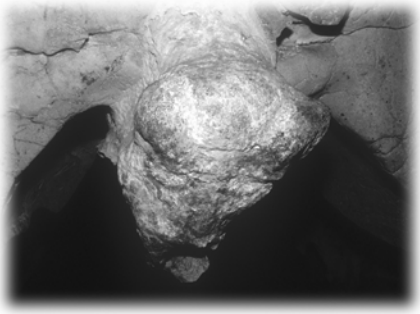

A Niche in Time: JD-5, Caribbean Cave Art, and the Fourth Dimension

Reinaldo Morales Jr. and Melisa A. Quesenberry

Modified speleothems were one aesthetic reaction to the sacred relevance of caves in the circum-Caribbean pre-Columbian world. These modifications were varied, ranging from simple line engravings to relief sculptures. This paper will discuss the cave art of JD-5 in southern Puerto Rico, introducing a sophisticated integration of rock art and geomorphology. The JD-5 "effigy niche," as we have called it, features sculpture and painting in concert with existing "found" forms creating a unique aesthetic delineation of space within the sacred context of the cave.

In the pre-Columbian circum-Caribbean world (Figure 1), caves were places of origin and the realm of ancestral and supernatural forces—transitional spaces between the present and the mytho-historic past. They were also the locus of significant ritual art production. In fact, the Greater Antilles and the Yucatán Peninsula boast the greatest concentration of cave art in the Americas (Stone 2004a). The cave art of JD-5, a cave in south-central Puerto Rico (Figure 2),[1] is typical in many ways of that found throughout the Greater Antilles (Cuba, Jamaica, Hispaniola [the island of Haiti and the Dominican Republic], and Puerto Rico). This essay will introduce an example of the sophisticated use of rock art within the dark zone of JD-5, and in doing so will illustrate the broader relationship that existed between caves, rock art, and the Taíno—"the people who greeted Columbus" (Rouse 1992).

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Puerto Rican rock art has not been securely dated (see Dubelaar et al. 1999:17), however, Peter G. Roe and others (Roe 2001; Roe et al. 1999; Roe and Rivera 1995) have proposed three periods of rock art production based on the evolution of iconographic complexity: Phase A (c. A.D. 600-800), Phase B (c. A.D. 1100-1200), and Phase C (c. A.D. 1300-1492). While this approach has been problematic elsewhere (Morales 2002), we shall adopt Roe's scheme for Puerto Rico as it is the most detailed attempt at establishing a chronology for this rock art to date. This essay will begin by introducing Puerto Rico and the Taíno in the larger context of the Pre-Columbian circum-Caribbean world—geographically, culturally, and cosmologically. We will then introduce the rock art and associated iconography from other arts and neighboring regions.

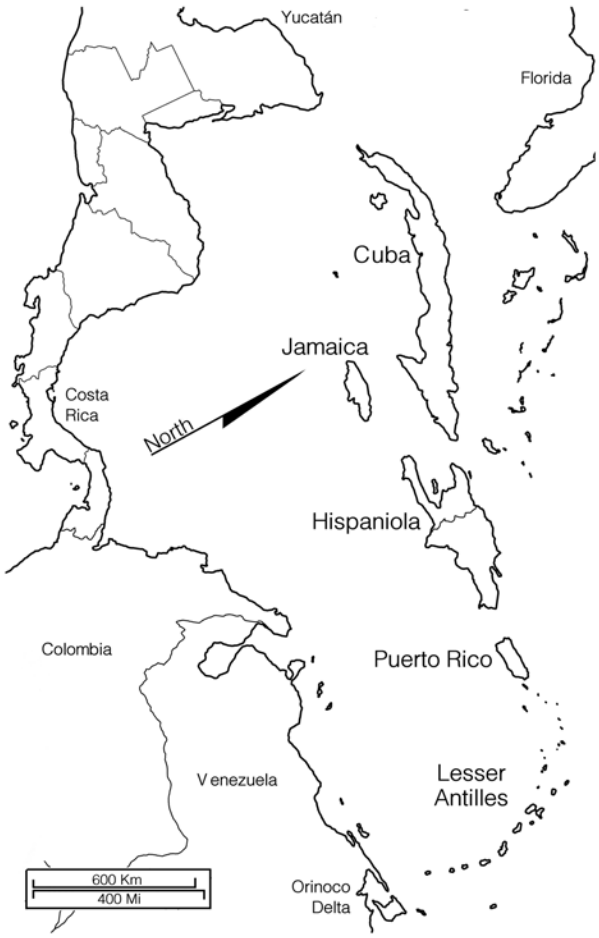

Figure 1. *Map of the circum-Caribbean following Wilson (2004, 2001; Wilson et al. 2001).*

THE CIRCUM-CARIBBEAN AND THE TAÍNO

Puerto Rico is the easternmost island of the Greater Antilles—large mountainous islands with diverse physiographic zones, most notably their vast regions of *mogotes* (steep and tightly spaced cone karst or "haystack hills") (Helmer et al 2002). These karstic

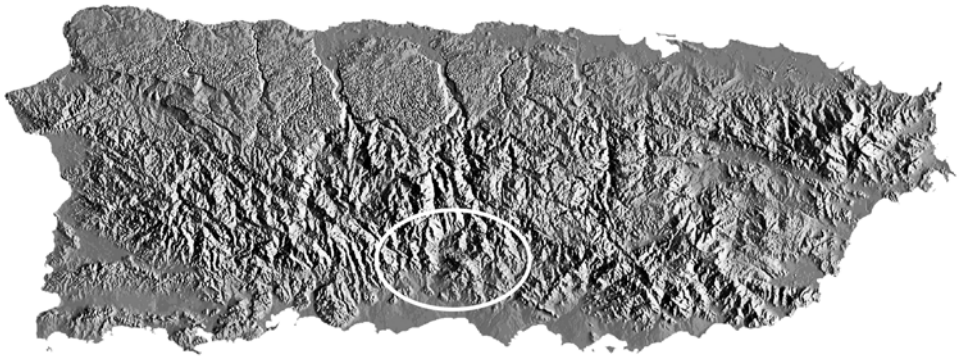

Figure 2. *Shaded relief map of Puerto Rico showing the general location of JD-5 (adapted from the U.S. Geological Survey Caribbean District, http://pr.water.usgs.gov/public/gis_map.html).*

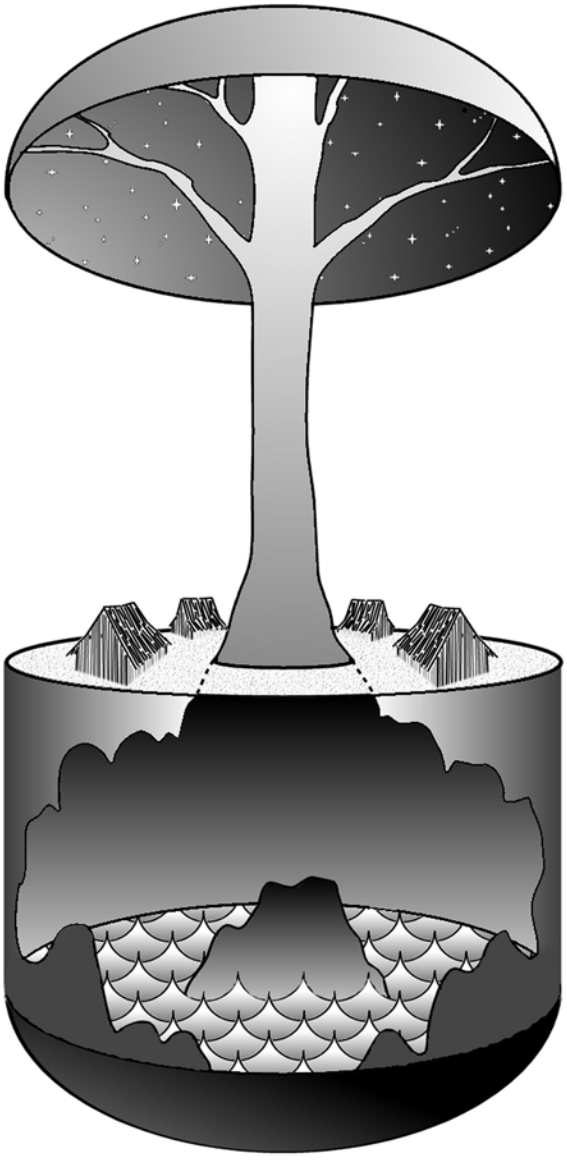

Figure 3. *Diagram of the Taíno cosmos (modified from Siegel 1997:Fig 1, and Beeker et al. 2002:Fig. 26).*

regions are where we find relatively prolific cave art, in stark contrast to mainland South America and Lower Central America (Stone 2004a; Stone and Künne 2003). The "tilted Caribbean" map shown in Figure 1 is adapted from Samuel M. Wilson (Wilson 2001, 2004; Wilson et al. 2001). Wilson's re-orientation of a familiar geography helps us to not only recognize the significant proximity of mainland Mesoamerica to Antillean Mesoamerica, but it also illuminates "the importance of northern South America on the Caribbean islands from Hispaniola east" (Wilson et al. 2001). This re-orientation also serves to recall Julian Steward's (1947) dated, yet influential theory of circum-Caribbean cultural diffusion (see Rouse 1953, 1992; Wilson et al. 1998). In all likelihood, as this essay will show, very similar motivations were behind the creation and use of cave art in the Pre-Columbian northern circum-Caribbean.

