the supply; less conservation in blade production than other sites that were about the same distance from the source; greater conservation in blade production than at trading site even closer to the source; more obsidian than could have been used by the local population; and evidence for blade production at the site from cores that were imported (1995a:163). If coastal trade routes were in use, coastal sites should exhibit each quality to a greater degree than inland sites of similar size and distance from the source (McKillop 1996:52). Furthermore, McKillop suggested that trade ports should yield obsidian from a greater variety of sources than non-trade ports, and that the level of diversity reflects the site’s role in trade (1995a:172; 1996:52).

Isla Cerritos and Wild Cane Cay each yielded obsidian from six sources, and Wild Cane Cay also had a much higher density of obsidian than most sites due to its relative proximity to the Highlands. San Juan on Ambergris Cay yielded obsidian from four sources, and McKillop suggested that this diversity as well as the density of obsidian from San Juan is consistent with what she would expect from a trading port midway along the long-distance route. She also assessed obsidian evidence from Wild Cane Cay, Moho Cay, and sites on Ambergris Cay according to the criteria described above and suggested that each was a trading port on an east-coast, maritime route. At Moho Cay and Wild Cane Cay knappers exercised less conservation in blade production than the average for Lowland sites. Evidence from Ambergris Cay, supported the notion of a developed system of way stations and transshipment points on the island well before the Postclassic period (1995a:163, 167, 172-173).

Discussion

Successful attempts to classify coastal sites must predict what tangible remains will result from economic activity that took place there. If a site’s residents received payment in kind for trade-related services, abundance of exotic trade goods at the site might serve as evidence for a special role in the exchange network. Quantifiable parameters, such as the diversity of trade goods at a site and the degree of conservation exercised in using them, provide the best evidence to differentiate sites where traders converged from those that merely received goods passively from the exchange network.
The importance of the sea in Maya cosmology probably translates into a ceremonial component of the archaeological record at most or all coastal sites. The religious importance of coastal sites probably played a role in attracting traders.

McKillop’s proposal for politically versatile coastal trade stations works well with the notion that most maritime trade existed outside elite influences, conducted by specialized middlemen whose ability to move goods over medium and long distances stemmed not from royal patronage but rather their monopoly on knowledge and skills. Central places could rise and fall but trade stations and the seafaring merchants who frequented them would continue, mostly unfettered by official changes.

The notion that storage facilities would exist at a trade center or station remains questionable. There is no evidence to suggest that petty traders or middlemen moving the bulk of trade goods along coastal routes would relinquish control of their cargo by storing it. If sites stockpiled trade goods they likely did so as they received tribute from secondary sites. Cargoes earmarked as tribute likely moved directly from the producer community to the central place without layovers.

THE ROLE OF THE PUTUN MAYA (A.K.A. THE CHONTAL, ACALÁN, OR ITZÁ)

Before the archaeological models and evidence showed that elite control of maritime trade was probably far less important than once thought, the notion of elite-organized and managed coastal networks appeared as a consistent theme in Maya trade literature. Appealing and drama-filled scenarios for trade in the Postclassic period were advanced first by Thompson (1970) and subsequently by Sabloff and Rathje (1980 [1975]) as well as others.

The Chontal or Putun Maya as Exclusive Maya Seafarers

In 1970, J.E.S. Thompson characterized the Chontal, whom he called Putún Maya, as warlike harbingers of Mexican influence in the Maya area. He stated that the Chontal started from their homeland in the western Maya area, penetrated the southern Maya Lowlands and the Yucatán Peninsula, then used their seafaring skills and connections with Mexico to establish a profitable relationship with the Toltecs of the central Mexican Highlands.

Ethnohistoric sources contributed much of the evidence used in his proposal but material remains seemed to offer important support. At Maya Lowland sites the apparent proliferation of imported goods from Mexico and the Gulf Coast or artifacts that display elements of presumably “Mexican” art styles have led many to cite the influence of foreign groups from Mexico as a force for social and
economic change among the Maya. Cultural changes appearing in northern Yucatán in the Terminal Classic-Early Postclassic were attributed to the presence of either central Mexican Toltecs or Putun/Chontal Maya. The new arrivals were typically characterized as aggressive opportunists who established themselves at Chichén Itzá around the end of the tenth century then expanded into the rest of the Yucatán Peninsula through political and economic dominance, bringing their gulf-coast cultural traditions with them (Andrews 1978:77).

The most elaborate scenario for seafaring merchants in the Maya area comes from Sabloff and Rathje’s article, “The Rise of Maya Merchant Class,” first published in 1975 and reprinted in 1980. Sabloff and Rathje’s arguments can be summarized as follows:

During the Classic period, Maya successes in the southern Lowlands were related to the fate of Teotihuacan, the premier central Mexican state whose wealth and culture spread far and wide in Mesoamerica. When Teotihuacan fell in the seventh century, it left the opportunity for blossoming Maya centers to flourish and reach new heights in art, architecture, and population. By the Terminal Classic, Maya cities of the southern Lowlands had over-extended their domains, and most of them went into a swift decline (Sabloff and Rathje 1980:139-140).

In the meantime, central Mexico saw the establishment of a Toltec state with its capital at Tula. The Toltecs were militarily aggressive and engaged in long-distance trade with economic partners as far south as Central America. In addition to Tula, the Toltecs took root in the northern Maya Lowlands. The Yucatecan city of Chichén Itzá, originally built by the Maya, was a Toltec city by A.D. 100020 (Sabloff and Rathje 1980:140).

At the fall of Teotihuacan the Putun Maya of the Tabasco and Campeche coasts purportedly found themselves in a unique position. They already had seafaring skills and heavy involvement in exchange, and they now sat at a critical geographic location between Highland Mexico and Lowland Maya regions with no distant superpower to dominate trade. Whereas all previous long-distance trade had been overland, the Putun started to take advantage of their location and their ability to move goods more efficiently by canoe. Furthermore they initiated production of goods designed for easy transport, such as thin-walled Fine Orange ceramics that had simple shapes and often nested together into neat stacks (Sabloff and Rathje 1980:140, 142).

Sabloff and Rathje argued that the Putun became the first Maya seafaring merchants in the Late Classic period. When Chichén Itzá fell and Toltec power in the Maya Lowlands loosened, the Putun used weapons and military techniques learned from the Mexicans, as well as their own homespun mercantile

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20This traditional view was based on striking architectural similarities between Chichén Itzá and Tula as well as reportedly similar chronology at the two sites.
skills and economic strength to expand their reach around the peninsula (1980:142). Characterizing Putun social and economic values, Sabloff and Rathje stated:

In the course of the Putun’s trade-oriented political expansion in the northern Lowlands of the Yucatán Peninsula they seem to have been governed by a cultural ethic that was new among the Maya. What might be called mercantile pragmatism, it reflected the ascendancy of a merchant class at the expense of the old theocracy (Sabloff and Rathje 1980:143).

The archaeological evidence that Sabloff and Rathje cite in support of their argument came primarily from Cozumel Island. There, the investigators stated, a change in socio-economic systems appears in the material record in several forms. To begin they pointed to the secularization of public life and mass production of trade wares. They also referred to the status of Cozumel as home to the shrine of Ix Chel, an important female deity in the Maya pantheon, as evidence for a merging of mercantile and religious values on the island. The authors proposed that Cozumel residents established the shrine to reinforce ties with their long-distance trading partners on the Gulf Coast. Alternatively, the shrine perhaps existed first and helped attract large numbers of people the island, spurring its growth and prosperity (1975:27).

Postclassic Cozumel saw plenty of construction but architecture there emphasized practicality over beauty, consisting largely of huge stone platforms designed to protect residents from rainy-season floods. Thick coats of plaster masked shoddy construction underneath. Sabloff and Rathje suggested that the network of field walls on Cozumel could indicate land was at a premium due to the prosperity of the Putun, and that previously communal land holdings had been converted to private property. House types on the island mirror those in other areas of the Yucatán Peninsula reportedly dominated by the Putun, and Cozumel’s central administrative site of San Gervasio had close ties to both Mayapán and Tulum (1975:26; 1980:143-146).

The investigators compared the line of small sites on the windward coast of the island, which they called coastal defense points, to possibly fortified sites on the mainland at Tulum, Xcaret, Ixpaatun, and Mayapán. Defensive structures such as walls and coastal outposts, they argued, were perhaps necessitated by a power vacuum after the fall of Chichén Itzá which left coastal sites vulnerable to raids (Sabloff and Rathje 1975:27-28; 1980:144).

Caches on Cozumel contained only low quality goods, which Sabloff and Rathje believed reflected the resident merchants’ desires to retain material wealth in the present world. Furthermore, the island population had broad access to exotic trade goods. The investigators maintained that a shift to mercantile values in the Postclassic period caused the Maya to spend less on elite and ritual items while keeping more goods available to use as currency. Omission of high quality goods from ritual deposits
was not due to a decline or disappearance of Classic art and iconography, but rather the predictable result of an “economic life... becoming increasingly complex and vigorous” (1975:27; 1980:143-146).

Variations on a Theme: More Putun Seafaring Scenarios

Andrews presented a variation on the Putun/Chontal story that incorporated his proposals for coastal salt trade. He argued that the Postclassic rise of Chichén Itzá and proliferation of settlement in the northern Lowlands found its roots in the rise of coastal salinas and their associated sites. He noted that in the ninth and tenth centuries foreign cultural elements began to appear at some coastal sites, while others were being abandoned. Simultaneously trade was intensifying between the southern Gulf Coast and the western Yucatán Peninsula. All this suggested to Andrews that coastal settlement was being consolidated by an allied political group who brought Fine Orange ceramics to the northern Lowlands and had close ties to Chichén Itzá (1978:84-85; 1983:127).

Andrews went further, proposing that the group was indeed foreign, and more specifically it consisted of the aggressive, opportunistic traders alternately called Toltec, Chontal, Putun, or Itzá, and that it had strong ties to central Mexico. Andrews argued that the group took over coastal and riverine trade networks of the western peninsula and grew to become a powerful merchant class that affected material culture throughout the Lowlands. Andrews supported his proposal by pointing to cultural traits in ceramics, art, and architecture usually interpreted as “Mexican,” which had spread north and west into the northern Lowlands (1983:127-128).

In Andrews’ scenario salt production provided the impetus for Putun expansion along the coasts in the Terminal Classic, and he maintained that whoever controlled salt production probably controlled coastal trade routes. Wealth accumulated as a result of salt production and trade enabled the Putun to grow stronger while still residing primarily at their Gulf Coast home. Eventually, they made a second push into northern Yucatán, this time penetrating the interior and establishing a permanent capital at Chichén Itzá in the Early Postclassic. Thus Andrews argued that they gained access to internal commerce, control of marine resources and salt, and access to long-distance trade through which they gladly exchanged salt for exotic elite goods (1978:85-87; 1983:87-89).

In order to explain the changes responsible for the transition from Early to Late Postclassic, Andrews maintained the Putun, or Itzá, clashed with the local Maya center of Cobá from their home base at Chichén Itzá. According to Andrews, Cobá had been heavily involved in trade along the east coast. When Chichén Itzá dominated them economically around A.D. 1100 the Itzá took over Caribbean trade routes. At that time Itzá influences begin to appear at sites in Belize. Later, Mayapán succeeded Chichén Itzá as a regional power, again relying on the salt beds for its monopoly on coastal trade (1983:128-129).
Miller offered yet another variation on the proposed Chontal/Putun expansion into the northern Lowlands, this time using evidence from the east coast sites of Tancah and Tulum. "Mexican" artistic traits appear relatively early in art and architecture at these sites. Miller agreed with Andrews that the external influences in the northern Lowlands appeared first on the coasts, which he characterized as areas that had been marginal in the Classic period. From there, bearers of the foreign traits gained a foothold and began to expand. He further agreed that the group could have been Chontal traders engaged in maritime trade all around the peninsula, and that they could have been present at Tancah and Tulum around A.D. 700 mediating the influx of central Mexican "Toltec" influences (1986:200-204).

Miller argued that mural evidence indicates east coast populations were receptive to ideas originating in Mexico as early as the middle of the Classic period. Around A.D. 1400, however, more pronounced and "intrusive" foreign elements appeared in Tancah and Tulum architecture, murals, pottery, and iconography. Miller reinforced Andrews' idea that the Chontal were opportunists living on the Maya periphery, outside the domain of Maya elites, creating tension throughout the Classic period (1986:205-206, 214-215):

The Acalán-Chontal of the Late Postclassic...may in fact have been allied with the Aztec pochteca, who employed the local marine expertise at Xicalango to extend their trading networks from the Gulf Coast around the peninsula to the Quintana Roo coast to gain a foothold there for eventual territorial expansion (Miller 1986:211).

Indigenous east-coast peoples, according to Miller, occupied the desirable, dry locations slightly inland from the coast such as Tancah. They primarily depended on agriculture for their livelihood, and relished the protection from weather and potential attacks from the sea. When foreign interlopers arrived, they settled the less desirable locations including the rocky headlands where Tulum sits. They depended on contacts with their gulf-coast homelands and easy access to sea trade for their subsistence. Miller characterized the outcrop locations as vulnerable, and suggested that they constitute evidence that the inhabitants needed no protection from seaborne attackers because they controlled the sea lanes themselves (1986:217-218).

The Alternative View: Mutually Beneficial Interaction

While Sabloff and Rathje's archaeological evidence for changing commercial systems on Cozumel is intriguing, neither this nor the earlier appearance of external influences on the Postclassic Yucatán Peninsula can be assigned to the actions of a foreign agent and least of all a specific foreign group. Simple increased contact with central Mexico for trade and communication could create the same
result. It remains extremely difficult to attribute remote actions, such as the proposed foundation of Mayapán by Cozumelinos, to any specific group without much more substantial evidence and a more clearly articulated relationship between behavior and the material record.

Nearly all of the evidence for Toltec and Chontal/Putun expansion derives from colonial period documents which still need to be verified with archaeological data. The apparent exception to this is the strong architectural similarity between Chichén Itzá and Tula, but the notion that these sites shared direct connections with one another is also questioned (Sheets et al. 1992:178).

Sabloff and Rathje's approach to evidence from Cozumel is circular. The investigators designed a research strategy to search for evidence of a specialized trade activities or a merchant class, then in the absence of abundant trade goods they proceeded to interpret much of their ambiguous findings as evidence for the popularization of Putun mercantile values. Despite its weaknesses, Sabloff and Rathje's assertion once constituted the most detailed explanation for the advent of Mexican culture traits in northern Yucatán and the concurrent trend in art and expression that Mayanists perceived as a devaluation of Classic styles. The "Putun seafaring merchants" have since been invoked often as the bearers of change throughout the Maya Lowlands.

More recently archaeologists have come to view this scenario as overly simple. The situation for production and distribution of Colha-made chert tools hints that elites at large administrative centers did not always control production of traded goods. Despite Sabloff and Rathje's suggestion with respect to Cozumel, elites did not necessarily control exchange either (McAnany 1986:271), except in a limited way through a tribute and redistribution hierarchy intended to reinforce vertically oriented allegiances within a polity. Intra- and inter-regional exchange probably took place without Putun intervention (Guderjan 1995c:5-6; Guderjan and Garber 1995a:185).

The presence of "outside" or "foreign" influences does not automatically indicate the presence of a non-local group, much less an occupying foreign government. A possible alternative comes from McAnany's description of "network cohesion." The circulation of goods helps establish socially and politically important networks between and among participating communities, and these do not necessarily coincide with social and political boundaries (McAnany 1986:92). For more details about how external cultural motifs in the Maya area can be interpreted, see Chapter IV.

Freidel offered an alternative to the common view that the advent of "foreign" influences was necessarily hostile, or that the north's rise to prominence was the product of an aggressive take-over of trade routes. He argued that, in fact, current evidence indicates the Classic Maya economy was not dominated by the cities of central Mexico, and that archaeologists typically overrate Mexican influence in the Maya Lowlands. The spread of Mexican or foreign cultural traits in the Maya area can be viewed as the result of increasing, mutually beneficial ties across Mesoamerica; the deliberate merging of the two
groups and their cultures for the politico-economic benefit of both beginning in the Classic period. Such merging occurs through the reconciliation of the religious underpinnings of political policy from both regions and, more visibly, intermarriage of elites. Mingling the social systems brought greater economic stability, because cities were less affected by the whims of their trade partners. On the other hand, the system as a whole became more vulnerable to drastic changes that might take place at any single participating center (Freidel 1986:412-414; 419-420).

Freidel proposed that toward the end of the Classic period, Maya in the northern Lowlands successfully established this kind of relationship with Highland Mexico groups, but the Maya of the southern Lowlands did not. Northern Maya adapted quickly by established large, stable, trade networks, engaging in mutual acculturation, and joining geographically wide political economies. They formed economic cartels that enabled them to expand trade throughout the Lowlands (Freidel 1986:425-427). Cultural traits from northern Yucatán increasingly appear in northern Belize (Chase and Chase 1982; Pendergast 1986:242) and archaeologists working there often propose that Belize was starting to be tied into this network (Sidrys 1983:13, 280; Graham 1994:246-247; Váldez et al. 1995:103).

Discussion

The oft-cited appearance of cultural and artistic traits related to material culture of the Gulf Coast or central Mexico, combined with ethnohistorical evidence, has fed elaborate scenarios for the exclusive participation of the Putun or Chontal Maya in Postclassic maritime trade around the peninsula. The evidence presented remains unsuited to the task of distinguishing the effects of an occupying foreign group and mere external contact and exchange.

Until better evidence emerges and there is clearer linkage of the material record with the potential causes of change, Mayanists should cease referring to either the Toltec or the Putun/Chontal as either harbingers of Mexican influence or monopolizers of maritime trade. It will be more productive to focus archaeological study on the possible development of mercantilism as an occupational specialization. As such, specialized seafaring merchants would not appear on the scene suddenly, but would materialize out of a long history of seafaring and trade that over time reached farther and farther into neighboring regions, increasingly blurring the distinctions between Mexican and Maya cultures. Currently, Mexican culture traits in the Maya Lowlands are being reinterpreted as the products of mutually beneficial trade relationships across Mesoamerica (Freidel 1986; Chase and Chase 1988).
CHAPTER IV
ARCHAEOLOGICAL DATA FOR MARITIME TRADE

By 1990, 320 Maya sites had been documented along the coasts of Campeche, Yucatán, Quintana Roo, and Belize. While some researchers proposed that coastal occupation and maritime activity exploded in the Terminal Classic period due to the decline of southern Lowland center, new evidence indicates that the reliance on the sea so visible in the Postclassic period followed a long Maya maritime tradition (Andrews 1990:167). New evidence from submerged coastal sites hints that seaward-oriented occupation was a feature of Maya prehistory in all periods.

This overview groups the evidence from coastal sites into geographical divisions solely to classify evidence into manageable categories (Figure 15). The geographical regions generally do not stem from clear divisions in the archaeological evidence, and do not imply that the Precolombian Maya perceived any such boundaries. This overview focuses on coastal sites based on the assumption that these are the most likely to inform us about Maya seafaring and trade. It includes inland and riverine sites if investigators proposed they had a significant direct or indirect role in maritime trade. In some cases minimal evidence shows that a site existed and perhaps indicates when it was occupied, but due to lack of excavation it is impossible to conclude whether or not the site had a role in trade. These sites appear in the maps, but are not discussed in the text. Detailed discussion of large central places lies outside the scope of this study, but clearly such sites enjoyed considerable political and economical power and they undoubtedly had impacts on maritime activity in all time periods.

Documentation of trade goods at Lowland sites frequently focuses on exotic artifacts; usually items made of jade, obsidian, volcanic stone, turquoise, copper, gold, or finely painted ceramics, rare shells, and durable marine products. Exotics endure the passage of time and appeal to archaeologists because they are frequently crafted into works of art. Thus, they are clearly visible in the archaeological record throughout the Maya area. Simply comparing quantities of exotic artifacts from excavations is not sufficient to draw meaningful conclusions about trade, however (McKillop 1987, 1989a). Sites with significant roles in Precolombian trade could actually yield fewer exotics than other sites (Sabloff and Rathje 1975:13). Excavations conducted with varying goals will not reveal exotic artifacts in proportions equally representative of the amounts brought to the sites in antiquity. Meaningful comparisons can only be made when exacting recovery techniques were used consistently at each site and the results were reported in full, which is seldom the case.
Furthermore, exotic artifacts are rare by definition, and sample sizes are usually small compared to the overall wealth of evidence from a site. The patterned distribution of exotics likely reflects only one component of the Maya socio-economic system—elite exchanges that wove polities and tributaries together in a social fabric. The more economically important low-level trade in utilitarian goods (e. g.
honey, wax, copal, cloth, feathers, cacao, achiote, salt) probably consisted mostly of perishables and remains largely hidden unless researchers use specialized excavation techniques. Nevertheless, careful documentation of durable commodities such as ceramics, lithics, and shell can illuminate ancient trade networks (Freidel 1993:161).

While we have good reason to be wary of using exotic artifacts from archaeological excavations to deduce trade patterns, they still form the most reported and studied aspect of Mesoamerican exchange and they are still a reasonable avenue to pursue in the study of trade. As new research increasingly reveals complex Mesoamerican social structures, we can no longer simply assume that rich burial goods or finds from the architectural centers of Maya cities reflect elite activity only (Chase and Chase 1992:8-10). Evidence from exotic trade goods reflects interactions among far-flung groups that probably was not restricted to rulers, but likely took place at many middle levels of society also.

THE PRECLASSIC PERIOD

The earliest evidence for long-distance transport of goods in the Maya region dates to ca. 980 and 900 B.C. from Cuello (Figure 16), where archaeologists documented obsidian and jade in early stratified deposits (Hammond 1991c:199; 1991d:197). By the Middle Preclassic period local, regional, and long-distance exchange networks moved jadeite and obsidian out of the Highlands, sandstone out from the Maya Mountains, formal chert tools outward from Colha, and Caribbean shell to inland sites (Dreiss 1988:61).
Figure 16. Sites that potentially participated in maritime trade networks during the Preclassic period.

About 55 sites dating to the Late Preclassic period line the Lowland coasts. Most of these were possibly seasonal fishing camps and outposts, but a coastal regional center had emerged at Cerros.
Andrews stated that at least 15 sites on the north coast were involved in salt production (Andrews 1990:160).

The Southwest and West

Sites line the banks of the Candelaria, Usumacinta, and Grijalva rivers, but few excavations have been reported from the southwest and west coasts of the Yucatán Peninsula and its prehistory remains largely unknown. Preliminary reconnaissance indicated a substantial, dense Preclassic population existed there although little standing architecture remains. Sites that may prove important in Preclassic trade include Aguacatal, sites on Isla del Carmen, Tixchel, Campeche, and others.21 With only occasional portages the Maya of the 1940s could travel by canoe from the coast far into Guatemala (Andrews 1943:45-46, 64, 88). Eaton speculated that canoe construction was an important industry in the area, citing ethnohistoric documentation of large fishing fleets in Campeche at the time of Contact (1978:13-14).

Aguacatal, 15 km west of the Laguna de Terminos on a sandy beach, was occupied in the Late Preclassic and into the Classic and Postclassic periods. The site occupied a strategic location next to far-reaching inland waterways and navigable coastal waters. Some suggest Aguacatal is the famed Xicalango. Today, modern Chontal-speaking Maya in the area use canoes extensively (Matheny 1970:1-5; Ball 1978:122).

Isla del Carmen now stretches 39 km across the Laguna de Terminos, but it was a line of four smaller islands during Preclassic times. The modern city of Ciudad del Carmen on the western tip is famous for its fishing and boat building. Preclassic remains reflect activity of fishing communities that were also involved in trade and able to import stone artifacts, but occupation dates of the site remain unclear (Eaton 1978:18).

Tixchel22 was possibly occupied as early as the Middle Preclassic and certainly through the Late Preclassic and into the Early Classic period. The site was once described as a point where the coastal trade routes from Tabasco to Yucatán turned inland and became a land route toward the north (Ball 1978:122; Lhuillier 1969:65, 112).

22 For more information about Tixchel see Lhuillier 1969, Eaton 1978, and Ball 1978.
Campeche is the largest port in Yucatán today and Eaton argued it was clearly an important port in Pre Columbian port on the Tabasco-Yucatán trade route (1978:28), but little information about its prehistory has been published.

The North

Following an initial survey by Eaton (1978), Anthony Andrews led the way in studying trade activity along the north coast. His arguments for the role of the north coast in maritime trade come primarily from his proposals for salt production. As noted in Chapter III, Andrews’ conclusions were called into question when substantial salt production on the Belize coast came to light. The importance of salt production in Belize stems not only from the fact that it reduced the alleged need to import salt, but also because it shows the boiling method of salt production (sal cocida) enjoyed far more prominence among the Maya than Andrews allowed. Now it appears that sal cocida not only satisfied the Maya tastes, but it could have been produced on a scale sufficient to fulfill the southern Lowlanders’ day-to-day needs (Mock 1994a:92, McKillop 1995b:215).

Most of the more than 20 sites between Celestun and El Cuyo are near to or next to salt-making areas. Andrews characterized them as mostly seasonal camps of fishermen and salt producers (1983:31), although the largest sites on the north coast yielded small quantities of goods from the south23 (Eaton 1978:48, 50).

The largest site on the north coast, Xcopte, was perhaps a regional center. Two of six Preclassic obsidian artifacts recovered there were green obsidian from the Pachuca source in central Mexico (Eaton 1978:35, 48), reflecting an early trade network that brought goods from central Mexico.

At Dzibilchaltun, 20 km from the coast, early occupation phases yielded few trade goods, just small amounts of gray obsidian from non-elite contexts. In the Late Preclassic exotic grave goods from Highland sources appear, including jade beads, plaques, and pendants, two of which might reflect some contact with Belize (Andrews and Andrews 1980:315, 320; Taschek 1981:556, 561).

Isla Cerritos. Evidence from Isla Cerritos indicates it was an important node in coastal trade, at least in the Terminal Classic and Early Postclassic periods. Ceramic evidence from well-stratified deposits indicates it was already heavily occupied in Late Preclassic times, but Late Preclassic remains were well below current sea level and waterlogged (Andrews and Negrón 1986:45; Andrews et al. 1988:198-200).

The island boasts a Late Preclassic burial associated with fragments of greenstone, obsidian, and basalt. The obsidian fragment deserves special interest, as its source is in Zaragoza, Puebla, of central Mexico (Andrews et al. 1988:204; Andrews et al. 1989:361), and corroborates evidence for early trade links between central Mexico and northern Yucatán.

**Río Lagartos Sites.** Other early evidence for long-distance trade in Highland products comes from the Río Lagartos sites. Alegria 1, 2, and 3, and El Cuyo yielded imported goods including stone tools of basalt and other volcanic stone which suggest the sites were involved in long-distance trade. Alegria 1 yielded a Preclassic stone axe which Eaton stated is identical to ones known from Guatemala and very much like ones from Nicaragua and Costa Rica. El Cuyo boasts the largest mounds on the north coast. One of these called Monte Cuyo stands 10 m high and serves as a landmark for modern navigators (Eaton 1978:9, 12, 44, 52, 60; Andrews 1983:31).

**The East**

**The East Coast Sites and Cozumel.** On the east coast, Preclassic occupations have been noted at Cancún (Ball 1978:128), Xcaret, and Tancah (Andrews and Andrews 1975:100, 102; Miller 1977:100, 115), and future excavations will likely reveal more. The southern part of Quintana Roo was occupied during the Late Preclassic but only a small sample of ceramics has been documented (Fry 1973:488).

By the Preclassic period the Maya had navigated the 16-km sea passage to Cozumel and occupied the island (Sabloff and Rathje 1975:22; Freidel 1978:241). Scattered remains of this period suggest the Preclassic population remained small, but ceramic evidence reflects some involvement in trade during that time (Connor 1975:126, 128, 134).

Chetumal Bay stands out as the most notable feature of east coast topography, and it undoubtedly influenced Maya occupation. Around Chetumal Bay and in northern Belize abundant evidence exists for coastal activity, urbanism, social complexity, and long-distance trade.

**Cuello.** The earliest known examples of long-distance trade goods from stratified contexts in the Lowlands come from Cuello, including obsidian and jade from as early as 980 B.C., a variety of marine shells and ritual marine products from 600 B.C., and more (Hammond 1991a:185, 187; 1991c:199; 1991e:197; Kosakowsky 1991:195).

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24 For more information about ceramics recovered from the Río Lagartos sites see Ball 1978.

Hammond argued that as Cuello was first being settled it was part of a network of interacting communities which brought exotic goods such as jade to the site through down-the-line trade. Hammond suggested that the marine shell that appears at Cuello was gathered on the coast and traded to the inland site, and that greenstone celts arrived by a coastal route along with obsidian (Hammond 1991a:183; 1991e:197).

In the Late Preclassic period Cuello developed into a larger and more complex community which could import exotics more easily. As noted in Chapter III, the Cuello obsidian collection revealed an unusual pattern of source use. Forty-seven percent came from Ixtepeque, 29 percent from El Chayal, and 24 percent from unknown sources. This pattern is rare because elsewhere in the Lowlands a transition from the San Martin Jilotepeque source to the El Chayal source was taking place. Investigators expected obsidian from these two sources to dominate the Cuello collection. Hammond argued the Preclassic Ixtepeque obsidian at Cuello indicates that, in addition to the inland-riverine route that supplied interior sites, coastal trade routes were already operating (1991b:247; 1991d:198).

**Cerros.** Cerros lies on Chetumal Bay at the mouth of the New River, and probably dominated northernmost Belize during the Late Preclassic period (Sidrys 1983:18). The site is unique among its coastal counterparts in that it clearly played the role of important political and economic center in the Late Preclassic period, boasting extensive monumental architecture and abundant access to exotic goods (Garber 1989:7). A 1.2-km canal circumscribes the site’s main precinct and has been preliminarily assigned to the Middle Preclassic period based on a radiocarbon date (Figure 17) (Sidrys 1983:395). Shoreline erosion has brought bay waters right to the site buildings, but in Precolumbian times it probably sat near the shore rather than directly on it (Freidel 1978:241).

Cerros sits on the proposed cultural boundary between the northern and southern Lowlands, and participated in the same cultural sphere as interior sites of the southern central region. It occupied an ideal location for mediating the flow of trade goods from diverse northern and southern sources, and investigators argued that the site was a transshipment point in long-distance trade during the Preclassic period (Freidel 1978:255, 258-259; Garber 1989:7, 96). Lowland Maya of Belize perhaps also perceived religious significance for Cerros, as the sea was important as a portal to the underworld in the increasingly institutionalized Maya belief system (Chase and Chase 1989:26-27).

Settlement pattern, abundant exotic trade goods, and the location of Cerros combine to suggest the site enjoyed frequent, easy access to exchange networks (Freidel 1978:258). Non-local materials found at Cerros included obsidian, jade, basalt, specular hematite, andesite, and rhyolite from the Highlands, as well as quartzite from the Maya Mountains (Garber 1989:7, 18, 95). All 16 analyzed obsidian artifacts came from the El Chayal source in Guatemala. This strongly supports the proposition that Lowland
Maya relied on El Chayal for obsidian during this period (Nelson 1985:636), and could alternately point to movement of El Chayal obsidian along maritime or inland/riverine distribution networks depending on how evidence from other sites is interpreted (Dreiss 1988:88; Hammond 1991d:198). Investigators documented more than 170 pieces of jade at Cerros, mostly pieces that had been deliberately smashed during termination rituals at the end of the Late Preclassic. Dedicatory caches also contained unbroken jade artifacts, including one impressive cache that yielded 28 jades, seven ceramic vessels, several Spondylus shells, white shell disks, and 86 specular hematite mirror fragments (Garber 1989:47-48, 92). In addition to exotic goods from long-distance trade networks, Cerros obtained finished chert tools and unworked raw chert from Colha through regional distribution networks (Mitchum 1991:52).

At first the role of Cerros in maritime trade seemed to be reinforced by the existence of an artificial jetty at the site, reportedly for docking canoes (Cliff 1986:51), but the feature actually dates to modern times (Guderjan, personal communication 1992). Cerros Structure 112 (Figure 18) has also been identified as a port facility, based on its proximity to the shore and a ramp-like slope that leads from the
Figure 18. Cerros Structure 112, which investigators identified as a possible port facility (From Garber 1989:Figure 5).

water's edge to the top of a mound with sufficient space to serve as storage for trade goods (Garber 1989:7).

Despite Andrew's assertion that Cerros owed its existence to the north-south salt trade (1983:123), long-distance exchange probably did not support day-to-day life at the site. Instead, utilitarian goods and materials could be obtained through local and regional trade networks. Regional and long-distance trade certainly had considerable importance at Cerros, however. More than half of the Late Preclassic manos and metates found at the site were made of materials from the Maya Mountains (Garber 1989:9, 96, 106-108; Mitchum 1991:52).

Occupation at Cerros ceased at the end of the Late Preclassic but the site experienced a resurgence in the Late Postclassic period (Garber 1989:96).

_Lamanai_. Up the New River from Cerros, Lamanai was an important center with well developed occupation by ca. 300 B.C. Little evidence for trade was documented for the Preclassic period, but Pendergast proposed that Lamanai had distant contacts during that time. The site was continually occupied through the Postclassic period, for a total of over 2000 years. Most excavation at Lamanai
focused on areas active in the Postclassic, so most of the evidence pertains to that period (Pendergast 1981:34, 41-42).

Large, impressive buildings were constructed at Lamanai in the Late Preclassic period, one of which (Structure N9-56) supports a large stucco mask remarkably similar to masks uncovered at Cerros, 80 km away (Pendergast 1981:39; Sidrys 1983:9, 160). The two sites probably communicated with one another via the New River.

Also at Lamanai is a 97-m-long feature next to a large depression that fills with water during the rainy season (Figure 19). Buildings associated with the feature date to the Preclassic and Early Classic periods. Pendergast stated that the depression was a harbor in ancient times. As evidence to support the depression as a harbor, Pendergast cited the abundance of corn pollen in sediment cores taken there which he argued indicates the area was used in a way normally restricted to areas with water (Pendergast 1981:34, 40). It is difficult to see how corn pollen indicates the presence of a harbor unless there is documentation of corn offerings thrown into areas with water. Possible use of the depression for intensive agriculture should also be considered.

_Nohmul._ Investigators proposed that Nohmul, first occupied in 1000 B.C., had an early role in riverine trade, transportation, and communication. Throughout its history the site alternately reflected influences of the Petén and northern Yucatán. The site reached a peak in the Late Preclassic, when it boasted grand architecture and a large population (Hammond 1985:763; Hammond et al. 1985:199; Pring and Hammond 1985:527)

Based on the notion that Nohmul probably had a role in trade on the Río Hondo, investigators hypothesized that there should be a structure dating to the Late Preclassic or Early Classic periods at the location where the river passes closest to the site. They predicted the structure would provide plenty of space for stacking traded goods or processing fish, and that breakage in handling would have created some excess of trade goods in cultural deposits near the structure (Pring and Hammond 1985:527).

Indeed, a platform of the expected date existed in the right location, 3.7 km from Nohmul’s center (Figure 20). Material remains had been disturbed by modern people who used the platform to escape floods. A jetty-like feature (Figure 21) near the riverside platform could not be dated, but due to the amount of overlying material investigators suspected it was Pre Columbian (Hammond 1985:533; Pring and Hammond 1985:527).
Figure 19. Map of Lamanai, showing a possible harbor in the upper right corner (After Pendergast 1981:Figure 3). This material is reproduced with the permission of the Journal of Field Archaeology and the Trustees of Boston University.
Figure 20. Map of Nohmul showing the location of a possible Pre-Columbian jetty with respect to the central portion of the site (After Hammond et al. 1985:Figure 2). Courtesy of Dr. Norman Hammond.
Figure 21. Possible jetty at Nohmul (After Pring and Hammond 1985:Figure 5.23). Courtesy of Dr. Norman Hammond.

The investigators did not find excess trade goods at the platform, but noted that because valuable trade items would have been carried to their final destinations, the structure's function still could have supported trade. They did find net sinkers in association with the mound, which suggests fishing or fish processing took place there. In general, the structure's existence where predicted and the artifacts found there support the notion of Nohmul as a riverine port (Pring and Hammond 1985:528).

Occupation at Nohmul continued into the Early Classic period but diminished at that time. Like many other centers in Belize, the site experienced a second fluorescence in the Terminal Classic and Early Postclassic (Hammond et al. 1985:197-198).

Colha. Colha is famous for its well-documented specialized production and distribution of formal chert tools which were used throughout northern Belize in the Late Preclassic, probably for tasks associated with increasingly intensive agriculture. The site flourished during the Late Preclassic period and again in
the Late Classic after an intervening period with little activity (Hester and Shafer 1984:166; Hester and Shafer 1989:1, 3-4; Shafer 1994a:26; 1994b: 152).

Ceramics of Preclassic Colha, continuing into the Classic period, generally relate to those of the Petén and the Pasión River zone (Váldez 1994:13). Exotic and elite artifacts from Colha include two jade artifacts from Middle and Late Preclassic contexts (Potter 1982:112, 118; Dreiss 1982:215). Marine shells were surprisingly prominent at the site. The collection included a Late Preclassic shell of *Pinctada mazatlanica*, a Pacific species of pearl oyster with a distinct luminescent quality; and another that could be *Spondylus princeps*, another Pacific species. In defiance of expectations, all of the shells reported from Colha were marine species (Dreiss 1982:215; 1994:187). Faunal remains at the site also included a surprisingly large number of marine species (Scott 1982:203). Regular contacts with the Caribbean shore seem to have been a feature of life at Colha.²⁶

Some evidence for distribution of Colha chert tools bears directly on maritime trade. The lithic collection at Moho Cay included typologically Late Preclassic artifacts produced at Colha. Many of these had been used at Moho Cay in the Late Preclassic and Late Classic periods, but others were pristine. Hester and Shafer agreed with the characterization of Moho Cay as a trade outlet (Hammond 1982a:68), and suggested the new tools perhaps awaited export to other consumer sites. Colha cherts at other island sites also suggest maritime transport, for example to Hick’s Cay as well as Ambergris Cay in the Terminal Classic period (Hester and Shafer 1989:11).

To study consumption of Colha chert tools in northern Belize investigators gathered information about lithic collections from other excavations around the Maya Lowlands. They also conducted regional surveys to determine how Colha fit into the regional economy, and to determine where chert tools from the site were used. Sites documented by the surveys included Yakalche,²⁷ Northern River Lagoon, Linear Survey Site 8,²⁸ Will Edwards Lagoon, and Rocky Point. In the southern portion of Northern River Lagoon, the Will Edwards site is notable for a canal that Kelly speculated could have been built by the Precolumbian Maya. On Rocky Point there is a mound which he described as strikingly visible and a possible navigation aid to guide canoes from the mouth of the Belize River through dangerous shallows (1982:91-92).

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²⁶ Mock maintained that Colha was accessible during the rainy season by small canoes traveling from Bomba, as well as through Quashie Banner and Rancho Creeks (1994a:183).

²⁷ Yakalche is a heavily looted site that sits between Colha and the Caribbean coast, within about one half day’s travel to three prominent lagoons that might have made good harbors for trade canoes. Kelly proposed Yakalche was a way station for porters, who could get there from Colha in one day if they maintained trails to traverse (1980:51, 53, 55).

²⁸ At Linear Survey Site 8, on high ground near the Northern River Lagoon site, excavators recovered abundant large decorated sherds, chert, obsidian, and plenty of shell and fish bones (Kelly 1982:91).
Chert artifacts from Colha could be consumed as either utilitarian tools or elite, ritual items. Tool exchange took place in a small-scale interaction sphere including inter-polity exchange. Some of it might have taken place at central marketplaces in larger communities such as Nohmul or San Estevan. Petty traders probably traveled short distances to regional centers and farming areas to barter for goods in exchange for the tools they had made (McAnany 1986; Hester and Shafer 1989:4-6).

The primary exchange area for Colha chert tools included northern Belize and southern Quintana Roo, perhaps extending into western, central, coastal, and southern Belize. Within this area Hester and Shafer identified the following sites where chert tools from Colha were consumed in the Preclassic period: Kichpanha, Pulltrouser Swamp, Cuello, Nohmul, San Estevan, Cerros, Santa Rita, El Pozito, Hick’s Cay, and Moho Cay29 (Hester and Shafer 1989:7-11).

At the same time, long-distance trade reached into a peripheral consumer area which included sites such as El Mirador in the Late Preclassic; Tikal and possibly the Petén Lakes; as well as San José, Barton Ramie, Big Falls, and Ponce’s Site in the Late Classic. Chert artifacts traded long distances were primarily macroblades and eccentricss with ritual significance, and Hester and Shafer maintained they were handled by professional, wealthy traders. Chert artifacts from Colha do not appear at sites in the upper Belize River Valley (Hester and Shafer 1989:6, 13), which is significant in light of Hammond’s proposal that the river was a conduit for movement of chert tools into the Petén by canoe (1982a:68).

Ambergris Cay. Counter to its name, Ambergris Cay is a long, narrow peninsula that defines the seaward edge of Chetumal Bay. It is 30 km long, not wider than 4 km at any point, and both coasts are dotted with Maya sites. Investigators found ceramic evidence of Preclassic Maya occupation at Chac Balam and Marco González at opposite ends of Ambergris Cay. At Chac Balam ceramics reflected a small population that possibly interacted with central Belize and the northern Petén (Váldez et al. 1995:95, 112), connections that would be consistent with canoe trade and communication along the Belize or Hondo rivers. Occupation at Chac Balam remained small until the Late to Terminal Classic period (Driver 1995:59, 63).

In contrast, Marco González flourished at a much earlier date, with considerable construction dating to the Late Preclassic and Early Classic, in addition to the Early Postclassic. The site was continually occupied from ca. 100 B.C. at least until the early fourteenth century, and reached its peak in the twelfth and thirteenth centuries. It is the largest known site on Ambergris Cay and one of few that actually benefited somewhat from the Classic-period rise in sea level, which helped sediment accrete at

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29Colha tool consumption in later periods was also documented. Early Classic: Kichpanha, Nohmul, San Estevan, Santa Rita. Late Classic: Kichpanha, Pulltrouser Swamp, Nohmul, San Estevan, Sarteneja, Lamanai, Ambergris Cay, Northern River Lagoon, Hick’s Cay, and Moho Cay. In the Early Postclassic: Kichpanha and Lamanai. In the Late Postclassic: Santa Rita (Hester and Shafer 1989:7-11).
the southern tip of the island (Guderjan, Garber, and Smith 1989:126; Graham 1989:137; Graham and Pendergast 1989:1, 7). Marco González sits in an ideal location for participation in coastal trade, and it undoubtedly took advantage of this location at least in later times, for which abundant evidence for exchange and communication emerged. No comparable role in earlier times has been documented, but the strong possibility remains that inhabitants engaged in maritime trade in the Late Preclassic period.

*Santa Rita, Corozal.* Santa Rita in the Corozal District of Belize lies largely covered by modern Corozal Town between the New and Hondo rivers. From its Preclassic occupation through all of Maya prehistory to the Colonial period the site was an important node on communication networks and in coastal trade (Chase and Chase 1989:25, 31).

Before 1000 B.C. Santa Rita was a small village, and by the Middle Preclassic period trade goods appear at the site, including obsidian as well as jadeite from a Middle Preclassic burial. During the Late Preclassic period Santa Rita boasted a large population and more long-distance trade goods like obsidian arrived there\(^{30}\) (Chase and Chase 1989:25-26). By the Postclassic period the site would become a regional center.

*Kakalche and Watson’s Island.* Kakalche and Watson’s Island are two of the sites in Stann Creek District, Belize, located on the coast at Colson Point. Environmental evidence suggests that in ancient times they were at creek mouths or were cays separate from the mainland. Both were used in the Preclassic period, from ca. 300 B.C. to 50 B.C. (Graham 1994:18, 26-29, 59, 317).

Kakalche and Watson’s Island probably functioned as bases for fishing, shellfish gathering, and perhaps processing the catch. Evidence showed residents’ fishing traditions developed in the Middle Preclassic or earlier, and that they clearly had a considerable wealth of knowledge about exploiting the reef, which suggests ample seafaring skills (Graham 1994:316-317).

Toward the end of the Preclassic and into the beginning of the Early Classic period, ca. A.D. 100-300, finely slipped bichrome and polychrome vessels and sherds occurred in much larger amounts than would have been expected if they were simply the personal possessions of residents. The artifacts occurred in midden contexts as well as ceremonial ones, but would not have been needed by inhabitants whose main occupation was fishing and shell fishing. Graham explained these findings by proposing the vessels were accumulated for trade, and entered the material records of the sites whenever breakage occurred. The ceramics came from the eastern Lowlands and perhaps were imported and exported in intraregional trade networks. Strong ceramic ties do exist between the Colson Point sites and the North Stann

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\(^{30}\) Inhabitants also obtained chert tools through the inter-polity exchange centered at Colha (Dockall and Shafer 1993:168).
Creek and Belize valleys. The presence of a distinctive jar type at both Barton Ramie and Colson Point during the late Preclassic and Early Classic perhaps reflects trade of some material or substance habitually stored inside that type of jar (Graham 1994:40, 245-246).

The Colson Point sites also imported obsidian from highland Guatemala in greater proportions than other sites in the Stann Creek District, perhaps as goods to be exchanged but more likely for use as tools. Most obsidian at the sites dates to the last part of the Preclassic and first part of the Early Classic period. Material came from the El Chayal source almost exclusively, but one artifact came from Ixtepeque and one came from San Martin Jilotepeque. Graham agreed with Dreiss and McKillop that the coastal route operated in the Preclassic carrying obsidian from the El Chayal source and perhaps also the Ixtepeque source (Graham 1994:40-41, 271).

Graham suggested that Kakalche and Watson’s Island were not founded for fishing and shellfish processing alone. Based on the type of faunal remains found there, a better fishing base would have been a cay near or far from shore. Instead, she argued the sites held more importance as maritime trade stations. Sites on Colson Point would have been useful for Maya who were familiar with the sea and were engaged in regional exchange among the various river valleys of the district (1994:316).

During the Late Preclassic and into the Early Classic periods, exchange at Colson Point intensified on local and intra-regional levels, perhaps spurred by possible population growth at nearby inland sites (Graham 1994:316-317).

*Placencia Sites.* Placencia, Placencia Lagoon, Indian Hill 2, and Placencia Cay probably had group interactions with one another and with nearby communities more like interactions typical of closely grouped communities further south on the Bay of Amatique. The Placencia sites were related to or dependent on the inland site of Alabama (Graham 1989:145).

Placencia Lagoon was used from the Preclassic into the Early Classic, and provided a sheltered waterway with access to inland water routes and the communities located along them. The lagoon was a good place for people from inland communities to collect, organize, and redistribute traded goods being exported or imported (Graham 1994:68).

Indian Hill 2 is actually a small island, and was perhaps used as early as the Middle Preclassic, and most intensively in the last part of the Late Preclassic. Based on the site’s location, the presence of fine sherds in its material remains, and trade evidence from the Colson Point sites, Graham suggested the site was involved in inter-community trade on the Caribbean coast (Graham 1994:65, 67).

Placencia Cay seems to have been permanently occupied by the beginning of the Classic period, but modern activity has disturbed the site and little evidence can be gleaned there. The site perhaps served as a way station for coastal canoe navigators at some point during its occupation (Graham 1994:68).
The Southeast

The southeastern periphery of the Yucatán Peninsula, was a transition zone between Maya cultures of the Petén and the Guatemalan Highlands and the non-Maya cultures of Costa Rica and Panama. Conquest-period documents indicate the region was heavily involved in long-distance trade by that time, particularly at Nitó and Naco in northwest Honduras.

Overland and maritime routes probably connected northwest Honduras with Maya centers to the north and Central American ones to the east and south. Initial surveys indicate the area had a long occupation history and that this role as a cultural and economic intermediary reached at least as far back as the Classic period, if not even earlier (Henderson et al. 1979:169, 171, 189). Little excavation has been reported from the region, however—this part of the Maya periphery remains largely unstudied.

Discussion

Preclassic-period remains yielded abundant evidence of far-reaching distribution networks for jade, obsidian, shell, and other elite, exotic goods, particularly from well excavated areas of northern Belize. There is still not enough comparable evidence from coastal and inland sites to determine the importance of maritime trade during this time, but several pieces of evidence hint that coastal networks were emerging. On the north coast at Isla Cerritos an obsidian fragment from Zaragoza, Puebla, in central Mexico, presages the unparalleled importance of Mexican obsidian at the island in later times when the Pachuca and Ucareo sources dominated collections from the site (Andrews et al. 1989:Table 5). Other exotic stones at Isla Cerritos and Dzibilchaltun came from the Maya Highlands. These represent an early convergence of traded materials from Mexico and Guatemala in the northern Lowlands, and hint at functioning maritime trade. In later times Isla Cerritos became an important coastal site in maritime networks.

Several sites thrived around Chetumal Bay in the Preclassic period, with Cerros as the most important among them. Guderjan and Garber stated that the relative lack of occupation on Ambergris in the Preclassic compared to later periods indicates that whatever long-distance trade system brought exotic goods to Cerros did not rely on Ambergris Cay for transshipment (1995a:189). In fact, the thriving site at Marco González certainly could have played such a role, although the direct evidence for it remains as difficult to glean as at later sites on Ambergris and elsewhere.

The Stann Creek sites of Kakalche and Watson's Island meet some of McKillop's criteria for coastal trade stations. Both exhibited greater abundance of obsidian and polychrome ceramics that ordinary fishing outposts. Furthermore, they were strategically positioned on a possible transportation route.
between the Petén (via the Stann Creek Valley), and the Bay of Amatique and northwest Honduras (Graham 1994:71, 245).

Intra- and inter-regional distribution networks for mass-produced chert tools have been documented for Colha in the Late Preclassic period. Similar networks for other goods probably existed. During this time vertically oriented social alliances formed throughout the peninsula so that Maya social hierarchy was institutionalized before the Classic period began. Most items were probably moved by petty traders marketing the products of their own labor, but middlemen traders could have appeared in the Late Preclassic period.

More Preclassic period evidence is needed to illuminate this possibly crucial chapter of Pre Columbian Maya seafaring. In addition to the burgeoning trade in Highland exotics, significant indications of interaction with central Mexico appeared on the north coast at Xcopte and Isla Cerritos and in Belize at Altun Ha. The Laguna de Terminos region promises especially useful information if more excavation results from there can be published. Most of the pertinent archaeological data for this period could lie in totally submerged sites or the lowest, waterlogged levels of extant coastal sites.

THE CLASSIC PERIOD

Despite the perception that coastal occupation diminished after the Preclassic, almost twice as many coastal sites are documented for the Early and Late portions of the Classic period. Most were fishing hamlets but large sites existed on each coast of the peninsula and included ones with public architecture. Widespread coastal-inland trade in marine products took place, as did exchange between the northern and southern Lowlands (Andrews 1990:160).

Andrews postulated a Classic period settlement pattern consisting of large urban settlements located within 20 km of the coast. As examples, he listed Chunuchucmil, Tzemé, Dzibilchaltun, Yalchihom, San Fernando, San Gervasio, Chunyaxche and Altun Ha (Figure 22) (1990:160-161). Beginning in the Early Classic period strong connections with Teotihuacan in central Mexico appear in Maya art and artifact assemblages of the southern Lowlands, including distinctive ceramics and green obsidian (Ball 1978:115; Rovner 1975:128-129). Mayanists view the relatively large quantities of green obsidian at Tikal and Altun Ha as evidence for direct interaction with Teotihuacan (Andrews et al. 1989:360).
The Southwest

Coastal settlements existed in the southwest and western part of the Yucatán Peninsula during the Classic period but, as for all periods, they are poorly known. On an early visit to southwest Campeche E. Wyllys Andrews noted heavy occupation in the region, with most of the surface remains dating to the Postclassic period. Various archaeologists who have documented Pre-Columbian settlement in Campeche and around the Grijalva-Usumacinta river systems, including Aguacatal and Isla del Carmen, concluded that while the remains are definitely Maya with relationships to the Petén (Andrews 1943:51-61, 88-89; Matheny 1970:120), sites in the region seem to have been independent from the interior (Lhuillier 1969:274, 277; Ball 1978:129, 130-131).

The North

Early connections to Gulf Coast cultures appear in Puuc zone architecture during the Classic period, perhaps indicating commercial ties between the two areas (Robles Castellano and Andrews 1986:82). On the north coast important sites grew at Holbach, Isla Cerritos, Emal, and El Cuyo. Andrews argued for large-scale salt production at northern sites during this period, stating that major complexes of salt pans and associated administrative centers exist at Xtempú, San Crisanto, La Providencia, Las Coloradas, and El Cuyo.

Consolidation at a few large sites reflected a shift from salt making as a cottage industry to large-scale production. Centers located 20-30 km inland perhaps controlled stretches of adjacent coastline and salt production, as well as exploitation of marine resources within the coastal domains (Andrews 1978:84; 1983:31, 124; 1990:160; Ball 1978:130).

Isla Cerritos remained occupied in the Classic period, but little evidence of activity is reported (Andrews et al. 1988:196). The site's most important occupation phase began later, in the Terminal Classic-Early Postclassic period.

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31 See Andrews (1943) for more information about Tiradero, Desegaño, and Moral. See Piña Chan and Navarrete (1967) for more information about Classic period occupation on the Grijalva River, including San Miguel, San Fernando, Tierra Nueva, and in the Las Palmas region. See Ball (1978) for more about ceramic collections from coastal sites, as well as an Early Classic occupation at Horno (1978:129-130). See Lhuillier (1969:154, Table 2) for more information about Classic occupation at Campeche.
Figure 22. Sites that potentially participated in maritime trade networks during the Classic period.

An aerial survey of the 100-km, mangrove-covered coastal stretch between Campeche and Celestun identified only three sites at Islas Jaina, Piedras, and Uaymil, but showed several straight waterways running inland from the shore for several kilometers. Eaton noted that they appeared to be
artificial channels and speculated that they had been constructed for canoe traffic in Pre Columbian times. Subsequent reconnaissance from a small fishing boat revealed 103 waterways distinguished only by their straightness (Eaton 1978:30). During historical times canals were opened and used for exploitation of inland lumber resources, and it is possible that at least some canals existed during the Pre Columbian era when they could be used for canoe transportation. Some canals were natural formations and others might have been constructed artificially (Robles Castellano and Andrews 1986:70-71).

_Islas Jaina, Piedras, and Uaymil._ Isla Jaina is a small island about 40 m from the northwest coast of the Yucatán Peninsula, just over 1 km wide at its widest point. Early visitors to the site characterized it as a burial island, but it clearly supported a resident population beginning in the Classic period and continuing in the Terminal Classic-Early Postclassic. Two other small islands nearby, Isla Piedras and Isla Uaymil, were probably also occupied (Eaton 1978:29, 64; Lhuillier 1969:164). Ceramic spheres of the northwest differed from those in the southwest or northeast coasts, except in the case of Tituc Orange Polychrome. This ware appeared on Islas Jaina, Piedras, and Uaymil in addition to the north and east coasts of the peninsula, perhaps indicating that a maritime trade route linked the northwest, north, and east coasts (Ball 1978:130-131).

Lhuillier stated that Isla Jaina was a natural feature built up with _sascab_ by coastal residents (1969:165), but Eaton argued that it was completely artificially constructed. The largest structure on the island is over 20 m high and can be seen from a distance at sea (Eaton 1978:29, 64).

The site yielded 28 pieces of gray and black obsidian and pieces of basalt. Green obsidian found on the island might date to the Early Postclassic, but this remains uncertain. Visitors to the island in the 1930s reported the captivating clay figurines for which the island is famous, spear points, stone axes, obsidian blades, pieces of jade, agate and shell artifacts, and a stone stela bearing a Late Classic date. Since that time the island has been heavily looted (Lhuillier 1969:74; Eaton 1978:29, 48, 50).

Isla Piedras is currently only about 400 m in diameter and sits roughly 50 m from the mangrove-lined shore. Eaton argued that the island is also artificial, with the same occupation dates as Isla Jaina. Likewise, the site included many burials and has been heavily looted. Isla Uaymil is similar to Isla Piedras, but it is located in the coastal mangrove swamp, about 2 km from open coastal water. Both islands yielded pieces of basalt, green obsidian and gray obsidian (1978:29-30, 48, 50).

_Dzibilchaltun._ Classic period deposits at Dzibilchaltun yielded far more exotic trade goods than Preclassic deposits. The presence of high quality jades in standard Early Classic styles at Dzibilchaltun reflects connections with mainstream Maya culture in an “integrated system of dendritic, overlapping, interlocking, multiple linkages among coastal and interior communities” (Taschek 1981:569). Taschek

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12 A calcareous sand used as building material by the Pre Columbian Maya.
characterized Dzibilchaltun's access to elite, luxury items as that of a small, provincial community receiving goods through redistribution from a large, powerful center. 33 Stone artifacts at the site, she maintained, arrived as the result of transitory contacts with mainstream elites of the southern and central Lowlands and the Usumacinta-Pasión river drainage. Dzibilchaltun had no ceramics from the Petén, and an apparent increase in obsidian compared to earlier periods is based on too small a sample to be reliable. Dzibilchaltun did enjoy some importance during the Early Classic, perhaps because it was well positioned for coastal-inland trade in salt and marine resources. As exchange in these items grew in the northern Lowlands, satellite communities such as Dzibilchaltun attained a degree of prosperity (Taschek 1981:572-577, 581, 584).

The East

Cobá. During the Classic period the east coast was home to a substantial Maya population with a large urban center at Cobá, 40 km from the east coast. According to Folan, exotic trade goods imported to Cobá during the Classic period included large quantities of jade, pearls, and shell (1983:68-69). Seven pieces of obsidian from Classic period contexts came from the El Chayal source in highland Guatemala, consistent with the general Lowland trend for the period (Nelson et al. 1983:212).

Cobá residents constructed a complex water system consisting of dikes around lakes and water holes, catch basins, cenotes, wells, and possible canals linking five small lakes in the occupied area of the site. At least in part, the Cobá lakes consist of Classic-period rock quarries that filled with water, perhaps in the Late or Terminal Classic. In the late nineteenth century a visitor to the site reported seeing a mound in the middle of a lake at Cobá but no such mound was noted by later visitors and none exists now (Folan 1983:3, 50, Table 14.1; Folan et al. 1983:455-456).

Architecture at Cobá relates more strongly to the Petén traditions than those of Yucatán (Folan 1983:58), and ceramics also show Petén affiliations (Tozzer 1957a:14-15). Some have suggested that a corridor of Petén-related culture extended northward to Cobá and its surroundings, and Andrews argued that this corridor was a coastal, maritime one with goods moving through the coastal site of Xelha. Andrews further suggested that Cobá functioned as an intermediary transshipment goods to north-central and northwest Yucatán via its main sacbe to Yaxuná (1990:161).

33 Evidence from exotic trade goods at Dzibilchaltun is consistent with exchange through central place redistribution, the trade mode characteristic of social control based on personal interaction rather than institutionalized roles independent of the individuals who held them. Elite goods enclosed in burials rather than public caches at Dzibilchaltun reflect the personal nature of leadership at the site. The central place that fed exotic goods to the site restricted the status of its satellites by manipulating access to luxury items such as jades, thus creating the uniform collection documented in the archaeological record (Taschek 1981:582-583).
Sacbes, raised Pre Columbian roads, connected groups within the city and extended to surrounding sites, including Ixil (20 km to the southwest) and Yaxuná (100 km west of Cobá). Most sacbes at Cobá date to the Classic period but the longest one, to Yaxuná, dates to the Terminal Classic period. Sacbes not only facilitated travel and communication, particularly during the rainy season, but they also formed links within and among sites that were important socially, ritually, militarily, and commercially. Some proposed that sacbes connected rural production areas with markets located in political centers (Folan 1983:53-54; Robles Castellano and Andrews 1986:70). Robles Castellano argued that communication and transportation links enabled by these sacbes allowed Cobá to control the economics and politics of the eastern Yucatán Peninsula (1981:107).

The unconfirmed report of a building in the middle of a lake at Cobá is particularly intriguing in light of the Terminal Classic mural at Chichén Itzá depicting such a landscape. Creation of the lakes during the Late and Terminal Classic period is consistent with creation of the Chichén Itzá mural. For more details see the section of this chapter on the Terminal Classic-Early Postclassic transition period.

The Northeast Coast: Cozumel, Tancah, and Xelha. On Cozumel Island, Classic period ceramics appeared at several sites. Most polychromes there form part of a regional tradition related to Yucatán rather than the southern Lowlands, but trade wares do occur during the Classic as they did in the Late Preclassic (Connor 1975:118, 126-129). An example of Petén Polychrome from a tomb at San Gervasio constitutes the only evidence for contact with the Classic Maya of the south.

At Tancah, Early Classic burials contained marine products, gray obsidian, pyrite, and jade. One jade pendant of the period resembles a similar piece from Santa Rita on Chetumal Bay. Other possible trade goods documented at Tancah included Puuc Slate vessels, green serpentine beads, jade from Late Classic contexts and an undated piece of a granite metate found on the surface (Miller 1977:103-104).

The Xelha inlet is the largest and most secure natural harbor on the central coast of the Yucatán Peninsula (Figure 23). The Maya site located there was occupied continually from the Early Classic period to the sixteenth century, with its most significant occupation during the Classic period and a possible occupation of diminished importance in the Late Postclassic period (Robles Castellano 1981:104-105, 110; Robles Castellano and Andrews 1986:64).

Xelha consists of three architectural groups joined by a sacbe about 1 km long and 6 m wide (Robles Castellano 1981:101). A Teotihuacan-style mural at Xelha dates to the Early Classic period (Robles Castellano and Andrews 1986:64, 73). A miniature coastal shrine sits on the north shore of the inlet, and a “jetty-like sacbe” connects a small island in the inlet to the mainland (Farris and Miller 1977:148-149; Miller 1982:70).
Xelha, Cobá, and Yaxuná together define a straight line from the Caribbean coast to the central-north part of the Yucatán Peninsula. Robles Castellano argued that all three sites acted as intermediaries in a Classic-period trade route stretched across the eastern peninsula, with Xelha functioning as a port. He suggested that Xelha sat on a critical point of the coastal maritime route, at the place where land and sea routes converged. Trade goods arrived by sea from Belize and by land from the northwest peninsula through Cobá (Robles Castellano 1981:101, 110-111).

A troublesome problem with this scenario is the lack of a sacbe between Xelha and Cobá, despite the fact that Xelha has an internal sacbe system and greater proximity to Cobá than does Yaxuná. To explain this discrepancy, Robles Castellano proposed that Xelha functioned as a formal port of trade—elites at Cobá allowed Xelha to remain independent in order to concentrate administrative resources toward its more insecure western border. Unlike sites further west, Xelha remained comparatively weak and posed no threat to Cobá’s dominance. According to Robles Castellano, a road from Cobá to Xelha would have been a undesirable outward manifestation of political control, when in fact a mutually
beneficial trade relationship existed between the sites that required no administrative investment. In this scenario merchants and their trade goods flowed freely between the coast and Cobá even though no *sacbe* existed to facilitate travel (Robles Castellano 1981:64, 110-111)

Robles Castellano predicted that if Xelha was a port of trade, the archaeological remains there should include a pier, storage areas, a large resident population, and separate facilities for foreign merchants (1981:113). In addition, monumental administrative and religious buildings would reflect a concentration of wealth at the site despite its small size. Evidence for such remains has not yet been reported from the site.

Farriss and Miller surveyed and test pitted the inlet in an unsuccessful search for Maya canoes that once might have docked at the site. They determined that the inlet sediment does contain substantial material evidence from the Postclassic period, however, including ceramics and well-preserved organic material. They uncovered a charred timber and rubble stones that showed signs of burning, among other artifacts. The survey showed that Xelha inlet could preserve an intact Maya canoe in its anaerobic sediment, and merits further investigation (Farriss and Miller 1977:150).

*Northeast Belize.* Numerous sites in northern Belize had access to exotic trade goods such as jade and obsidian. A distinctive double-mouth jar that Sidrys suggested was made at Aventura appears at Uxmal in the Puuc Hills, and other ceramic ties linked northern Belize and the northern Yucatán Peninsula during this period. Fish remains from sites in northern Belize indicated the Maya residents relied primarily on resources close to shore for their subsistence, and did not usually venture far offshore. Sarteneja constituted an exception, however, and remains there reflect regular trips to the barrier reef to exploit marine resources (1983:346, 381, 384).

Specialized production of chert tools continued at Colha during the Classic period, but on a lesser scale than during the Late Preclassic. Empirical evidence from lithic remains shows that the exchange network through which the producer community of Colha provided tools to its consumer community at Pulltrouser Swamp remained remarkably stable through the Classic period despite political changes occurring at that time. The exchange system that distributed Colha-produced tools was a component of an economic system that seems to have operated independently of political happenings (McAnany 1986:248-249, 251, 256-257, 271).

*Ambergris Cay.* Early Classic remains on Ambergris Cay have been documented at Chac Balam, Ek Luum, Laguna de Cayo Francesa, Marco González, and the now-submerged Yalamha (Figure 24).

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Figure 24. Archaeological sites on Ambergris Cay, and its relationship to the east-coast barrier reef (After Guderjan 1995d:Figure 2).

Population was expanding at Chac Balam during that time and ultimately reached a peak in the Late Classic. Marco González was a flourishing trade center at the beginning of the Classic period, ca. A.D. 300-400. The site evidently hosted a substantial population during the Early Classic, but activity remains largely obscured by later construction (Driver 1995:47-51; Graham 1992:3; Guderjan 1995b:149, 151; Váldez et al. 1995:95, 104).

Guderjan characterized settlements on the leeward, western side of the island as strategically placed to take advantage of natural harbors. Leeward sites display formal architecture and they had greater
access to exotic trade goods. They seem wealthier than windward sites, and perhaps had greater participation in maritime trade. At leeward sites the ratios of imported exotics to local materials at San Juan and Chac Balam is roughly the same as at Cozumel. By contrast windward-side sites are smaller with less formal architecture and investigators characterized them as poorer with less access to exotics (Guderjan 1988:66; Guderjan et al. 1989:124; Guderjan and Garber 1995a:186-189).

The east-coast barrier reef protects the seaward, windward shore of Ambergris Cay along its entire length except between Rocky Point and Robles Point. There the reef hugs the shoreline for a treacherous 1.5-km stretch. To proceed past this section of coast, navigators must depart the calm waters inside the reef through narrow passages, then travel outside the reef and endure the rougher conditions before crossing back into protected waters through more narrow openings at the opposite end. Outside the reef, waves commonly reach more than 3 m in height while inside the reef, wave heights reach only 1 m or less over shallower, clear waters (Guderjan, Garber, and Smith 1989:123; Guderjan 1995c:2).

At the north end of Ambergris a narrow waterway called Bacalar Chico separates the “cay” from mainland Quintana Roo. Guderjan argued that the waterway is a partially artificial canal constructed by the Maya to create access to the leeward shore, thereby allowing canoes to traverse the length of Ambergris without braving the obstacles at Rocky Point. The portion he believes to be artificial is about 1 km long and 3-4 m wide (Guderjan, Garber, and Smith 1989:124). If open during the appropriate chronological periods, Bacalar Chico provided access to Blue Creek, Cerros, Santa Rita, Ixpaatun, Nohmul, and Lamanai from the Caribbean coast.

Several secondary canals join Bacalar Chico, the most prominent of which connects Laguna de Cantena and the site of Burning Water to the main canal. The main canal meanders, but the secondary passage is straight and passes within a few meters of lagoons that might have been incorporated into the waterway. Guderjan and Garber concluded that this characteristic suggests the canal is a man-made feature, but accurate information about the lagoon’s boundaries before Classic-period sea level rise could affect this assessment. Smaller channels located at Laguna de Cayo Francesa and Chac Balam, Laguna de Boca Ciega might have been at least partially artificial. Guderjan and Garber suggested Ambergris residents perhaps enhanced low-lying drainages to create them (1995a:188).

Whether or not the Maya built the canal, Guderjan argued that the canal definitely existed by A.D. 600, and perhaps in earlier times when traders going to and from Cerros might have had use for it. To support this contention, Guderjan offered two lines of evidence. First, two important Ambergris sites, San Juan and Chac Balam, sit on the trade route the channel would have created. Both yielded quantities of exotic trade goods, and Guderjan argued that it would have been extremely unlikely for either to have significant access to long-distance trade unless they enjoyed a direct connection to the coastal route. Second, at San Juan he recovered a deposit of conch shells which dated to A.D. 600. The Maya had
consumed the animals inside. Conch live only on the floor of the open sea on the windward side of the
island, and Guderjan maintained that due to their bulky nature it is more likely that the Maya brought
them to the site by boat rather than carrying them overland (Guderjan 1988:80, 85; 1995b:148; 1995c:2;
Guderjan and Garber 1995a:183, 185).

The argument for the existence of Bacalar Chico in Pre-Columbian times remains weak, and there
is no solid evidence that the Maya had a hand in constructing it. Neither is there evidence to refute
Guderjan’s assessment, and the Maya certainly had the skills and organization to undertake such a project
as shown by extensive waterworks at Edzna,35 Cerros, and many other sites. Still, the Guderjan’s
conclusions concerning Bacalar Chico must be considered tentative until archaeological or geological
evidence for its creation is reported.

Another intriguing feature at Chac Balam concerns maritime trade—an L-shaped excavation that
provided water-borne access to the site from the lee shore of the island, and which Guderjan characterized
as a possible artificial harbor. The 15-m-wide channel proceeds inland in a direction perpendicular to the
shore for about 50-75 m, then turns 90 degrees and proceeds another 25 m, before ending within about 100 m of the site (Guderjan, personal communication 1992; Guderjan 1995c:3). Exotic trade goods were
present at Chac Balam, but not in large enough quantities to suggest the site had a distinguished role in
trade. Guderjan proposed that a Terminal Classic-Early Postclassic burial at the site belonged to a
prosperous merchant, but presented no convincing evidence to support the conclusion (1995b:153).

Santa Rita, Corozal. Chase and Chase proposed that after the fall of Cerros by the Early Classic period,
Santa Rita controlled access to all of Chetumal Bay and the adjacent river systems. They maintained that
Santa Rita traded with communities down the Río Hondo into the Petén and along the east coast of the

Ceramics, elite symbolism, and architecture at the site are all similar to Petén examples, and
residents had access to the full inventory of trade goods valued by the Maya. An Early Classic tomb and
associated cache included pottery, Spondylus shell, jadeite ornaments, shell artifacts, a set of elaborate
shell and jadeite mosaic earflares, a flint ceremonial bar, a jadeite and shell mask, and stingray spines.
Another Early Classic burial contained even more jadeite artifacts (Chase and Chase 1988:33, 35; 1986;

35 During the Late Preclassic period the Edzna residents built a canal and reservoir system that served to drain
waterlogged land and help defend the community. Moats surrounded a building nicknamed “the fortress” and
connected to a 12-km-long canal which was reportedly wide enough for canoe navigation (Matheny et al.
Early Classic trade at Santa Rita focused primarily on intra-Maya exchange and communication. Population was small but well established, forging its important trade connections by providing ritually important marine items to inland centers such as Tikal (Chase and Chase 1989:29).

Teotihuacan artistic styles and iconography appear at Santa Rita in the Early Classic as in southern Quintana Roo and at many inland sites. Mayanists usually interpret these as evidence for strong contact with Teotihuacan. Chase and Chase proposed an alternative, citing evidence that Teotihuacan-style tripod vessels have a long developmental sequence in the Maya Lowlands and can be seen as part of a pan-Mesoamerican development, perhaps even with roots in the Maya area. Strong communication links existed between the Maya and central Mexican centers, and the Maya had a more active role in these relationships than previously acknowledged. Communication with central Mexico would become even more important in the Postclassic period, when Santa Rita reached its peak (Chase and Chase 1988:11; 1989:24).