We refer to the Antilles as the "Other Mesoamerica." Geographically, these islands are part of Central America, especially the Greater Antilles. Geologically, the Greater Antilles share much in common with the karst regions of the eastern Mesoamerican lowlands (Watters 1991:309). Culturally, the Antilles were home to peoples who imposed South American riverine traditions upon an oceanic world of islands and caves. The earliest peopling of the Antilles probably came from eastern Mesoamerica c. 4000 B.C. Following a second wave of preceramic immigrants after 2000 B.C., this time from South America, waves of horticulturalists "re-peopled" the islands beginning around 500 B.C. (Allaire 1997; Rouse 1992; Wilson 1997a, 2001; Wilson et al. 2001). These Arawak-speaking peoples moved up through the Lesser Antilles from the Orinoco drainage and the riverine lowlands of northern South America. A new Antillean culture emerged. The indigenous Central American traditions were assimilated into the ideological and artistic heritage imported from South America, to eventually give rise to the culture who called themselves the "Good People" (McGinnis 1997a:83-86)—the Taíno—who flourished from around A.D. 1200 until the early sixteenth century.[2]

KARST AND THE COSMOS

The karst landscape of the Greater Antilles played a key role in the modifications of the cultural and ideological heritage introduced from South America. Peter Siegel (1996, 1997)

has proposed that the structural basis for Taíno cosmology is a variant of an Amazonian and Orinocoan model (Figure 3). The circular or semi-circular village is the center of the world, shown here with the ubiquitous "World Tree" or *axis mundi* This is surrounded by vertical layers and concentric regions of sacred and profane, public and private, and worldly and other-worldly space. To this last distinction, worldly and other-worldly, we should add *under*-worldly. In a distinctly Taíno modification of a lowland South American template, caves act as sacred conduits, connecting the earthly plane and the subterranean waters (Beeker et al. 2002:20-21; Siegel 1997:108). At the center of these subterranean waters is the island Soraya ("Mythic Place"), where Coaybay was located, the "house and dwelling place of the dead" (Pané 1999:17-18).

In neighboring mainland Mesoamerica, caves likewise represented sacred portals to the underworld (MacLeod and Puleston 1980; Tedlock 1985; Klein 1975; Nicholson 1971). The cave passage is a "cosmic aperture," as Andrea Stone (1995:Fig. 3-34) characterized it, through which the different levels of existence could be traversed. These are liminal spaces where the various planes—including temporal planes—of the world merge and are thus accessed via carefully orchestrated ritual (Figure 4) (Bassie-Sweet 1991, 1996; Brady 1989, 1999; Friedel et al. 1993; Halperin et al. 2003; Heyden 1975, 1981; Stone 1995, 1997, 2003; Taube 1986). We argue that this likely represents the residue of a very ancient conceptual relationship with the environment shared by the cultures that populated both mainland and Antillean Mesoamerica prior to the Arawak invasion from South America.

THE MAW IN MYTH

From the first ethnographic study of the American Indians, Fray Ramón Pané's 1498 *An Account of the Antiquities of the Indians* (Pané 1999), we know that two caves on the island of Hispaniola, Cacibajagua and Amayaúna, were considered the place of origin of people. Cacibajagua translates as "Jagua Cave" or "Cave of the Genipap Tree" (*Genipa americana*) (Pané 1999:5). This is the cave from which the Taíno emerged. Genipap is the source for black body paint used throughout tropical America, and being painted is generally equated with being dressed (not-naked), or civilized (see Gregor 1985, 1977; Toral 1992;

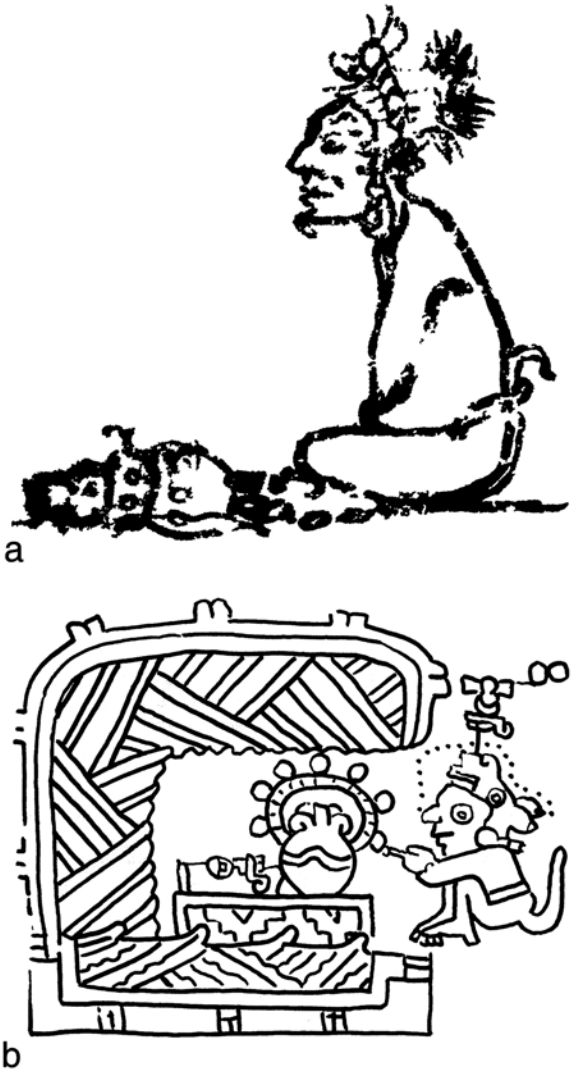

Figure 4. *(a) Drawing 22 from Naj Tunich showing a figure seated in front of a conch shell, probably participating in a cave ruitual (adapted from Siffre 1993); (b) Lord Two Rain performing a cave ritual before a pulque vessel and a mask of the Rain God, from the Mixtec Codex Selden, Oaxaca, Mexico (c. 1556; adapted from Pohl 2005).*

Turner 1980; Verswijver 1992, 1996; Vidal 1992; Vidal and Müller 1987). The other cave, Amayaúna, or "Worthless Cave," is where all non-Taíno (non-"Good People") emerged. Furthermore, these two caves of origin were in the sacred mountain called Cauta. José Juan Arrom points out in his annotations to Pané (1999:5), "the word *kauta* is used in the Arawak language to designate a tree whose ashes, mixed with clay, are used in the making of pottery." It is interesting that ceramics are also seen as a "civilized" trait, just as body paint (from the jagua) is a mark of "civilized" behavior.

Perhaps not coincidentally, Aztec origins point to emergence from Chicomoztoc Cave (Heyden 1975, 1981; Pasztory 1983:102, 124-125), and "in much Mexican mythology, the earth's womb from which ethnic groups sprang was a cavern or series of caverns" (Heyden 1975:134). In the Maya *Popol Vuh*, the emergence of Hun Hunahpu, the ancestor of all people, through such a cosmic aperture (*à la* Stone) "constitutes a form of emergence myth found widely over Mesoamerica" (Miller and Taube 1993:69). Shirley McGinnis (1997a:249 n.10) argues that the Maya and Taíno creation myths share enough in common to strongly suggest a common ancient heritage.