_Altun Ha._ Occupation at Altun Ha continued from the Preclassic period through the Classic to ca. A.D. 900. A unique burial and Teotihuacan-style cache of exotic trade goods at the site was deposited at the very beginning of the Classic period, probably ca. A.D. 250-275. It included 95 pieces of jade, 172 jade fragments, 22 ceramic vessels, large quantities of worked shells including Pacific species, pearls, animal teeth, and 258 pieces of green obsidian from Pachuca. Two hundred forty-five of the green obsidian artifacts were small eccentric artifacts in the shapes of human figurines and other unusual forms (Figure 25) (Pendergast 1971:456; 1982b:200; 1992:265-272, 275).

The assemblage of artifacts contained in this offering is virtually identical to artifacts at Teotihuacan that date to ca. A.D. 150-200, and is the only evidence of Teotihuacan material at Altun Ha. Pendergast concluded that the cache had been transported to Altun Ha as a single, meaningful entity that could not have passed through many intermediaries without losing its significance and much of its form. The ceramic vessels alone were not clearly diagnostic of Teotihuacan, rather the cache assemblage and the artifact styles led Pendergast to his conclusion (1971:456-459).

The cache contents do not undermine the assertion that cultural attributes normally attributed to Teotihuacan influence might actually have been products of a growing pan-Mesoamerican set of artistic characteristics (Chase and Chase 1989:24). Instead, the cache represents direct contact between the Maya and the Teotihuacanos very early in the Classic period, two centuries earlier than the first recognized Teotihuacan material at Tikal. Early Classic Maya artifacts have also been found at Teotihuacan. Pendergast suggested that the evidence from both sites represents “the beginning of a two-way flow of ideas and materials” which manifested itself more strongly in the remains at Tikal later in the Classic period (Pendergast 1971:459; Boxt 1989:45-46). Indeed, the Altun Ha cache could represent the type of
Figure 25. Examples of eccentric, green obsidian artifacts from tomb F-8/1(B) at Altun Ha. These artifacts formed part of a cache that Pendergast interpreted as an assemblage brought intact from Teotihuacan, ca. A.D. 250-275 (From Pendergast 1990a:Figure 120). Reproduced with permission of the Royal Ontario Museum.

occasional, but pivotal contacts among elites that sowed the seeds for more important trade ties in later times.

Moho Cay. Moho Cay, a small island at the mouth of the Belize River, surprised archaeologists with its large quantity of exotic trade goods. The site was most active in the middle of the Classic period, ca. A.D. 400-700, but Preclassic and Late Postclassic remains were also present. Moho Cay was unusual in that evidence from the site reflected clear orientation toward maritime trade routes. Excavation conducted before the site was destroyed revealed the tiny island’s significant role in Classic-period trade and maritime activity36 (Healy and McKillop 1980:11; McKillop 1987:109-110; Jackson and McKillop 1989:103).

36 Moho Cay was completely destroyed by dredging in 1980 (Jackson and McKillop 1989:99).
Moho Cay residents relied heavily on marine resources for subsistence, but unlike their peers at other Maya sites they especially depended on manatee meat, which constituted fully 86 percent of the total estimated meat consumed at the site. Ethnohistoric accounts described canoe-borne manatee hunts that resemble modern hunts of Central America, and the Preclassic Maya likely used the same techniques. From a canoe, hunters spear the manatee using a harpoon with ropes and a float attached, then allow the float to buoy the harpoon line as the hunters tow the catch to shore (McKillop 1984:25-35; 1985:340).

Moho Cay residents might have exploited marine and estuary resources not only for local consumption but also regional exchange. Some of the Early Classic ceramics at the site are associated with salt-making, which opens the possibility that residents also produced salt to trade inland (Mock 1994a:80).

Classic period ceramics at Moho Cay consisted of ceremonial and utilitarian vessels, including fine polychromes in Classic southern Lowland styles and “Teotihuacan-style” tripod vessels. Moho Cay polychromes also resemble wares found along the coast and Healy and McKillop stated they reflect ties to the north and west coasts of the peninsula. Still other ceramic affiliations relate the site to northern Belize, especially Altun Ha, San José, San Estevan, and Cuello (Healy and McKillop 1980:11, 14; Jackson and McKillop 1989:99).

Moho Cay yielded abundant chert artifacts, including numerous chert stemmed points. Little chert debitage existed at the site, indicating that the tools were imported as finished products and only retouched on the island. As noted previously, many chert tools on Moho Cay remained unused, hinting they were bound for coastal trade networks. Other artifacts included gray obsidian cores, blades, and blade fragments, notched sherds and stones used as fishing tackle, granite, quartzite, basalt grinding stones, jade, greenstone earflares, and carvings of manatee bone. One of the manatee-bone carvings represents a canoe and strongly resembles a similar artifact from Altun Ha (Healy and McKillop 1980:11-12; Healy et al. 1984:416; McKillop 1980:30-31; 1985:343-344; Jackson and McKillop 1989:99). For detailed discussion of both carvings see Chapter V.

Hammond proposed that Moho Cay was a transshipment point or some type of trade node for coastal trade based on the quantity and variety of artifacts found there (Hammond 1976:73, 78). Investigators agreed that the site probably had a strategic function in coastal trade in the Classic period. The Belize River formed an important trade route to the Maya interior and Moho Cay’s position on the junction of the riverine route with a coastal, maritime one undoubtedly contributed to its participation in trade (Healy et al. 1984:415-416; Jackson and McKillop 1989:103; Mock 1994a:80).

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37 Manatee is also documented as a lesser proportion of the diet at Cancun, Cerros, the north and west Yucatán
The abundance and quality of imported goods at Moho Cay reflect its participation in extensive communication networks of the Middle Classic, a time of rich interregional interactions. Moho Cay inhabitants probably obtained their exotics directly from long-distance traders instead of from a redistribution center like most other Maya sites. On the other hand, the presence of materials from nearby resource zones indicates that trade at Moho Cay included a local component (Healy and McKillop 1980:12; Jackson and McKillop 1989:93, 108).

The archaeologists who investigated Moho Cay materials directly addressed Hammond's proposal for differential distribution of obsidian by inland-riverine (San Martin Jilotepeque and El Chayal sources) or coastal (Ixtepeque source) routes. Twelve of 13 obsidian artifacts analyzed from the site came from El Chayal. At the same time that it was the most popular source, however, El Chayal obsidian was converted to blades more efficiently than Ixtepeque obsidian (Jackson and McKillop 1989:109). This would normally indicate less access to El Chayal obsidian at Moho Cay. From this evidence investigators concluded that obsidian distribution took place over multiple transportation routes and that El Chayal obsidian could arrive at coastal sites via either inland or coastal networks (Healy et al. 1984:415-416).

Overall, archaeologists recovered a large amount of obsidian from Moho Cay. Only 112 blades were excavated, but hundreds more were found in surface deposits and underwater deposits, as well as from dredge deposits after the site was leveled (Jackson and McKillop 1989:93). Mock found some evidence from the lithic collection to suggest blade production took place on the island, perhaps for export.38 This supports the notion that Moho Cay had a strategic role in maritime trade (Mock 1994a:232).

The Southeast

The study of Pre Columbian Maya maritime trade owes much to the Point Placencia Project, the goal of which was to document coastal sites of southern Belize in the context of their relationships to one another. To do this, a survey team visited "every cay, rock, and mangrove patch" in the Stann Creek District from Crow's Nest Cay to Indian Hill Lagoon 45 km south. In each case the team collected remains from the surface and investigated the underwater surroundings. Investigators documented 24 sites with mostly Classic and Postclassic remains (Figure 26) (MacKinnon 1989:111-113).

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38 The collection of 194 obsidian artifacts from Moho Cay included 5 complete blades and 87 fragments. Mock also noted 92 blades and fragments from the surface and three exhausted obsidian cores (Mock 1994a:232).
The project revealed distinct patterns in the use of coastal and island sites through time. MacKinnon concluded that during the Classic period coastal residents of southern Belize engaged in resource procurement but not exchange. He suggested that Classic-period maritime routes generally hugged the coastline and avoided cays of the inner and outer portions of the barrier reef. He also argued that coastal networks were not highly organized and did not move large volumes of trade goods compared to later periods. As evidence, he pointed to the fact that despite a sizable inland population in the Stann

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39 MacKinnon did not address the possibility that marine resources themselves constituted trade goods on the coastal-inland networks.
Creek District, only the small site of Placencia Cay can be characterized as a coastal trade station (1989:113, 121).

After thorough efforts to locate submerged or dry sites on and near the coast, MacKinnon stated confidently that Placencia Cay is the only site in the Placencia area with Classic-period material remains. North and south of the Placencia area activity has been documented at Frenchman’s Cay, Wild Cane Cay, Stuart Cay, Moho Cay, Ambergris Cay, Hick’s Cay and Grand Bogue Point in the Turneffe Islands (1989:114-115).

Placencia Cay boasted intensive occupation in the Early Classic and yielded considerable Late Classic evidence mixed with later material of the Postclassic. MacKinnon suggested that the site had a sheltered harbor in Precolombian times as it does today and characterized it as a possible transshipment point linking the maritime trade route with the inland center of Alabama, also called C’hacben K’ax (1986:81; 1989:115).

Artifacts recovered on False Cay included ceramics related to those of mainland sites in the Cayo and Toledo districts of Belize. Part of the False Cay archaeological site now lies underwater, and submerged deposits yielded a carved jade in the form of a human hand similar to one from the Sacred Cenote at Chichén Itzá (MacKinnon 1986:81-82).

False Cay yielded a greater abundance of chert, debris, and antler tools than any other site in the Stann Creek District. Furthermore, the chert tools at the site showed almost no usewear or evidence that they had been retouched. MacKinnon proposed that residents imported raw chert via coastal trade routes, produced tools, and traded them to the interior (1986:80).

Both False Cay and Placencia Cay participated in coastal trade networks. Maritime navigators in the vicinity of either would always be within sight of landfall even when venturing considerable distances offshore. Further south, past Laughing Bird Cay and Ranguana Cay and about 20-30 km southeast of Placencia, the proposed route proceeds out of sight of land and becomes difficult as it passes through rough, unprotected waters. MacKinnon referred to the possibility that the limitations of Maya watercraft in the Classic could account for the predominance of coast-hugging maritime routes. On the other hand, he correctly noted that watercraft did not seem to limit Maya navigation, as Precolumbian activity is evident at Grand Bogue Point 50 km offshore, as well as Hunting and Sapodilla Cays. MacKinnon favored his own suggestion that maritime trade routes ultimately endeavored to bring goods to rivers of southern Belize and Guatemala, and hence the interior populations of the southern Lowlands. Under these circumstances the most direct route hugged the shore. There is Lowland evidence for exchange with cultures farther south and east, but MacKinnon suggested that, at least during the Classic period, such contacts might have been intermittent or handled through intermediaries (1986:81; 1989:115-116).
Current trade evidence from the southeast periphery of the Maya world supports MacKinnon’s notion that trade with northwest Honduras was only beginning during the Classic period. Western Honduras and El Salvador provided the earliest metals that appear in Maya contexts, and these seem to start trickling into the Maya region beginning in the eighth century. Convincing evidence exists to show that inhabitants of the Bay Islands and the Maya near Quirigua on the Motagua River produced copper bells. A large collection of copper artifacts, including possible ingots, was documented near the Chamelecon River in northwest Honduras (Lothrop 1952:22-25, 108-110).

Like the Point Placencia Project, the South Coastal Archaeology in Belize (SCAB) project documented settlement and relationships among sites in south coastal Belize from the Protoclassic through the Postclassic, A.D. 1-1500. The project’s goals were to catalog distinctive characteristics of a coastal trade port at Wild Cane Cay, determine if trade in commodities and utilitarian items was different and separate from elite trade in luxury goods, and investigate how long-distance trade was integrated into the regional economy of nearby settlements on the coast (McKillop 1996:49, 52, 56).

Investigators found that non-elites in the south coastal Belize region had access to exotic goods throughout the occupations there. They used obsidian from the same sources evident at Wild Cane Cay, which supports the notion that the latter supplied obsidian to its surrounding communities. During the Classic period obsidian from both El Chayal and Ixtepeque appeared at south coastal sites. Either El Chayal obsidian arrived via inland exchange networks or material from both sources was transported by coastal routes. Obsidian from other sources also appeared, including green obsidian from Pachuca (McKillop 1996:56-57).

Exotic artifacts from Classic period contexts on Wild Cane Cay originated only in regions south and west of the island, but in later times the inventory expanded to include goods from the north. Obsidian on the island came from El Chayal, Ixtepeque, and Unknown Source Z which is believed to be in the upper Motagua drainage. Wild Cane Cay residents probably obtained trade goods directly from long-distance traders rather than through a redistribution center like other Maya sites (Jackson and McKillop 1989:93, 104; McKillop 1989a:48).

Discussion

Compared to other periods of Maya prehistory the archaeological evidence for maritime trade in the Classic period is somewhat limited. Coastal occupation and activity clearly held considerable importance, however, and it would be premature to conclude that maritime trade experienced a lull in favor of inland routes. As with the Preclassic period, much more evidence could emerge from waterlogged and submerged deposits when they are excavated.
During the Classic Period Highland trade goods continued to arrive in the northernmost parts of the Yucatán Peninsula, and extensive communication networks manifested themselves both in material influences of the Petén found at sites in Quintana Roo, and in burgeoning connections with central Mexican groups found throughout the Lowlands. The absence of Petén-related traits in the material remains of Cozumel weakens the notion of a corridor of Petén influences stretching along the east coast unless the trade and communication route veered inland at Xelha as some have proposed (Robles Castellano 1981:111; Andrews 1990:161). The proposition is further weakened, however, by the lack of a sacbe between Xelha and Cobá, precisely where convenient travel would be most necessary if the east coast was Cobá’s gateway to the southern Lowlands. Instead, the east coast’s cultural influences came from the west, prefiguring their expansion from that region in later times.

Bacalar Chico at the north end of Ambergris Cay perhaps existed during the Classic period, whether or not it was built by the Maya. If so, the passage undoubtedly facilitated the task of maneuvering watercraft in and out of Chetumal Bay for navigators coming from and going to points farther north. Moho Cay, Placencia Cay, False Cay, and Wild Cane Cay could have been stops on a maritime route or routes to the south. Although Maya navigators clearly ventured offshore to the Turneffe Islands during the Classic period, conclusive evidence indicates they did not use the potential offshore route from Placencia to northwest Honduras. It appears that trade with the southeast Maya periphery began and intensified during the Classic period, but for the time being it relied on coast-hugging canoe routes.

THE LATE CLASSIC PERIOD

During the Late Classic period changes start to occur in the Maya Lowlands that pertain to the apparently sudden decline of the southern Lowland centers. Not all investigators differentiate between Early Classic and Late Classic, however, which complicates the task of comparing the material remains across the Maya region. An oft-cited characteristic of the Late Classic period concerns the perceived expansion of north-central ceramic traditions to the east, as well as south into northern Belize (Sidrys 1983:13). Mayanists typically associate this with commercial or military expansion from the northern Lowlands toward the communities around Chetumal Bay and further south.

The Southwest

Berlin attributed the first significant occupation of the Grijalva River region to the Late Classic period, during which flint, limestone, and obsidian imports indicate possible trade with the southeast
Usumacinta drainage and highland Guatemala. In exchange for stone goods the Tabasco communities perhaps provided Fine Orange ceramics that were made in the region⁴⁰ (Berlin 1960:109, 147-148).

Ceramics from Late Classic Aguacatal (Figure 27) continue directly from earlier wares, and also show that Maya at the site had far reaching relationships. Pottery from Yucatán, the Petén, and the Tabasco coast appear alongside locally developed traditions. At the end of this period population at Aguacatal declined (Matheny 1970:117,119, 121).

Occupation continued on Isla del Carmen in the ninth or even the tenth centuries while mainland sites seem to have been abandoned by the eighth century (Ball 1978:132). Late Classic occupation in the low-lying mainland areas could still exist, but may be hard to detect in the flooded environment. Ethnohistoric sources stated that when the Spanish arrived at Laguna de Terminos they saw shrines on Isla del Carmen which they supposed had been built by fishermen and dedicated to sea deities. On the west end of Isla del Carmen the Late-to-Terminal-Classic Los Guarixes consists of mounds about 8 m high and 100 m apart. Lhuillier suggested these could be remains of “shrines” the Spanish mentioned in their sixteenth-century accounts of the region. A few ceramics and a jade earflare suggest the site had access to distribution networks for these items (1969:60, 98).

The coast of Campeche and particularly Champoton evidently thrived toward the end of the Late Classic period. Ceramics from the Campeche and Yucatán coasts reflect constantly changing interactions with other groups, but wares relate most closely to northwest Yucatán (Ball 1978:135, 137; Eaton 1978:64).

The North

North Coastal Sites. Isla Jaina, Isla Piedras, Isla Uaymil yielded the only Late Classic remains documented by Eaton’s survey of the west coast. Most architecture on Isla Jaina dates to this period, and the major monumental construction on each dates to the end of the Late Classic and into the Terminal Classic (Eaton 1978:64). According to Andrews the number of sites on the north coast increased slightly during the Late Classic but only a few had heavy occupation (Andrews 1983:32).

⁴⁰Berlin proposed that Type Z Fine Orange wares were produced at Jonuta. For more information see Berlin (1968:147).
Figure 27. Sites that potentially participated in maritime trade networks during the Late Classic period.
Trade evidence appeared at coastal sites in the latter parts of the Late Classic and into the Terminal Classic, including polychrome ceramics at El Cuyo which indicate continuing interaction with the southern Lowlands (Eaton 1978:64; Andrews 1983:32). Ball documented Puuc Slate, Thin Slate, Puuc Red, Fine Gray, and Balancan/Altar Fine Orange wares at north coastal sites, suggesting that trade connections also extended to the southwest around Isla del Carmen and southwest Campeche (Ball 1978:137).

Although Andrews argued that only the northern salt pans produced enough to fulfill the demands of the Lowland Maya population (Andrews 1983:114), new results show that salt was produced on the east coast at Northern River Lagoon (Mock 1994a), Punta Ycacos Lagoon (MacKinnon 1992:4), Ambergris Cay, and possibly some Stann Creek District sites (Graham 1994).

Dzibilchaltun. During the Late Classic period Dzibilchaltun experienced its height of population. The number of burials increased considerably from earlier times, and 16 of them contained jade artifacts. Burials also frequently included marine items such as stingray spines, coral, barnacles, and bryozoans. The obsidian collection included no green obsidian and the materials were generally less diverse and lower quality than those at Chichén Itzá. From the evidence for exotic trade goods Taschek concluded that Dzibilchaltun still obtained its luxury items as a marginal site in the exchange networks (Andrews and Andrews 1980:318; Taschek 1981:585, 605).

During the Late Classic period tools associated with weaving and cloth production appear in abundance for the first time at Dzibilchaltun, suggesting that cloth production or exchange came to be important, at least within one segment of the community (Taschek 1981:596).

Chichén Itzá. Mayanists usually characterize Chichén Itzá as an Early Postclassic site, but the earliest architecture there appeared in the Late Classic. Architecture of this period mostly resembles Puuc examples and even includes one typically Puuc building, but sculpture at the site represents a combination of independent styles. Of two groups of Late Classic structures, one derives from Classic Petén traditions and the other derives from Yucatán Puuc traditions. Trade goods at Classic-period Chichén Itzá included turquoise, shell, coral, obsidian, and more jade, all of which was used in mosaics (Tozzer 1957a:14, 23, 146).

The Caracol, a large round structure at Chichén Itzá often heralded as the quintessential Maya round structure (Figure 28), was initially constructed in the Late Classic period. Mayanists usually

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41 Andrews and Andrews (1980) proposed the presence of an elite group with exclusive access to exotic trade goods. Given the nature of excavations for Late Classic Dzibilchaltun, however, it is not yet possible to contrast elite and non-elite access. Most excavation that took place for this period concentrated on elite contexts and does not represent the range of activity at the site (Taschek 1981:586, 603).
Figure 28. The Caracol at Chichén Itzá. This building is often cited by Mayanists as the quintessential Maya round structure (Photo by Donald P. Shatto).

consider the building to be related to the cult of Quetzalcoatl-Kukulcan in later times, but Tozzer argued convincingly that the main part of the structure was constructed between A.D. 600 and 1000. "Toltec"-style features were added later (Tozzer 1957a:24, 82-83).

The East

Cozumel Island. By the Late Classic period Cozumel Island might have attained its reputation as a pilgrimage center. The sample of obsidian artifacts was very small, consisting of only two blades from the El Chayal source, but a small altar at La Expedición was surrounded by a huge concentration of

\[42\] For a summary of the legend of Quetzalcoatl-Kukulcan see Tozzer (1957a).
Figure 29. Cozumel Island (After Sabloff and Rathje 1975:Figure 3).

ceramics, mostly Puuc slate wares, and was also associated with a cache of greenstone celts, shell, jade beads and pendants, and other artifacts (Connor 1975:118, 128-129; Nelson et al. 1983:212).

Late Classic sherds emerged from Aguada Grande, La Expedición, Buena Vista, San Gervasio, San Miguel and El Cedral (Figure 29). At San Gervasio, architectural Group 6 yielded ceramics dating from the Late Preclassic through all major periods of Maya prehistory including the Late Classic period (Connor 1975:126-128, 134).
A burial in the group dating to ca. A.D. 800 contained an Olmec-style jade comparable to others that date to 800-400 B.C. Diagnostic ceramics in the burial dated to the Late Classic. The Olmec jade indicates that either such items circulated among the Maya in the Late Classic period (Connor 1975:135), or the artifact was retained for some time, if not generations, before being deposited on Cozumel.

Ambergris Cay. Activity on Ambergris Cay increased during the Late Classic period, with intensive occupation focusing on the coast. Guderjan argued that the canal system at Bacalar Chico provided Caribbean access to San Juan, Chac Balam, Burning Water, Santa Cruz, Punta Limon, and Laguna de Cayo Francesa by ca. A.D. 600 (Figure 24). Each site, he stated, had formal architecture and each was located next to a natural or artificial harbor (Guderjan and Garber 1995a:186; Guderjan 1995b:151, 154).

There remains much to learn about Ambergris Cay’s relationship to mainland sites such as Santa Rita, but overall Late and Terminal Classic ceramics relate mostly toward northern Belize. Some examples from the Belize Valley, southern Belize, Campeche, and Yucatán, however, suggest the island participated in a trade system that included each area. Obsidian evidence from Ambergris Cay supports the notion of a well developed system of way stations and transshipment points in place well before the Postclassic period (McKillop 1995a:172). Most obsidian on the cay probably arrived via the Motagua River and Caribbean coast, but the high percentage of green obsidian at San Juan might have arrived via a circumpeninsular maritime trade route. Nearly all the chert artifacts on the cay are from the northern Belize Chert Bearing Zone and arrived on Ambergris as finished tools. Guderjan speculated that islanders specialized in some type of production that enabled them to trade their own product for the chert tools, but presented no evidence for craft specialization on the island (Guderjan and Garber 1995a:186; Guderjan 1995b:153).

Guderjan stated that no evidence on Ambergris Cay suggests the presence of centralized authority, and speculated that instead of institutionalized elites, family-run enterprises developed in the Late Preclassic and grew throughout the Classic to form “inter-related nodes in the coastal-trade [sic] system.” According to Guderjan the families serviced maritime trade, and perhaps injected their own salt, shell, and salted fish products into the exchange network for transport to mainland sites (Guderjan 1995b:152, 157). The growth of competing family units or lineages could account for accelerated production and exchange later, in the Late to Terminal Classic period (Mock 1994a:325).

Guderjan argued that by the Late Classic period, structured systems for long-distance trade existed for Ambergris Cay and its trade partners. As evidence of the proposed “institutionalization of this interaction in northern Belize” Guderjan pointed to the suggested presence of port facilities at Chac Balam as well as similarities in architecture and artifacts between San Juan and Nohmul. Specifically, he cited the existence of round structures at San Juan, Nohmul, and Chichén Itzá. Guderjan also proposed that
San Juan and Chac Balam constituted important transshipment points in maritime trade by this period, citing as evidence the location of the sites next to natural harbors and on maritime routes, the presence of imported goods, architectural ties to Chichén Itzá and northern Yucatán, the presence of formal architecture, and the high proportion and context of green obsidian at San Juan⁴³ (Guderjan, Garber, and Smith 1989:132; Guderjan, Garber, Smith, Stross, Michel, and Asaro 1989:368; Guderjan and Garber 1995a:189-190).

High proportions of green obsidian occur at San Juan and Marco González but no other sites on Ambergris Cay. At San Juan the green obsidian artifacts occur in middens rather than elite contexts. The amount of green obsidian at San Juan is much greater than at other sites in northern Belize. Guderjan and Garber proposed that this evidence suggests San Juan had a different function than most other sites on the island and elsewhere (1995a:189).

Late Classic Marco González yielded gray obsidian, green obsidian, jade, chert, and granite artifacts. This is consistent with the suggestion that the site participated in maritime trade in the same way as sites at the northern end of Ambergris Cay, but perhaps serviced traders who arrived from the south (Guderjan, Garber, and Smith 1989:132; Guderjan and Garber 1995a:186, 189). The site also had an intensive salt production industry during the sixth and seventh centuries (Graham 1989:150; Graham and Pendergast 1989:6).

**Northern River Lagoon.** Northern River Lagoon was a Late Classic to Terminal Classic site involved in salt production, exchange of salt, and exchange of salted products along with other commodities such as ceramics and obsidian. Extremely large quantities of skeletal catfish heads at Northern River Lagoon suggest residents engaged in specialized fish processing and supplied salted fish to the interior, as well as exotic trade goods and other resources they obtained through exchange. Perhaps obsidian blades constituted the tool of choice for fish processing, thus accounting for high proportions at Northern River Lagoon. Residents might have engaged in different activities at different times of year, with salt production taking place during the dry season, exchange of salt, salted fish, and other goods taking place during the rainy season when more water routes are accessible, and fishing taking place year round (Mock 1994a:2, 54, 93-96, 183-196).

Mock concluded from the archaeological evidence that Northern River Lagoon had a political, socioeconomic, or ideological relationship with Colha, and that the sites had a two-way, consumer-producer relationship using overland *sacbe* or water transportation routes (Figure 30). Colha supplied stone tools, agricultural products, ceramics and perhaps other items in exchange for salt, salted fish,

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⁴³Other imports to the site included quartz, marble, volcanic stone such as basalt and andesite, chloromelanite, and various greenstones (Guderjan 1995b:153; Guderjan and Garber 1995a:189).
Figure 30. Locations of Northern River Lagoon, Colha, and Kichpanha. Quashie Banner Creek perhaps allowed canoe travel from the coast to Colha during the rainy season (After Kelly 1982:Figure 1).

obsidian, imported ceramics, and other goods that Northern River Lagoon could acquire through trade (1994a:200, 350).

Coastal sites such as Northern River Lagoon could function as outposts of inland communities. The coastal sites would provide marine resources and signal the territorial boundaries of minor or major centers. Mock speculated that Colha elites established authority over Northern River Lagoon to maintain control over their production and exchange system for chert tools, as well as to defend the boundaries of their distribution area. Northern River Lagoon and similar communities perhaps provided transshipment services for inland sites, and in doing so played a role in creating the political and economic landscape of the region. Residents became increasingly wealthy as a result of their role in transshipping trade goods and producing salt and preserved fish for inland consumption. According to Mock, the Northern River
Lagoon residents formed a type of middle class that arose during the Late to Terminal Classic period (1994a:17, 344, 353).

If Northern River Lagoon was a transshipment point, its archaeological remains should include a high frequency of elite status goods as well as an assortment of ceramics. A variety of ceramic types intermingled with shell ornaments, obsidian blades, stone tools, and the remains of salt production, all appeared at Northern River Lagoon. Palmar Orange polychrome plates appear along a 27-km-long, narrow stretch from Northern River Lagoon to Colha then north to Kichpanha, with Colha roughly marking a midway point. Saches in the area roughly follow the same northwesterly linear pattern. This large, patterned inventory of artifacts supports the notion that Northern River Lagoon had a role in maritime trade along the Caribbean coast during this period. To explain abundant decorated ceramics Mock suggested some ceramics in the assemblage arrived at the site for transshipment and were not used by the resident community. In handling and storing ceramics for trade, local residents might retain damaged or broken items for their own use, or deposit the pieces indiscriminately in construction fill. Alternatively, the site’s prosperity perhaps stemmed directly from its prominent role in trade (Mock 1994a:139, 241, 321, 325, 349; 1994b:235, 242). McKillop’s suggestion that trade goods might constitute in-kind payment to sites providing trade services could apply to Northern River Lagoon.

The savanna of northern Belize floods seasonally and saches undoubtedly would have eased transportation to Colha. Mock estimated that a person can travel approximately 3 km/hour on a sache, and the overland journey from Northern River Lagoon to Colha would take about five hours under optimal conditions. Travel to Colha by water routes was also possible. In that case speed would vary, averaging 3-4 km/hour upstream on the Northern River and its tributaries. Travel to Colha by canoe would take approximately 3.7 hours, and the return, downstream trip was perhaps as short as 3 hours (Mock 1994a:144, 349).

The conclusion that Northern River Lagoon was a transshipment point on maritime trade routes rests primarily on two lines of evidence, the site’s ideal location for such a role and the presence of a range and volume of ceramics and other artifacts greater than what would be expected for such a small resident population. Northern River Lagoon perhaps received goods from coastal traders from southern Belize and from Petén traders then re-shipped them to Colha or distributed them to local communities. Residents also produced salt, salted fish, and perhaps gathered marine raw materials such as shells or manatee bone, and traded these items for agricultural products and ceramics (Mock 1994a:332, 326).

Lithic analysis clearly identified Northern River Lagoon as a consumer site of lithic tools rather than a producer. Blades constituted the dominant tool type, suggesting that Northern River Lagoon residents either redistributed tools from Colha through trade, or that residents required blades for activities such as fish processing. Eighty-seven percent of 23 analyzed obsidian blades at Northern River Lagoon
came from El Chayal. The obsidian collection is less diverse than expected for a large sample from a site with access to coastal trade routes. Since an obsidian workshop at Colha produced tools from El Chayal obsidian exclusively, Mock suggested that Northern River Lagoon obtained its obsidian from Colha. Thus, the evidence that El Chayal obsidian was transported along maritime trade routes remains mixed. Mock warned against describing coastal trade based on the presence of obsidian at coastal sites, stating that “the scenario of a coastal community off-loading obsidian obtained from coastal trade into canoes for transport into the inland [sic], although picturesque, may not have empirical reality.” Nevertheless, she maintained that the quantities of obsidian at Northern River Lagoon support the notion that the site was a transshipment point with frequent, diverse interactions that enabled it to acquire obsidian from other inland and coastal sites participating in production and exchange (1994a:219-222, 227-228, 233, 325).

The Southeast

Southernmost Belize. Southern Belize hosted considerable Late Classic occupation, both at inland sites44 and along the coasts. Coastal communities participated in trade, acquiring obsidian with procurement patterns that mirror that of Wild Cane Cay. McKillop argued that this supports her suggestion that obsidian from both El Chayal and Itzpepe was transported along maritime routes. She pointed to Wild Cane Cay as the regional obsidian importer (McKillop 1996:57-59).

Remains of marine animals at Lubaantun further testify to the existence of a functioning coastal-inland trade network. A number of coastal sites in southernmost Belize engaged in specialized salt production and also yielded ceramics from Lubaantun. Several sites on the southern Belize coast produced salt for inland consumption, but coastal-inland trade in salt, marine products, and obsidian was handled through Wild Cane Cay (McKillop 1996:58).

The Point Placencia Project survey documented Late Classic remains on Pork and Doughboy Points as well as the John Spang property between Middle River and Golden Stream on the Belize coast (Figure 26). Some evidence of Late Classic activity emerged on Frenchman’s Cay. An earlier survey had documented Late Classic pottery on Hunting Cay although MacKinnon found nothing when he visited for the Point Placencia Project. MacKinnon characterized Placencia Cay as a transshipment point on the route from the coastal maritime network to the inland center of C’hacben K’ax in the Late Classic period. Late Classic obsidian blades at Placencia Lagoon and at the inland center of C’hacben K’ax (22 km inland) all came from the El Chayal source (MacKinnon 1989:119; 1992:4).

44See Leventhal 1990 for information about the inland sites of Pusilha, Uxbenka, Lubaantun, Xnaheb, Nim Li Punit, Uxbentun, and Silver Creek.
Stingray Lagoon. Stingray Lagoon, a site now submerged under approximately 1.0 m of water, was occupied in the Late to Terminal Classic periods, ca. A.D. 700-900 (Figure 31). The primary activity of its residents was specialized production of salt. Lubaantun-style ceramics documented at the site indicate the salt was probably destined for inland sites and that Stingray Lagoon was participating in coastal-inland trade. No evidence for specialized fish processing or salt-preservation of fish emerged. Marine fish
bones did appear at Lubaantun, however, so at least some transport of fish to inland sites took place during the Late Classic period (McKillop 1995b:217, 220, 223).

There is no evidence to suggest Stingray Lagoon participated in long-distance trade in obsidian and exotic trade goods that was so important at nearby Wild Cane Cay. This demonstrates that Wild Cane Cay did not necessarily distribute its exotic goods to all the other sites in the region during the Late Classic period.

Discussion

Lack of evidence for Late Classic-period long-distance exchange from sites in the southwest and north Yucatán Peninsula prevents useful conclusions about maritime trade there during that time. In the north, however, Chichén Itzá had been established and if Highland goods in the Cenote of Sacrifice were indeed brought by exchange networks then clearly the flow of goods northward was well established.

In the east, a number of coastal sites have disproportionately large amounts of elite trade goods: San Juan, Marco González, Northern River Lagoon, and Marlowe Cay. This hints that during the Late Classic period maritime networks were being used extensively. It does not necessarily reflect a change from the Classic period, but probably inequity in the amount of evidence available. Guderjan, Garber, and Smith speculated that during the Late and Terminal Classic periods, individual groups of traders specialized in moving trade items along single, short routes that joined one another at each end. It was not until the Late Postclassic, they maintained, that a merchant class of navigators plying the entire route emerged (1989:132).

Northern River Lagoon emerged during this period as the first solidly supported transshipment point for goods moved along coastal routes. The site lies at the juncture of maritime routes and a convincingly documented overland or riverine route to Colha and Kichpanha. In addition to providing a place for transshipment, Northern River Lagoon residents contributed their own salt and salted fish products into the coastal-inland network.

THE TERMINAL CLASSIC-EARLY POSTCLASSIC PERIOD

During the Terminal Classic-Early Postclassic transitional period the volume and diversity of coastal trade increased dramatically. Traditionally, Mayanists mark the beginning of the Postclassic by the abandonment of the Classic centers of the Southern Lowlands and the Puuc zone, and development of what was viewed as a degenerate and debased Maya culture in the north. The appearance of central Mexican art, artifacts, and architectural features at Chichén Itzá ca. A.D. 1000 epitomized the transition.
These features have been associated with the arrival of people and religious figures from Mexico as reported in Maya legends (Andrews 1978:76-77; 1990:161; Thompson 1970).

As described in the previous chapter, Sabloff and Rathje characterized the Terminal Classic as a time when influences from central Mexico and the Gulf Coast are increasingly important. In the prevailing view, mass production of Fine Orange ceramics began in the Terminal Classic-Early Postclassic,\(^{45}\) and trade in raw material and commodities first started to become important (1975:24). In sum, Mayanists often consider the Postclassic to be a time when commercial interests took precedence over religious ideology and emphasis on maritime trade grew to new heights, thanks to the entrepreneurship and seafaring culture of the Putun Maya (Rathje 1975:415-416, 431-433; Pendergast 1990a:173). The shift to maritime trade purportedly dealt a damaging blow to large centers of the southern central Lowlands by depriving cities of their middleman role (Andrews 1983:125-126).

Now we know there was considerable continuity in the Lowlands at some sites (Lamanai, Santa Rita, Xcaret), and even renewed activity after a long hiatus at others (Cerros, Colha), particularly in the coastal zones where populations were growing (Willey 1986:21-22; Pendergast 1990a:176). Now Mayanists often refer to a Terminal Classic-Early Postclassic transitional period (A.D. 800-1200), which has been the focus of much attention in recent excavations in Belize, Yucatán, and Quintana Roo. Economic developments in the northern Lowlands are now interpreted as new and vigorous rather than degraded leftovers of the Classic fluorescence (Robles Castellano and Andrews 1986:75).

**The Southwest**

During the Terminal Classic-Early Postclassic transition major construction took place along the Campeche and central Yucatán coasts (Figure 32). Fine Orange and Fine Gray wares appear at the sites, and some believe the wares were made in the southwest region around sites such as Palenque and Jonuta (Willey 1986:27-28).

\(^{45}\) Fine Orange wares are often invoked as a hallmark of the Postclassic period, but their use actually spans 1500 years of Maya prehistory. The earliest examples came from Early Classic La Venta. Type Z Fine Orange Wares date to the Late Classic, Type X dates to the Early Postclassic, and Types U and V date to the Late Postclassic (Berlin 1960:148).
Figure 32. Sites that potentially participated in maritime trade networks during the Terminal Classic to Early Postclassic transitional period.

Berlin excavated test pits at a few sites along the Grijalva and Usumacinta Rivers and found remains dating mostly to the Postclassic period, including a few traded goods such as jade, green and
black obsidian, chert, and copper bells. Green obsidian was more plentiful than gray. No evidence exists to support the idea that a group bearing Toltec culture settled there for any length of time. Nevertheless, Berlin stated that Tabasco had far reaching trade relationships, and argued that metal from Oaxaca and green obsidian from Pachuca demonstrate a distinct western orientation for trade in contrast to the eastern Petén orientation that characterized the Late Classic period (1960:109, 142-148).

Andrews maintained that coastal salt trade continued between the northern salt pans and the west coast during the Terminal Classic even while turmoil existed in the central southern Lowlands. He attributed salt’s success in the west to the presence of aggressive traders in the region—the infamous Toltec, Putun, or Chontal. Andrews argued that this group eventually took over coastal routes and the major riverine trade networks of the west. They emerged as a powerful merchant class with alliances in Mexico as well as the Maya area. He argued further that their success stemmed in part from the incipient decline of southern Maya centers, which was itself helped along by the Putun’s aggressive economic tactics (1983:127).

The city of Campeche continued to thrive through the Terminal Classic-Early Postclassic transition, as did Champoton. Eaton characterized both as probable trade centers. By the Early Postclassic period, Campeche coastal sites were positioned along a corridor of communication between Mexico and Yucatán. Foreign influences were having a significant impact on Maya culture in the northern Lowlands and non-Maya influences appeared at Chichén Itzá (Lhuillier 1969:243, 275-277, Table 2; Eaton 1978:64).

Champoton is strategically located on the proposed Tabasco-Yucatán maritime trade route at the mouth of the Río Champoton. The Río Champoton, the only real river in the northern Yucatán Peninsula, is navigable along its entire length, about 120 km to the Lago Jogonochac. Champoton’s full occupation sequence remains unknown, but the site became important in the Early Postclassic period (Eaton 1978:25-26), and Late Postclassic ceramics from test pits at the site indicate it was important during that time also (Lhuillier 1969:137).

Maya legends from this region refer to a “fine building in the sea like that of Chichén Itzá” close to the shore at Champoton. Eaton stated that there was reportedly a temple on an island in the Bay of Champoton during the Colonial period. On his visit to the site he noted a small island about 400 m offshore which appeared to be artificially constructed. The island has masonry architecture and today functions as a navigation aid for fishermen and sailors. The structures guide navigators who wish to enter a straight channel between sand bars and access the port immediately upriver (Eaton 1978:26; Lhuillier 1969:67).
The North

The Terminal Classic-Early Postclassic history of the northern Lowlands, particularly Chichén Itzá, is a complex chapter of Maya archaeology with considerable bearing on maritime trade. In the most commonly cited scenario aggressive, militaristic seafarers from either the Gulf Coast or central Mexico (Tula) intruded into the northern peninsula, perhaps in two phases. The group took over northern salt pans, established its capital at Chichén Itzá, and proceeded to dominate the economic life of the northern Lowlands until the intruder's primacy was successfully challenged by resentful local elites. The economy was based on maritime trade with the south and west, which allowed the group to import copious Mexican and Maya exotics and concentrate them at the capital. Cultural trappings of these Mexicans or Mexicanized peoples, thereafter called the Itzá, included round structures, Fine Orange ceramics, Mexican style weaponry, Postclassic green obsidian, distinctive art and architectural styles, and iconography. As the Itzá economic sphere of influence grew these cultural traits spread southward.

After the decline of Chichén Itzá ca. 1200, a brief hiatus was followed by the establishment of Mayapán in Chichén Itzá's image. Mayapán is usually viewed as a short-lived and vain attempt to regain the prestige and wealth of Chichén Itzá, but with a focus toward the east coast. After the dissolution of Mayapán, the northern Lowlands fragmented into the 16 independently ruled provinces that remained when the Spanish arrived.

Mexican influences actually appeared on the Yucatán Peninsula before the first millennium, much earlier than is traditionally acknowledged in the scenario described above. There are several interpretations of their importance. Researchers have suggested the Mexican influences resulted from an incursion of people (Thompson 1970; Sabloff and Rathje 1980; Andrews 1983), sustained contact between the cities of Chichén Itzá and Tula perhaps accompanied by a gradual movement of population (Tozzer 1957a:17, 18, 27, 165), or the outward-oriented cosmopolitan nature of Postclassic Maya culture (Coggins 1992; Chase and Chase 1989).

Ceramic wares associated with Chichén Itzá's Early Postclassic pinnacle include Fine Orange, Fine Gray, and Plumbate wares (Andrews 1943:77, Smith 1958:159). Silho Fine Orange and Plumbate are common at Chichén Itzá but comparatively rare at other interior sites, and they are usually characterized as trade wares. Fine Oranges and Grays have also been interpreted as markers of Putun/Itzá presence. Fine Orange wares probably originated in the northwestern peninsula along the coasts of Campeche and Yucatán (Andrews 1978:79, 82; Ball 1978:138-139; Guderjan and Garber 1995a:185). Plumbate was produced on the Pacific coast and widely distributed in Mesoamerica and the northern parts of Central America. The distribution of Plumbate suggests it was disseminated from El Salvador and Guatemala (Shepard 1948:103-104, 112).
Ceramics at interior sites in the northern Lowlands appear fairly uniform and derive from other Chichén Itzá styles (Andrews 1978:79). Late ceramic phases at the Classic Puuc sites overlap with the early phases at Chichén Itzá, and the late phases of the latter overlap with the rise of Mayapán. There are clearly identifiable material remains in northern Yucatán and elsewhere that bear strong similarities to, and are sometimes nearly identical to, remains in central Mexico and especially the city of Tula.

North Coastal Sites. Coastal sites that were continually occupied from earlier periods into the Early Postclassic include Campeche, Champoton, Isla Jaina, Isla Piedras, Isla Uaymil, Holbach, Emal, El Cuyo in Yucatán, and Vista Alegre. Andrews argued that the coastal sites of the western and northern coasts were the first places to be occupied by politically allied foreigners in the Terminal Classic/Early Postclassic. These groups had a mercantile nature and distributed Fine Orange trade wares along the west coast (Andrews 1978:84-87; 1983:32, 128; Eaton 1978:64;).

In Andrews’ scenario the mercantile groups took over the salinas at Xcopte and Emal to garner influence over trade and coastal routes in the north. This caused already stressed interior sites to decline precipitously, and allowed the coastal groups to penetrate inland to found Chichén Itzá. Andrews concluded that the establishment and continued success of Chichén Itzá was completely dependent on coastal resources and maritime trade (Andrews 1978:85-89; Eaton 1978:12; Andrews 1983:33; 1990:161).

Andrews suggested that the coastal locations attracted the Chichén Itzá founders and inhabitants because they offered strategic advantages. Some sat at entrances to inland rivers or navigable estuaries, others were well located for salt-making, and other held ideal locations for military action and commerce. Important occupation phases at each of these sites coincided with the reign of Chichén Itzá, while other coastal sites with no strategic advantages declined during the same period. Ceramics from most of these coastal sites, specifically Silho Fine Orange and Tohil Plumbate, link them firmly to the inland city (Andrews 1978:85-88; 1983:32-33; 1990:161).

Andrews suggested that a second wave of foreigners later conquered the first group and took over the capital at Chichén Itzá, presumably bringing the Mexican artistic and architectural traits at that time. For the next 200 years coastal sites melded into a single economic unit, with an interior capital at Chichén Itzá. Residents of Chichén Itzá dominated the peninsula, monopolized the salt trade, and established trade relations with far away regions of Mesoamerica and Central America. When Chichén Itzá fell around A.D. 1200, so did the coastal sites, marking the end of the Early Postclassic period. Nearly every site on the northwest and north coasts was abandoned, leaving Emal as the only significant Late Postclassic occupation (Andrews 1978:85, 88-89; 1983:32-33).
This scenario is meant to explain why the coastal zones were more populated than the interior during the Postclassic, why Chichén sphere ceramics are found at those coastal sites rather than interior sites, and how large quantities of Mexican material found its way to Yucatán. Ceramics suggesting a direct link between Chichén Itzá and Isla Cerritos indicate that Chichén Itzá was tied into a maritime trade network (Ball 1978:141).

**Chichén Itzá.** Much of what we know about trade at Chichén Itzá comes from offerings thrown into the Sacred Cenote there. Artifacts in the cenote came from as far away as Central Mexico and Colombia, and included carved jades, cast gold, wood weapons, and wooden personal ornaments (Coggins and Ladd 1992b:340). Remains at Chichén Itzá can be divided into Terminal Classic (A.D. 750-1000) and Early Postclassic (A.D. 1000-1250) phases (Willey 1986:32). Clear changes occur in architecture and art between the characteristically Maya first phase and the centuries that followed. In the Early Postclassic period, Maya styles from the Late Classic continued alongside the new elements, seemingly related to central Mexico (Tozzer 1957a:32-33, 233). Coggins suggested that the “strands of Cenote ritual traditionally described as ‘Maya’ and ‘Toltec’” perhaps represent social or functional variations of this single phase. She viewed the “Toltec” artifacts from the cenote as a trait of cosmopolitan Maya culture at Chichén Itzá rather than discrete “Mexicanized” deposition (1992:388).

The Chichén Itzá Sacred Cenote yielded thousands of jade pieces, far more than any other site in the Maya Lowlands. The only known source of jade is in the Motagua River valley at Manzanal, but there are most certainly several others in Guatemala, the Maya Mountains, and Mexico. Jade could also be gathered from river beds rather than being mined. Dates for the jades depend on interpretation of their stylistic attributes. Prosokouriakoff documented pieces beginning with Preclassic-period, Olmec styles followed by smooth transitions into the Early and Late Classic periods. Most pieces related to the Classic-period Petén, although some related to the Classic styles of northern Yucatán, Campeche, the Puuc zone, and highland Guatemala. Others also exhibit “Toltec” cultural elements, specifically the feathered serpent motif. Jade was also nearly ubiquitous in caches and burials at Chichén Itzá, appearing alongside copper and locally available items. No jades like those from the Sacred Cenote are documented at Tula (Tozzer 1957a:85-86, 145; Prosokouriakoff 1974:2, 8, 11-12, 15-16)

Tozzer proposed the exotic goods could have been brought from the source areas to the cenote by pilgrims who came to Cozumel and Chichén Itzá to make offerings, or they could have been offered by northern residents who acquired them through trade (1957a:233). Prosokouriakoff disagreed, arguing

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46 Tozzer described the Early Postclassic period at Chichén Itzá as the “Toltec-Mayan” phase, using the word “Toltec” to refer to any people from the region now called the state of Mexico between the fall of Teotihuacan and the rise of the Mexica in the Late Postclassic (1957a:18, 32-33).
instead that the jades had been looted from burials in the south by marauding Toltecs and their allies, then sent to Chichén Itzá as gifts and tribute (1974:14-15).

The cenote also yielded a large number of metal artifacts imported from the central Mexican Highlands, Honduras, Belize, Veraguas and Coclé in Panama, and Colombia. No mining or metallurgy took place in northern Yucatán, but the Maya did emboss and trim pre-made metal sheets imported from elsewhere. Metals from the cenote included gold, copper, and three alloys: tumbaga (gold-copper), bronze (copper-tin), and copper-lead. The geographic origins of much of the metals can be determined by comparing chemical compositions and artistic styles. Hammered artifacts of relatively pure gold were probably made in Panama. Hammered artifacts of relatively pure copper were probably made in Mexico. Cast copper, sometimes alloyed with tin or lead, probably came from Mexico or northwest Honduras. Cast gold, often alloyed with copper and gilded to look like gold, was made mostly in Panama, but two artifacts are from Mexico and Colombia and another may be from Costa Rica. The form and silver content of at least one tumbaga artifact in the cenote indicate it was imported from Panama (Lothrop 1952:3, 11-14, 27, 114).

Decorated and undecorated gold disks from the cenote almost certainly came from Veraguas, Panama, based on shape and metal content. Coclé and Veraguas regions of Panama exported gold artifacts in quantity. The disks could date as early as the end of the tenth century, during the time that holdovers of Classic Maya art still existed at Chichén Itzá. Lothrop concluded that battle scenes portrayed on some of the disks illustrate conflict between the Maya and the Toltecs (1952:9, 27-28, 31, 59, 108-110). One of these, Disk G, portrays a battle taking place in canoes on a body of water (See Chapter V). Its style and subject indicate it was not decorated in Panama, where the blank disk was probably made (Proskouriakoff 1952:35).

Three gilded copper disks from the Sacred Cenote were made in the same artistic styles as the frescoes at Santa Rita, Corozal, Belize, with "Mexican" elements and Maya glyphs side-by-side in the same scene (Figure 33). Lothrop proposed that the styles are so similar that the three cenote disks were probably embossed in northern Belize. Lothrop also suggested the gilded sheet copper from the cenote came from Mexico and that these disks perhaps date to very late in Maya Prehistory. Considerable amounts of copper artifacts have been documented at sites farther south, such as on Wild Cane Cay, but the artifacts are not gilded. Copper filigree rings and other rings were made in Oaxaca (Lothrop 1952:75-77, 83, 107, 109). A gilded, cambered ring with decorated edges also shows strong resemblances to artifacts from Santa Rita, Corozal (Figure 34). Copper artifacts also appeared throughout Chichén Itzá in burials and caches (Tozzer 1957a:86).
Little gold and silver was deposited in the cenote. This was unexpected because groups in central Mexico had access to gold and silver, and also had regular contact with the Maya area. Most of the cast gold from the cenote is in Veraguas style, made in Panama, and there is also some from Coclé. Lothrop concluded that most cenote artifacts came from the north coast of Central America, and he suggested they were traded to the northern Maya Lowlands by sea and over land. Gold is generally rare in Mesoamerica.
Figure 34. Gilded rings from the Cenote of Sacrifice at Chichén Itzá. These rings are similar to ones excavated from Santa Rita, Corozal, Belize (From Lothrop 1952:Figure 71).

and the gold ore that the cenote disks are made from is unusual even at its source in Veraguas (Lothrop 1952:11, 22, 94-99, 108).

Cast copper and copper-alloy bells form the largest group of metal artifacts from the cenote (Figure 35). The bells seem to date to a period when Classic Maya art was still used at Chichén Itzá, because they are depicted as part of the warrior’s dress in battle scenes that Lothrop dated to that period. Most bells probably came from the central Mexican plateau and adjacent areas. Bells of relatively pure copper, copper-lead alloy, and copper-tin alloy came from the Valley of Mexico. Late Postclassic-period bells of copper-lead alloy were also found in the cenote. Some of the material has almost no impurities and trace elements indicate these were probably imported from Honduras in the Late Postclassic (Lothrop 1952:42, 85-86, 108-110).

Other artifacts in the cenote included considerable amounts of rubber, often modeled into shapes and balls. Precolombian rubber came from the rubber tree, Castilla elastica, which grew in the tropical lowlands, particularly on the Gulf Coast, but is not reported from Yucatán. Vesicular stone artifacts also occurred in the cenote, one of which might be basalt. Considerable amounts of volcanic stone used for metates have been reported from Chichén Itzá deposits other than the cenote. Two vessels made of a banded translucent stone called tecali were found in the Sacred Cenote, and possibly came from Oaxaca,
Figure 35. Copper bells from the Cenote of Sacrifice at Chichén Itzá (From Lothrop 1952:Figures 75, 77, 79, 80, 83-86).

while one other stone vessel could be of marble from Honduras (Sidrys and Andresen 1976:184; Coggins and Ladd 1992a:353-354; Moholy-Nagy and Ladd 1992:100-104, 143).

A unique assemblage of Early Postclassic carved obsidian beads in the cenote consisted of five complete beads, 33 gray obsidian fragments, and 15 green obsidian fragments (Figure 36). Two gray fragments came from Ucareo in central Mexico. The beads probably formed part of a coherent assemblage in antiquity, perhaps a necklace. The cenote examples are so similar in size and workmanship that they were probably made together at one time, most likely close to an obsidian source in Mexico (Moholy-Nagy and Ladd 1992:106, 108).
Figure 36. Carved obsidian beads from the Cenote of Sacrifice at Chichén Itzá
(From Moholy-Nagy and Ladd 1992:Figure 5.14).

It is not clear from published data exactly how much obsidian in the cenote came from central
Mexico, but it seems to have been 25 to 30 percent. Sheets concluded that the unusually high percentage
of green obsidian indicates the existence of commercial ties with Tula in the Early Postclassic period.
Overall, lithics from the Sacred Cenote at Chichén Itzá consisted of more diverse raw materials, higher
quality artifacts, and greater reflection of external relationships than the Late Classic collection from the
Xlacah cenote at Dzibilchaltun or the collection from Mayapán (Andrews et al. 1989:360-361; Sheets
1991:172, 180, 185; Sheets et al. 1992:172, 176; Table 6.10). Cenote lithics reflect Late Classic, Maya-
oriented use which gradually changed to Early Postclassic, Mexican-oriented use. The whole assemblage
of trade goods from the cenote reflects clearly significant transport of exotic goods to Chichén Itzá from
the entire Maya Lowlands and beyond, including Oaxaca, central Mexico, Honduras, Costa Rica, and
Panama.

Isla Cerritos. Two northern islands with Postclassic stone architecture, Xcopte and Isla Cerritos, have
been called commercial ports of Chichén Itzá (Andrews 1978:82). Little is known about Xcopte, but
excavations at Isla Cerritos yielded a great deal of information about northern trade.

Isla Cerritos is the island site closest to Chichén Itzá. The island is approximately 200 m in
diameter and 500 m from the mainland (Figure 37), near the half-way point of the hypothetical maritime
route from Laguna de Terminos to the Gulf of Honduras, and at the entrance to Rio Lagartos where
productive northern salt pans were located. A large open plain on the island’s south side is an artificial
terrace filled in from the center of the island, with few surface structures. A sache connects Isla Cerritos
Figure 37. Isla Cerritos (After Leshikar 1990:5).


Isla Cerritos was occupied in the Preclassic period but most of the trade goods and seemingly all of the architecture dated to the Terminal Classic-Early Postclassic transition. The single discovery of a Terminal Classic jar with an Early Postclassic bowl being used as a lid dramatically illustrated the overlap between the two periods (Figure 38). Other ceramic finds from the transitional period included

Multiple lines of evidence support the role of Isla Cerritos as a major port on the maritime trade route. During 1984-1985 excavations, archaeologists collected a sizable sample of long-distance trade goods, such as ceramics from the Gulf and Caribbean coasts, the southern Lowlands and the Guatemalan Highlands, obsidian from central Mexico and possibly the Guatemalan Highlands, greenstone, and basalt. Most material appears to date to the Terminal Classic-Early Postclassic, during the time Chichén Itzá was occupied (Andrews and Negrón 1986:47).

A burial on Isla Cerritos, radiocarbon dated to A.D. 1075, contained a rich collection of trade items, including a basalt mano and metate for grinding corn, greenstone beads, turquoise, green obsidian, and a gold pendant. It also held two Silho Orange and three Tohil Plumbate vessels. The basalt grinding equipment and greenstone possibly came from the Maya Highlands, while the turquoise and green obsidian was almost certainly brought from central Mexico. The excavators stated that the gold pendant came from Costa Rica or Panama. Thus, a single burial held items from opposite ends of the maritime trade route, and from places up to 1200 km away (Andrews et al. 1988:198, 204).

Of 34 analyzed gray and black obsidian samples from Isla Cerritos, two-thirds came from Mexican sources, primarily Ucareo, even though this source is farther from the island than those of highland Guatemala. In addition, 31 artifacts were green Pachuca obsidian, making Isla Cerritos an anomaly in the Maya area with 82 percent of sourced obsidian from central Mexico. Only 10 of these samples dated to periods other than the Terminal Classic-Early Postclassic, including a Late Preclassic sample from Zaragoza, Puebla, and nine undated Pachuca samples collected at Paso del Cerro (Andrews et al. 1989:358, Table 5).

The Isla Cerritos collection is unusual compared to other Maya sites excavated to date because only a relatively minor amount of obsidian came from highland Guatemala, and most of that is from the El Chayal source. The larger proportion of obsidian from El Chayal at Isla Cerritos contradicts the proposed pattern of Ixtepeque dominance during the Postclassic period. Investigators proposed that Isla Cerritos acquired Guatemalan obsidian via the west-coast trade route which perhaps dealt in obsidian from Mexican sources and El Chayal (Andrews et al. 1989:360).

The Terminal Classic/Early Postclassic assemblage included relatively large samples of basalt and obsidian (Andrews and Negrón 1986:46). Islander's reliance on volcanic stone for such necessities as metates is unusual in the Lowlands, where the Maya usually used local material to satisfy their everyday household needs. The large quantities at Isla Cerritos hint that volcanic stone perhaps moved over

\(^{47}\) Ball also noted ceramic continuity from Terminal Classic Puuc wares to Chichén Itzá Sotuta wares
Figure 38. A Terminal-Classic jar with an Early-Postclassic bowl being used as a lid, from a burial on Isla Cerritos. This find clearly demonstrated the overlap between Terminal Classic and Early Postclassic ceramic phases in the northern Lowlands (From Andrews et al. 1988:Figure 4).

...maritime routes regularly as cargo. Given the westward orientation of the obsidian collection at Isla Cerritos, perhaps basalt was traded via a west coast route.

Andrews et al. argued that Isla Cerritos and Chichén Itzá participated in a west-coast oriented trade with central Mexico, specifically Tula, more than with the mainstream Maya in the east and south. They speculated that Tula controlled the Pachuca, Zinapecuaro, and Ucareo obsidian sources. During the

Early Postclassic period, trade with central Mexico was channeled through series of outposts along the north and west coasts of the Yucatán Peninsula. After the fall of Chichén Itzá ca. A.D. 1200, this Mexican-oriented network collapsed and traditionally Maya sources became more common trade partners (Andrews et al. 1989:361).

Tula was occupied during the Terminal Classic-Early Postclassic, and source information about obsidian used there shows the same shifts in source use that appear at Isla Cerritos. Both Isla Cerritos and Tula have substantial amounts of obsidian from Pachuca and Zinapécuaro, and both show a shift from predominantly Zinapécuaro in the Terminal Classic to Pachuca in the Early Postclassic. Healan stated that this supports the scenario of direct exchange between Tula and Isla Cerritos rather than exchange through intermediaries48 (1993:456-459).

Apparent harbor facilities at Isla Cerritos further distinguish the island as unique. The west, north, and east shores of the island have terraces, docks, and piers built out into the water (Figure 37). Much of the stone has been removed and most of these are underwater at high tide (Andrews and Negrón 1986:46; Andrews et al. 1988:203).

Although the investigators did not describe all these features in detail, they elaborated on the construction of a sea wall that lies along the south shore. This wall, probably built during the Terminal Classic-Early Postclassic transition, stretches 330 m along the south side of Isla Cerritos, and rests about 80 m off the current shoreline. Vertical stone slabs lined up in parallel lines hold rubble fill for a total remaining width of 2.5 m. Stone removal and erosion account for the variation in width. Andrews and Negrón suspected that the wall once rose above high tide, which would have made it at least 1.8 m tall from the bottom, with current sea level. Currently it does not rise more than 1 m above the bottom. Three gaps in the wall provided passages to the interior, and platforms on either side of one entrance probably supported some type of perishable structures (Andrews and Negrón 1986:46-47; Andrews et al. 1988:203-204).

Margaret Leshikar investigated the site to learn more about the role of Isla Cerritos in long-distance canoe trade. She did not excavate the harbor, but did find the water is currently deep enough to allow canoes to enter. She also ascertained that the pier-like features on the island’s other shores could have accommodated canoes, while also providing protection for other shoreline constructions. At Paso del Cerro, the mainland site just opposite Isla Cerritos, vertical stones aligned to connect the pyramid

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48 Healan noted, however, that obsidian tool production at Tula only supplied enough for local needs. He suggested that Tula demanded obsidian or manufactured goods that included obsidian from the sites in its central Mexican realm. The site did not control production, but collected goods produced in tributary towns and managed their export to other sites or regions. Thus, although there was no large-scale production at the center, obsidian exchanged from Tula did come from state coffers and was traded long-distances under elite control (Healan 1993:451, 456, 459-460).
area of the mainland site to a protected mangrove channel. A *sacbe*, also of stone slabs, leads away from Paso del Cerro in the direction of Chichén Itzá but disappears into the coastal mud (Leshikar 1990:7-9).

The island’s strategic position on the circumpeninsular trade route and high concentration of Mexican obsidian point to its role as a center of long-distance exchange. The data from Isla Cerritos complements that from other sites along the proposed route. The final piece of evidence linking Isla Cerritos to Chichén Itzá is the concurrent demise of both sites. Andrews and his associates proposed an abrupt and violent end to the Early Postclassic settlement of the island, based on a collapsed building with Late Postclassic ceramic remains on its roof. These point to a destruction of the island settlement around the time Chichén Itzá also fell (Andrews et al. 1988:199).

The effects of a 1 m rise in sea level must be considered in evaluating evidence for a Precolumbian harbor at Isla Cerritos, but the island’s seawall could have been built after the higher sea level stabilized in the Terminal Classic period. It is also possible that the Maya residents of Isla Cerritos built the piers, walls, and landfill in response to a rising sea level, in an effort to adapt and protect their prosperous trading community. Even if the submerged structures at Isla Cerritos were originally dry, the interpretation of trade evidence there remains the same. Whether it was an island or tiny outcrop of land on the north coast, Precolumbian Maya on Isla Cerritos participated in long-distance, maritime trade and probably funneled exotic goods to Chichén Itzá.

**The East**

Sotuta ceramics related to Chichén Itzá appeared on the east coast about 100 years after they had spread into the rest of the Yucatán Peninsula and the Gulf Coast. This could indicate that during the Terminal Classic-Early Postclassic period the upper east coast was dominated by Cobá instead of Chichén Itzá (Robles Castellano and Andrews 1986:85). Andrews proposed that Cobá and Chichén Itzá were the two economic powers in the northern peninsula, engaged in an economic struggle with each other through the Terminal Classic-Early Postclassic period. He speculated that toward the end of the Early Postclassic period, Chichén Itzá closed northern markets to Cobá and took over east-coast trade networks, perhaps contributing to Cobá’s swift decline ca. A.D. 1100 (Andrews 1983:128-129).

Sotuta ceramics do appear further south on Chetumal Bay and evidence from Chichén Itzá seems to show that residents traded heavily with the Bay of Honduras region and Central America. One possible explanation for the gap in Sotuta ceramics is that trade routes to Isla Cerritos bypassed the northern section of the east coast. Perhaps traders traveled over land routes between their capital and the Bays of Espíritu Santo and Ascensión, as described in Maya legend. Or, perhaps the Itzá were indeed expert seafarers and traveled the coast by sea but avoided east-coast stops. Alternatively, the primary trade routes
from northwest Honduras could have led over both land and river routes across the base of the Yucatán Peninsula to the Laguna de Terminos, where goods from Central America entered the Gulf Coast trade (Robles Castellano and Andrews 1986:85, 87)

Apparent evidence of Yucatecan influence in northern Belize and the southern Lowlands in the Terminal Classic-Early Postclassic raises the possibility that the population from Chichén Itzá expanded down the Caribbean coast (Andrews 1983:129). Archaeologists addressing this problem usually refer to round structures and Chichén-like patio arrangements associated with other external influences as Yucatecan culture traits. The earliest precedents for these are in the Gulf Coast areas of Mexico (Chase and Chase 1982:605-606).

A ceramic style commonly called Tulum-related wares have traditionally been associated with the Late Postclassic period, but they occur earlier than that in northern Belize. The “Tulum” ceramics could have originated in northern Belize ca. A.D. 1000 or earlier, becoming fully developed by A.D. 1140. The Middle Postclassic examples from Colha show considerable uniformity and manufacturing skill, demonstrating that the ware had already developed by that time (Mock 1994b:236).

Cozumel Island. Population increased significantly on Cozumel (Figure 29) during the Terminal Classic period. Quantities of Puuc and Thin slate wares appeared on the island during this time, as well as at the mainland site of Xcaret (Sabloff and Rathje 1975:24). The island also yielded over 100 ground stone celts made of volcanic stones from highland Guatemala. The large number is even more remarkable considering that, up to that time, 21 sites had only yielded a total of 112 similar celts. Connor felt that the large quantity of imported stone and ceramics at San Gervasio matched what would be expected if the population had easy access to exotics because it functioned as a trade center (1975:131).

As mentioned previously, a Late to Terminal Classic burial on Cozumel included imported items that perhaps had been curated for several centuries before finally being deposited, including a Middle Preclassic (1200-600 B.C.), Olmec-style jade pendant. Investigators proposed that the pendant indicates Cozumel had a role in commercial long-distance trade, and even stated that no other explanation exists for the presence of such an artifact 1000 km from its probable source. They acknowledged that the object could have been an heirloom passed down for 30-40 generations before deposition on Cozumel, but nonetheless concluded that the artifact had been a trade item and demonstrates circulation of ancient Olmec jades in the Late Classic period in the Maya Lowlands (Rathje et al. 1973:87-88). It is also possible, however, that the artifact was carried to the island by its owner during the Preclassic or earlier, then passed down as an heirloom until deposition. Proskouriakoff’s assertion that Precolombian peoples looted their own ancient burials opens the possibility that the jade had been deposited, subsequently removed, and reintroduced into the trade networks.
Sabloff and Rathje cited several Early Postclassic similarities between Cozumel at Chichén Itzá, including a round structure at San Gervasio, architectural elements such as columns resembling the Atlantean columns of Chichén Itzá, and Chichén-related ceramics. They suggested that a sea-borne “Toltec” migration to the east coast began with Cozumel, and that this central Mexican group settled on the island before launching incursions on the mainland (1975:25).

Sabloff and Rathje originally postulated Cozumel as a port of trade under Toltec influence during the Terminal Classic-Early Postclassic period (Sabloff and Rathje 1973:461), making it doubly significant that very few ceramic wares associated with Chichén Itzá actually appear on the island from Terminal Classic-Early Postclassic contexts. For example, there are just three or four examples of Plumbate sherds. Architectural Group 6 at San Gervasio constitutes a notable exception, however. A large collection of Chichén Slate and Silho Fine Orange sherds was documented there, making the group unique on Cozumel Island (Connor 1975:119, 129). The group also stands as the only one with a continuous ceramic sequence beginning in the Preclassic period.

The nature of this group and its relationship to mainland Yucatán remains unclear (Connor 1975:119). Interestingly, the ceramic evidence from San Gervasio’s Group 6 fits McKillop’s prediction for material remains of a port of trade—the structures could have been a residential area for non-local traders, identified by the presence of abundant imported materials at that location and nowhere else (1987:37). Leaving aside the problematic port-of-trade model, perhaps the remains indeed reflect the presence of a small cadre of elites with strong ties to Chichén Itzá living among the local population. By themselves the Group 6 ceramics do not indicate whether or not its residents were traders or even representatives of Chichén Itzá, but they hint at active connections with the capital.

**Tancah.** Tancah was densely populated in the Postclassic period. From the Late Classic to the Early Postclassic occupation at Tancah shifted to the west, away from the shore. Writing when the invasion scenario was still considered probable (despite Tozzer’s early arguments to the contrary), Miller proposed that the shift away from the sea was perhaps due to increasing threats from seaborne marauders—perhaps the Putun. As evidence he referred to murals at Tancah and at Chichén Itzá that depict warlike scenes, and which bear strong similarities to the art of the Early Postclassic period at Chichén Itzá (1977:116-117, 122). Today, the murals at Tancah and elsewhere in the Maya region are seen as part of the emergence of a pan-Mesoamerican style during this period.

**Northern Belize.** Substantial populations in northern Belize continued from the Late Classic into the Terminal Classic, and longer into the Early Postclassic period. The region was continually occupied and experienced no dramatic decline like its Petén neighbors (Chase and Chase 1986).
During the Terminal Classic period small amounts of Fine Paste wares started to appear in northern Belize, and architecture of the period at Lamanai, Nohmul, and Blue Creek exhibited similarities to that of northern Yucatán. Sidrys stated that during this period Aventura Double Mouth Jars were distributed all the way to Santa Rosa Xtampak and Uxmal. These lines of evidence indicate that northern Belize had open lines of communication and perhaps commerce with the northwest peninsula. Evidence for contact and communication with Mexico during the Terminal Classic includes an overall increase in the occurrence of green obsidian at Lowland Maya sites (Sidrys 1983:13; Guderjan and Garber 1995a:184-185), as well as murals at Santa Rita, Corozal, painted in a pan-Mesoamerican style (Chase and Chase 1988:82).

Ambergris Cay. Terminal Classic evidence on Ambergris Cay shows a continuation of Late Classic patterns including interactions with Yucatán, Campeche, southern Belize, and mainland northern Belize. By this time Yucatecan ceramics on the cay included Fine Orange, Tohil Plumbate, Chichén Red, and Sotuta Slate vessels, all strong indicators of continuing participation in long-distance trade (Guderjan 1995b:152; Guderjan 1995c:3; Guderjan and Garber 1995a:187, 189). Green obsidian appeared at San Juan, Laguna de Cayo Francesa, and Marco González (Figure 24) (McKillop 1995a:171). According to Guderjan, the presence of round structures constituted further evidence of strong ties to the north during the Terminal Classic period (Guderjan and Garber 1995a:185).

At the end of the period sites on the coast of Ambergris Cay were largely abandoned, except Marco González where trade activity consolidated. This conflicts with the scenario at Cozumel, where population increased dramatically and trade grew in importance during the Postclassic. To explain the divergence at the two islands, Guderjan suggested that during the Early Postclassic period existing maritime routes were consolidated and organized in a way that encouraged Maya seafarers to travel in longer voyages and avoid stops at intermediate sites (Guderjan 1995b:147, 155-156; Guderjan and Garber 1995a:187).

Guderjan referred to unpublished modern replicative studies showing that a Maya trade canoe could travel 40 km or more per day to conclude that canoes could avoid stopping at any sites on Ambergris Cay if necessary. He argued that on the southern coast at the same time the Maya started to use offshore islands of southern Belize as a strategy to avoid raiders near the coast. He pointed to the walled cities at Tulum and Ixpaatun that were functioning during that period, and which were spaced farther apart than the leeward sites of Ambergris Cay. Tulum and Ixpaatun, he argued, were better suited for defense from terrestrial forces (Guderjan and Garber 1995a:190; Guderjan 1995b:156).