Many, if not most, creation myths in lowland South America refer to a lake or riverine origin (see, for example, Reichel-Dolmatoff 1971, Lévi-Strauss 1969; Mekler 2001; Villas Boas and Villas Boas 1973). A notable exception is that of the Warao ("Boat

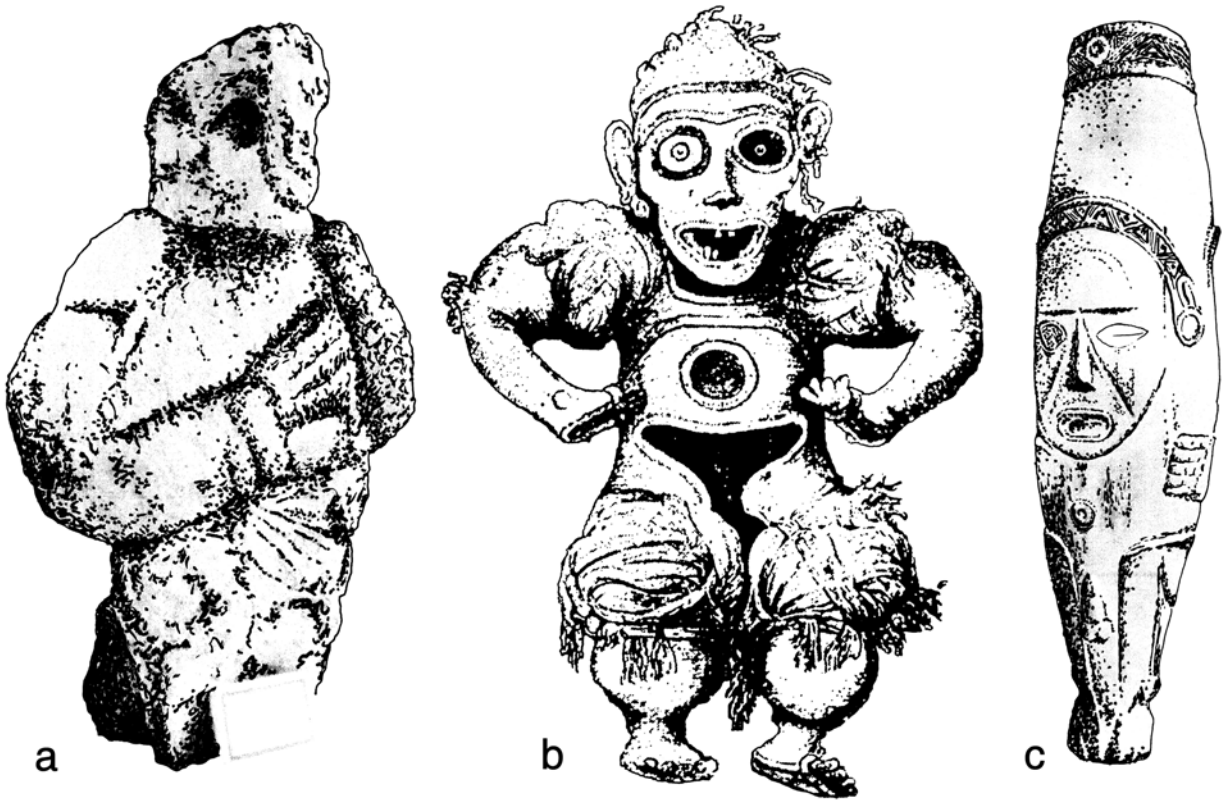

Figure 5. *(a) Coral sculpture from Baracoa, Guantánamo, Cuba (57 cm h.; Museo Antropológico Montané, Universidad de La Habana); (b) Taíno mummy bundle from the Dominican Republic (75 cm h., cotton, shell, and human skull; adapted from Fewkes 1970:Fig. 43); (c) The so-called "Cigar Idol" from Maisí, Guantánamo, Cuba (92 cm h., wood and shell; Museo Antropológico Montané, Universidad de La Habana).*

People"), from the Orinoco River Delta. Mawari, son of the god of origin, emerged from a cave in the World Tree-Mountain in the east (Wilbert 1985:147). That this cave origin seems out of place among indigenous lowland South American mythologies is perhaps explained by Johannes Wilbert when he notes that the very mobile, seafaring Warao "probably have assimilated cultural traits not only from the South American mainland but from Mesoamerica and the Caribbean as well" (Wilbert 1985:181). Creation stories from eastern Mesoamerica and the Greater Antilles refer to caves. Those from lowland South America generally do not. This likely results from the landscape; the natural abundance of limestone caves in the north. Nonetheless, this marks a significant discontinuity with the Arawak homeland in the south, and a significant affinity between mainland and Antillean Mesoamerican world-views (or rather, underworld-views).

CAVES AND ZEMÍS

In eastern Mesoamerica and the Antilles, not only did people emerge from a cave, but the Sun and Moon did as well (for Mesoamerica, see Heyden 1975:134, 1981:14, Miller and Taube 1993:70-71). For the Taíno, the Sun and Moon emerged from the cave called Iguanaboina, in the country of a *cacique* ("chief") named Mautiatihuel. His name translates as "Son-of-the-Dawn," or "Lord of the Region of the Dawn"—synonymous with the Aztec god Tlahuitzcalpantecuhtli (Pané 1999:17 n. 74). Iguanaboina cave is especially significant in that Pané reports that "they have it painted in their fashion" (Pané 1999:17), representing, as far as we can tell, the first European report of rock art in the Americas: c. 1498.

Along with that single mention of painting at Iguanaboina, Pané (1999:17) mentions perhaps the most polymorphous and enigmatic Taíno artifact, the zemí. Zemís, for the most part, were sacred, occasionally venerated objects, made of a variety of materials (Figure 5). But we must always keep in mind the fluid nature of the concept; "zemí was spirit, not object," as Nicholas Saunders and Dorrick Gray (1996:806) put it. Some were made of

Figure 6. *Modified speleothems from Barbados (motifs c. 20-30 cm h.).*

wood, such as the so-called "Cigar Idol" from Cuba (Figure 5c). Some were made primarily of cotton, such as one of the rare surviving Taíno mummy bundles, now in the Museo di Antropologia e di Etnografia dell'Università di Torino (Figure 5b). Coral was one of the rarest sculptural mediums in the Greater Antilles, and only from Cuba do we find zemís carved from this difficult to work material (Dacal Moure and Rivero de la Calle 1996:40-41) (Figure 5a). Jesse Walter Fewkes

(1970:58-59) reported that human bones were treated as zemís, and zemís could also be designs painted on the body.

In the case of the zemís in the mythical Iguanaboina cave, they were made of stone, probably the most familiar form we have in the surviving archaeological record. Of the Iguanaboina figures, Pané wrote, "there were two zemis made from stone, small ones, the size of half an arm, with their hands tied, and they seemed to be sweating. They valued those zemis very highly; and when it did not rain, they say that they would go in there to visit them, and it would rain at once" (Pané 1999:17). One was named Boinayel, which translates as "Gray Serpent" or "Rain Cloud." The other was named Márohu, which means "Without Clouds" or "Clear Weather" (Pané 1999:17). Both the Maya and the Central Mexican rain gods, Chac and Tlaloc, reside in caves (Bassie-Sweet 1991:93; Miller and Taube 1993:166). "Tlaloc" even means "Path Under the Earth" or "Long Cave" (Durán 1971:154). And just like the dual zemís, Boinayel and Márohu, Tlaloc had a dual nature, as either generous or miserly with his control of the rains (Miller and Taube 1993:166).

Christopher Columbus reported that, "most of the caciques have three stones for which they and their people feel great devotion. According to them, one of these stones helps the grains and vegetables grow, the second helps women give birth without pain, and the third secures rain or fair weather when they are in need of either" (Colón 1959:152). The use of symbols such as this by the Taíno caciques (in the context of ball court rituals, and probably cave rituals as well), placed them in the role of

> intermediaries between the ancestors (who are now deities) and the rest of society. They were power brokers in control of such valuable commodities as myths and rituals.... [T]here was a genealogical association between

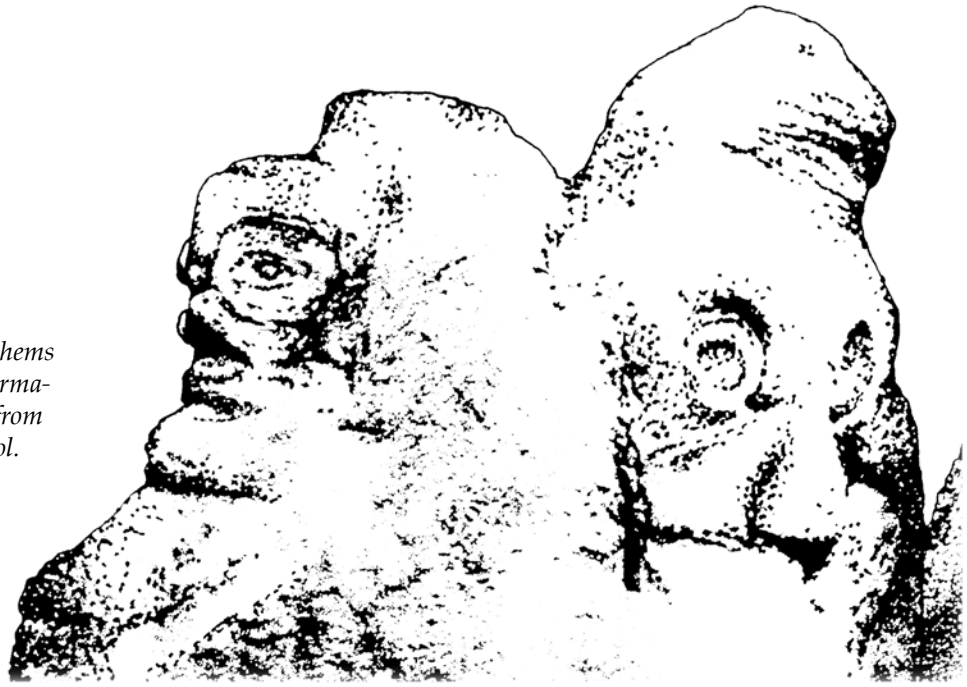

Figure 7. *Modified speleothems from Granma, Cuba (formation c. 1 m h.; adapted from Núñez Jiménez 1990 Vol. 2:506).*

> chiefs, apotheosized ancestors, and the spirit world. The chiefly lineages had a vested interest in maintaining this perception [Seigel 1996:327; see also Oviedo 1950].