Overall, Guderjan believed the abandonment of coastal Ambergris Cay, combined with the prominence of widely spaced Postclassic walled cities and the apparent increase in reliance on maritime
trade is evidence that coastal trade networks were consolidated and organized to reduce the energy needed to maintain control of the system. Investigators further argued that organized Postclassic traders forced families of Ambergris Cay and elsewhere out of the maritime trade business (Guderjan 1995b:156-157; Guderjan and Garber 1995a:190).

San Juan sits on one of Ambergris Cay’s natural harbors with nearby access to the east coast via Bacalar Chico. It is protected from wind and weather and, if Bacalar Chico was used by canoe traffic, it lies on the shortest route from the Caribbean coast to centers on Chetumal Bay. Major construction at the site took place between A.D. 650 and 950, and the center of the site was abandoned around A.D. 1000, the end of the Terminal Classic period (Guderjan 1988:216; 1995a:41; 1995c:3).


San Juan yielded less central Mexican obsidian than Isla Cerritos, but the overall percentage of 18.6 percent is unusually high for northern Belize. Investigators proposed that it is reasonable to assume some of this was passing through San Juan en route to nearby mainland sites (Guderjan, Garber, and Smith 1989:130; Guderjan 1995b:153). Abundant green obsidian at San Juan fits the model of circumpeninsular trade in which Mexican obsidian would arrive at Isla Cerritos first, then Ambergris Cay, then locations farther south such as Wild Cane Cay (McKillop 1995a:170).

Using evidence from Wild Cane Cay as a comparative database for evaluating obsidian on Ambergris Cay, McKillop identified important differences between the two collections. Overall obsidian densities are lower on Ambergris than at Wild Cane Cay. The pattern of obsidian procurement and use on Ambergris Cay fits a consumer model in which obsidian was traded for immediate use or given as payment for transshipment services. This more closely resembles the pattern of the trading port Isla Cerritos on the north coast than that of Wild Cane Cay (McKillop 1995a:173-174).

McKillop proposed that trading ports received obsidian from a variety of sources, and this diversity reflects the ports’ roles in trade. For example, Isla Cerritos and Wild Cane Cay each yielded obsidian from six sources. San Juan had obsidian from four sources. Wild Cane Cay had a much higher density of obsidian overall due to its proximity to the highland Guatemala sources, so San Juan’s diversity and densities fit what we should expect of a trading port midway along the route (McKillop 1995a:172).
San Juan’s Structure 3 (Figure 39) constitutes one of the most important architectural features at the site. The building is a two-tiered round structure on a rectangular platform dating to the Late and Terminal Classic periods. Guderjan asserted that this type of structure is rare in the Maya area, and is usually associated with the Postclassic period because round structures became important at Chichén Itzá during the Terminal Classic. Guderjan listed other Terminal Classic-Early Postclassic round structures at Seibal, Becan, Nohmul, and on Cozumel, and in the Late Postclassic at Mayapán, and along the east coast at Xelha, Xcaret, Tulum, and Paamul (Guderjan 1995a:35-37; Guderjan and Garber 1995a:188-189). There are also round structures noted at Isla Mujeres, Ake, Uxmal, and Saccacal. Landa mentioned a tall round building at Tihoo (Mérida), and others have been noted by Pollack at Palenque, in Guatemala, Honduras, Salvador, Nicaragua, and Costa Rica (1936). Some feel that round structures at these places
signal northern Yucatecan influence or even invasion (Chase and Chase 1982). Round structures have been called storage facilities at La Expedición on Cozumel, where one was associated with a San Gervasio architectural group interpreted as the holdings of a family involved in commercial enterprise.

Guderjan asserted that east-coast round structures are residential or administrative buildings rather than shrines (Guderjan 1995a:37-38; 1995b:152).

He argued that the presence of round structures in prominent locations at Late Postclassic east coast sites shows the structures are accoutrements of the maritime trade system, and that round structures in Yucatán have clear association with maritime trade even though they postdate the round structures at San Juan, Seibal, Nohmul, and Becan. Guderjan stated that round structures in the Terminal Classic period resulted from non-Maya influence on the Maya world. He did not infer the presence of a northern ethnic group at San Juan, but rather that San Juan was emulating an exotic type of architecture (Guderjan 1995a:38; Guderjan 1995b:152).

Structure 3 at San Juan relates most closely to the round structures at Seibal and Nohmul, and Guderjan found particular significance in the fact that a possible port facility was identified by Pring and Hammond at the latter. Combining general information about round structures with his own evidence from San Juan Structure 3, Guderjan concluded that round structures at San Juan are a “virtual ‘smoking gun’”—the strongest possible architectural evidence that San Juan was heavily involved in the maritime trade system (Guderjan 1995a:38; Guderjan 1995b:152; Guderjan and Garber 1995a:188-189).

Closer inspection, however, reveals problems with this conclusion. No direct evidence supports the notion that round structures are accoutrements of the maritime trade system, or that they are associated with particular developments of the Terminal Classic-Early Postclassic transition. Elsewhere in the Lowlands round structures were built much earlier than the Terminal Classic-Early Postclassic period, for example a large Middle Preclassic round platform at Altun Ha (Pendergast 1982b:186-202), and another at Chan Chen (Sidrys 1983:81). Furthermore, it is far from certain that round structures are rare. In addition to the many sites listed above, the possibility remains that more sites with round structures exist and that they are a common feature of Maya architecture. San Juan’s Structure 3 probably does reflect close ties with the north during the Terminal Classic period, but from current evidence little else can be said about its significance for maritime trade.

Two more possibly important buildings at San Juan, Structures 1 and 2 (Figure 40), were built ca. A.D. 1000, at the same time as the abandonment of the site center or perhaps just afterwards. Structure 1 is perpendicular to the shore, sloped, and leads from the shore almost to Structure 2. Structure 2 has a walkway leading away from it toward the east-southeast. Guderjan stated there is nothing special about these structures, and that they have no antecedents in earlier periods (1995a:33, 35, 41). If these two structures in combination led to the water’s edge in Pre Columbian times, however, they
Figure 40. The architectural group at San Juan, Ambergris Cay, Belize that includes Structures 1 and 2 (After Guderjan 1995d:Figure 6).

could be related to maritime activity. Such a facility might have been useful for loading and unloading goods.

Guderjan compared overall settlement pattern of San Juan to architectural groups on Cozumel that have been interpreted as family-operated commercial enterprises, particularly Group 4 at San Gervasio. He characterized San Juan as a node on the north-south maritime trade route that carried green obsidian along the coast. Evidence for interaction with the northern polities included pottery, Mexican obsidian, and the Structure 3 architectural style. Granites, schists, sandstone, pyrite and ceramics at San Juan indicate interaction took place between northern Belize and the Maya Mountains. Basalt, gray
obsidian, jade, and some aspects of the ceramics reflect trade with the south (Guderjan 1988:210; Guderjan, Garber, and Smith 1989:130; Guderjan 1995a:41-42).

Marco González was continually occupied from earlier times into the Postclassic, and experienced its peak ca. A.D. 1200. During the Early Postclassic period, Marco González expanded and prospered. Most construction took place at that time and immediately afterwards, signaling a consolidation of activity at the site once the other coastal sites on Ambergris Cay had been abandoned (Graham 1989:152; Graham and Pendergast 1989:7; Guderjan and Garber 1995a:187).

The assemblage of luxury goods at Marco González resembles that of San Juan, including gray and green obsidian, carved jade, chert, granite, Yucatecan pottery, and Tohil Plumbate (Graham and Pendergast 1989:7; Guderjan 1988:67; Guderjan 1995b:152). Marco González also yielded large amounts of ceramics strikingly similar, but not identical to those at Lamanai, 182 km away by maritime and riverine transportation routes. The close ceramic relationships and the fact that both sites were continuously occupied and thriving through the Terminal Classic-Early Postclassic transition hints that they interacted with one another. Graham and Pendergast argued the water routes would have been preferred over the swampy overland journey, but similar ceramics do not appear at the intervening sites on the New River. The interaction network that bound Lamanai to Marco González perhaps excluded sites on the New River. Either they did not participate in the Postclassic resurgence of activity, or transportation between Lamanai and Marco González used a different route (1989:1, 11).

Graham and Pendergast argued that the inventory of trade goods indicates Marco González residents accumulated wealth, and attributed this success to economic strength derived from meeting interior demand for marine resources. Marco González occupied an ideal location for monitoring water routes in and out of Chetumal Bay between the Caribbean coast and the Río Hondo, the New River, and the Northern River Lagoon system. Perhaps Marco González residents played a “gatekeeper” role, or offered goods and services to canoe traffic on the maritime route. Investigators also speculated that the site served as a port for Lamanai, but admit that more evidence will be required to address this possibility. Marco González went into an economic decline in the thirteenth and fourteenth centuries, but occupation continued into the Contact period (Graham and Pendergast 1989:11-15).

Ek Luum is located on the windward side of Ambergris Cay and was occupied during the Late and Terminal Classic periods. The site seems to have more in common with leeward sites than other windward sites, but evidence for involvement in trade was limited (Guderjan and Brody-Foley 1995:66, 72). Ek Luum is the site closest to an opening in the barrier reef, but one that did not provide access to the leeward side of Ambergris Cay. Guderjan proposed that during rough weather canoe navigators traveling outside the reef perhaps stopped at Ek Luum for shelter, accounting for its limited trade evidence (1995c:3).
Los Renegados, a small site with no formal architecture, had surprisingly good access to exotic trade goods, particularly obsidian (Váldez et al. 1995:112). Large amounts of obsidian from Middle Postclassic contexts, including 278 blades and two core fragments, possibly indicate that coastal trade still flourished there at that late date (Guderjan 1995b:155; Guderjan and Garber 1995a:187).

Sarteneja. Sarteneja experienced a surge in population in the Early Postclassic period, and reached its peak between A.D. 800 and 1200 when it was the largest and most important site in northeast corner of Belize. Its location suggests it had a role in the Precolumbian coastal trade (Boxt 1989:33, 35, 42).

The 4-km² site now lies beneath a modern village, and half the Precolumbian buildings have been destroyed by rock scavenging, looting, and waves. Ubiquitous Terminal Classic-Early Postclassic ceramics at Sarteneja related strongly to Yucatán wares of Chichén Itzá and the Puuc zone, reflecting interactions with the north. Ceramics correspond to similar ones from contemporary contexts at Aventura, Nohmul, El Pozito, Lamanai, and Santa Rita (Boxt 1989:33, 35, 43).

Sarteneja functioned as a central place for a network of satellite communities that surrounded it. Postclassic occupation is abundant in the area. Specific satellite communities included Aragon, Cave site, Cenote, and Bandera. A sacbe running 3.5 km from Bandera to Sarteneja facilitated year-round travel through the seasonally flooded savanna. Bandera provided access to the coastal lagoon and would have allowed travelers from Sarteneja to avoid an 18-km sea journey around Rocky Point (Sidrys 1983:162, 188, 403).

Sarteneja had a wealthy elite that procured exotic goods from diverse locations. Imports to the site during the Postclassic period included a jaguar effigy bowl made of volcanic stone, a greenstone celt, volcanic rock grinding stones, jade beads, obsidian blades, gold-sheet objects, a pyrite mirror, and a Type X Fine Orange Vessel, as well as copper bells, rings, and pins (Sidrys 1983:14). One burial contained Tulum-style tripod vessels, Mayapán censers, artifacts made of conch shell, a greenstone celt, a jade bead, a quartz crystal bead fragment, a copper bell, and 42 pieces of hammered gold foil. The largest piece of foil had been folded as though it once covered a container (Boxt 1989:41).

Sarteneja participated in a far-reaching trade network with access to products from northern Yucatán and Quintana Roo, the Guatemalan Highlands, and Central America. Participation in that trade network and connections with inland Belizean sites allowed Sarteneja to flourish during the Terminal Classic-Early Postclassic transition. Sarteneja perhaps served as a safe port or way station that could funnel goods from the southern and western interior to the coast, and goods from the maritime route to the interior. Sarteneja could supply stingray spines, marine and terrestrial animals, cotton, or sea shells to inland populations. Regular trade in marine items would explain the presence of a variety of non-local artifacts at the site (Boxt 1989:41, 44-45).
Today, Sarteneja fishermen use the largest boats and the best fishing equipment in the region due to their optimal location for traveling to the barrier reef. Sidrys speculated that the same held true in Pre Columbian times, and that Sarteneja residents could have had the largest and best watercraft. These would allow residents to access conch beds and other ecological niches of the reef approximately 40-70 km southeast of the site. Sidrys proposed that Sarteneja resident’s expertise and familiarity with the sea enabled them to participate as a leading community in long-distance maritime trade (1983:345, 381).

Sarteneja experienced an economic lull after the fall of Chichén Itzá. During the Late Postclassic it perhaps constituted a minor outpost or stop-over on the proposed circumpeninsular trade route (Boxt 1989:43).

Lamanai. Not only was there no decline at Lamanai at the end of the Classic period, but investigators proposed that conditions actually improved there as the site became the dominant Postclassic center (Pendergast 1981:43; Váñez 1994:15). A vigorous elite existed to organize labor for major renovations of large buildings, and Lamanai clearly benefited from participation in long-distance trade (Pendergast 1986:232-233; 1990b:173).

A ninth-century or early tenth-century ball court offering at Lamanai contained crystalline hematite, cinnabar, a pool of mercury, a small piece of jade, shell objects, pearl, and ceramics. The offering is unique in the Maya area because it contained 312 g of elemental mercury. Until its excavation, a total of only 952 g of mercury had been recovered from Maya deposits spanning 400 years, making the metal quite rare and probably very valuable to the Maya. The mercury probably came from Honduras and Pendergast suggested that it represents trade with Copan and other sites in western Honduras ca. A.D. 900-950. He further suggested that a maritime trade route between western Honduras and Lamanai would have been the most likely, although he noted that the presence of the mercury alone cannot support this (Pendergast 1981:40; 1982a:533-534; 1986:229-230).

Other exotic trade items at the site included Guatemalan obsidian, small amounts of ceramics from northern Yucatán, marine shell, and copper. Copper from western and central Mexico, Oaxaca, and Central America was arriving at Lamanai by the twelfth century. The flow began as a trickle then increased as the Postclassic period progressed. The Lamanai collection of metal artifacts, with 152 items, is the largest ever excavated in a controlled manner from a Maya site. Pendergast stated that we do not yet know what Lamanai provided in exchange for these goods, but that it must have been quite valuable. The quantity and diversity of trade goods at Lamanai shows that it was a wealthy site with considerable status in the eyes of traders and producers in other regions (Pendergast 1990b:173).

Pendergast argued that water routes were paramount for Lamanai’s participation in long-distance trade and described the New River as a great avenue for traders traveling to and from the site. He correctly
pointed out that no evidence exists to identify the people who did the trading, or to show that they had a more dominant role in the Postclassic period than in previous periods (1990b:173).

The Southeast

By the Terminal Classic period inland centers of southeast Belize (Lubaantun, Nim Li Punit, and Pusilha) had been abandoned. The coastal-inland component of trade with Wild Cane Cay and the other coastal sites ceased as a result (McKillop 1996:59). Coastal settlement continued, and sites were occupied at Wild Cane Cay, Frenchman’s Cay, Green Vine Snake, Moho Cay-Toledo, Foster Farm, Arvin’s Landing, and Clearwater (Figure 31). Island populations of southern Belize increased during the Terminal Classic-Early Postclassic period. Coral architecture appears at Wild Cane Cay, Frenchman’s Cay, and Green Vine Snake, and Foster Farm was a sizable Postclassic village. Moho Cay-Toledo and Clearwater were small fishing and hunting communities (MacKinnon 1989:116-117; McKillop 1996:56).

Evidence from nearshore and offshore cays indicates that maritime trade routes stayed close to the coast in the Terminal Classic and Early Postclassic periods and did not move offshore to include cays of the outer edge of the barrier reef until the Late Postclassic. MacKinnon predicted that cays close to the mainland would yield remains mostly from the Early Postclassic or earlier, while cays along the barrier reef would have Late Postclassic remains. Cays in between the coastal and reef zones would have few if any artifacts (1989:113). Survey results were consistent with MacKinnon’s prediction.

During the Terminal Classic-Early Postclassic transition, maritime trade with Honduras and Central America was either not established yet or still took place through a series of short hops along the coast (MacKinnon 1989:116). Evidence from Lowland sites clearly indicates that goods were arriving from those areas so trade probably involved a coastal hugging route.

Placencia, False, and Frenchman’s Cays. In the Placencia area, only Placencia Cay and False Cay yielded remains from the Terminal Classic-Early Postclassic, and both yielded green obsidian. A disturbed site on Placencia Cay yielded Tohil Plumbate, gray obsidian from Guatemala, green obsidian from Pachuca, and chert from northern Belize. At False Cay excavation revealed obsidian from Guatemala and Pachuca, Tohil Plumbate pottery, and chert from northern Belize. MacKinnon characterized the site as the node of a specialized lithic production on the maritime trade route, and proposed that coastal trade was more organized during this time than it had been in the Late Classic period (McKillop 1987:116-117; MacKinnon 1989:116-117, 120).

The pattern of remains on Frenchman’s Cay resembled that of Wild Cane Cay—a combination of green obsidian, Tohil Plumbate wares, and coral housemounds. Wild Cane Cay and Frenchman’s Cays
also had higher surface densities of obsidian than other sites, suggesting workshops existed on each (MacKinnon 1989:116, 120-121).

Wild Cane Cay. Wild Cane Cay was occupied from A.D. 300 to 1400 and had a tremendously important occupation and role in maritime trade in the Terminal Classic and Early Postclassic periods, ca. A.D. 800-1200. The cay sits at the mouth of the Deep River, which flows out of the Maya Mountains. The terrain is flat, with six Postclassic-period mounds made of coral (Figure 41). Today coral and mangroves form a natural harbor on the north shore. Sea-level rise has submerged much of the island, however, and testing of the underwater deposits around the cay demonstrated that at one time the occupied area was at least twice as large as the area now exposed. Wild Cane Cay has been thoroughly tested and studied by Heather McKillop, and this summary of the results draws entirely from her numerous publications about the site (McKillop 1987; Jackson and McKillop 1987; 1989; McKillop 1989a; 1989b; McKillop and Jackson 1989; McKillop 1996).

Wild Cane Cay yielded abundant trade evidence, with a diverse collection of traded goods from all periods of occupation and a particularly interesting assemblage of obsidian for the Terminal Classic-Early Postclassic period. Careful examination of trade goods has shown that the site was probably an important station on the maritime trade route. Ceramics at Wild Cane Cay are typical Early Postclassic forms. The collection included Tohil Plumbate made on the Pacific coast, and Tulum Red, which was
once thought to be a Late Postclassic ware but has since been found in Early Classic contexts in northern Belize (Jackson and McKillop 1987:62-63; McKillop 1987:251; 1989a:23).

McKillop’s study of Wild Cane Cay’s role in maritime trade focused on common-sense predictions designed to illuminate the relative importance of the site on the proposed trade route using archaeological data. McKillop first predicted that if obsidian was transported over coastal routes, then coastal sites should yield higher densities of obsidian than inland sites. If Wild Cane Cay functioned as a trade port on a coastal route, then it should yield much higher densities of exotics than other sites similarly distanced from the sources which were not trade ports. The degree of conservation exercised in blade production should be lower at trade ports than non-trade ports, and the overall collection of exotic artifacts should be more diverse. If long-distance trade, and in particular maritime trade, became more important in the Postclassic than in the Classic period then over time densities of obsidian and overall diversity of exotic trade goods should increase, and conservation of raw material during blade production should decrease (McKillop 1989a:19, 49; 1996:52).

Wild Cane Cay had a higher density of Guatemalan obsidian during the Classic period than even some of the largest cities of the interior, and this density increased in the Postclassic period. Residents did not use obsidian very efficiently compared to interior sites, which indicates they had easy access to the raw material, probably due to the site’s role in maritime trade. Based on exhausted cores, blades, and debitage, investigators suggested Wild Cane Cay was home to small obsidian workshops (Jackson and McKillop 1987:63; McKillop 1987:247, 250-251, 254).

Densities of obsidian on Wild Cane Cay were much higher than would be expected if the site imported it only for local use, and also much higher than comparable Lowland sites. The Postclassic period density, 134.4 g/m³, was much higher than the Classic period density, 16.8 g/m³, indicating that obsidian trade expanded in the Postclassic. McKillop noted that the obsidian density at Cozumel only reached 0.5 g/m³ and at Tulum it only reached 1.4 g/m³, and in each case the quantity of obsidian was still used to propose a role in long-distance trade (1989a:39-44; 1996:54).

McKillop estimated that during the Postclassic period at least 21,686 obsidian cores arrived on Wild Cane Cay, enough to produce 9,036 blades every year for 300 years.49 To use this much obsidian locally the island would have had to host an extremely dense population, and each household would have had to consume much more than was normal for the Maya Lowlands while simultaneously using imported chert tools. No evidence exists to indicate this was true. The number of blades from excavations

49A single obsidian core typically yielded about 125 blades. If the Postclassic period lasted 300 years and 21,686 cores were imported during that time, then 72 cores arrived each year with an estimated yield of 9,036 blades (McKillop 1989a:39).
on the island was far lower than suggested by the number of cores. At least some of the blades produced there must have been manufactured for export (1989a:39).

To measure the degree of conservation exercised in the production of blades recovered, McKillop compared cutting-edge-to-mass ratio (CE:M) and average blade width at on Wild Cane Cay to values at other sites. Wild Cane Cay obsidian knappers also conserved less than their counterparts at Moho Cay in northern Belize, probably because the former were closer to the supply zone. At both islands Ixtepeque obsidian was conserved less than El Chayal obsidian in the Classic and Postclassic periods. This could indicate that Ixtepeque was delivered via a more direct route and therefore was more accessible, or it might reflect differences in the production and distribution of cores from each source. During the Classic period, the CE:M equaled 4.67 and average blade width was 1.18 cm. During the Postclassic period on the island, CE:M dropped to 4.55 and the average blade width rose to 1.23 cm. Both trends reflect less concern with conservation in the Postclassic period, and less conservation than the average for the Maya Lowlands during both periods (Jackson and McKillop 1989:109; McKillop 1996:54).

Early Postclassic Wild Cane Cay imported obsidian from at least seven sources: Ixtepeque, El Chayal, San Martin Jilotepeque, Ucareo, La Esperanza, Unknown Source Z, and Pachuca. Reliance on Ixtepeque obsidian increased 1082 percent from the Classic to Postclassic periods. The obsidian from Ucareo was an unusual find. In the Maya area Ucareo obsidian is only known from Wild Cane Cay, Isla Cerritos, San Juan, and Lubaantun (McKillop 1989a:31-32, 45; 1996:55).

Green obsidian on Wild Cane Cay was found in Early Postclassic deposits in two production areas and one tomb. Green obsidian was rare compared to gray obsidian but still densely deposited compared to other sites. The Ucareo and Pachuca obsidian on Wild Cane Cay supports the notion that it was involved in long-distance trade with the northern Lowlands in the Early Postclassic period. Evidence suggests the Mexican blades were imported as finished products or perhaps produced by itinerant merchant-knappers (McKillop 1989a:29, 45-46), while the Ixtepeque obsidian was imported as cores.

Based on the obsidian evidence Jackson and McKillop concluded that Wild Cane Cay received Guatemalan obsidian early in a series of exchanges that moved the material to Lowland sites. Wild Cane Cay sat on the direct trade route between the supply zone and the Lowlands, and residents probably interacted directly with long-distance traders (1989:108).

The overall diversity of exotic goods imported to Wild Cane Cay was unusually high. Trade-related activity at the cay evidently expanded during the Early Postclassic period, as a much wider variety of trade goods appeared at that time. Early Postclassic imports to the island included: gray obsidian; green obsidian blades; copper bells, rings, and beads; basalt manos and metates; and Tohil Plumbate pottery. Artifacts in burials included pottery (including Tulum Red vessels), gold foil, obsidian, chert, a groundstone axe, Spondylus shell, greenstone, and stingray spines. Again the Wild Cane Cay evidence
contrasts with that from Cozumel, where exotic burial goods were relatively scarce (Jackson and McKillop 1989:104; McKillop 1996:53).

McKillop attributed increased building activity and a trend toward larger structures on Wild Cane Cay in the Postclassic period to wealth gained from participation in profitable maritime trade. She hypothesized that residents charged merchants for trade services, while carrying on transactions with them during their stay. McKillop characterized the Wild Cane Cay population as a wealthy group that had the luxury of acquiring obsidian, perhaps as payment, to use in day-to-day activities even though chert and shell alternatives were available (1987:257, 261; 1996:57).

For subsistence, islanders relied entirely on local resources of the cay, its immediate surroundings, and the nearby mainland. Sandstone slabs from the mainland were transported to the site, presumably by canoe, for use in tombs and other mound-related construction. High quality chert artifacts like those from the northern Belize Chert Bearing Zone also appear on Wild Cane Cay. These included chert debitage and tools like those made at Colha during the Early Postclassic period (McKillop 1989a:29; 1996:55).

The trade networks in which Wild Cane Cay participated probably also supplied Chichén Itzá and other centers such as Lamanai and Colha. The increase in trade goods at Wild Cane Cay over time resulted from the rising importance of trade with the north as Chichén Itzá became powerful. In support of this assertion McKillop pointed out that the assemblage of traded goods at Wild Cane Cay is similar to that of Isla Cerritos, where most goods were bound for Chichén Itzá: green obsidian, copper, Tohil Plumbate, Ucareo obsidian, and more. The parallels suggest participation in the same trade network (McKillop 1989a:46-47, 50).

The copper bells are especially significant. Identical copper bells have been found at Quirigua, Wild Cane Cay, the Bay Islands, and the Chichén Itzá Cenote of Sacrifice. Honduras is known as a Maya source for copper, but bells from Wild Cane Cay are chemically different from other Honduras copper objects that have been analyzed. On the other hand they are visually similar to ones at Quirigua, which suggests they originate in the Motagua River basin. The presence of identical bells at Chichén Itzá hints that they were transported north along the coast (McKillop 1989a:47).

Evidence for obsidian densities, source diversity, and conservation at Wild Cane Cay combined with evidence of other exotic goods traded to the site clearly shows that Wild Cane Cay was a coastal trade station and that obsidian was indeed transported along a maritime trade route. The sources of other traded goods appearing at Wild Cane Cay show that it participated in trade routes with both the northern and southern regions in the Postclassic period. Southern products included: gray obsidian, basalt, copper, Tohil Plumbate, and Honduran obsidian. Green and Ucareo obsidian probably arrived from the north since both are also found at Isla Cerritos. McKillop concluded that the evidence suggests the existence of a
maritime route along the Motagua River and Caribbean coast of the peninsula (McKillop 1989a:47-48, 50).

Discussion

The study of maritime trade in the Terminal Classic-Early Postclassic period has been traditionally infiltrated with the assertion that coastal trade routes became important in the Postclassic period because a group of seafaring people arrived and brought their maritime traditions with them. The residents of Chichén Itzá were assigned a controlling role in maritime trade and furthermore, the spread of art and architectural traits associated with Chichén Itzá were viewed as evidence of the lengthening reach of the Putun or Itzá seafarers.

Archaeological evidence has not shown conclusively if cultural changes in northern Yucatán reflect immigration from Mexico or simply expansion of traits from there, and may be unable to do so in the future given the difficulty of differentiating the effects of each in the material record. The problem has considerable relevance for maritime trade—central Mexican culture traits could have been brought by migrating peoples in one or two episodes, or could reflect gradual expansion of communication and trade via a maritime route. Archaeologists increasingly favor the latter, and view the Terminal Classic-Early Postclassic transition as a time when pan-Mesoamerican culture traits developed.

Green obsidian from Pachuca is normally found in the Lowlands only at large centers or at Postclassic coastal sites such as on Ambergris Cay, False Cay, Frenchman’s Cay, Isla Cerritos, Cozumel, Santa Rita, Sarteneja, and Wild Cane Cay. All these coastal sites have been proposed as sites involved in long-distance maritime trade (McKillop 1989a:45). Green obsidian from central Mexico was more abundant than Guatemalan obsidian in the southwestern corner of the peninsula during the Terminal Classic-Early Postclassic, and it became more frequent in the Maya Lowlands through the period. Mexican obsidian was still rare in the Maya area, but artifacts from both Pachuca and Ucareo have been recovered at three key points along the proposed circumpeninsular maritime trade route: Isla Cerritos, Ambergris Cay, and Wild Cane Cay (McKillop 1989a:45; 1995:171-172) as well as at Chichén Itzá.

Artifact assemblages and occupation at Wild Cane Cay, Isla Cerritos, and San Juan, showed that all three participated in the same trade sphere of the Early Postclassic period tied to the rise of Chichén Itzá (McKillop 1996:55). Isla Cerritos and Wild Cane Cay have good harbors, a natural one at Wild Cane Cay and a man-made one at Isla Cerritos.

The nature and abundance of exotics indicates pivotal roles for Isla Cerritos and Wild Cane Cay. For Isla Cerritos this role was to be a coastal port for Chichén Itzá, bringing gold, tumbaga, and copper from Central America, gray obsidian from Guatemala, and green obsidian from Mexico. Wild Cane Cay’s
role was to be a supply node for Guatemalan obsidian and other Highland exotics. Greater use of Guatemalan obsidian at San Juan and Wild Cane Cay reflects their eastern focus, and greater use of Mexican obsidian at Isla Cerritos reflects a focus toward central Mexico (McKillop 1989a:50; 1996:55).

The pattern of available evidence suggests that a maritime trade network bringing jade and metals northward and fine-paste ceramics southward skirted the northern section of the east coast, but perhaps included a stop at Cozumel. Chichén Itzá-related ceramics at a single group on Cozumel hint that the group’s residents had strong relationships with the Yucatecan capital. Thus, a group of people with access to the maritime network perhaps maintained an enclave or barrio on the island at San Gervasio, but most Cozumel residents remained uninvolved in trade.

No clear evidence exists to show that the advent of art and architectural traits associated with the Gulf Coast and central Mexico spread into the Maya Lowlands solely due to the expansion of maritime trade during the Terminal Classic-Early Postclassic period. The art styles and artifact types appear in the Maya area much earlier and at more Lowland sites than Mayanists traditionally acknowledged. Intensified communication and coastal trade probably accelerated an existing trend toward pan-Mesoamerican popular culture but the notion that aggressive merchant warriors imposed their will on the Maya does not stand up to scrutiny.

THE LATE POSTCLASSIC PERIOD

Perhaps the most tantalizing clue to the importance of Chichén Itzá for coastal settlement and activity is the contemporaneous and seemingly dramatic decline of the inland capital and sites all along the north and west coasts of the Yucatán Peninsula at the end of the Early Postclassic period (Figure 42). Andrews characterized the changes as the result of the collapse of Chichén Itzá which caused the abandonment of Itzá outposts along the coast and the maritime trade network on which they relied. At the same time an explosion of occupation and activity took place along the northeast coast of the peninsula. Over 100 sites with Late Postclassic occupation have been documented. Andrews characterized the coastal strip as an almost continuous belt of densely occupied city states that thrived on a combination of farming, exploitation of marine resources, and trade (1990:161-162).

The Southwest

Ethnohistoric documents indicate that coastal Campeche played an important role in the Late Postclassic, but as with other periods, little archaeological evidence exists due to lack of excavation
(Willey 1986:40). The Grijalva River area might have been home to powerful groups able to resist the encroaching Aztecs (McVicker 1978:185).

Southwest Campeche hosted dense populations, with most of the visible remains dating to the Late Postclassic. Canoes were probably used heavily for transportation along the networks of rivers, swamps, and lakes (Andrews 1943:37, 45-46). Considerable Postclassic activity also took place at San Fernando, El Fenix, Sigero, and at several sites in the Las Palmas region (Piña Chan and Navarrete 1967:15, 17, 34-35, 37-38). At Tamulte de Sabanas, an offering included pottery with four copper bells and a 13-bead jade necklace (Berlin 1960:108, 143, 145).

Atasta and Aguacatal were two towns on a western lagoon branching off the Laguna de Terminos. Late Postclassic graves at Atasta yielded ceramics, shell, and obsidian flakes along with one jade bead in each grave. There is an unconfirmed report that a vessel full of copper bells was excavated from Atasta, and four other copper bells have been documented from the site. Berlin also reported a copper point attached to a shaft like two others known from Chichén Itzá (1960:109, 111, 142, 146).

Other Late Postclassic contexts included 45 green obsidian flake blades and 14 gray-black ones. Referring to the reports that Xicalango had been a commercial outpost of the Aztecs and that green obsidian was commonly used in the Valley of Mexico, some proposed that the green obsidian was transported to the Laguna de Terminos region by Mexican merchants (Berlin 1960:142; Andrews et al. 1989:360). Extensive distribution of green obsidian in the Maya region during the Terminal Classic-Early Postclassic transition shows that Mexican-Maya trade networks between the two regions clearly had roots in earlier periods. The advent of Aztec merchants probably had little effect on long-standing routes through the Laguna de Terminos area.
Figure 42. Sites that potentially participated in maritime trade networks of the Late Postclassic period.
Late Postclassic occupation at Aguacatal was smaller than in earlier periods, but the site might still have played a role as a trade center of some importance. Late Postclassic Fine Orange wares appear there alongside ceramic signs of contact with the central Mexican Aztecs (Matheny 1970:5, 121).

The North

In the traditional view of the Late Postclassic for the northern Lowlands, the fall of Chichén Itzá ca. A.D. 1200 is attributed to a resurgence of local elites resentful of the domination exercised by the city’s rulers. After the site declined, Mayapán rose to a brief Late Postclassic fluorescence, ca. 1240-1441, during which residents constructed buildings in deliberate but inferior imitation of Chichén Itzá. Archaeologists typically characterized this as a vain attempt to revive Chichén Itzá’s former glory. After Mayapán fell, the Yucatán Peninsula fragmented into 16 independent units which remained in place until the Spanish arrived early in the sixteenth century (Robles Castellano and Andrews 1986:91; Andrews 1990:161).

Evidence suggests that revisions to this scenario are needed. The independent city states of the fifteen century started to emerge before the rise of Mayapán, and some remained outside Mayapán’s sphere of influence throughout their occupation. Western and eastern parts of the northern Yucatán Peninsula exhibit cultural differences through the period, with an indistinct cultural boundary between them. Robles Castellano and Andrews maintained that Mayapán dominated the western sphere and Ecab and Cozumel dominated the east (1986:91, 96-97).

Mayapán had a much longer occupation than traditionally thought and ceramic phases there overlap with Chichén Itzá phases. Mayapán is a walled city with dense residences around a ceremonial center. Several large buildings at Mayapán resemble the Early Postclassic buildings at Chichén Itzá. There are four round structures, the largest of which is much like the Caracol. On the other hand, differences between the two sites are as striking as the similarities. Mayapán has stronger architectural links to the east coast sites including close architectural and ceramic relationships with Tulum (Andrews 1943:82; Andrews 1983:124; Tozzer 1957a:54-55; Willey 1986:37-39).

Late Fine Orange wares appear at Mayapán during the Late Postclassic. Also large, elaborate incense burners were deposited around shrines and colonnades. The censers appear at other sites throughout the Late Postclassic Lowlands and are often considered a sign of influences from the northern part of the peninsula. Some appear at Chichén Itzá, indicating that buildings there were reused after the site was mostly abandoned (Tozzer 1957a:54). Architectural and ceramic styles that reflect Mayapán influences appear across the northern Lowlands from south central Campeche to southern Quintana Roo, and into northern Belize (Willey 1986:40).
Andrews characterized the north coast of the Late Postclassic as enduring a state of post-Chichén Itzá decline. By 1983 the only known occupations were at Enal and Vista Alegre, and by 1990 Andrews noted only seven documented sites. On the other hand, he has also reported that by the time the Spanish arrived in the sixteenth century nearly every salt-making area between Celestún and El Cuyo was operating (Andrews 1978:89; 1983:36, 129). The largest salt producing beds were at Las Coloradas. During the early colonial period and the Precolombian period that preceding it, salt beds were owned by certain towns and persons wishing to collect salt needed permission and usually paid a fee to the appropriate rulers (Eaton 1978:13). If the Spanish were accurate in their descriptions of the north coast, then clearly the region experienced considerable success that continues to elude archaealogical detection.