In addition to any sacred significance we attribute to it, we must keep in mind the likelihood that there were also sophisticated political motivations behind the production, use, and reception of Taíno art.

Some zemís were located in special houses built for them in the village (Pané 1999:26). Zemí mummy bundles, such as the Turin Zemí (Figure 5b), and sculptures were also deposited on man-made and natural platforms and niches in caves (Beeker et al. 2002; Fewkes 1970:56, 213-214; Watters 1991:309). According to Fewkes:

> The caves from which the sun and the moon came out and to which the Haitian people made pilgrimages... contained two idols, to which they did not fail to carry rich offerings.... No statue is seen in this place, but there are everywhere *zemis* carved in rock, and the whole cavern appears to contain high and low niches, which are believed to be artificial [Fewkes 1970:56].

In Jamaica, carved wooden figures were found in caves (as early as 1792, and as recently as 1972). These Taíno sculptures were still in use as part of suspected *obeah* (Jamaican voodoo) rituals, perhaps indicating a degree of continuity expressed in the local syncretic Afro-Caribbean traditions (Saunders and Gray 1996).

Offerings of ceramic vessels, sometimes containing bones, were also reported in the Antilles (Watters 1991:309; just as was the case in the Yucatán [Brady 1989; Siffre 1979a, 1979b; Stone 1995, 1997]). Fewkes relates a 1677 report of "a cave [in Jamaica] in which lay human bones, all in order, also pots and urns wherein were bones of men and children" (Fewkes 1970:71). At Cueva de Patana in Maisí, Cuba, evidence of extensive ritual activity was discovered at the foot of a "modified speleothem" (a stalactite, stalagmite, column, flowstone, or other secondary mineral cave deposit, that shows sculptural modification) (Harrington 1929:268-273; Watters 1991:309; see also Fernández Ortega and González Tendero 2000; Harrington 1951; Nuñez Jiménez 1975:198-214). This leads to the reasonable conclusion that paintings, engravings and sculptures in caves could also have been zemís, and as such, the focus of ritual offerings.

Figure 8. *Modified speleothem from southeastern Peten, Guatemala (face c. 30 cm h.; adapted from Siffre 1979a:Fig. 81).*

MODIFIED SPELEOTHEMS

Modified speleothems display a range of aesthetic treatments, from shallow line engraving, to deep relief carving and sculpture in the round. Some take advantage of natural contours, and with engraved modifications give the appearance of a large face looking up from the rock. The single rock art site on Barbados is a small cave with examples of

Figure 9. *Modified speleothem from JD-5 (face c. 18 cm h.).*

engraved "face" motifs on speleothems (Figure 6). These motifs are variations of the ubiquitous circle-and-dot faces found in open-air sites throughout South and Central America (see Dubelaar 1986), the Caribbean, and sporadically in North America (see Larose 2001 for Vermont, Swauger 1966 for Pennsylvania, and Weisman 1995 for Florida). More heavily carved, three-dimensional sculptures are also found, although not as frequently An example of such a modified speleothem is from Cueva Ceremonial Numero Dos, in the Granma province of eastern Cuba (Figure 7). When looking at these heavily modified formations, one cannot help but to think of the plethora of similar cave art from the Maya region of mainland Mesoamerica (Figure 8; see also Brady 1989, 1999; Siffre 1979a, 1979b; Stone 2004b).

These haunting faces seem to stare back from the rock—back from the past—and there is reason to believe they should have that very effect. In Mixtec and other Mesoamerican mythology, "gods and legendary figures were turned to stone at the first dawning" (Miller and Taube 1993:71). This also happened to one of the first culture heroes, Mácocael, in the Taíno creation narratives. He was charged with standing watch at the door to the caves, Cacibajagua and Amayaúna, where people still lived (before emergence and distribution around the world). Due to his lack of vigilence one day, he was turned to stone by the Sun at the entrance to the cave (Pané 1999:6).

JD-5 CAVE AND THE FOURTH DIMENSION

In the Antilles, the vast majority of these modified speleothems, such as the one in Figure 9, from JD-5 in south-central Puerto Rico, occur in the twilight zone near cave entrances. This echoes the fate of Mácocael at the dawn of time. "The events and the actors" in Taíno mythology, as José R. Oliver (1997:142) put it, "belong to the past, to a remote, primordial cosmos.... [T]he normal rules of the passage of time and of the movement from one place to another do not apply. In this primordial world rocks, plants, and animals can "speak" to each other—but in sacred, nonhuman language." This is a potent dominion, a liminal arena where the past and the present co-exist, complete with the ancient and under-worldly personages only accessible

via the suspension of the normal physics of space and time—a fourth dimension.[3]

Zemís, as Pané (1999:25-30) informed us, could be anything, man-made items, images, or naturally occurring phenomena (see also Fewkes 1970:54-59). Perhaps it is best to think of the cave activating the art, just as much as the art activating the cave—like the notion of "caveness" introduced by Stone:

> The qualities that constitute 'caveness' derive from empirically observed features of caves which in turn served as models of or were otherwise implicated in important cosmological and religious ideas: the cave as hole in the earth, as enclosure; source of water, repository of human bones, as strange rocky landscapes, etc.... Selected cave features were reinterpreted as models of higher, unseen realities: cosmic locations, such as the underworld or primordial sea, and causal explanations for mysterious ontological transformations, such as the transition between life and death [Stone 2003; see also Stone 1995:34-44].

In fact, Andrea Stone and Martin Künne have insisted that researchers "need to understand such nuances of the indigenous perception of stone" (Stone and Künne 2003:208). Thus, the choice of which cave formations to modify might very well have been a function of the sacred potency of the rock itself, based, at times, on its natural resemblance to anthropomorphic or zoomorphic forms—"found art" of a sort (Stone 2004b:8-11). In this context, even the rock is not simply rock.

A MODIFIED SPELEOTHEM FROM JD-5

A modified speleothem from JD-5 (Figure 10a) combines multiple surface treatments with an existing form to suggest the head of an animal, including the way it hangs by a limestone "neck" from the cave wall (less than two meters from the floor, or about eye-level with the viewer). Small lobes carved on each side of the top suggest ears (Figure 10b). Black pigment enhances the earlobes and outlines

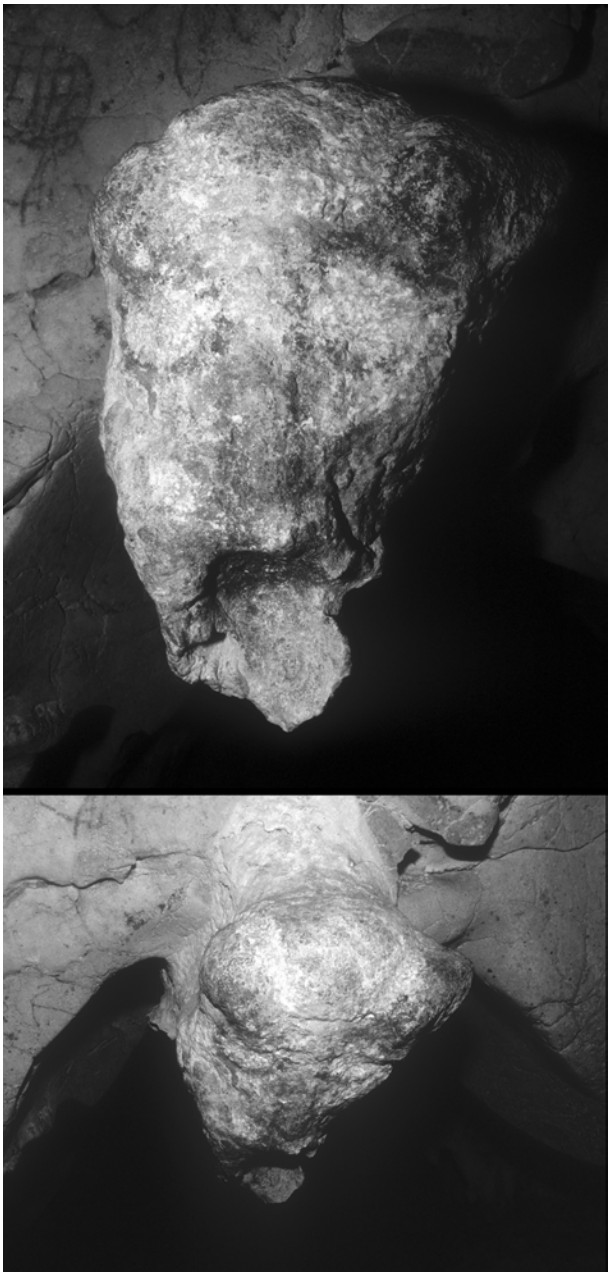

Figure 10. *Front and top view of a modified speleothem from the dark zone of JD-5 (c. 45 cm h.).*

shallow carved eyes and a long nose. The mouth area is a natural recess filled with black pigment to enhance the gaping maw. This painted and engraved formation is but one of

many face images in this rear room of JD-5. Most are the menacing anthropomorphic faces typical of Taíno art, drawn or painted with black pigment (Figure 11).

The JD-5 modified speleothem hangs over the entrance to one of several small side niches in a secluded room at the rear of the cave (Figure 12). The niches have natural shelves and "seats" where offerings could have been placed, or zemís seated[4] (Figure 13). Considering the concentration of rock art here (much more than in the easily accessible, twilight zone), and that areas very much like this served as places of ritual activity and zemí deposition, the side niches in this room could be conceived of as sacred vessels. This room is only accessible after a 20-30 m crawl through a low, tight tunnel, further emphasizing its "containment" quality.

Figure 11. *Example of a dark-zone painting in JD-5 (c. 45 cm w.).*

Again, as Stone and Künne (2003:208) insisted, we should consider the cognitive reception and significance of the cave—caveness—and how it might serve to activate the art. In the case of the speleothem in Figure 10, this is expressed in stunning visual fashion. The speleothem "head" is only a small part of a much larger image that incorporates over five meters of the cave wall. On either side of the speleothem, the natural opening in the cave wall undeniably resembles giant bat wings looming over the entrance to the niche (Figure 14). Here at JD-5, bat iconography merges with the cave, not just as an image *on* a surface (see Figure 11), but as a complementary union of rock art and the rock itself—of bat and cave. Furthermore, the bat's wings define the mouth of the niche, making the bat the container. This is an interesting twist on the normal condition of the cave as container of the bat.

The bat is arguably second only to the cave itself as the most potent cave-related symbol in Taíno iconography. However, bats are not even mentioned in the Pané *Account* This is a curious omission considering the saturation of bat iconography in not only Taíno art, but in the art of the entire circum-Caribbean world (see Figure 15). In Taíno and pre-Taíno art, bats occur as carved stone, bone and shell pendants, amulets, and pectorals (Figure 15f), stone pestles, three-pointers, and vomiting sticks (Arrom 1975; Dacal Moure and Rivero de la Calle 1996; García Arévalo 1997; Harrington 1929; McGinnis; 1997a, 1997b; Rouse 1992; Siegel 1997; Fewkes 1970). And in isolated cases, bat iconography has appeared as an effigy mound (Figure 15g), and on a beaded cotton Afro-Taíno mummy bundle (see Taylor et al 1997).

In a vessel from the Dominican Republic (Figure 17; featured in an exhibition at El Museo del Barrio, New York), the rim forms a figure-eight, with triangular points almost meeting at the center. At each opposing point are modeled and engraved bat head motifs.

Figure 12. *The secluded room at the rear of JD-5, showing one of the side niches (niche opening c. 1.7 m h.).*

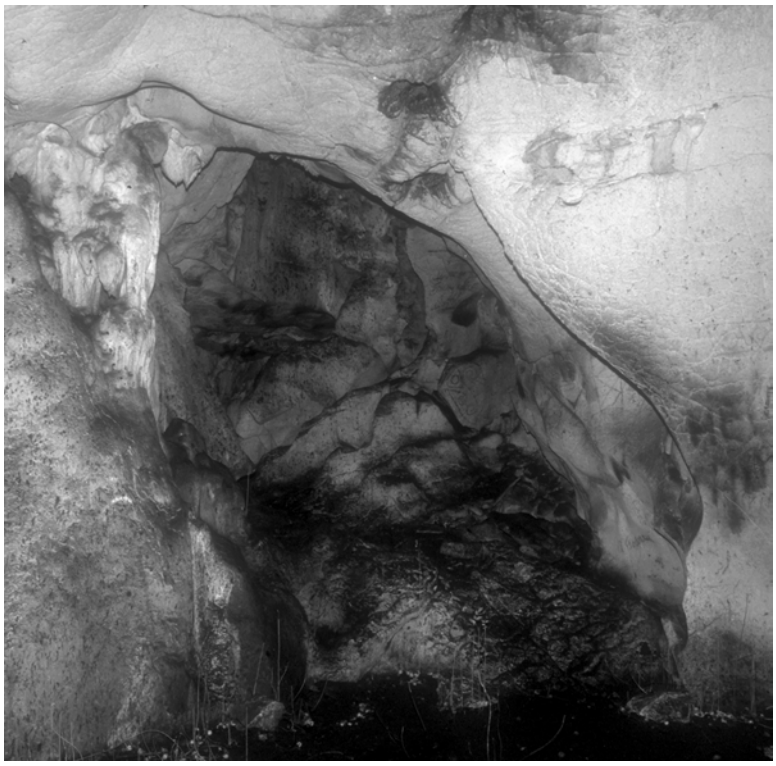

Figure 13. *Interior of a niche in the rear room of JD-5 showing natural shelves and painted motifs.*

Figure 14. *Overall view of the JD-5 effigy niche showing the natural "bat wings" framing the opening.*