The East

Unlike in the north and west, the east coast of the Yucatán Peninsula experienced a fluorescence during the Late Postclassic period. Large, dense communities appeared along the coast, usually located next to natural harbors where, in Andrews’ estimation, good facilities existed for traders involved in flourishing long-distance exchange (Andrews 1978:89; 1983:33, 129).

Ecab. Ethnohistoric sources left the location of the important “port” of Ecab ambiguous (Robles Castellano and Andrews 1986:62). Benavidas C. and Andrews argued that the site of Boca Iglesias was the Precolombian Ecab, but others proposed that it was at Vista Alegre. Boca Iglesias occupied about 2-3 km² and included hundreds of domestic units (Benavidas C. and Andrews 1979:6, 9-10).

Ecab’s influence could have covered a province of about 10,000 km² including roughly 40 known sites, 26 of which are on the coast, extending all the way to Tulum. Benavidas C. and Andrews proposed that the whole zone was not actually governed by one center, but rather a loose organization of towns including Ecab (1979:50-52).

Ecab is where Hernández de Cordoba and his men reportedly encountered a city so large they called it Gran Cairo, saying they had not seen a city that big in Cuba or on Hispañiola. They had been greeted nearby by Maya in 10 large canoes, and they wrote of seeing gold and copper there. The Spaniards perhaps exaggerated the grandeur of Ecab—most of the chroniclers who wrote about it had not actually been there (Benavidas C. and Andrews 1979:14-15). Ecab was probably not a huge city compared to other east coast centers.

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50Late Postclassic occupation is noted on the northeast coast at Holbox, Isla Mujeres, Cancún (Benavides C. and Andrews 1979:51) as well as Cocal 1, Cocal 2, and Chiquila (Sanders 1960:190-192).
Central East Coast Sites. The central portion of the east coast boomed during the Late Postclassic. Miller characterized the region's primary activities as lucrative trade with the Highlands, and hosting pilgrims who visited religious centers (Miller 1977:107). Most information concerning the east coast of Quintana Roo, Mexico, comes from a survey and test-pit program carried out by E. Wyllys Andrews IV and Anthony P. Andrews. They documented more than 500 masonry buildings in a stretch of coast 60 km long and 3 km deep, with site sizes ranging from a single building to 50 or more structures (Figure 43). Land immediately behind this coastal strip was densely populated in Precolumbian times (Andrews and Andrews 1975:1).

A distinctive characteristic of the east coast is the string of isolated coastal shrines, common in the central section. Six of these lie between Punta Piedra and La Ina, and there are seven more farther south at Punta Cadenas, Xelha, Matanceros, Xaac Chico, Xaac, and Ak 2. Most of the shrines are in the vicinity of inland sites, which suggests they were coastal outposts or landmarks. Chakalal, Xaac, and Xelha are in natural harbors which suggests they were involved in port activities related to larger inland sites. Significantly, every natural harbor on the coast boasts one of these shrines (Andrews 1973:476).

Round structures are present at Tulum, Xelha, Paamul, and Xcaret. Walls are present at Tulum, Xelha, and Xcaret. According to Andrews the walls probably did not have high strategic value (1973:476).

Late Postclassic sites on the east coast exhibit influences attributed to Mexico much like the western and inland sites of the Early Postclassic did. Andrews and Andrews argued that the artistic and architectural features “corroborate historical accounts that the east coast was an important part of the far-reaching trade and transportation network of Postclassic Mesoamerica.” They proposed that the large population was attracted to the east coast by coastal trade (Andrews and Andrews 1975:102, 104).

The distribution of sites along the coast was determined by available water and agricultural resources as well as access to trade routes. Whenever all could be found right on the shore, the sites would locate there, preferably next to a natural inlet or cove which formed ideal harbors for canoes. Examples include Tulum, Paamul, and Xcaret. In many cases water was located somewhat inland. Thus some larger sites are not located directly on the coast, but rather at places with fresh water that were as close to natural harbors as possible. In these cases, coastal shrines functioned as extensions of the main site to a nearby harbor where settlement was not advisable (Andrews 1973:476-477; Andrews and Andrews 1975:104).
Figure 43. Sites of the central portion of the east coast of Quintana Roo, Mexico (After Andrews and Andrews 1975:Figure 1). Courtesy of the Middle American Research Institute.
Xcaret. Xcaret sits directly opposite Cozumel’s main modern port at San Miguel (Andrews and Andrews 1975:10), which was also occupied in Precolumbian times. Xcaret covers about 10 km² around a Y-shaped inlet, which Andrews and Andrews described as a “well-sheltered harbor with natural docking facilities that could accommodate a large number of canoes.” The inlet provides the best shelter in the area for boats and is used today as such (Figure 44). Xcaret almost certainly was the Colonial town of Pole, which served as the primary point of embarkation for Cozumel (Robles Castellano and Andrews 1986:63). Ethnohistoric sources state that a paved road ended at Pole, which probably facilitated pilgrims’ travels (Tozzer 1957a:185).

Most of the standing buildings date to the Late Postclassic period. Four more small, isolated shrines face the water, and larger buildings are visible for a considerable distance out to sea. Architecture typifies east coast construction, with inset panels above the doorways of buildings and thick layers of plaster that disguised sloppy building practices. Two round structures exist at Xcaret, one of which may be visible from more than 1 km out to sea. Round structures have been considered rare in Maya architecture as a whole but are fairly common on the east coast and on Cozumel (Andrews 1973:475; Andrews and Andrews 1975:10, 12, 22, 26, 54, 102).

Punta Tulsayab. On the approach to the two largest and southernmost sites considered in the Andrews survey, Tancah and Tulum, an isolated coastal shrine sits 100 m inland on Punta Tulsayab, on a promontory facing the sea. The shrine marks a dangerous spot at the northern end of the bay on which Tancah lies, where the barrier reef meets the mainland. Boats must maneuver quickly to get inside the reef if they wish to proceed to Tancah or Tulum using the inside passage. There are remains of a twentieth-century shipwreck there, suggesting the necessity for a navigation aid. The Precolumbian shrine perhaps served as a navigation aid and announced the proximity of Tancah (Andrews and Andrews 1975:97; Miller 1977:131; 1982:44).

Tancah. Tancah consists of an isolated coastal shrine and inland group of buildings. Although construction took place earlier at the inland portion of the site, the majority of the buildings date to the Late Postclassic period and overlook the shore. A natural opening in the barrier reef in front of Tancah seems to be marked by a Precolumbian structure on land (Andrews and Andrews 1975:100; Miller 1977:131; 1982:43).

Based on mural evidence, Miller described Precolumbian Tancah as culturally marginal, but periodically injected with wealth and prestige by opportunistic foreigners (1982:64-74, 82-83). He saw substantial Mexican influence in the mural paintings there, and attributed it to two separate Mexican incursions that he proposed for A.D. 770 and 1400 (1982:2). Tancah and Tulum were exporters of marine
products such as stingray spines, conch shells, carapace and meat from sea turtles, and *Spondylus* shells, all for use in rituals (Miller 1977:100-103).

*Tulum.* The imposing Late Postclassic-period site of Tulum sits directly on the highest rocky promontory of the central east coast. Most buildings were constructed toward the end of the Postclassic period (Miller 1977:126). Archaeologists once thought that the appearance of distinctive Tulum wares at sites further south reflected an aggressive movement of northern peoples south along the coast. More recent evidence shows the wares probably originated in northern Belize, perhaps as early as the Terminal Classic period, and their appearance at Tulum probably reflects coastal trade and communication.
Tulum seems to have been a planned city; as buildings are oriented along a single street (Figure 45). On the seaward side an imposing 12-m cliff slopes down toward the water (Lothrop 1924:65). There is a break in the cliff north of Tulum's inner enclosure and the land drops down to a sandy beach and a low flat area. The flat area merges into the trough of the street that runs through the site, providing easy access from the sea. Sanders speculated the beach served as a canoe port with the expanded level space inland from it as a marketplace (1960:176).

The possible marketplace consists of a large open space between structures 25 and 33, with the west side defined by a low stone wall along the east edge of the street. Excavation trenches revealed 1.4 m of cultural deposits. One included pottery, bone, and shell. Soil is deeper here than elsewhere and contains abundant cultural materials. If not a marketplace, the space could have been a small area of dense residences (Sanders 1960:183, 213).

Other than the access route to the sea, Tulum is well fortified by the cliff and a thick wall that surrounds the settlement area. The wall is 4.6–6.1 m (15–20 ft) high and has an average width of about 6.1 m (20 ft). Five gateways allow access through the wall and Lothrop described small temples at the inland corners. The Tulum walls were built in stages and they do not fully enclose any space. Lothrop suggested they were closed with walls made of perishable materials (Lothrop 1924:68-71).

In 1985 a survey team from Mexico's Instituto Nacional de Antropología y Historia and the Institute of Nautical Archaeology investigated Tulum's Castillo for relationships to canoe navigation. They found that two windows in the third story of the castillo directed beams of light from butane-gas lamps, a convenient substitute for fire, directly onto the narrow opening in the barrier reef in front of the site (Figure 46). The two beams reportedly overlapped to pinpoint the spot. Creamer compared them to range lights that serve the same purpose for modern sailors51 (1986:4-5). We must view this sort of experimental evidence with caution, but it does suggest a substantial Maya commitment to maritime navigation.

51 Range lights normally must lie in line with one another rather than side-by-side.
Figure 45. Tulum (From Sanders 1960:Figure 2).
Cozumel Island. Architecture and ceramics on Cozumel indicate that the Late Postclassic period brought a construction boom and increased population (Connor 1975:115, 125; Sabloff and Rathje 1975:26). During the Late Postclassic period the island was a single social, cultural, and economic unit with an administrative center at San Gervasio and strong ties to Mayapán.

The investigators viewed all sites on the island as having functioned together as one trading center. Since the island sat on a probable major trade route from northern Yucatán to Honduras, residents could have traded in salt, cotton, fabrics, slaves, honey, and copal from the north, as well as cacao, gold, jade, and obsidian from the south. Sabloff and Freidel argued that Cozumel is a likely location for warehouses because the island is on a trade route, it was a pilgrimage center, and it was defensible. Ethnographic sources reported that warehouses existed at nodes in the trade network such as Naco,
Xicalango, but we do not know what they would have looked like. Large platforms built on Cozumel during the Late Postclassic period perhaps provided dry storage spaces for trade goods transported along the maritime route. Sabloff and Rathje even suggested that capacious storage would allow a merchant elite from Cozumel to exert control over the market supplies (Sabloff and Freidel 1975:371-372; 401-403; Sabloff and Rathje 1980:143).

Exotic goods excavated from Postclassic contexts on Cozumel include a magnetite mirror, several gold-foiled clay beads, copper bells, colonial period artifacts, obsidian, ceramics, jade axes, beads, carved pendants, and basalt manos. These occur in relatively small quantities, with very few used in caches and burials. As described previously, the investigators stated that the general population had access to exotic goods but did not deposit them in burials, preferring to preserve wealth in the material world that could easily convert to cash when necessary. Sabloff and Rathje proposed that this is what archaeologists should expect of a system in which mercantile concerns were prominent; residents did not want to bury wealth in a way that is inaccessible and inflexible (Connor 1975:131; Sabloff and Rathje 1973:460; Sabloff and Rathje 1980:146).

The general settlement pattern of the island shows several medium-sized settlements near the coasts, and large settlements located in the interior. Good areas for docking canoes exist at San Miguel and the lagoons at the north end of the island. Sacbes lead away from the northern lagoons to the south, and would have eased transport to storage facilities during the rainy season. Sabloff and Rathje proposed that trade canoes would land and unload in the northern lagoons. The goods would be transported south and stored if necessary, then reshipped to other sites or taken to San Gervasio, which was the commercial hub in the Late Postclassic period (Sabloff and Rathje 1973:460; Sabloff and Freidel 1975:376).

A line of small coastal shrines on the windward side of Cozumel dates to the Late Postclassic period (Connor 1975:128). At least two of the same type of structures did exist on the leeward side but both have been destroyed (Sabloff and Rathje 1975:27). Similar shrines on the mainland coast are usually located in front of inland settlements, and might have been landmarks for inland centers, watchtowers, or both (Sabloff and Freidel 1975:403). Test pitting documented only very small ceramic samples in association with the Cozumel shrines (Connor 1975:128).

In 1518, the Grijalva expedition on its way to San Miguel, Cozumel, noted bonfires on shrines along the west coast of the island. Sabloff and Rathje proposed that the line of shrines was a system of defensive flares or watchtowers on which bonfires would be lit to warn of approaching enemies. They proposed that the Late Postclassic brought increased defenses on the mainland, citing Tulum’s location on a cliff, and walls constructed at Xcaret, Ixpaatun, and Mayapán (Sabloff and Freidel 1975:403; Sabloff and Rathje 1975:27; Sabloff 1977:81-82).
It is not certain, however, that the line of coastal shrines on Cozumel formed part of a defensive strategy. They would not have been very effective unless the Cozumleños could tell at some distance whether a canoe bore friend or foe, as maritime traffic purportedly frequented the island. Watchmen probably constituted a less conspicuous early warning system. Comparable shrines on the mainland coast were probably coastal outposts of inland settlements or navigation aids (Andrews and Andrews 1975:103; Miller 1977:130-131). Furthermore, Spanish chronicles indicate that when the Spanish arrived at the island the local inhabitants greeted them warmly. Islanders were seemingly accustomed to foreign visitors (Sabloff and Rathje 1980:146-148).

Cozumel seems to have declined just before the Conquest, but there was still some trade activity on the island at that time (Sabloff and Rathje 1975:28). Little is known about San Miguel, however, and it remains possible that considerable activity continued to take place there immediately before the Contact period.

**Northern Belize.** During the Late Postclassic period, northern Belize experienced a drop in population, but not a significant overall decline or abandonment. Material culture of the region exhibits heavy influences from Mayapán and other centers of Yucatán and Quintana Roo. Ceramic evidence suggests increased communication with the north.

Two lines of evidence point to contacts with central Mexico. Some artifacts, such as green obsidian, were clearly transported to northern Belize from their Mexican sources. Others show a complex of traits strongly related to growing pan-Mesoamerican culture, for example the murals at Santa Rita and Tancah, which reflect strong lines of communication between the Maya area and central Mexico (Sidrys 1983:389-390).

Cerros experienced a resurgence of activity during the Late Postclassic although this did not involve new construction (Garber 1989:7-9). A Late Postclassic cache at Cerros contained three *tumbaga* disks, two gold artifacts, and about 12 jade artifacts. Seventeen copper bells and substantial amounts of obsidian were also documented at the site. Sidrys concluded from this evidence that Cerros participated in Postclassic maritime trade (Sidrys 1983:14).

There is little jade or greenstone from Late Postclassic contexts at northern Belize sites, so Sidrys turned to trends in the importation of volcanic stone for manos and metates for evidence of changes in long-distance trade. Using relative abundances of exotic stones at Aventura, Caledonia, Chan Chen, Patchchacan, Santa Rita, and Sarteneja, Sidrys concluded that a trend toward efficiency in long-distance trade took place from the Terminal Classic-Early Postclassic to the Late Postclassic period. At these sites the percentage of volcanic stone used for metates rose from 19 percent in the Late to Terminal Classic-Early Postclassic to 42.1 percent in the Late Postclassic. The use of volcanic stones in these
periods contrasts to the Late Preclassic and Early Classic, when only 5.9 percent of stone for metates was volcanic, and 65 percent was made from local sedimentary rock (Sidrys 1983:Table11).

In the Classic period, metate forms were oriented toward Petén types more than northern Yucatecan types, and northern Belize residents imported a total of about 35 percent from the Maya Mountains and the volcanic Highlands farther south. In the Late Postclassic northern Belize residents imported a total of about 63 percent of their metates, mostly from the volcanic Highlands (Sidrys 1983:297).

Sidrys attributed the increase in use of volcanic stone over time to technological and organizational innovations in Caribbean coastal trade. He speculated that the Late Postclassic coastal Maya were middlemen in the north-south trade and used larger, more efficient sea-going canoes than other peoples. He stated that neutral ports of trade along the maritime route provided safe shelter, and entrepreneurial alliances facilitated the distribution of everyday utilitarian products (Sidrys 1983:296-297, 303). This scenario is not documented by the evidence Sidrys presented. Increased use of volcanic stone indicates only that more stone from the Highlands arrived at northern Belize sites. It may be realistic to conclude that the stone was transported along maritime routes in canoes, but Sidrys presented no evidence to suggest what size canoes carried it, how trade was organized, or the roles of towns canoe traders encountered along the way.

From the Classic into the Terminal Classic-Early Postclassic period, amounts of obsidian at northern Belize sites increased with respect to chert and ceramic sherds. Sidrys concluded that obsidian use per capita was higher in the Postclassic, and attributed the change to the same circumstances listed above for volcanic stone imports, including the use of larger, better canoes and the existence of sites functioning as ports or ports of trade. In this case Sidrys suggested the more seafaring canoes allowed fishermen to procure their own obsidian for personal use and for trade (Sidrys 1983:306, 313). Again the evidence supports an increased volume of maritime trade in the Late Postclassic, but not the proposals for the organization and mechanics of exchange.

In the Late Postclassic period substantial quantities of effigy censers (Figure 47) appear at 30-35 sites from Ixpaatun along the coast of Quintana Roo north to Chiquila, and at eight sites in southern Quintana Roo. The censers were sometimes ritually deposited at sites that were not necessarily occupied. The uniformity in Late Postclassic effigy censers could be attributed to exchange of facial molds used to make them, perhaps originating at Mayapán. Censers might have been produced and distributed from Santa Rita, where unlike at other sites they occur in a variety of contexts (Sidrys 1983:265, 406).
Two proposed ports of the east coast, Santa Rita and Tulum, have prominent murals showing *Ek Chuah* with supplicants holding effigy censers and spheres of copal. Some censers themselves depict *Ek Chuah*. Since *Ek Chuah* is the Maya deity associated with travel and trade, this suggests a connection between maritime trade and rituals that involved the censers at small shrines along the east coast. Coastal shrines associated with deposits of effigy censers might have served religious and mercantile purposes by simultaneously functioning as landmarks, navigation aids, and focal points for seafarers’ religious practices (Sidrys 1983:250, 262, 327).

*Aventura*. During the Late Postclassic period population declined at Aventura, leaving little evidence for occupation. The site yielded a limestone artifact that Sidrys called an anchor. The artifact weighs several kilograms and resembles a *mano* but has a 1.5-cm groove around it, with a maximum depth of 1.0 cm, which seems to have been polished by rope. Sidrys presented no other evidence to support his assertion.
that the artifact is a stone anchor. The artifact was recovered near a deposit of censers (Sidrys 1983:25, 49, 303), and this association presumably formed the basis for the Late Postclassic date.

**Ambergris Cay.** Although Wild Cane Cay and Ambergris Cay continued to trade during the Late Postclassic period, their roles had shrunk considerably by that time. Little or no occupation existed at the northern end of Ambergris Cay. Occupation continued at Marco González during the Late Postclassic period, but the site experienced an economic decline and no more construction took place. The reason for this decline remains unknown, but Guderjan proposed that a merchant class plying the entire trade route perhaps replaced individual groups of traders moving goods along short hops. These traders could bypass large parts of Ambergris Cay. Larger sites on Chetumal and Corozal Bays, such as Santa Rita and Ixpaatun, might have taken over functions of Ambergris Cay’s small transshipment points (McKillop 1987:122; Graham 1989:153; Guderjan et al. 1989:132-133; McKillop 1995:174).

**Santa Rita, Corozal.** Santa Rita experienced a dramatic rise in the Late Postclassic, particularly after the fall of Mayapán, and grew to become a densely populated, dominant community of northern Belize. Coastal-inland exchange continued, while trade with Yucatán and elsewhere expanded and brought a more “international” character to the site. Santa Rita participated in a regional cultural sphere but also had strong artistic ties to other parts of Mesoamerica that reflect pan-Mesoamerican contacts. Population boomed at the site as a result of the expanded networks, and Chase and Chase argued that Santa Rita administered long-distance trade for the entire region in its role as capital of Chetumal province (1986; 1988:65; 1989:29-31).

Abundant and unusual exotic trade goods at Santa Rita testify to its long-distance relationships: ceramics, turquoise, jadeite, jadeite and *Spondylus* jewelry, other *Spondylus* artifacts, several copper objects, gold, hematite, and green and gray obsidian (Chase and Chase 1986; 1988:16). A single Late Postclassic elite midden had obsidian from four different sources, the three Guatemalan sources and Pachuca. This implies the owners had access to the complete exchange system, which Sidrys proposed would confer high economic status on them (Sidrys 1983:319). Preliminary analysis showed that Late Postclassic formal chert tools are like those characteristic of Colha (Shafer and Hester 1988:117).

Two copper rings are very much like examples from the Cenote of Sacrifice at Chicxulub Itzá (Figure 48). A Postclassic cache contained a single vessel from South America which is unique at the site (Figure 49). The double-spouted blackware vessel probably came from Ecuador. The vessel could have been an heirloom, or perhaps made its way to Belize through a series of exchanges rather than through direct trade (Chase and Chase 1986; 1988:19, 26, 51, 60).
Figure 48. Copper rings from Santa Rita, Corozal, Belize. These rings are similar to ones recovered from the Cenote of Sacrifice at Chichén Itzá (From Chase and Chase 1986).
Figure 49. A black stirrup vessel from Ecuador excavated from Santa Rita, Corozal, Belize (From Chase and Chase 1986).
Figure 50. Aztec-style earflares from Santa Rita, Corozal, Belize (From Chase and Chase 1986).

One burial with spectacular goods might date to either the Classic or Postclassic period. Among other items it contained a set of gold and turquoise earflares on obsidian backs that originally had six gold bells dangling from them. The earflares are described in ethnohistoric sources as restricted to use by Aztec nobles (Figure 50). The individual in the burial was probably a ruler, and the earflares could indicate Aztec influence and interest in the trade that was passing through Late Postclassic Santa Rita (Chase and Chase 1986; 1988:56).

Santa Rita residents used mostly local stone for manos and metates but use of stone from the Maya Mountains and highland Guatemala for metates increased from eight to 91 items from the Classic to the Postclassic periods. Sources of stones used correlated with the shapes of metates, demonstrating they were probably imported as finished products (Chase and Chase 1988:107).
Figure 51. "Mixteca-Puebla"-style murals at Santa Rita, Corozal, Belize (From Miller 1982:Figure 110).

So-called "Mixteca-Puebla" murals at Santa Rita (Figure 51) have been described as the result of non-Maya, outside influences, specifically either Toltec or Putun control of the site. The murals date to the Late Postclassic, between A.D. 1350 and 1500, and are probably slightly later than Tulum murals to which they have been compared. Chase and Chase argued that the "Mixteca-Puebla" label, applied to the murals is misleading. The painting style used at Santa Rita spans a large area of Central America including the Maya area and points farther south. Some now describe it as an international style characteristic of the Late Postclassic period. To characterize the murals as non-Maya "ignores the cosmopolitan nature of Postclassic Mesoamerica and the extensive communication systems operating at the time of European contact in the sixteenth century." While no evidence exists for a non-Maya population at Santa Rita, the site yielded substantial evidence for "a cosmopolitan Maya people solidly entrenched in a Pan-Mesoamerican system of exchange and well aware of outside innovations in both the practical arena and in art." The mural style characterized the Maya Postclassic period from its inception, and the Santa Rita murals result from an indigenous tradition with extensive exterior trade and communication (Chase and Chase 1986; 1988:80-83).

Similar murals at Tancah, Tulum, and Cobá have been invoked as evidence for the incursion of maritime foreign groups to the east coast. The mural style seen at east coast sites actually culminates a
long history of long-distance communication and trade with central Mexico and Central America. Thus, Late Postclassic evidence remains consistent with the suggestion of Maya maritime trade as an indigenous development with antecedents in earlier periods.

At the time of contact with the Spanish, Santa Rita was a flourishing regional capital, involved in widespread trade networks and known for producing cacao and honey. Chase and Chase demonstrated that Santa Rita was probably the city of Chetumal mentioned in the Spanish contact period documents. This places it in the same category of sites as the grand centers of Mayapán and Lamanai (Chase and Chase 1988:10, 65, 67-68, 79).

The Southeast

*Southern Belize Cays.* Significant use of cays on the southern portion of Belize’s barrier reef begins in the Late Postclassic period, constituting a radical change from earlier times. False Cay was abandoned by this time (Figure 26), and aside from a village that developed on the southern tip of Placencia Point, MacKinnon documented no activity on the adjacent coastal lagoons (1989:117).

MacKinnon suggested that the existence of Maya sites on cays along the outer reef edge between Dangriga and Belize City hint at the operation of a maritime canoe route from Ambergris Cay along the outer reef edge south to Honduras. Sites have been documented at English, Sergeant’s, Goff, Gladden, Ranguana, and Northeast Sapodilla cays (MacKinnon 1992:3-4).

Some cays of the inner reef were used sporadically as fishing camps. These included Wippari, Quamina, and Funk Cays, 13 km, 15 km, and 25 km offshore respectively. Material remains consisted of Late Postclassic utilitarian ceramic sherds, notched sherds and pellets used as fishing weights, and obsidian and chert fragments. Two cays of the outer reef, Gladden Cay (36 km from shore) and Ranguana Cay (40 km from shore), also yielded evidence consistent with fishing. These two cays lie on a potential direct route between northeast Yucatán and Nito in the Guatemala-Honduras border area. MacKinnon proposed they made safe stop-over points for traders using slave labor; resting at such remote locations would minimize escapes. Nicholas Cay near the barrier reef was characterized by Late Postclassic artifacts. Non-diagnostic artifacts existed on Moho Cay (Toledo) and Stuart Cay, and no remains were found on Bedford Cay, Mangrove Cay, North Spot, Red Rock, Frank’s Lime, Seal Cay, East Snake, Middle Snake, West Snake, South Snake, Tom Owens, or Hunting Cays (MacKinnon 1989:113-114, 117-118).

Placencia Cay, Ranguana Cay, the northeast cays, and the site on the southern tip of Point Placencia all have certain artifacts in common. Each has similar pottery as well as side-notched obsidian and chert points. MacKinnon proposed that the residents of the Placencia site established a transshipment
point on Ranguana Cay, or that some other traders originally established both sites. No known inland center could be responsible for the Point Placencia site. If it was a mainland base for residents of Ranguana Cay who were living there to support trade along the maritime route, the site would have provided access to lagoon and mainland resources. An additional possibility is that the mainland site itself served as a transshipment point providing access to a secondary land route that reached inland populations (MacKinnon 1989:119).

DISCUSSION

The archaeological data surveyed here clearly shows that abundant evidence with direct relevance to maritime trade appears throughout the Yucatán Peninsula in all periods of Maya prehistory. It is not feasible to generalize the great breadth of Maya seafaring with a few comprehensive conclusions. Maya coastal communities gleaned all types of resources from the sea, exploiting its bounty and taking advantage of its benefits for trade, transportation, and communication in different ways depending on local environmental and socio-economic conditions. This overview has organized and clarified information that existing evidence can provide, separating fact from fiction so that future research can begin with only the valid findings.

Abundant evidence exists to indicate that maritime trade and seafaring thrived beginning with regional exchange networks in the Late Preclassic or earlier. Conclusive documentation for such involvement exists for only a few, such as Isla Cerritos, Moho Cay, Northern River Lagoon, and Wild Cane Cay. In contrast, evidence from sites traditionally associated with seafaring remains largely inadequate, for example at Tulum and Cozumel. The evidence from the Preclassic and Classic periods is fragmented, and it is possible that the effects of sea-level rise have obscured much of the archaeological data for these periods, and future excavations that can overcome this obstacle will reveal maritime trade networks as active, if not as far-reaching, as those of the Postclassic.

Several lines of evidence confirm the existence of a trade route that extended at least from northwest Honduras to the northern shore of the Yucatán Peninsula during the Terminal Classic-Early Postclassic transitional period. McKillop offered unparalleled documentation to show that Wild Cane Cay, San Juan on Ambergris Cay, and Isla Cerritos all participated in a single maritime exchange network that carried Mexican and Guatemalan obsidian, copper, Tohil Plumbate ceramics, and more, along the east coast of the peninsula. At Santa Rita, Corozal, excavations revealed artifacts nearly identical to ones deposited in the Cenote of Sacrifice at Chichén Itzá during the Terminal Classic-Early Postclassic period. Furthermore, the Spanish chronicles and ethnohistoric documents repeatedly
mentioned trade between northern Yucatán and Honduras taking place at the time of contact. Perishable goods probably constituted a large proportion of canoe cargoes.

The evidence that this route continued around the peninsula to Campeche and the Laguna de Terminos is less certain, although this is probably due to the dearth of excavations reported from the southwest and west coasts. In light of the westward orientation of artifacts and other cultural remains at Chichén Itzá and Isla Cerritos, it seems likely that future excavations will confirm the western arm of the proposed circumpeninsular route for the Terminal Classic-Early Postclassic transitional period.

**Infrastructure for Seafaring**

The archaeological evidence pertaining to the infrastructure of Maya maritime trade remains uneven. Natural harbors, on the other hand, exist almost everywhere that coastal sites have been discovered and the shallow-drafted canoes Maya seafarers used could undoubtedly go ashore nearly anywhere. Sea-level rise complicated our picture of coastal construction considerably by inundating sites and structures that perhaps once sat on dry land. Concrete evidence for the rise only recently came to light, so most Mayanists investigating coastal structures did not account for this environmental change in their assessments. Nevertheless, a few documented structures at Cerros and San Juan in Belize perhaps constitute specialized buildings for seafarers, provided that they facilitated access to the water in Precolumbian times as they do now.

Isla Cerritos stands as the most likely site boasting deliberately constructed seafaring infrastructure. Not only did it have a well documented role in maritime trade, but most activity at the site dates to the Terminal Classic-Early Postclassic transition, after the new, higher sea level had stabilized. The island’s seawall and numerous piers and jetties perhaps provided prime facilities for cargo-laden canoes from the west and east coasts. The fact that the seawall faced the mainland rather than the open sea hints that its purpose related more to controlling access to the island or defending Isla Cerritos against land-borne threats than to providing sheltered waters.

The harbor constructions Chac Balam on Ambergris Cay could also date to the Terminal Classic-Early Postclassic transition or earlier. The only other possible artificial harbor construction yet identified is the jetty at Nohmul. As no date exists for the structure, interpretation of its use and importance should await further evidence. Further investigation at the Isla Cerritos and Chac Balam harbors is also desperately needed to determine when each was constructed. If both were built during the Terminal Classic-Early Postclassic transitional period, then they would strongly support the notion that the Maya increased labor investment in maritime trade at that time.
In several cases, researchers have postulated the existence of Precolombian man-made canals, for example along the Campeche coast, at the north end of Ambergris Cay, and at Will Edwards Lagoon on the north coast of Belize. No conclusive evidence exists that the Maya built these canals, but such projects would fall within the scope of Maya monumental construction. With further excavation we may find that most community investment in seafaring-related infrastructure concerned providing access to the coast where none existed, rather than providing shelter or docking facilities for canoes.

The shrines of the east coast of Quintana Roo and of Cozumel have been called possible landmarks and navigation aids for trade canoes, since the rocky coast has virtually no prominent features (Miller 1982:73; Creamer 1986:6). Nearly all east-coast shrines are associated with inland sites. Many of the buildings contain altars, and the possibility remains that they served purely religious purposes or perhaps represent some combination of ritual and practical considerations. If traders needed to make religious offerings during their travels, the shrines perhaps provided locations for them to do so. Evidence from Punta Tulsayab and Tancab hints that they could also identify critical locations for seafarers, such as shoreline hazards or safe passages. Taller buildings on all coasts of the peninsula undoubtedly helped seafarers mark their positions and maintain course headings, but there is no evidence to suggest the Maya constructed them expressly as navigation aids.
CHAPTER V

MAYA WATERCRAFT DESIGN AND CONSTRUCTION

Despite the ubiquity of canoes suggested by the early Spanish reports, there are no known excavated examples of Preclassic Maya watercraft. Available evidence from Maya art and early colonial reports indicates that in the Maya area and all around it, dugout canoes were the primary watercraft used (Johnstone 1988:45). Rafts were occasionally employed, but overall the canoe dominated and in some areas constituted an absolutely crucial mode of transportation.

The word “canoe” comes from the indigenous Taino language of the Greater Antilles, where the Spanish first landed in the late fifteenth century. “Canoe” simply means “boat” and was adopted by the Spanish to refer to the dugout canoes in use throughout the Caribbean islands. Over subsequent centuries the meaning broadened to include many types of craft, so that today a canoe can be defined as “an open watercraft of hollow form, generally shaped at each end to improve its hydrodynamic qualities, and designed originally to be propelled by one or more occupants, facing forward and using paddles or push-poles” (Roberts and Shackleton 1983:1-2).

Information about Maya canoe design and construction comes from Preclassic artistic representations, reports by Spanish visitors of the sixteenth century, modern canoes and canoe craftsmen, and reports of canoes in neighboring regions. With few exceptions, Maya artists of the Classic and possibly Early Postclassic periods depicted canoes remarkably consistently. Most canoe representations, however, come from ceremonial contexts. The uniformity of their appearance could be the result of consistent themes in the Maya art where they appear. Extant canoe representations possibly overemphasize the degree of standardization in Maya canoe construction. A small number of representations do show canoes with different hull shapes. Also, the diversity of modern Maya canoes hints that there was probably no single canoe design used throughout the Maya region and in all chronological periods. Hull shapes and construction techniques likely varied depending on locally available materials, conditions in which the craft would be used, and the canoe’s purpose.

In the following discussion of Maya canoe representations, the vessels are loosely organized according to the type of depiction (drawing/painting or model), origin in either the southern or northern Lowlands, and the degree of detail discernible in each one.
CANOE REPRESENTATIONS

Payan Graffiti

Payan sits on the edge of a lagoon near the border between Quintana Roo and Campeche, Mexico. Two rough drawings of canoes exist on one plaster-covered wall of a room in the major building at the site (Figure 52 and Figure 53).

One graffito shows an elevated bow and stern (Figure 52), while the other has one flat end elevated above the sheer and one flat end even with the sheer (Figure 53). In both cases, the ends are flat, platform-like features. Each drawing includes a line parallel to the sheer. The boat in Figure 52 exhibits an additional line that seems to portray the interior bottom of the canoe, but it extends less than one third the length of the craft. The canoe in Figure 53 also exhibits a unique feature. At one end a wavy line extends off the platform-end, reminiscent of a rope falling loosely away from the canoe.

While these drawings are rough, the graffiti present the basic canoe shape that appears in other artistic representations. The flat, platform-like ends and the narrow band formed by two lines at the sheer represent consistent and identifiable features that Precolumbian artists recorded in their drawings and paintings of Maya canoes.

Tikal Bone Carvings

The most famous Maya boat representations come from a set of etched and carved bones from Burial 116 in Temple 1 at Tikal, which dates to approximately A.D. 700 (Hammond 1981:175). These bones form part of a collection of approximately ninety bone pieces, often carved or etched with glyphs or scenes, that were carefully arranged at the extreme southern end of the tomb (Trik 1963:10, 15). Four of the bones depict canoe scenes finely engraved and rubbed with bright red cinnabar, and one other bears a carved canoe with some unusual features.
Figure 52. Payan graffito (From Ruppert and Denison 1943:Figure 98).