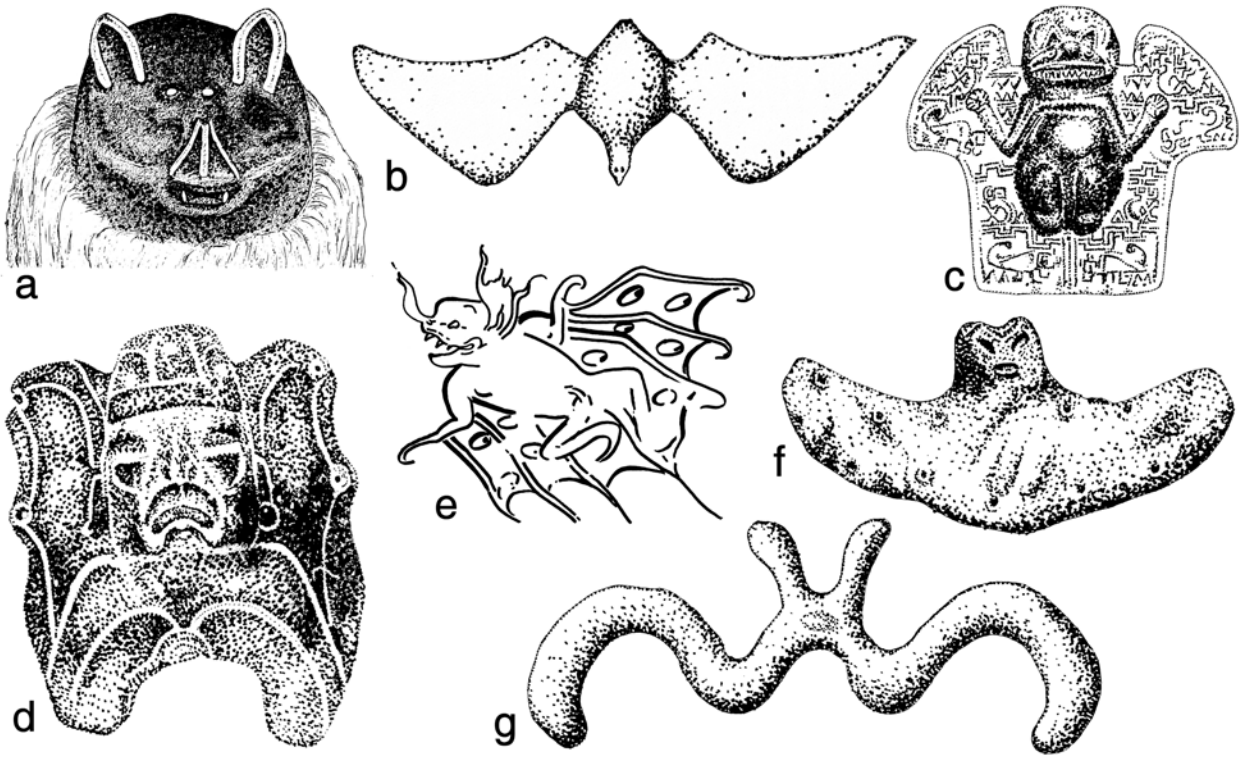

Figure 15. *Representative examples of bat iconography from the circum-Caribbean: (a) contemporary De'áruwa (Piaroa) wax and fiber effigy mask; right bank of the Orinoco River, Amazonas, Venezuela (28 cm w; adapted from Braun 1995:Fig. 82); (b) contemporary Makiritare wood Dede effigy pendant of the Bat Cult; upper Orinoco River, Venezuela (64 cm w.; adapted from Mekler 2001:Fig. 1); (c) Quimbaya (c. A.D. 500-1000) hammered gold pectoral; Upper Cauca River valley, Colombia (20 cm h.; adapted from Dumbarton Oaks 1963:Cat. 323) (see also examples of Malagana [c. 200 B.C.-A.D. 200], Tolima [c. A.D. 200-1000], and Tairona [c. A.D. 1000-1600] ceramics and goldwork [Labbé 1998:Cat. 89, 150, and 141]); (d) Olmec (c. 800-500 B.C.) jade pendant; Linea Vieja, Costa Rica (5 cm h.; adapted from Coe 1995:Cat. 69); (e) Late Classic (A.D. 600-800) Maya "Codex Style" vase painting (9 cm h.,; adapted from Kerr 2004:No. 1080); (f) Pre-Taíno (c. A.D. 600-1200) bone pectoral from Puerto Rico (16 cm w., Museo del Barrio, New York); (g) Effigy mound; Camagüey, Cuba (108 m l.; adapted from Nuñez Jiménez 1990 Vol. 1:72).*

end of p. 46:

In a vessel from the Dominican Republic (Figure 17; featured in an exhibition at El Museo del Barrio, New York), the rim forms a figure-eight, with triangular points almost meeting at the center. At each opposing point are modeled and engraved bat head motifs....

missing:

The imagery "works" visually, from any angle, just as bats are easily recognizable rightside up, or upside down. The curved and pointed rim shape is a subtle, yet effective indicator of bat wings. Plastic and incised surface treatments combine to imbue the vessel with a distinct quality of "batness." Considering that effigy vessels, like other offerings, were often placed in niches or platforms in caves (Beeker et al. 2002; Fewkes 1970:213-214; Watters 1991:309), they could be thought of as sacred containers. Moreover, as we suggested earlier, caves and their interior niches could be considered in the same manner, as sacred containers—keeping potent forces in, and excluding or segregating normal space. That which is bat-like in the Figure 15 vessel probably functioned as an iconographic modifier of the vessel's "sacred containment," much like speleothem art modifies the innate qualities of the cave.

In the case of the JD-5 niche (Figure 14), the giant wings give this form an obvious bat-like quality, despite the almost generic zoomorphic speleothem head. The iconography is simple, yet clear. Even the vessel in Figure 15 requires only minor formal modifications to the rim to augment the bat iconography in the reliefs. The rim of the vessel acts as both passage and iconographic modifier. Negative space, usually merely functional in vessels, becomes a significant design element. This is the same with the JD-5 niche. In fact, conceptually, the niche itself becomes a giant effigy vessel. This is a formally, iconographically, and conceptually sophisticated example of sacred containment brought together in what we have called the JD-5 "effigy niche."

TAINO CAVE ART IN A CIRCUM-CARIBBEAN CONTEXT

Zemís in caves, as we know, could include natural features, paintings, engravings, and offerings of wood, bone, fiber, and stone. Ceramic vessels containing offerings were deposited in caves—decorated vessels within decorated vessels, further illustrating the complex layering of Taíno iconography, ritual, and underworld-view. As far as we have been able to ascertain, this sort of cave art—an effigy niche—has not been reported elswewhere in Puerto Rico, or in the circum-Caribbean, for that matter. Nonetheless, considering the indigenous use and conception of caves, sacred vessels, and their associated aesthetic modifications, we think the JD-5 effigy niche represents an eloquent example of Taíno cave-related ritual iconography.

Although the archaeological record is replete with evidence that the Arawakan invasion that gave rise to the Taíno chiefdoms imported lowland South American material culture and ideology into the Greater Antilles, this record does not account for the use and ...

continued on p. 49:

...conception of caves seen in the prolific cave art. Mainland Mesoamerica, however, has abundant archaeological and ethnographic evidence of such activities. That no material connection has been established for a mainland Mesoamerican-Antillean cultural interaction sphere in no way precludes an underlying, shared, and persistent ideological connection. The cave art, mythology, and ethnohistoric evidence of cave use, strongly suggests, in fact, that such a connection did exist.

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The Taíno were a unique culture, an Antillean culture (one of many; Wilson 1993). Taíno rock art is unique in the Americas. Attempting to understand this rock art requires that we not only seek analogies from South America to augment the limited Antillean ethnohistoric record, but that we also recognize the salience of rich mainland Mesoamerican sources. This broader contextualization enables us to more fully appreciate the sophisticated aesthetic manifestation of Taíno caveness that is the JD-5 effigy niche.

Figure 16. *Taíno bat effigy vessel from the Dominican Republic (24 cm w.; photograph by Dirk Bakker, reproduced by permission of El Museo del Barrio, www.elmuseo.org)*

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NOTES

[1] PR JD-5 is the trinomial designation for this cave on file with the Instituto de Cultura Puertorriqueña, San Juan. For obvious ethical reasons, and because this present work does not require it, no local name, survey maps, or more precise location will be provided by the authors.

[2] It is impossible to provide an accurate date for the demise or dissappearance of the Taíno. Citing data from Karen Anderson-Córdova (1990:218-276), Rouse informs us that by "1524, when Diego Columbus completed his term as Viceroy, there were more [Indian slaves from other parts of the Caribbean and Black slaves from Africa] than Taínos; and by 1540, the former had almost completely replaced the latter" (Rouse 1992:158). This must be understood in light of the 1514 census, by which time Indian wives had been taken by 40 percent of the Spanish men (Rouse 1992:158; Sauer 1966:199). "Consequently, a large proportion of the modern population of the Dominican Republic, Puerto Rico, and Cuba is able to claim partial descent from the Taínos" (Rouse 1992:161). Taíno culture persists in many ways (Rouse1992:161-168; Wilson 1997b:206-213), and there is even a "Neo-Taíno" movement gaining popularity (see Duany 2002; Haslip-Viera 2001).

[3] For literature concering theories of a fourth dimension, not as it is used metaphorcally here, see Henderson (1981, 1983), Lafleure (1940), and van Cleve (1987).

[4] No archaeological reconnaissance has been published on this very heavily visited and vandalized cave (hence, Note 1). Regarding the pre-Columbian concept of "seating," especially of ancestors, for lowland South America see McEwan (2001) and Guapindaia (2001), for the Andes see Moseley (2001) and Stone-Miller (2002), and for mainland Mesoamerica see Miller and Taube (1993:119).

REFERENCES CITED

Allaire, Louis.
1997 The Lesser Antilles Before Columbus. In *The Indigenous People of the Caribbean*, edited by Samuel M. Wilson, pp. 20-28. Gainesville, University Press of Florida.

Anderson-Córdova, Karen
1990 Hispaniola and Puerto Rico: Indian Acculturation and Heterogeneity, 1492-1550. Ph.D. dissertation, Yale University. Ann Arbor, Michigan, University Microfilms International.

Bassie-Sweet, Karen
1991 *From the Mouth of the Dark Cave* Norman, University of Oklahoma Press.
1996 *At the Edge of the World: Caves and Late Classic Maya World View*. Norman, University of Oklahoma Press.

Beeker, Charles D., Geoffrey W. Conrad, and John W. Foster
2002 Taíno Use of Flooded Caverns in the Eastern National Park Region, Dominican Republic. *Journal of Caribbean Archaeology* 3: 1-26.

Brady, James E.
1989 An Investigation of Maya Ritual Cave Use with Special Reference to Naj Tunich, Peten, Guatemala. Ph.D. dissertation, University of California, Los Angeles. Ann Arbor, Michigan, University Microfilms International.
1999 The Gruta de Jobonche: An Analysis of Speleothem Rock Art. In *Land of the Turkey and the Deer: Recent Research in Yucatan*, edited by Ruth Gubler, pp. 57-68.Lancaster, CA, Labyrinthos Press.

Braun, Barbara, ed.
1995 *Arts of the Amazon*. Text by Peter G. Roe. London, Thames and Hudson.

Coe, Michael
1995 *The Olmec World: Ritual and Rulership*. Princeton and New York, Art Museum, Princeton University in association with Harry N. Abrams.

Coe, Michael, and Richard Diehl
1980 *In the Land of the Olmec*. 2 vols. Austin, University of Texas Press.

Colón, Fernando
1959 *The Life of the Admiral Christopher Columbus by His Son Ferdinand*. Translated and annotated by Benjamin Keen. New Brunswick, NJ, Rutgers University Press.

Dacal Moure, Ramón, and Manuel Rivero de la Calle
1996 *Art and Archaeology of pre-Columbian Cuba*. Edited by Danial H. Sandweiss and David R. Watters. Translated by Danial H. Sandweiss. Pittsburgh, University of Pittsburgh Press.

Drewett, Peter.
1991 *Prehistoric Barbados*. London, Archetype.

Duany, Jorge
2002 *The Puerto Rican Nation on the Move: Identities on the Island and in the United States*. Chapel Hill, University of North Carolina Press.

Dubelaar, Cornelis Nicolaas
1986 *South American and Caribbean Petroglyphs*. Caribbean Series No. 3. Leiden, The Netherlands, Koninklijk Instituut voor Taal-, Land- en Volkenkunde.

Dubelaar, Cornelis Nicolaas, Michele H. Hayward, and Michael A. Cinquino
1999 *Puerto Rican Rock Art, A Resource Guide*. San Juan, Puerto Rico State Historical Preservation Office.

Dumbarton Oaks
1963 *Handbook of the Robert Woods Bliss Collection of Pre-Columbian Art*. Washington D.C., Dumbarton Oaks, Trustees for Harvard University.

Durán, Fray Diego
1971 *Book of the Gods and Rites and the Ancient Calendar*. Translated and edited by Fernando Horcasitas and Doris Heyden. Norman, University of Oklahoma Press.

Easby, Elizabeth Kennedy
1968 *Pre-Columbian Jade from Costa Rica*. New York, André Emmerich.

Fernández Ortega, Racso, and José B. González Tendero
2000 Los Petroglifos de la Cueva de Patana, Maisí, Guantánamo. *El Caribe Arqueológico* 4: 45-52.

Fewkes, Jesse Walter
1970 *The Aborigines of Porto Rico and Neighboring Islands* Reprinted. Johnson Reprint Corporation, New York. Originally published 1907, Twenty-Fifth Annual Report, 1903-04, U.S. Bureau of Ethnology, Smithsonian Institution, Washington D.C.

García Arévalo, Manuel Antonio
1997 The Bat and the Owl: Nocturnal Images of Death. In *Taíno: Pre-Columbian Art and Culture from the Caribbean*, edited by Fatima Bercht, Estrellita Brodsky, John Alan Farmer, and Dicey Taylor, pp. 112-123. New York, Monacelli Press.

Gregor, Thomas.
1977 *Mehinaku: The Drama of Daily Life in a Brazilian Indian Village*. Chicago, University of Chicago Press.
1985 *Anxious Pleasures: The Sexual Lives of an Amazonian People*. Chicago, University of Chicago Press.

Guapindaia, Vera
2001 Encountering the Ancestors: The Maracá Urns. In *Unknown Amazon: Culture in Nature in Ancient Brazil*, edited by Colin McEwan, Cristiana Barreto and Eduardo Neves, pp. 156-173. London, British Museum Press.

Halperin, Christina T., Sergio Garza, Kieth M. Prufer, and James E. Brady
2003 Caves and Ancient Maya Ritual Use of *Jute*. *Latin American Antiquity* 14(2): 207-219.

Harrington, Mark R.
1929 *Cuba Before Columbus*. 2 vols. New York, Museum of the American Indian, Heye Foundation.
1951 Idol of the Cave. *Natural History* 60: 312-335.

Haslip-Viera, Gabriel
2001 *Taino Revival: Critical Perspectives on Puerto Rican Identity and Cultural Politics*. Princeton, New Jersey, Markus Wiener Publishers.

Helmer, E. H., O. Ramos, T. del M. López, M. Quiñones, and W. Diaz
2002 Mapping the Forest Type and Land Cover of Puerto Rico, a Component of the Caribbean Biodiversity Hotspot. *Caribbean Journal of Science* 38(3-4): 165-183.

Henderson, Linda Dalrymple
1981 Italian Futurism and the "Fourth Dimension." *Art Journal* 40(4):317-323.
1983 *The Fourth Dimension and Non-Euclidean Geometry in Modern Art*. Princeton, Princeton University Press.

Heyden, Doris
1975 An Interpretation of the Cave underneath the Pyramid of the Sun in Teotihuacan, Mexico. *American Antiquity* 40(2): 131-147.
1981 Caves, Gods, and Myths: World-View and Planning in Teotihuacan. In *Mesoamerican Sites and World-Views*, edited by Elizabeth P. Benson, pp. 1-35.

Kerr, Justin
2004 Maya Vase Database. FAMSI Research Materials, http:// research.famsi.org/kerrmaya.html. Accessed April 2004.

Klein, Cecelia
1975 Post-Classic Mexican Death Imagery as a Sign of Cyclic Completion. In *Death and the Afterlife in Pre-Columbian America*, edited by Elizabeth P. Benson, pp. 69-85. Washington DC, Dumbarton Oaks Research Library and Collections, Trustees for Harvard University.

Labbé, Armand J.
1998 *Shamans, Gods, and Mythic Beasts: Colombian Gold and Ceramics in Antiquity*. New York, The American Federation of Arts and University of Washington Press.

Lafleure, Laurence J.
1940 Time as a Fourth Dimension. *The Journal of Philosophy* 37(7): 169-178.

Larose, Thomas Earl
2001 The Petroglyph Sites of Bellows Falls and Brattleboro, Vermont. Ph.D. dissertation, Virginia Commonwealth University. Ann Arbor, Michigan, University Microfilms International.

Lathrap, Donald W.
1975 *Ancient Ecuador: Culture, Clay and Creativity, 3000-300 B.C.* Chicago, Field Museum of Natural History.

Lévi-Strauss, Claude
1969 *The Raw and the Cooked*. Translated by John and Doreen Weightman. New York, Harper & Row.

MacLeod, Barbara, and Dennis Puleston
1980 Pathways into Darkness: The Search for the Road to Xibalba. In *Third Palenque Round Table, 1978, Part 1*, edited by Merle Greene Robertson and Donna Call Jeffers, pp. 71-78. Palenque Round Table Series 4. Palenque/Monterrey, Pre-Columbian Art Research Institute/Herald Printers.

McEwan, Colin
2001 Axiality and Seats of Power. In *Unknown Amazon: Culture in Nature in Ancient Brazil*, edited by Colin McEwan, Cristiana Barreto and Eduardo Neves, pp. 176-197. London, British Museum Press.

McGinnis, Shirley
1997a Ideographic Expression in the Precolumbian Caribbean. Ph.D. dissertation. Ann Arbor, UMI.
1997b Zemi Three-Pointer Stones. In *Taíno: Pre-Columbian Art and Culture from the Caribbean*, edited by Fatima Bercht, Estrellita Brodsky, John Alan Farmer, and Dicey Taylor, pp. 92-105. New York, Monacelli Press.

Mekler, Adam
2001 *Under the Canopy: Myth and Reality in Western and Northwestern Amazonia*. Fresno, Fresno Art Museum.

Miller, Mary Ellen, and Karl Taube
1993 *The Gods and Symbols of Ancient Mexico and the Maya*. London, Thames and Hudson.

Morales, Reinaldo, Jr.
2002 The Nordeste Tradition: Innovation and Continuity in Brazilian Rock Art. Ph.D. dissertation, Virginia Commonwealth University. Ann Arbor, Michigan, University Microfilms International.

Moseley, Michael E.
2001 *The Incas and their Ancestors: The Archaeology of Peru*. Rev. ed. London, Thames and Hudson.

Nicholson, H. B.
1971 Religion in Pre-Hispanic Central Mexico. In *Handbook of Middle American Indians*, Vol. 10, ed. by Robert Wauchope, pp. 396-446. Austin, University of Texas Press.

Nuñez Jiménez, Antonio
1975 *Cuba: Dibujos Rupestres*. Havana, Editorial de Ciencias Sociales.
1990 *Medio Siglo Explorando a Cuba: Historia documentada de la Sociedad Espeleológics de Cuba*. 2 vols. Havana, Imprenta Central de las Fuerzas Armadas Revolucionarias.

Oliver, José R.
1997 The Taíno Cosmos. In *The Indigenous People of the Caribbean*, edited by Samuel M. Wilson, pp. 140-153. Gainesville, University Press of Florida.

Oviedo, Gonzalo Fernández de
1950 *Sumario de la natural historia de las Indias* Mexico, Fondo de Cultura Económica.

Pané, Fray Ramón
1999 *An Account of the Antiquities of the Indians*. Introduction, notes, and appendices by José Juan Arrom. Translated by Susan C. Griswold. Durham, Duke University Press.