Figure 53. Payan graffito with a rope-like appendage (From Ruppert and Denison 1943:Figure 98).
Hammond divided these canoes into two groups. The first group included the two canoes in which we see Maya deities fishing and apparently engaging in a lively discussion (Figure 54 and Figure 55). In each scene one deity paddles the boat, and one arranges fish inside, while a third stands waist deep in the water, catching fish with his hands. In one instance the deity who fishes wears a basket containing his catch (Figure 55). The canoes represented are almost identical, with raking ends that seem to form flat platforms over the water. Each has a horizontal line parallel to the sheer that curl downward slightly at the ends, and curved bands with an “m” motif attached on the hulls’ sides. A simpler version of the “band-and-m” motif appears on one of the paddles. The paddles consist of a roughly trapezoidal blade with the loom emerging from one edge.

The craft appear to be double-ended, although Hammond discerned a sharper curve at the right end of each and named it the bow. Hammond also proposed that the narrow band at the top represents a flattened ledge, but acknowledged that we really cannot discern that from these representations (1981:175). The “band-and-m” motif is a glyph element that appears frequently in Maya writing and art. Its precise meaning in this context remains uncertain. Thompson suggested that a similar feature on a canoe from the Dresden Codex may represent the overlapping pieces of a bark canoe (1951:70), but Hammond rejected this in favor of a symbol depicting the material from which the boat is made (1981:175).

Hammond proposed that the two canoes measure approximately 3.8 m in length, based on a comparison to modern day Lacandon canoes and the relative sizes of the deities depicted on the Tikal bones (1981:175-178). We cannot assume, however, that the artist etched the figures and the canoes to the same scale. Indeed, we must consider size estimates from this schematic type of representation as virtually meaningless in the study of Maya canoes. Not only do we know from first-hand colonial and modern accounts that canoes could be as long as 10 m and possibly longer (Thompson 1951:70; Las Casas 1965:274; Díaz del Castillo 1968:45), but artistic considerations undoubtedly took precedence over the need to depict proportions accurately. In the absence of better evidence we should assume that canoes could be built in many sizes.
Figure 54. Scene from an incised bone from Tikal that shows three deities fishing from a canoe (From Trik 1963:Figure 6).

Figure 55. Scene from an incised bone from Tikal that shows three deities fishing from a canoe, one of whom carries a basket for the catch (From Trik 1963:Figure 7).

Hammond’s second group of canoe representations included the three canoes that carry a combination of human, animal, and supernatural figures. Two representations differ from the others, in that their sterns curve up sharply, and their bows are submerged (Figure 56). The line of water symbols turns to follow the edge of the bone, so the upturned sterns probably reflects the artist’s desire to fit the composition onto the irregular medium (Hammond 1981:178). A paddle held by one canoe’s occupant is decorated with a glyph-like design depicting a stylized cross. The occupants resemble those of the canoe in Figure 57, but with only one paddler in the middle of the group, immediately followed by Ruler A, all of whom are plunging toward the water symbols that line the lower edge of the bone.

The crew of yet another etching (Figure 57) includes two deities, known as the “Paddlers” by iconographers, who sit on the raking ends of the craft and use decorated paddles to propel it forward.
Figure 56. Scenes from incised bones from Tikal that depict canoes plunging into the water (From Schele and Miller 1986:Figure VII.1).

Hammond identified the passengers from left to right as “an iguana, a monkey, a man, a parrot, and a furry ?possum [sic], all sitting in human posture facing forwards and except for the last-named, grasping the starboard gunwale with the right hand/paw/claw and with the left limb raised.” The human figure seated amidships represents Ruler A, either on a ritual journey in life or a voyage to the underworld at death (1981:178).

The canoe in Figure 58 differs from all the others. Like the Payan graffito in Figure 52, the ends turn up before flattening out to form raking bow and stern projections. Nevertheless, the typical narrow horizontal band lines the sheer of the vessel. A stylized addition near the bow portrays the head of the terrestrial monster, with the upper jaw forming an almost vertical feature. A glyphic te’ sign emerges from its mouth to decorate the end of the boat (Schele 1992:139). Forward of the stylized monster the undecorated portion of the raised, raking end remains barely visible. Both Paddlers are again present, but in this case only one faces forward with a paddle while the other faces aft seemingly in supervision of the passengers.
Figure 57. Scene from an incised bone from Tikal that shows a canoe underway. Ruler A sits amidships (From Schele and Miller 1986:Figure VII.1).

Figure 58. Carved bone from Tikal showing a canoe with an elaborate monster component at the bow (From Hammond 1981:Figure 5).

Shell Medallion

A Late Classic shell medallion depicts one of the Paddler gods by himself paddling a short canoe (Figure 59). The craft has the familiar raking ends, but the canoe's bottom is more rounded with gradual entrance and run that replace the sharply defined bow and stern platforms of other representations. The canoe in the medallion has a thick horizontal line defining the sheer.
The paddle's loom is clearly depicted as a separate piece of wood from the blade. The blade has an asymmetrical shape with one straight side and one curved side. A protruding tip extends outward from the straight side. The loom joins the blade not in its center, but closer to the straight side. This type of paddle also appears in the Tikal bone carvings and in paintings on ceramics (see below).

The canoe also carries a passenger seated behind the paddler—a rabbit, a Maya symbol for the moon (Schele and Miller 1986:286, 271).

**Classic Period Cylinder Vases**

Canoe and Paddler iconography also appears on Classic period cylinder vases. One example shows two canoes, each carrying a Paddler god (Figure 60). The quatrefoil cartouches around each canoe probably represent cave openings (Reents-Budet 1994:275). Crazing and repainting have distorted the image (Dorie Reents-Budet, personal communication 1992), but the major features of the canoe are discernible. The artist painted the rounded hull orange and left the narrow horizontal band at the sheer white. Each highly stylized representation shows a flat-bottomed canoe with sharp entrance and run and the platform-like bow and stern. The horizontal band at the sheer of each hull curls downward ornately.
The decoration on the canoes is badly damaged, but a symbol resembling the “band-and-m motif” survives on one of them. This canoe also carries a dog in the rear of the craft.

Another cylinder shows a long canoe paddled by the two “Paddler” deities and carrying one human passenger (Figure 61). Here the canoe is painted white, and the narrow band at the sheer is brown and a thin line of background slip shows above it. Again the painting depicts a double-ended craft with virtually no entrance and run, and platform-like ends ends that curl downward. Here the canoe has a flatter bottom than most of the other hulls depicted in Maya art. The paddles have rectangular blades with looms that join in the middle of one end. Each paddle bears a white, curved, double line with four white dots next to it. This cylinder is a funerary vase depicting a scene similar to those on the Tikal bones. A deceased lord sits in the middle of the canoe while the Paddler gods paddle him through the underworld (Reents-Budet 1994:274).

A third cylinder vessel (Figure 62) depicts three stylized canoes showing the same basic construction elements as the craft described so far, but with features distorted by the artist for this elaborate scene. Each canoe has the distinctive band at the sheer and a stylized version of the platform-like ends. In this representation the ends angle down and then out to form “L” shapes. The bands and the background on the canoe hulls are gray, but might have been green or blue before fading (Reents-Budet 1994:11). Glyph-like designs decorate the sides of each vessel.

The scene on this cylinder depicts the rebirth of one the Maya Hero Twins, Hun Hunahpu, after he has been through the underworld. Behind him, each of the three canoes carries a supernatural being, one of whom holds a paddle (Reents-Budet 1994:206). Although highly stylized, the distinctive features of the paddle resemble those depicted on the Tikal bones and the shell medallion discussed above. The loom joins the asymmetrical blade near to its straight side, and the straight side of the blade ends with a pointed tip. The blade is decorated with glyphic designs.

Like ones described previously, this scene depicts activity related to the underworld. A deceased person has descended to the underworld and reemerged as a deity. The figures standing in each canoe are Paddlers who escorted his soul to the underworld (Reents-Budet 1994:208).
Figure 60. Classic-period polychrome cylinder vase depicting two painted canoes. The canoes are painted inside quatrefoil cartouches that symbolize openings to the underworld (From Reents-Budet 1994:Figure 6.47) Photograph © Justin Kerr (K5351).

Figure 61. Classic-period cylinder vase depicting a flat-bottomed canoe propelled by the Maya Paddler gods. The black background in this scene indicates it takes place in the underworld (From Reents-Budet 1994:Figure 6.46) Photograph © Justin Kerr (K3033).
Figure 62. Classic-period cylinder vase depicting three highly stylized canoes
(From Reents-Budet 1994:Figure 5.49) Photograph © Justin Kerr (K731).

CANOE MODELS

Altun Ha Model

A number of possible canoe models have been excavated. Several carved from manatee bone date
to the Late Classic period from Altun Ha and Moho Cay, Belize. These came from either midden or
disturbed contexts, and Hammond proposed they were children's toys (1981:181).

At Altun Ha a Late Classic deposit (ca. A.D. 650-750), perhaps a domestic midden, yielded an
apparent canoe model with features similar to those depicted in the Classic-period graffiti, bone carvings,
and ceramic paintings (Figure 63). The model has a gently curved sheer and bottom and ends that form
raking, squared platforms at each end. The published drawing of the Altun Ha canoe model shows that
one end has a narrower beam and is shallower than the other. Each platform has three parallel,
longitudinal grooves carved into its surface, and the wide end also has a single transverse groove across
Figure 63. Carved canoe model from Altun Ha, Belize (From Pendergast 1979:Figure 46). Reproduced with permission of The Royal Ontario Museum.

It. Close to the wide end there are two small holes through each side of the craft, opposite one another. The largest hole is 4 mm in diameter. Pendergast identified the end with the perforations as the bow, but did not explain how he distinguished bow from stern. The model has an overall length of 14.6 cm, a maximum beam of 3.3 cm, and a maximum height of 2.05 cm. The sides are 0.5 cm thick (Pendergast 1979:138).

Pendergast did not try to explain the grooves or the presence of the perforations at one end of the canoe model. It is possible that additional pieces once existed, such as quarter rudders or a superstructure. String passed through the holes could hold the pieces together. From the drawing it does not appear that the grooves served any purpose other than decoration. Their shapes and placement make it improbable that they were worn by strings. No other Pre-columbian Maya canoe models or representations depict grooves on the bow or stern.
Figure 64. Plan view and longitudinal section of a carved canoe model from Moho Cay, Belize (From McKillop 1985:Figure 4).

Moho Cay Canoe Models

McKillop reported three more manatee-bone carvings that appear to depict canoes from Moho Cay, Belize. One of these is very similar to the example from Altun Ha (Healy and McKillop 1980:12; McKillop 1984:30; 1985:343-344). It has eroded, squared ends that form platforms, one of which is slightly narrower and shallower than the other (Figure 64). There are no perforations in this model, and no grooves carved in the platform-like ends. The platform at the narrow end of the model is thinner in cross-section and considerably narrower in the plan view than the other end, which is rounded and wider. This model is also deeper than the example from Altun Ha. It has an overall length of 16.8 cm, a maximum beam of 4.6 cm, and a maximum depth of 5.7 cm.

For two other models, McKillop showed only the plan view. One appears to have the platform-like, squared ends, and has an overall length of 14.7 cm with a maximum beam of 6.4 cm (Figure 65). The smallest model is only 7.9 cm long with a maximum beam of 2.4 cm (Figure 66). It has one
Figure 65. Carved canoe model from Moho Cay, Belize (From McKillop 1985:Figure 4).

Figure 66. Small, carved canoe model from Moho Cay, Belize (From McKillop 1985:Figure 4).
Figure 67. Early Classic period ceramic vessel and lid. The lid portrays a canoe and paddler (From Schele and Freidel 1990). Photograph © Justin Kerr (K3249).

rounded end and one that appears to be either notched or which has an ill-defined longitudinal groove in its surface.

Early Classic Ceramic Canoe Model

Another canoe model is part of the lid of an Early Classic ceramic vessel (Figure 67). The lid’s finial is modeled in the shape of the Maya sun god paddling a canoe. The canoe is a flattened version of the models described above, with raking ends that form shortened platforms at the bow and stern. The artist probably changed the canoe’s shape so that it would fit into the ceramic composition.
Figure 68. Ceramic artifact from Jaina, Mexico, proposed to be a canoe model
(From Roberts and Shackleton 1983:54).

In this representation a lone paddler sits in the middle portion of the hold rather than on one of
the platform ends. A fish stretches between his back and the stern of the canoe. The paddle has a thick
loom and a roughly triangular blade with raised edges on its two sides but not on the end. Incised
symbols on the lid and the vessel represent the watery underworld (Schele and Freidel 1990).

The Jaina Canoe Model

A possible canoe model made of clay was recovered from a burial on the northwestern island of
Jaina, and dates to ca. A.D. 700-1000 (Figure 68). Its shape generally resembles canoes in other
examples of Maya art with a nearly flat bottom and squared, platform-like ends. There is no recognizable
construction element along the sheer. The canoe’s sides appear to meet the bottom at an unusually, but
not impossibly, sharp angle. Roberts and Shackleton identified the appliqué decoration on the side as an
“exotic marine creature” (1983:53-54) but it more closely resembles a parrot.

The Jaina model resembles canoes depicted elsewhere, but as with the other examples it remains
possible that the artifact had some other significance. Classic period iconography associated with canoes
hints that the hull shape might have been adopted for ceremonial dishes (see below). If the artifact is
intended to simply represent a canoe, then it is the only one of its kind from the northern Lowlands.
The Roatan Canoe Model

From a central offering at the Dixon site on Roatan, one of the Honduran Bay Islands, Strong excavated three ceramic objects that he described as possible canoe models. Strong attributed the offering to a late period in Maya prehistory but did not attempt to assign a precise date. The deposit also included abundant ceramics, ornate greenstone beads, and copper bells (1935:58, 146).

Only one of these strongly resembles a canoe in comparison to the other known representations. Strong published one photograph of the broken canoe in situ with the other cache items (Figure 69), and one plan-view photograph of the artifact after it had been cleaned and reassembled (Figure 70). In these
photographs, the model clearly exhibits the most important feature common to Maya canoe representations discussed so far—it has blunt, flat, ends that form platforms at the bow and stern. In this case the ends incline upward slightly. In the section view, the craft’s sides bulge outward, seemingly to mimic the round cross-section of tree trunks from which canoes were made. The bottom has little discernible curve but seems at least slightly rounded in section. The model is the largest known from the Maya area and environs, with a length over 27.5 cm. The maximum beam is difficult to determine since the photograph does not show a precise plan view of the artifact, but it appears to be approximately 7.5 cm.

The inclusion of this canoe model in a cache testifies to the importance of the canoe in Maya ritual. Indeed, considering the similarity between canoes depicted in Maya art and representations of the dishes used in bloodletting ceremonies, it comes as no surprise that such a vessel is part of a public offering (see below).

The two ceramic artifacts that Strong also described as possible canoe models do not resemble the other known representations. One has a very shallow, oval-shaped central section and two rounded ends that resemble the platform-like ends of the first example, but which are uniquely recessed with respect to the main compartment of the artifact, and incised with several short lines (Figure 71). The last ceramic object Strong mentioned is only visible in the photograph of the Dixon-site offering in situ., directly above the large model with platform-like ends. According to Strong the shape only generally suggests a canoe (1935:58). It is a roughly rectangular ceramic vessel with no raking ends at all, and is much wider than either of the other objects (Figure 69). Based on comparisons with canoe representations that were not available to Strong in 1935, it is unlikely that either of these artifacts represents a canoe.

CLASSIC-PERIOD COSMOLOGY RELATED TO CANOES

Canoes depicted in the Tikal bones, Classic-period cylinder vessels, and the shell medallion appear as components of similar pictorial scenes. Each artifact probably formed part of the burial goods from the tombs of royal or elite persons. In each case supernatural beings are present, usually one or both of the Paddler gods, Old Stingray Spine God and Old Jaguar God. Two Tikal bones and two painted cylinder scenes depict deceased persons in the same scene, if not actually in the canoe.
Figure 70. A ceramic canoe model from the Dixon site on Roatan, Bay Islands, Honduras (From Strong 1935:Plate 8.2e).

Figure 71. A ceramic artifact from the Dixon site on Roatan, Bay Islands, Honduras, that Strong suggested as a possible canoe model (From Strong 1935:Plate 8.2d).
In Maya cosmology, the underworld, called Xibalba, was a “watery world that could only be entered by sinking beneath water or by passing through a maw in the surface of the earth.” Each person’s inevitable death was followed by a journey to the underworld fraught with challenges (Schele and Miller 1986:265, 267) which the Maya learned about from their mythology told in the Popol Vuh. One portion of the Popol Vuh describes two heroic brothers who go to Xibalba to confront the lords of death residing there. The twins repeatedly trick the lords, ultimately deceive them into allowing themselves to be sacrificed, then rise in triumph out of the underworld. The Maya believed that their own deaths, and particularly those of their rulers, involved an analogous journey through Xibalba that culminated in a momentous rebirth.

The canoe scenes on the Tikal bones, the shell medallion, and the cylinder vases depict ritual journeys in which the canoe serves as a vehicle for traveling above the underworld and plunging into it. Schele and Miller offered a detailed interpretation of the canoe etchings in which they proposed that the posture of the king in the middle of the canoe, with his wrist held against his forehead, is a sign that he is preparing to die. The scene in which the canoe is horizontal and not sinking represents a canoe trip through life, above the watery underworld and accompanied by the gods. In the two other scenes the canoe sinks into the underworld, signifying the death of the tomb’s occupant. Two of three hieroglyphic texts on these canoe bones refer to the date of the event and the names of the participants. The third text written over the scene where the canoe has not yet started to sink (Figure 57) states that Ruler A paddled through life for four katuns, or 80 years, before he died; passing on in the sinking canoe (Schele and Miller 1986:270-271).

The Precolombian Maya used several standardized interrelated metaphors to symbolize death. Death as a catastrophic canoe voyage beneath the waves was one metaphor, while another invoked the Maya concept of a World Tree at the center of the universe. In Maya iconography the World tree, a ceiba, has roots in the underworld, Xibalba, and upper leaves represent the celestial sky. The Maya called the tree Xibal Be, or “the road Xibalba”, and on the lid of Lord Pacal’s sarcophagus from Palenque we see a deceased ruler falling down the trunk of the tree into the underworld at the bottom (Figure 72) (Schele 1992:133). To fall down the trunk of the World Tree was to journey down the road to Xibalba, the underworld. Canoes represent another form of Xibal Be, and could even be made of ceiba like the World Tree.

The canoe representation in Figure 58 has a crocodile head at the bow, just as the World Tree sometimes appears with a “Cosmic Monster” head at its base (Figure 73) (Schele 1992:138, 139). The monster head portrayed on this canoe could easily reflect real features of a ceremonial canoe (Hammond 1981:180), but more likely reflects the Maya artist’s goal to depict the canoe journey as a metaphor for passage into the underworld.
Figure 72. Lord Pacal’s sarcophagus lid from Palenque, Chiapas, Mexico. The carved lid depicts Lord Pacal falling into the underworld along the trunk of the World Tree (From Schele and Miller 1986:Plate 111a).
The Tikal-bone scenes that depict deities fishing refer to a Xibalba story from the Popol Vuh. In the story, the mythological Hero Twins are sacrificed by the lords of Xibalba. When their ashes are scattered on the river the twins are transformed into catfish (Schele and Miller 1986:266; Reents-Budet 1994:274). The canoes painted on Classic-period cylinder vases also pertain to Xibalba. The cylinder vase in Figure 61 depicts a deceased ruler’s travels through the Xibalba in a canoe. The vase in Figure 62 shows a scene from the Popol Vuh itself, when one of the Hero Twins is reborn out of Xibalba carrying a bag of maize, observed by supernatural figures in canoes who seem to remain in the underworld (Reents-Budet 1994:208, 274). Finally, the cylinder vase in Figure 60 depicts canoes with a single paddler in each. Cartouches around each canoe and paddler represent openings in the earth, showing the viewer that the elements inside are located in Xibalba.

Each scene mentioned here was created during the Classic period, probably the Late Classic period, and each depicts a supernatural scene taking place in the underworld or depicting a journey into it. The canoes depicted have strikingly similar features—consistently portrayed double-ended craft with a
Figure 74. Representations of bloodletting dishes that resemble Classic-period canoes in Maya art (From Schele and Miller 1986:Plates 65, 74-75). Drawing by Ian Graham. Bottom right photograph © Justin Kerr (K2849).

painted or etched band along the sheer and platform-like ends. The hull bottoms are flat or slightly curved, and the hulls appear with varying lengths according to the number of occupants and the space available for each artistic composition. The ends curl downward to varying degrees in each representation. The irregularities probably relate more to the artists' flourishes rather than real features of Maya canoes.

Canoes in Classic-period Maya art bear remarkable similarity to dishes that appear frequently in another type of scene, artists' renderings of the bloodletting ritual. The Maya practice of letting blood was intended to bring on a vision through which the living could contact their dead ancestors, whom they believed had continuing influences on their daily lives in the earthly world (Schele and Miller 1986:175, 183, 266). They used ceremonial dishes to collect the blood from their bodies, soaked a piece of paper or cloth in the blood, then and burned the saturated piece. A vision would appear in the resulting serpentine tendrils of smoke. Scene after scene in Classic Maya art shows dishes to collect and burn the blood which have virtually the same shape and features as the canoes depicted as ritual transports to the underworld (Figure 74). Thus the dishes used for the vision quest seem related to the canoes used for transportation to Xibalba.
Evidence from throughout the Americas suggests the general shape of canoes in the Maya artistic representations reflect realistic hull designs. If the resemblance of bloodletting dishes to canoes was deliberate then perhaps the dishes are miniaturized canoes, designed to allow a hallucinogenic journey into the underworld to meet one's ancestors. Canoe models excavated from caches and burials, such as the ceramic models from Roatan and Jaina, conceivably functioned as bloodletting dishes for the rituals that accompanied their deposition. This proposition needs to be tested through further study and scientific analyses of possible blood residues in archaeologically recovered dishes and canoe models.

It is tempting to interpret the horizontal band along the sheer of each canoe as a construction feature because it is so consistently depicted. It is more likely, however, that the line is a Classic-period artistic convention. Maya artists use contour lines as the primary tool for creating an image. In many cases they used double lines, composed either of two parallel lines drawn by the artist or a single line adjacent to a line left blank with only the background slip showing (Reents-Budet 1994:9). The horizontal band along the sheer of the canoes also appears on the rims of bloodletting dishes, and probably reflects the artist's technique for painting the upper edge of an open, three-dimensional object.

**CANOE REPRESENTATIONS FROM THE NORTHERN LOWLANDS**

**Gold Disk from the Cenote at Chichén Itzá**

An embossed gold disk from the Cenote of Sacrifice at Chichén Itzá depicts a naval battle including two types of watercraft (Figure 75). The disk is unique among several similar artifacts from the cenote that depict other types of scenes. It cannot be securely dated but was probably made around the second half of the tenth century (Lothrop 1952:59) or perhaps as late as the early twelfth century (Tozzer 1957a:35).

The large canoe shown on the disk exhibits short, platform-like ends and the horizontal band at the sheer like the Classic-period canoes discussed above. The stern seems shortened, perhaps due to the artist's need to fit the available space. Only one of the paddles is visible. It has a symmetrical blade with the loom joining at the center. The blade tapers from very narrow where the loom attaches to a wider, blunt end.
Figure 75. Embossed gold disk from the Cenote of Sacrifice at Chichén Itzá, depicting a naval battle (From Lothrop 1952:Figure 35).

The disk scene includes the only known Maya representation of a watercraft other than a canoe. Three rafts appear to consist of round floats attached to the bottom of a platform. Each one holds one or two people only. In each case one of the rafters holds an unusual, paddle-like object with a short loom and disproportionately large, disk-shaped blade. It remains unclear if these are actually paddles as they are
not clearly being used as such in this scene. In one case the raft occupant also holds a more conventional paddle similar to the ones used in the canoe.

The disk shows a battle between occupants of the large canoe and men on rafts. A man wearing an elaborate headdress stands in the canoe paddled by two armor-clad paddlers in the stern. Two warriors with shields sit in the bow, and one leans over to attack the raft before him. The men on rafts, who wear distinctly different helmets, seem to be fleeing for their lives. Two are in the water swimming, probably after being tossed from their rafts. The costumes of the men in this scene combine Maya and Mexican elements. Lothrop suggested the conflict depicted was between two rival Maya groups. In his scenario the group occupying the canoe has adopted some “Toltec” paraphernalia. He described the deity hovering above as a sky god that was supposed to be Toltec, but rendered in Maya artistic style (1952:51-52).

Lothrop overemphasized the Toltec influences that appear in this scene. In fact, the accouterments and design elements are similar to those of Classic Maya art of the southern Lowlands, and reflect contact with central Mexico in a general way that is easily attributed to Classic-period trade and communication.

The canoe represented on the gold disk holds particular importance because the artifact was recovered in the northern Lowlands and was apparently created at a relatively late date (Lothrop 1952:59; Tozzer 1957a:35). The hull design appears absolutely consistent with Classic-period canoes portrayed in the southern Lowlands. We do not know whether the battle scene depicted on the disk is real or fictional, and if it did transpire, we do not know where or when the fight took place. Although this scene does not prove that the same type of craft was used in the north and south during the Classic and Postclassic periods, the presence of this representation at Chichén Itzá implies that northern Maya at least had some familiarity with platform-ended canoes.

The canoe on the embossed disk and the Payan graffiti are the only instances in which platform-ended canoes appear in scenes that are not clearly related to rituals or the supernatural. On the other hand, there are ceremonial overtones in the disk scene, particularly with respect to the visionary celestial creature that observes the melee.

**Murals from the Temple of the Warriors, Chichén Itzá**

A mural on the interior walls of the Temple of the Warriors at Chichén Itzá depicts warriors being paddled past a village in brown, double-ended, flat-bottom canoes with upright ends that curve outward slightly (Figure 76). Another scene from the same building depicts one complete example of this type of canoe and a fragment of second on an enclosed body of water (Figure 77). In a poorly-preserved third scene a similar canoe lies diagonally across the mural, and appears to carry warriors
Figure 76. Mural depicting warriors peacefully poling by a village in their canoes, from the Temple of the Warriors at Chichén Itzá (From Miller 1982:Figure 104).

holding blue and yellow decorated shields (Figure 78). Next to it we see a strangely-shaped end of a canoe, possibly depicting a carved animal head.

Ann Axtell Morris, who first analyzed the murals, stated that all three seem to go together, judging from their placement in the temple and the continuity of theme (Morris et al. 1931:398). Several details differentiate them, however, particularly the two scenes that portray activities on land and water juxtaposed (Figure 76 and Figure 77). The warrior participants in the two scenes wear different types of clothing. While in Figure 76 they pass a village that does not seem disturbed by their presence, but Figure 77 may depict an invasion, with warriors engaging in hand-to-hand combat, taking prisoners, and invading houses.

Morris noted that in Figure 78 men with long yellow hair seem to be losing a water-borne battle. The canoe shown diagonally across this portion of the mural could be sinking, but Morris
believed the unusual position resulted from the artist's attempt to show a canoe pulled up on the beach. In the remaining portions of the mural and in some fragments found detached from it, one yellow-haired person is in the water and about to be bitten by a fish, another is being pulled by his hair, and another has his arms bound behind his back. In addition, Morris described another section of the mural that depicts two Maya priests sacrificing a yellow-haired person, using the back of a feathered serpent as an altar (Morris et al. 1931:400, 403). Tozzer argued that the yellow-haired people are defeated Maya, implying that the yellow color heralds their status as sacrificial victims (1957a:155).

Tozzer argued that the battle scene depicts a local engagement based on the fact that it appears to take place next to a small body of water. In his scenario a battle is taking place in which native Maya must defend themselves against a Toltec attack. In the lower part of the mural in Figure 77, villagers are shown as red-striped figures being led away as captives. Figure 76 perhaps shows a peaceful scene on the coast or a lake with the Maya villagers engaged in domestic life but with their conquerors still present,
Figure 78. Mural depicting a yellow-haired person and a canoe, as well as remnants of shields held by the canoe's occupants, from the Temple of the Warriors, Chichén Itzá (From Miller 1982:Figure 106).

represented by the canoe-borne warriors passing by the shore (Tozzer 1957a:77). Marine creatures in the water probably indicate the village is located on the coast.

Tozzer asserted that these actions took place near Chichén Itzá, but this remains problematic, since the only closed water bodies near the site are cenotes. An alternative possibility is that the scenes depict action at Cobá, where lakes had probably formed by the Early Postclassic period. More excavation at sites in the northern Lowlands must be conducted before we can determine if the mural scenes at Chichén Itzá depict real or fictional events, and if real, then where and when they took place.

Canoes that appear in the Chichén Itzá murals differ from those in other Maya representations. The craft are flat-bottomed and double-ended, but lack the platform-like bow and stern and the distinctive contour line at the sheer so characteristic of canoes elsewhere in Maya art. The mural canoes have upright ends that curl outward slightly at the top. Instead of paddlers seated at each end, the mural canoes are propelled by a single person standing and using the paddle as a push-pole. The paddles are symmetrical with long looms and leaf-shaped blades.

Several possible explanations exist for the departure in canoe shape shown in the Chichén Itzá murals. For example the canoes could have been designed to function differently from typical, platform-
ended hulls. Perhaps they were built for use in battle, although the presence of a platform-ended hull on the gold disk from the Cenote of Sacrifice at the same site suggests the Maya did not strongly associate a single hull shape with warfare. Perhaps instead the raised prow and stern of the mural canoes made them more suitable for rough, open water. The mural canoes could be designed for coastal navigation while platform-ended craft were suited for inland navigation. On the other hand, Figure 77 shows a canoe with raised bow and stern on a closed body of water.

Another possibility is that the mural canoes were built by people adhering to a different construction tradition. If Tozzer was correct that the murals portray an incursion of a foreign group, then the foreign canoes perhaps had a different design. Alternatively, the artist could have simply painted the canoes to look different in order to distinguish them from local craft. The differences could also reflect use of varying artistic conventions to portray the same type of craft. Finally, the different canoe design could reflect temporal changes in construction between the Late-to-Terminal Classic and the Postclassic periods. Although this possibility cannot be ruled out, more evidence from Postclassic representations is needed to support it.

**Canoes in the Dresden Codex**

The Dresden Codex includes six canoe representations. All the drawings come from the section of the codex having to do with Chac, the Mesoamerican god of rain. These pages in effect constitute a prehistoric almanac annotated with instructions for proper execution of rituals associated with the agricultural seasons (Knorosov 1982:115; Love 1994:44, 54, 58). Canoes do not figure prominently in the Chac pages, which depict far more scenes with Chac engaged in other activities including travel by foot (Villacorta and Villacorta 1992).

Canoes in the Dresden Codex are piloted by Chac and in one example the canoe also carries a passenger. All the canoes are disproportionately small in the drawings, as was conventional for certain elements of codex compositions. Most of the canoes exhibit the distinctive raking, platform-like ends, but in other details they vary slightly from other representations. Five of the drawings show dots on the hulls (Figure 79, Figure 80, Figure 81, Figure 82, and Figure 83) while one shows the “band-and-m” that appeared on the Tikal bones (Figure 84). Only two drawings from the codex include the band at the sheer (Figure 81 and Figure 84), but in two other cases there is a contour line around the entire canoe hull (Figure 80 and Figure 83). The latter has platform ends elevated above the sheer in contrast to the other drawings that show platforms even with the sheer. One other shows a single “m” glyph attached to its sheer contour, in addition to dots on the canoe’s side (Figure 81).
Figure 79. Canoe depicted on page 29 of the Dresden Codex (From Villacorta and Villacorta 1992:58).

Figure 80. Canoe depicted on page 36 of the Dresden Codex (From Villacorta and Villacorta 1992:72).
Figure 81. Canoe depicted on page 40 of the Dresden Codex (From Villacorta and Villacorta 1992:80).

Figure 82. Canoe depicted on page 40 of the Dresden Codex (From Villacorta and Villacorta 1992:80).
Figure 83. Canoe depicted on page 65 of the Dresden Codex (From Villacorta and Villacorta 1992:130).
The canoe in Figure 79 has a gradual entrance and run, which makes the platform-like ends less pronounced. It lacks the longitudinal band at the sheer and has two dots on the hull instead. Chac is pictured cross-legged on the canoe's stern platform carrying a pointed, leaf-shaped paddle that is also decorated with dots. Texts associated with this scene and the others refer to the movements of Chac (Knorosov 1982:164).

In Figure 80 Chac is ferrying a passenger, whom Knorosov identified as the “god of abundance” (1982:159). In this case the platform ends are blunt and pronounced, and a contour line outlines the entire hull. Dots again decorate the hull and the paddle. The paddle in this drawing has a blade that is widest where it joins the loom.

Figure 81 shows a canoe with the standard shape, a horizontal line at the sheer with an “m” motif attached, and dots on the hull. Chac’s paddle has a roughly rectangular blade with rounded corners. In Figure 82 raking ends of the canoe are invisible, but only because they are blocked by the paddle at one end and Chac’s foot at the other. The paddle is similar to the one in Figure 81, and a glyph for the number “26” appears below the canoe. The number also appears in the three codex drawings succeeding this one, and have to do with the almanac-like function of the Chac pages.
The canoe in Figure 84 is unique in the Dresden Codex. The drawing is much larger than the others and has more conventional, Classic-style details such as the horizontal band at the sheer and the “band-and-m” motif. As mentioned above, the platform ends are elevated above the sheer, as in the Payan graffiti (Figure 52 and Figure 53) and one example on the Tikal bones (Figure 58). In this case Chac sits on the stern platform with his feet in the hold, and pilots the craft with a paddle that has an egg-shaped blade. The text refers to the long-awaited arrival of Chac to irrigate the fields, and identifies the offerings that should be made. Knorosov stated that the glyphs on the bow of the canoe represent a net, the headdress of the thunder god, Tox, and the head of an eagle, the thunder bird (1982:172).

Figure 83 depicts the canoe in a similar manner to Figure 80, with the contour line around the entire hull; pronounced, blunt, raking ends; and dots on the canoe’s side. Chac adopts a more active pose in this scene however, holding a pointed, leaf-shaped paddle as if to stab the animal swimming below. Knorosov identified the animal as a manatee, referring to its forked tail and what he called flippers visible in the drawing. Villacorta and Villacorta tentatively called the animal a crocodile (1992:131), and other possible interpretations exist. The ethnohistoric sources discussed here do not mention the paddle as a weapon for hunting at sea, and the possibility remains that the Chac in this canoe is simply paddling.

In general the canoes depicted in the Dresden Codex exhibit the same hull shape as the Classic and Postclassic period paintings, etchings, and models discussed here. The dots decorating the canoe hulls and paddle blades remain unique and unexplained. It is likely the dots are significant but in light of the Maya scribe’s gift for symbolism they could have nothing to do with canoe construction or design. The variations in the sheer band support the notion that it does not represent a construction feature of Maya canoes, but rather constitutes an artistic convention used to portray three-dimensional objects. The variety of blade shapes for the paddles depicted here and elsewhere contrasts with the uniformity in hull shapes. Perhaps paddles were less uniform in reality, or artists might have been less restricted in representing them, particularly if they had little or no ritual significance.

**INFORMATION FROM NON-MAYA SOURCES**

Information about canoes used in various parts of North, Meso-, and Central America from Precolumbian times to the present generally supports the basic canoe shapes depicted in Maya art. Canoes called piraguas (pirogues) in use in Panama today have platform-like ends, and smaller pitpans designed specifically for riverine travel could have platform ends just large enough for a person paddling or poling. The latter also have thick, flat bottoms which enable them to last through repeated scrapes on rocky riverbeds. Canoes of the Tarascans in the Valley of Mexico have platform-like ends, and these likely remain little changed from their Precolumbian predecessors (Roberts and Shackleton 1983:31, 49).
A Precolombian Mexica codex depicts canoes with platform-style bows (Figure 85) (Roberts and Shackleton 1983:42), and two canoe models excavated from Tenochtitlan seem to have had similar shapes (Leshikar 1982:78-79). In addition, a Precolombian canoe now in the Florida State Museum has bow and stern platforms reminiscent of those in Classic period Maya canoe representations (Figure 86) (Roberts and Shackleton 1983:69). None of these specimens or descriptions include reference to a longitudinal feature at the sheer that could correspond to the band we see in the Maya paintings and etchings. This supports the notion that the horizontal line simply constitutes Maya artistic convention.