Pasztory, Esther
1983 *Aztec Art*. Norman, University of Oklahoma Press.

Reichel-Dolmatoff, Gerardo
1971 *Amazonian Cosmos: The Sexual and Religious Symbolism of the Tukano Indians*. Chicago, Univ. of Chicago Press.

Roe, Peter G.
2001 Rivers of Stone, Rivers Within Stone: Rock Art in Ancient Puerto Rico. Paper presented at the 66th Annual Meeting of the Society for American Archaeology, New Orleans.

Roe, Peter G., and José Rivera
1995 Recent advances in recording, dating and interpreting Puerto Rica petroglyphs. *Actes du XVI Congres International D'Archeologie De La Caraibe, Basse Terre, Guadeloupe 1995* 16:444-461. Basse Terre, Guadeloupe, French West Indies.

Roe, Peter G., James Byerly, and Nicole Cornell
1999 The Cueva de la Momia (Comerio, PR) Petroglyphs: A Case Study in Field Technology. Paper presented at the 18th International Congress of Caribbean Archaeology, Grenada.

Rouse, Irving.
1953 The Circum-Caribean Theory, an Archaeological Test. *American Anthropologist* 55(2): 188-200.
1992 *The Tainos: Rise and Decline of the People Who Greeted Columbus*. New Haven, Yale University Press.

Sauer, Carl Ortwin
1966 *The Early Spanish Main*. Berkeley, University of California Press.

Saunders, Nicholas J., and Dorrick Gray
1996 *Zemís*, trees, and symbolic landscapes: three Taíno carvings from Jamaica. *Antiquity* 70: 801-812.

Schmidt, Peter, Mercedes de la Garza, and Enrique Nalda
1998 *Maya*. New York, Rizzoli.

Siegel, Peter E.
1996 Ideology and Culture Change in Prehistoric Puerto Rico: A View from the Community. *Journal of Field Archaeology* 23(3): 313-333.
1997 Ancestor Worship and Cosmology among the Taíno. In *Taíno: Pre-Columbian Art and Culture from the Caribbean*, edited by Fatima Bercht, Estrellita Brodsky, John Alan Farmer, and Dicey Taylor, pp. 106-111. New York, Monacelli Press.

Siffre, Michel.
1979a *A la recherche de l'art des cavernes du pays Maya. Mystérieuses civilissations dans les entrailles de la terre*. Nice, Editions Alain Lefeuvre.
1979b *L'or des gouffres: découvertes dans les jungles mayas*. Paris, Flammarion.
1993 *Découvertes dans les grottes mayas*. Paris[?], Arthaud.

Steward, Julian H.
1947 American Culture History in the Light of South America. *Southwestern Journal of Anthropology* 3(2):85-107.

Stone, Andrea J.
1995 *Images from the Underworld: Naj Tunich and the Tradition of Maya Cave Painting*. Austin, University of Texas Press.
1997 Precolumbian Cave Utilization in the Maya Area. In *The Human Use of Caves*, edited by Clive Bonsall and Christopher Tolan-Smith, pp. 201-206. BAR International Series 667. Oxford, Archaeopress.
2003 Principles and Practices of Classic Maya Cave Symbolism. Paper presented at the 68th Annual Meeting of the Society for American Archaeology, Milwaukee.
2004a Cave Art in the Americas. In *Encyclopedia of Caves and Karst Science*, edited by John Gunn, pp. 91-94. New York, Fitzroy Dearborn.
2004b Modified Speleothems in Maya Caves as Aesthetic Objects. In *Rock Art and Aesthetics*, edited by Thomas Heyd and John Clegg. London, Ashgate, in press.

Stone, Andrea J., and Martin Künne
2003 Rock Art of Central America and Maya Mexico. In *Rock Art Studies, News of the World 2: Developments in Rock Art Research 1995-1999*, edited by Paul G. Bahn and Angelo Fossati, pp. 196-213. London, Oxbow Books.

Stone-Miller, Rebecca
2002 *Art of the Andes*. 2nd ed. London, Thames and Hudson.

Swauger, James L.
1966 The Parkers Landing Petroglyphs Site, 36 Cl 1. *Pennsylvania Archaeologist* 36(1-2):1-11.

Taube, Karl A.
1986 The Teotihuacan Cave of Origin: The Iconography and Architecture of Emergence Mythology in Mesoamerica and the American Southwest. *Res* 12: 51-82.

Taylor, Dicey, Marco Biscione, and Peter G. Roe
1997 Epilogue: The Beaded *Zemi* in the Pigorini Museum. In *Taíno: Pre-Columbian Art and Culture from the Caribbean*, edited by Fatima Bercht, Estrellita Brodsky, John Alan Farmer, and Dicey Taylor, pp. 158-169. New York, Monacelli Press.

Tedlock, Dennis
1985 *Popol Vuh: The Definitive Edition of the Mayan Book of the Dawn of Life and the Glories of Gods and Kings*. New York, Simon and Schuster.

Toral, André Amaral de
1992 Pintura corporal Karajá contemporânia. In *Grafismo Indígena: Estudos de Antropologia Estética*, edited by Lux Boelitz Vidal, pp. 191-208. São Paulo, Studio Nobel, Editora da Univ. de São Paulo, and FAPESP.

Turner, Terence S.
1980 The Social Skin. In *Not Work Alone: A cross-cultural view of activities superfluous to survival*, edited by Jeremy Cherfas and Roger Lewin, pp. 112-140. London, Temple Smith.

van Cleve, James
1987 Right, Left, and the Fourth Dimension. *The Philosophical Review* 96(1):33-68.

Verswijver, Gustaaf
1992 *Kaiapó, Amazonia: The Art of Body Decoration*. Tervuren, Royal Museum of Central Africa; Gent, Snoeck-Ducaju and Zoon.
1996 *Mekranoti: Living Among the Painted People of the Amazon*. Munich, Prestel.

Vidal, Lux
1992 *A pintura corporal e arte gráfica entre os Kayapó-Xikrin do Cateté*. In *Grafismo Indígena: Estudos de Antropologia Estética*, edited by Lux Boelitz Vidal, pp. 143-189. São Paulo, Studio Nobel, Editora da Univ. de São Paulo, and FAPESP.

Vidal, Lux, and Regina Polo Müller
1987 Pintura e Adornos Corporais. In *SUMA Etnológica Brasileira*, edited by Berta G. Ribeiro, pp. 29-64. Vol. 3, Arte Índia. 2nd ed. Petrópolis, Rio de Janeiro, Financiadora de Estudos e Projetos.

Villas Boas, Orlando, and Claudio Villas Boas
1973 *Xingu: The Indians, Their Myths*. Translated by Susana Hertelendy Rudge. New York, Farrar, Strauss and Giroux.

Watters, David R.
1991 Archaeology of Fountain Cavern, Anguilla, West Indies. *Annals of Carnegie Museum* 60(4): 255-319.

Weisman, Brent R.
1995 Crystal River: A Ceremonial Mound Center on the Florida Gulf Coast. *Florida Archaeology* 8:1-106.

Wilbert, Johannes
1985 The House of the Swalow-Tailed Kite: Warao Myth and the Art of Thinking in Images. In *Animal Myths and Metaphors in South America*, edited by Gary Urton, pp. 145-182. Salt Lake City, University of Utah Press.

Wilson, Samuel M.
1993 The cultural mosaic of the indigenous Caribbean. *Proceeding of the British Academy* 81: 37-66.
1997a Introduction to the Study of the Indigenous People of the Caribbean. In *The Indigenous People of the Caribbean*, edited by Samuel M. Wilson, pp. 1-8. Gainesville, University Press of Florida.
1997b The Legacy of the Indigenous Peoples of the Caribbean. In *The Indigenous People of the Caribbean*, edited by Samuel M. Wilson, pp. 206-213. Gainesville, University Press of Florida.
2004 The Prehistory and Early History of the Caribbean. Electronic document, http:// uts.cc.utexas.edu/ ~swilson/ research/ biogeography.html, accessed 30 June, 2004.

2001 The Prehistory and Early History of the Caribbean. In *Biogeography of the West Indies: Patterns and Perspectives*, edited by Charles A. Woods and Florence E. Sergile, pp. 519-528. 2nd ed. Boca Raton, CRC Press.

Wilson, Samuel M., Harry B. Iceland, and Thomas R. Hester
1998 Preceramic connections between Yucatan and the Caribbean. *Latin American Antiquity* 9(4): 342-352.

Wilson, Samuel M., Laura Kozuch, Lee Newsome, J. Daniel Rogers, and Elizabeth Wing.
2001 The Nevis Archaeological Research Project: Summary and Conclusions. Paper presented at the International Association for Caribbean Archaeology, 19th Congress, Aruba.