Based on examples from North American to Panama, Roberts and Shackleton reported that platform-like ends provide a place for a person to stand and use a push-pole for propulsion, or to paddle the canoe. The seagoing dugouts they documented did not have the platforms, as poles cannot be used in
deep water. Instead, craft designed for service in rougher waters had pointed ends raised higher than the sheer line to minimize water sloshing into the boat (1983:35). These parallels could confirm the conclusions of some scholars that the platform-ended canoes depicted in Maya art represent riverine craft, while the canoes depicted in the murals at Chichén Itzá are designed for coastal or open-water navigation.

Spanish chroniclers who visited the Maya region during the late fifteenth and early sixteenth centuries provided only scant details about the canoes they witnessed around the Yucatán Peninsula. The individual accounts were covered in Chapter II, and the information they provide is briefly restated here.

The Maya vessel that the Spanish encountered at the Bay Islands was described as “as long as a galley and eight feet wide” (Las Casas 1965:274). Witnesses described an awning in the boat, noting that it was a superstructure sufficient to keep passengers dry. The canoes were made of a single tree trunk and were shaped like a trough. While the Bay Island canoe carried at least 25 people, perhaps not including the women and children who were on board, Díaz del Castillo stated that some canoes held up to 50 people. Other accounts indicate canoes could carry from five to 30 people.

Reports from neighboring regions such as Central America and Greater Antilles refer to enormous canoes. Columbus and other early explorers in the Caribbean reported seeing dugouts as much as 29.3 m long and 2.4 m wide, and ones carrying 70-80 people. Although the Spanish probably exaggerated the sizes, the huge trees available to Precolumbian canoe builders allowed them to construct large craft, seemingly without adding extra strakes. A 1747 account from North America cites canoes 9-12 m long and corroborations for the use of such large canoes in the Maya area comes from nineteenth
century reports in which visitors to the area traveled in dugouts 10 and 12 m long (Roberts and Shackleton 1983:16, 60; Johnstone 1988:47, 234-235).

Numerous accounts of early explorers in Central America testified to the seaworthiness of the large canoes as well as the fearlessness and tenacity of the navigators. When a canoe became swamped by a wave or overturned by rough waters occupants simply righted it from the water or bailed it out with gourd containers (Roberts and Shackleton 1983:33-34). Although Johnstone argued that canoe builders worldwide constantly tried to increase the stability of their craft by widening the hulls or adding outriggers (1988:48), there is no evidence for internal stiffening, thwarts, or equipment added on the outside of the Pre columbian hulls in the Maya area or neighboring regions. No evidence suggests the Pre columbian Maya added washstrakes to their canoes, but Thompson nevertheless argued that they did. As evidence he pointed to the raised bow and stern of canoes depicted in the Chichén Itzá murals, stating that the ends are too high to have been made from a single log. Once the ends were raised with additional pieces, Thompson reasoned, adding washstrakes would have been a simple and obvious step to take (1951:70). Clearly this argument requires corroboration from either archaeological or very early ethnohistoric sources before it can be considered credible.

In his 1951 study of Maya watercraft Thompson argued that Spanish descriptions prove the Maya used sail on their canoes. His conclusion relied primarily on the Spanish story of the rescue of Jerónimo de Aguilar from the shores of Yucatán, where he had been prisoner for some time. Several chroniclers clearly stated that upon his release Aguilar set sail in a canoe for the Spanish ships (Epstein 1990:188).

Thompson also cited a passage from Bernal Díaz del Castillo’s chronicle as evidence that the Maya used sail in Pre columbian times (1951:71). Díaz del Castillo described a scene that occurred one morning when the canoes of Yucatán approached the Spanish ships:

...we saw coming 10 very large canoes, which they call piraguas, full of indians indigenous to this population, and coming by paddle and sail. Their canoes are made like a trough, and they are large and of thick timbers and dug out as if they were hollow, and all of a single timber, and there are many of them which can hold 40 indians (Díaz del Castillo 1968:45).

In describing the canoes Díaz del Castillo wrote that the canoe navigators came “a remo y vela,” which literally means “by paddle and sail.” This phrase, along with other pieces of evidence, prompted Thompson to argue that the Maya used sails on their canoes (1951:71-72).

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52 The word remo literally means “oar” but was also applied to paddles in the New World (Epstein 1990:189).
To support the argument for sail Thompson turned to linguistic evidence, citing Maya words from the sixteenth-century Motul dictionary that had to do with sailing. In that dictionary the Maya word *bub* translates as “sail” or a verb meaning “hoist a sail.” *Bubil* means “to navigate with a sail or sails.” Another word, *bacam*, originally meant “standard” but was expanded to mean sail during colonial times. Thompson argued that the existence of the Maya words *bub* and *bubil* constitute strong evidence for Pre-Columbian use of sail. He reasoned that when the Maya encountered a Spanish object or technology unknown in their language, they would either adopt the Spanish term or, more rarely, expand the meaning of an existing Maya word with similar meaning. In this case, the other possible meaning for *bub* is “frog spawn,” which Thompson understandably viewed as completely unrelated to sailing. Thus, he argued that the word *bub* and its sail-related meaning had older, Pre-Columbian roots (Thompson 1951:72).

Many scholars accepted Thompson’s arguments for Pre-Columbian Maya use of sail. When Clinton Edwards surveyed the evidence for sail in the New World he added no new evidence for sail in the Maya region but he did not view Thompson’s argument as conclusive (1965:351). In 1990, however, Epstein successfully refuted all three lines of evidence that Thompson had invoked. First, the fact that Jerónimo de Aguilar used a sail does not indicate the Maya used it before contact. Aguilar was an experienced sailor and undoubtedly he could easily construct a simple rig with which to convey himself to the Spanish ships (1990:188).

Epstein also showed that Díaz del Castillo’s description of the canoe “a remo y vela” does not necessarily refer to a sail. When phrased this way the combination of words can have literal or metaphorical meaning. Epstein noted that Díaz del Castillo used the word *vela*, sail, only two times and in both cases as part of the expression “a remo y vela.” Furthermore, in all other cases in which Díaz del Castillo mentioned canoes he often referred to paddlers but never to sail. Epstein proposed that when Díaz del Castillo wrote “a remo y vela,” he meant to invoke the figurative meaning, in which the expression translates as “to do business quickly” (1990:189). Thus, Díaz del Castillo did not describe the propulsion of the canoe, but the swiftness and urgency with which it arrived.

To refute Thompson’s linguistic evidence Epstein first noted that several dictionaries of indigenous languages throughout Mesoamerican include words associated with sailing ships, all from places where there is no ethnohistoric evidence for sails. This indicates the words were probably used this way only after contact with the Spanish. Epstein also questioned Thompson’s assertion that the word *bub* had no Pre-Columbian meaning that would relate it to sailing. In fact, the Motul dictionary lists the other meaning of *bub* as *renacuajo*, a Spanish word that can mean either frog spawn or frog eggs. *Physalaemus pustulosus*, a frog found on both coasts of the Yucatán Peninsula, produces egg clusters that form groups of free-floating white foam nets. Epstein wrote that “…an analogy between such foam
nets and a flotilla of miniature sailboats would not be unreasonable. If this similarity occurred to the Maya, they may have extended the original meaning of *bub* to include sail" (1990:189-190).

This evidence, in addition to the complete absence of sail in Maya canoe representations (Epstein 1990:191), shows that the Maya did not use sails before the Spaniards introduced them. This fact remains surprising because the Maya developed sophisticated technologies for other tasks, and because sail clearly was used in Pre Columbian times on the Pacific coast of South America. Metallurgy techniques and methods diffused from the same area to Mesoamerica, so why not sail?

Epstein proposed that perhaps the metallurgy technology diffused northward before sail had been developed in the south. Alternatively, he suggested that perhaps Mesoamericans did know about sail but decided against using it. In South America navigators used sails on buoyant, stable rafts. In Mesoamerica, on the other hand, dugout canoes were preferred. These craft were comparatively unstable, and without outriggers or other means of increasing stability they perhaps remained unsuited to sailing (1990:191). To the Maya, adoption of underdeveloped sail technology probably meant a sacrifice in maneuverability and, more importantly, speed. If early Spanish reports were accurate and the Maya did indeed build canoes 12 m long and longer with relatively narrow beams, then they could probably travel at impressive speeds under human power alone. Dugout canoes propelled by paddle could probably move easily from open water to shallow streams and lagoons surrounded by forest, and experienced paddlers could likely stop and turn their canoes quickly in any wind and weather conditions. The advantages of sail are not nearly so obvious under these circumstances.

**MAYA CANOES OF THE TWENTIETH CENTURY**

Among the many tragedies of modern incursion into the Maya area is the rapid disappearance of ancient nautical traditions. A few ethnographers in this century included a few lines about canoes in their works discussing the customs of today's Maya, but they included only the most general impressions.

In 1918 Gann described the boat-building practices of "Indians living in the neighborhood of lakes and rivers." He stated that canoes ranged from 1.5-1.8 m long and only 0.4-0.45 m wide to more than 7.5 m long. These craft were formed of hollowed out cedar or cotton (*ceiba*) trees, and had pointed bows and sterns. Although the shape of the log usually dictated the shape of the vessel, "when steel tools are available to their makers the lines are often very graceful." Gann felt the canoes to be extraordinarily clumsy, and apparently admired the skill and endurance with which the Maya could handle them. He further stated "They use their canoes for trading corn, vegetables, lime, and livestock among villages along the river banks, for line fishing, spearing, and netting, and for getting from place to place. On the large lagoons and along the seacoast they sometimes use the pole to support a lug sail" (1918:28-29).
In 1929 Lothrop wrote a few paragraphs about canoes on Lake Atitlán. He noted that three Maya groups, the Zutugil, the Quiche, and the Cakchiquel, all used the same type of canoe, although they lived on different sections of the lake. The canoes were dug out from large cedar logs, so that one boat was big enough to carry 30 to 40 people (1929:216-219). The canoe sterns were shaped to resemble a transom with handles projecting aft, all carved from the same log (Figure 87). The projections facilitate handling when the navigators dragged the canoe onto shore stern first. Some extremely large canoes had an additional handle at the bow (Lothrop 1929:219, 221; Roberts and Shackleton 1983:57). On Lake Atitlán, canoe bows formed a V-shape rather than a blunt end like at the stern.

Some Lake Atitlán Maya raise the sides of their canoes with extra planks and seal the seams with pitch to keep water from entering. The sides can reach a height from the bottom of up to 1.2 m, which Lothrop said hinders paddling. Lothrop attributed the extra plank to European influence, as not all the Maya canoes employed it (Lothrop 1929:221; Roberts and Shackleton 1983:61). McBryde also observed the Lake Atitlán canoes and agreed that the extra plank showed European influence rather than indigenous Maya tradition. He measured the largest canoe on the lake as 10 m long and 1 m wide, able to carry about 20 people and some cargo, including pigs (Thompson 1951:70).
In 1937 Soustelle brought the canoe construction practices of the Lacandon Maya to light. He reported that these Maya would begin the long and arduous task by bringing a mahogany log close to the water, where they dug it out using fire and a machete. The results included canoes usually about 2-3 m long, but occasionally reaching lengths up to 6 m. These canoes were double-ended. Soustelle stated that they usually had a platform raised by about 2-3 cm for the paddlers (1937:76). His photograph indicates that these must have been inside the hull (Figure 88). Thompson stated that this feature is a remnant of the Pre-Columbian paddling platforms (1951:71), but Hammond estimated that such a small elevation would not effect paddling (1981:175). Soustelle also stated, however, that the Lacandon canoes always had a little water in their bottoms (1937:77), so the short platform probably served simply to keep the paddler comfortable. Of course, the Pre-Columbian platforms could have been intended for that purpose also.
MAYA CANOE CONSTRUCTION

The Spanish chronicles and the boat-building practices of the modern Maya leave no doubt that canoes depicted in Maya art are dugouts. Bernal Díaz del Castillo described Maya canoes as hollowed out like a trough, and witnesses of the Bay Island encounter added that canoes could have superstructures for shelter. All other evidence for Maya construction techniques comes from later ethnographic accounts and descriptions of modern practices that incorporate use of metal tools. The most detailed account of Maya boat-building is a modern ethnographic record of the canoe building practices of Ausencio Cruz Guzmán, a Maya man from a village west of Palenque on the Tulijá River (Hopkins et al. 1985).

Early accounts from the Caribbean islands indicate that the Precolumbian tools used for canoe building included greenstone axes, tools made from volcanic stone or shell, and possibly shark skin used like sand paper. During the Colonial period the time needed to build a canoe ranged from a few days to two weeks, but metal tools available then undoubtedly sped the process. The earliest European reports of canoe construction indicate that with stone tools the project could last several months (Roberts and Shackleton 1983:16, 26, 39, 60).

In the Caribbean islands one person could make a small canoe but a large craft required a master boat builder supervising a crew of workers (Roberts and Shackleton 1983:16). Very early reports from the Valley of Mexico indicate that canoe construction perhaps constituted a specialization there in Precolumbian times (Leshikar 1982:78). There is no solid evidence that canoe building was a craft specialization in the Maya area, but early visitors did note that two regions were renowned for building canoes, the northeast corner of the peninsula at Cabo Cotoche and the area around Lake Bacalar near Chetumal Bay (Tozzer 1957a:227). In the sixteenth century one canoe reportedly fetched 100 cacao beans for its builder (Roberts and Shackleton 1983:54).

Based on his casual observations in Belize Thompson stated that Spanish cedar was the most common wood used by the Maya for canoes, but that Santa Maria, ceiba, and mahogany could also be used. He had the general idea that mahogany was not favored because of its great weight. Some mahogany logs would not even float (1951:71). In the Caribbean both mahogany and red cedar (Cedrela odorata) were considered suitable, and mahogany was a favorite due to its durability. Both could grow into enormous trees with as much as 27.4 m of straight trunk before branching, and one nineteenth century document reported mahogany trunks could be 24.4 m high and 2.1 m thick. During the Colonial period mahogany was seen as especially desirable for sailing a canoe to windward, a quality probably related to its weight. The ceiba tree produced the very largest trunks and found favor as a canoe material due its size. In other respects, however, Caribbean and Maya boat-builders considered it inferior to the other woods and might use it only when no other large trees were available (Roberts and Shackleton
1983:22, 32-33; Hopkins et al. 1985:321). Given the importance of the *ceiba* tree in Maya cosmology, it is possible that *ceiba* was preferred for canoes used in rituals or for royal persons. Canoe builders in the Valley of Mexico preferred to use a tree called ahuehuete, a kind of Mexican coniferous tree. Trunks were large, up to 30.5 m tall and 0.9-1.5 m in diameter, the wood was easy to work and resistant to decay, but trunks did require seasoning before being shaped (Leshikar 1982:69, 72). Hopkins et al. documented several woods used by modern Maya canoe builders and their degree of durability, which was considered paramount (Table 2). The effort required to work the wood is secondary, as a canoe built from durable wood could remain in riverine service as long as 30 years. The location of the trunk was not a strong consideration, and trees as much as 20 km from a waterway are commonly selected (Hopkins et al. 1985:326).

Early colonial accounts from the Maya area do not include details of canoe construction, but techniques were likely similar to those used in the Caribbean. There the project began by felling a tree using a fire built around its base. Builders also used fire to shape the canoe, alternating burning the portion to be hollowed and scraping out the charred wood to attain the proper hull shape. Some Caribbean canoes could be ornately decorated (Roberts and Shackleton 1983:16). Elite canoes in the Valley of Mexico could also be decorated and even furnished with a seat and protective awning (Leshikar 1982:63).

Today canoe builders on Dominica use metal tools to shape their canoe hulls, but use fire afterwards to widen them. They fill the canoe with heavy stones and water, allow it to soak for a few days, then build fires near the sides of the canoe to heat the wood and water. As it heats, the hull becomes flexible. The builders can spread the sides and insert thwarts to make sure the shape holds when dry (Roberts and Shackleton 1983:21).

Modern Maya continue to build and use canoes, but the advent of metal tools probably caused Pre Columbian techniques to be largely abandoned. Outboard motors are now preferred for propulsion. Builders on the Usumacinta River near the region once called Acalán begin to shape their canoes by first leveling the upper surface of the chosen log to a flat plane. Men carve out sections of the trough along the length of the log with axes, then shape the outer hull only after the interior is finished. The resulting canoe has pointed, raised ends but no platforms for poling or paddling (Roberts and Shackleton 1983:58-60).
Table 2. Trees used for building canoes in Chiapas, Mexico. (From Hopkins et al. 1985:326).

<table>
<thead>
<tr>
<th>Name in Spanish</th>
<th>Name in the Chol dialect of Maya</th>
<th>Qualities of the wood</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maca</td>
<td>Mankohte’</td>
<td>Durable, will last up to 30 years</td>
</tr>
<tr>
<td></td>
<td></td>
<td>The all-around best tree for canoes</td>
</tr>
<tr>
<td>Cedro</td>
<td>Ch’uhte’</td>
<td>Durable, but many trunks are hollow</td>
</tr>
<tr>
<td></td>
<td></td>
<td>The second-best tree for canoes</td>
</tr>
<tr>
<td>Caoba</td>
<td>Sutz’ul</td>
<td>Durable, but many trunks are hollow and the wood will rot around knots and other imperfections</td>
</tr>
<tr>
<td>Maca blanca</td>
<td>Ha’te’</td>
<td>Durable</td>
</tr>
<tr>
<td>Laurel</td>
<td>‘Unte’</td>
<td>Durable</td>
</tr>
<tr>
<td>Tinco (Amargoso)</td>
<td>‘Ik’xi’</td>
<td>Durable</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Swells in water</td>
</tr>
<tr>
<td>Bari</td>
<td>Sik Balun te’</td>
<td>Durable</td>
</tr>
<tr>
<td>Lacté</td>
<td>‘Ulmo’</td>
<td>Not so durable</td>
</tr>
<tr>
<td>Caracolillo</td>
<td>Karakol</td>
<td>Not so durable</td>
</tr>
<tr>
<td>(Guasibán)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Guanacaste</td>
<td>K’uk’té’</td>
<td>Not so durable</td>
</tr>
<tr>
<td>Ceibo</td>
<td>yix te’</td>
<td>Low durability, only about two years</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Easy to work when green, and the wood hardens later</td>
</tr>
</tbody>
</table>
In the complete account of the construction of a canoe by Auscencio Cruz Guzmán on the Tulijá River, the builder begins by locating a suitable tree and securing permission to cut it. To cut large, rainforest trees sometimes required construction of a platform over the tree’s buttresses so that the log could be cut above them. Once the tree was felled a master builder examined it and decided how to cut the log for maximum use, with respect to defects such as knots and hollows. To begin construction the builder cut off the log’s ends and carved transverse grooves at various locations along its length, all to equal depths. The builder ran strings along the length of the log that were connected to the bottom of each groove, and these indicated the depth to which the top of the log should be leveled. The wood was then cut away with axes and trimmed with machetes and adzes.

To shape the canoe hull the master builder drew equally spaced transverse sections on the flattened surface, then measured the width of trunk at each line. The builder tapped nails into the flat surface to delineate the outside edges of the hull at each line. He then ran a string around the nails and traced the resulting curve on the flat surface. The process was repeated to define the inside edge of the hull, giving a side thickness of about 2.5 cm near midships. Workers cut away the sides of the canoe with axes beginning amidships and proceeding to the ends. They first formed the exterior into vertical, straight sides. The master builder shaped the bow and stern with a machete. To shape the bow and stern using a traditional method, the builder would take a large leaf, fold it and cut it to create a template for the desired curve. Unfolded, the leaf could be used as a guide to shape the symmetrical bow and stern. In modern times builders more commonly use a plastic yardstick bent to the desired curve. Hopkins et al. noted that symmetry was desired for appearance, not for the canoe’s performance. To create the canoe’s interior the master makes several cuts to the correct depth and his assistants cut away the wood. They used axes for the heavy cutting then shaped the surfaces with flat and curved adzes (Hopkins et al. 1985:326).

Next the builder drilled three sets of three holes in the bottom of the boat, along three section lines at the two ends and amidships. These were used to judge the hull’s thickness once the log was turned over and the builders were shaping the exterior surface. Once the log was inverted, the master examined the holes, determined the optimal thickness for the hull, and made more guide cuts to indicate the thickness in different places along the length of the craft. Assistants cut away the bottom, first making it flat and then following the master’s instructions for creating the curved sides. The bottom of the canoe was left thicker than the sides. Wood from the same tree was used to plug the nine holes, as well as any knots or splits that the builders encountered. To finish the canoe a series of holes was created along the sides just below the sheer which were used for tying down covers for the cargo space (Hopkins et al. 1985:327).
Once the canoe was finished a ceremonial dinner was held with the master builder and his assistants participating, and only afterwards was the canoe transported to the river or stream where it was to be used. As many people as possible then piled into the craft to test its capacity (Hopkins et al. 1985:327).

DISCUSSION

Archaeological data for Maya canoe design is remarkably consistent. Paintings, etchings, carved bone models, and ceramic models all depict craft with raking ends that usually form distinct platform-like bows and sterns. Variations on this basic shape do occur. While in general the craft depicted seem to have flat bottoms and flat sheers, some show varying degrees of curvature to either. The horizontal sheer band depicted in paintings and etchings has no counterpart in the canoe models, and probably does not represent a real construction feature. Instead, the line constitutes a Maya artistic convention for depicting the top edge of an open, three-dimensional object.

The consistency with which canoes are portrayed in Maya painting and etching stems partially from the nature of the scenes where they appear. With two exceptions—the embossed gold disk from the Cenote of Sacrifice and the Temple of the Warriors mural at Chichén Itzá—painted, drawn, and modeled canoes all have some context that relates them to the Maya view of death and passage to the underworld. Although information about canoe construction from elsewhere in the Americas indicates that the depicted canoe shape is realistic, the canoe representations discussed here probably overemphasize the degree of standardization in Maya canoe construction. Postclassic representations from the northern Lowlands hint that canoes of other shapes existed and that perhaps craftsmen used more than one hull design depending on the task and the conditions at hand. Today the Maya build canoes in regional styles, sometimes with distinctive features such as the projecting handles on the sterns of Lake Atitlán watercraft.

Surprisingly, none of the representations of canoes depicts the activity archaeologists find most important—maritime trade. The Maya clearly viewed canoes as far more than mere vehicles for fulfilling one’s earthly desires and responsibilities. The contrast between details worthy of the scribe’s brush and those emerging from the rest of the archaeological record stands as a reminder that Maya art does not necessarily imitate Maya life.
CHAPTER VI

CONCLUSION

Naum-Pat, Halach Univic ("true human")... had been a seaman all his life. Like his people a thousand years before him, he had plied the deep blue waters and treacherous shallows in great canoes, laden with honey, salt, slaves, chocolate—treasure of all kinds. He had fought enemies up on its rolling surface; he had ridden out the great storms that tormented its waters; he knew every port and people that graced its shores. The sea was his, world of his ancestors, great and dangerous and rich in precious, holy things.

—A Forest of Kings (Schele and Freidel 1990:377)

The archaeological record of the Yucatán Peninsula lends concrete support to this fictional description of the importance of the sea to the Precolumbian Maya. A Maya person’s relationship to the sea operated on spiritual and practical levels, probably with little distinction between them. The evidence compiled for this literature review concentrated primarily on maritime trade, which is but one aspect of Maya seafaring.

Enormous amounts of data pertaining to Maya maritime trade have been published in the last half of this century. In some parts of the Maya realm the very abundance of information from coastal sites complicates our efforts to trace and understand maritime networks. Overlapping distributions of goods and multi-directional movement of ideas and people paint a complicated picture of seafaring and its role in culture change. Several pieces of evidence point to the possibility that Precolumbian maritime trade was economically significant. First, coastal trade routes around the Yucatán Peninsula clearly had a long development through Maya prehistory, and probably integrated to some degree into the creation of local and regional trade networks from their earliest moments. Second, the evidence for artificially created resource inequities (McAnany 1986) would cause Maya who normally relied on local resources for survival to gradually grow dependent on regional trade networks, including their maritime components, for subsistence resources. The importance of the sea in Maya cosmology and the coastal-inland transportation networks associated with it formed the link that allowed long-distance maritime routes to dovetail with medium- and long-distance riverine or overland ones. Finally, it is possible that Maya seafaring merchants emerged indigenously as a specialized type of middleman, who perhaps had influence and power derived from their participation in wide distribution networks and access to information.
A basic problem that remains in the study of Maya maritime trade and seafaring is that the bulk of evidence still consists of luxury artifacts from elite contexts. We do not know how well trade in exotics correlates with trade in utilitarian goods, if it correlates at all. Even though the same durable objects documented in the archaeological record could have had some economic importance in trade among non-rulers, the current state of evidence does not allow us to comprehensively study this. Results from the Colha Project and the Wild Cane Cay Project show that thorough articulation of the behavior that creates a material record and better reporting of the findings can correct this problem and completely change how we think about Preclassic Maya economies.

Current evidence for seafaring does clarify a different aspect of Maya prehistory, however. The role of maritime trade in culture change on the Yucatán Peninsula has been greatly overstated by many of the archaeologists who studied it (Rathje et al. 1978; Andrews 1983). Maya maritime trade was but one component of an essentially land-oriented system of interactions. Seafaring perhaps lengthened the distances that could be traveled or accelerated the pace of communication among far-flung groups, but did not by itself play a determining role in the development of social complexity among the Maya. Furthermore, it is highly unlikely that a rise of aggressive, seafaring traders or shift from overland to maritime trade routes had anything to do with the Classic-to-Postclassic period transition in the Lowlands. Maritime networks probably remained fairly stable in the face of political fluctuations, the rise and fall of regional centers, and changing territorial boundaries. We do not know enough about seafaring in the Classic period to conclude whether or not the Terminal Classic–Early Postclassic evidence really represents expanded use of coastal routes or relatively steady continuation from earlier times.

Gaps in our knowledge of Maya seafaring and maritime trade fall into three categories. Spatially, we lack evidence from the clearly crucial southwest corner of the Yucatán Peninsula. Maya around the Laguna de Terminos and along the west coast undoubtedly played a tremendous role in maritime trade, but almost no archaeological evidence has been reported from these regions. In addition, more excavation on the north and northeast coasts of the peninsula as well as the north coast of Honduras is needed to balance the concentration of data in Belize. Sizable towns at Santa Rita, San Miguel, Champoton, and Campeche all have maritime histories that extend to Preclassic times, and modern buildings overlie the archaeological remains there. Chronologically, the Classic period deserves much more attention. We now know that most coastal sites of this period probably lie underwater and have thus escaped the archaeologist’s notice until recently. Finally, evidence for maritime trade and seafaring is skewed by the lack of any true nautical evidence. To study this topic from a nautical point-of-view would open the door to new lines of evidence that might clarify some aspects of Maya seafaring and maritime trade. Although archaeological sites on land provide myriad clues, the data nearly always result from a
series of actions over time. A canoe site, if one exists, has the potential to inform us about a moment in time of Maya prehistory and possibly illuminate the pieces of the puzzle that we still lack—those that pertain to perishable, consumable trade goods.
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Graham, E. and D. M. Pendergast


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Guderjan, T. H. and L. Brody-Foley


Guderjan, T. H. and J. F. Garber


Guderjan, T. H., J. F. Garber, H. A. Smith

Guderjan, T. H., J. F. Garber, H. A. Smith, F. Stross, H. V. Michel, F. Asaro

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Hammond, N., M. D. Neiven, and G. Harbottle


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Jackson, L. J. and H. McKillop

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Nelson, F. W., K. K. Nielson, N. F. Mangelson, M. W. Hill, R. T. Matheny

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Shafer, H. J. and T. R. Hester


Sheets, P. D.


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Tozzer, A.


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Váldez, F., Jr.

Váldez, F., Jr., L. A. Sullivan, and T. H. Guderjan

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APPENDIX

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March 5, 1998

Rahilla Shatto
206 Grove Street
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Phone: (202) 857-7537
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March 3, 1998

Rahilla Shatto
206 Grove Street
College Station, Texas 77840
Daytime phone: (409) 845-7662
Evening phone: (409) 696-0155

Mr. Herbert Johnson
Publisher
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53 Old Post Road No. 2
Greenwich, CT 06830
Phone: (203) 661-7602
Fax: (203) 661-0792

Dear Mr. Johnson,

I am a master's student in the Nautical Archaeology Program of the Department of Anthropology at Texas A&M University. As part of my degree requirements I am writing a thesis, titled *Maritime Trade and Seafaring of the Pre-Columbian Maya*.

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Rahilla C. A. Shatto
Graduate Student, Department of Anthropology
Texas A&M University

March 4, 1998

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Rahilla C. A. Shatto
Graduate Student, Department of Anthropology
Texas A&M University

March 4, 1998

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Rahilla Shatto
206 Grove Street
College Station, Texas 77840
Daytime phone: (409) 845-7662
Evening phone: (409) 696-0155

Mr. Glenn Ruby
Dumbarton Oaks
1703 32nd St. NW
Washington, D.C. 20007
Phone: (202) 339-6430
Fax: (202) 625-6805

Dear Mr. Ruby,

I am a master’s student in the Nautical Archaeology Program of the Department of Anthropology at Texas A&M University. As part of my degree requirements I am writing a thesis, titled *Maritime Trade and Seafaring of the Pre-Columbian Maya*.

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Sincerely,

Rahilla C. A. Shatto
Graduate Student, Department of Anthropology
Texas A&M University

9 March 1998

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Glenn Ruby, Publishing Manager, Dumbarton Oaks
9 March 1998

Rahilla C. A. Shatto
206 Grove St
College Station, TX 77840

Dear Ms. Shatto:


Sincerely,

[Signature]

Patricia Craig
202-939-1120 phone
202-387-8092 fax
Ms. Rahilla Shatto
206 Grove Street
College Station, Texas 77840

March 13, 1998

Dear Ms. Shatto:

Thank you for your letter requesting permission to use Figures 1, 3 and 4 from our publication number 40, "A Preliminary Study of the Ruins of Xcaret, Quintana Roo, Mexico." We are happy to grant you permission to use those figures for your masters thesis and only ask that you credit the publication and the Middle American Research Institute completely.

Sincerely yours,

Kathe Trujillo
Assistant Director
March 3, 1998

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Sincerely,

Rahilla C. A. Shatto
Graduate Student, Department of Anthropology
Texas A&M University
Janice Rubin - Photographer

March 31, 1998

Ms. Rahila Shatto
206 Grove Street
College Station, Tx 77840

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I would be grateful if you could send me a copy of your thesis, as I would be very interested in reading it. Thank you for your courtesy. Good luck with your work.

Sincerely,

[Signature]

Janice Rubin
FACSIMILE MESSAGE
FAX NO.: (409) 693-1367

Rahilla C. A. Shatto
Department of Anthropology
Texas A&M University
College Station, Texas 77840, U.S.A.

31st March, 1998

Dear Ms. Shatto:

Your fax of the 4th of this month was directed to a colleague who was in the field until yesterday; she has just passed your request on to me. You have permission to use the following drawings, as requested:

Excavations at Altun Ha, Belize, 1964-1970
Volume 1, Figure 46: drawing of bone canoe model
Volume 2, Figure 120: green obsidian figures

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I am very sorry for the delay, and I shall have the original of this letter off to you by courier at once. I trust that it will arrive in time, but if not I hope that this faxed version will serve in the meantime.

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Vice President for Collections and Research
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Journal Fellow
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PO Box 750415 Dallas TX 75275-0415
March 2, 1998

Rahilla Shatto
206 Grove Street
College Station, Texas 77840

Dr. Norman Hammond
Department of Archaeology
675 Commonwealth Ave.
Boston University
Boston, MA 02215

Dear Dr. Hammond,

I am a master's student in the Nautical Archaeology Program of the Department of Anthropology at Texas A&M University. I am writing my master's thesis about the maritime trade and seafaring of the Precolumbian Maya.

It has been my privilege to read several of your publications about Precolumbian obsidian distribution and your study of Maya canoes in the International Journal of Nautical Archaeology. I am also quite interested your work at Nohmul which turned up the possible Precolumbian jetty.

I request permission to reproduce the drawing of the Nohmul jetty in my master’s thesis. The drawing is published as Figure 5.23 in Nohmul: A Prehistoric Maya Community in Belize, Excavations 1973-1983 (BAR International Series 250, 1985).

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Rahilla C. A. Shatto
Graduate Student, Department of Anthropology
Texas A&M University
March 5, 1998

Ms. Rahilla Shatto
206 Grove Street
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Dear Ms. Rahilla Shatto:

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March 5, 1998

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K3033 Figure 6.46. Classic-period cylinder vase depicting an underworld scene with a flat-bottomed canoe. The Paddler Gods paddle the canoe, and a single Figure between them is the passenger.

K5351 Figure 6.47. Classic-period cylinder vase depicting two canoes with paddlers, shown inside cartouches that represent cave openings.

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K3249 Photograph of Early Classic vessel with a modeled canoe and paddler on the lid.

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Ms. Rachel Shatto
206 Grove St., College Station
Texas 77840

16 April 1998

Dear Ms. Shatto,

I am sorry to be answering your letter beyond your deadline. I have only just returned from my field season in Mexico—Guatemala.

Yes, you may certainly reproduce my drawing of lintel 15 from Yaxchilan.

Yours truly,

[Signature]
Routledge

Please call direct on: Tel: 01264 342756/Fax: 01264 342792
email: sally.sweet@ips.co.uk

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18 May 1998

Ms Rahilla Shatto
206 Grove Street
College Station
Texas 77840
USA

Dear Ms Shatto

Re: Figure 4, Drawings of Canoe Models from Moho Cay, Belize from World Archaeology 16(3): 337-353 1985 Prehistoric Exploitation of the Manatee in the Maya & Circum-Caribbean by H McKillop

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Sally-Ann Sweet - Permissions Department
VITA

Rahilla Corinne Abbas Shatto

c/o Tariq and Cynthia Abbas
26495 East Otero Dr.
Aurora, Colorado 80015
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EDUCATION
8/91 - 8/98

Texas A&M University, College Station, Texas
Anthropology (Nautical Archaeology), M.A.

8/87 - 5/91

Duke University, Durham, North Carolina
Comparative Area Studies (Latin America), B.A.

EXPERIENCE
1/94 - present

Department of Oceanography, Texas A&M University,
College Station, Texas
Communications Specialist / Staff Assistant

Managing Editor of Quarterdeck magazine. Plan, write, and edit articles, design graphics, layout pages, distribute final product. Design and edit the Department of Oceanography web site (http://www.ocean.tamu.edu/). Produce and supervise production of internal and external publications.

5/93 - 7/93

Monte Cristi Shipwreck Project, Monte Cristi, Dominican Republic
Staff Member

Excavated a 19th-century shipwreck underwater, recorded artifacts, supervised volunteers, presented educational lectures, supervised Spanish-speaking cook and food preparation for the research team.

10/90 - 8/91

Duke University Museum of Art, Durham, North Carolina
Student Curator / Intern


AWARDS AND HONORS

1992 Herman F. Heep Scholarship for Academic Excellence, Texas A&M University
1992 National Science Foundation Fellowship Honorable Mention
1991 Mary Duke Biddle Summer Internship Award, Duke University
1991 Cum Laude, Duke University
1990 Duke Semans Fine Arts Foundation Grant, Duke University
1990 Golden Key National Honor Society
1990 Dean’s List, Duke University