

# Lucayan Road on Middle Caicos Island: A Community Built Component of Sun-Synchronized Salt Harvest and Ceremonialism

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## Abstract

A protohistoric Lucayan-built road is an integral part of the public architecture and ceremonial space at a complex Lucayan archaeological site (MC-6) on Middle Caicos, in the Turks & Caicos Islands. Several attributes of MC-6 have stimulated hypotheses concerning the social organization and economic dynamics of the community. Those attributes include imported ceramics and lithics originating from the Greater Antilles (principally from Hispaniola); planning that is evident in the deliberate community design; physical linkage of the community via the road to a source of salt, which is a valuable trade commodity; and calendric scheduling of activities implied by an annual celestial cycle recorded in the astronomical alignments of a central court. The site has been posited as the seat of a cacique, possibly of a multi-community Paramount-Cacique, who was empowered by regional trade networks and associated kinship alliances. In the context of these hypotheses, the amount of labor time, and the consequent: number of people required to build the

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road, are considered in relationship to the social organization necessary to marshal the required workforce, plan and build this public work, and schedule related social and ceremonial activities.

*Key words: road, plaza, astronomy, Lucayan, Turks & caicos, cacique, public works, public architecture.*

## **Carretera de Lucayan en la Isla de Caicos Medio: un componente comunitario construido mediante la sincronización del sol y la Cosecha de Sal y Ceremonialismo**

### **Resumen**

La carretera protohistórica Lucaya es una parte integral de la arquitectura pública y el espacio ceremonial en un complejo sitio arqueológico de Lucaya (MC-6) en Caicos Central, en las Islas Turcos y Caicos. Varios atributos de la MC-6 han estimulado varias hipótesis sobre la organización social y la dinámica económica de la comunidad. Esos atributos incluyen cerámicas y líticos importados originarios de las Antillas Mayores (principalmente de La Española); planificación que es evidente en el diseño deliberado de la comunidad; la vinculación física de la comunidad a través de la carretera a una fuente de sal, que es un valioso producto comercial; y la programación calendárica de las actividades implicadas en un ciclo celestial anual registrado en las alineaciones astronómicas de un patio central. El sitio ha sido postulado como la sede de un cacique, posiblemente de un cacique supremo multicomunitario, que fue empoderado por las redes comerciales regionales y las alianzas de parentesco asociadas. En el contexto de estas hipótesis, la cantidad de tiempo de trabajo, y el consiguiente número de personas requeridas para construir la carretera, se consideran en relación con la organización social necesaria para reunir la fuerza de trabajo requerida, planificar y construir esta obra pública, y programar las actividades sociales y ceremoniales relacionadas.

*Palabras clave: Camino, plaza, astronomía, Lucaya, Turcos y Caicos, cacique, obras públicas.*

### **Discovery, Definition, Dating**

The Lucayan Road (hereafter Road) analyzed here was evidently found by Loyalist planters when they arrived in Caicos Islands in the late 18<sup>th</sup> century. Daniel McKinnon, a British national, visited the Turks & Caicos during the Loyalist plantation period and noted (1804, pp. 132-133) that the first settlers of the “Caicos” had found “an old road traversing one of the islands... which they ascribed to the Indians; for the Spaniards, although they exterminated the inhabitants, were indifferent about their country, not worthy the possession” (*sic*).

In the modern era, a Lucayan Road was encountered and mapped on Middle Caicos during 1977 field investigations by an archaeological team from the University of Illinois; it was found to be an integral part of a complex of public architectural features within a large Lucayan archaeological site, MC-6 (Sullivan, 1980). The Road is, thus far, a unique archaeological feature in the Lucayan culture area, which lies north of Hispaniola and Cuba and extends for nearly 1000 kilometers from the Turks & Caicos northwest through the Bahamas (Figures 1 and Figure 2).

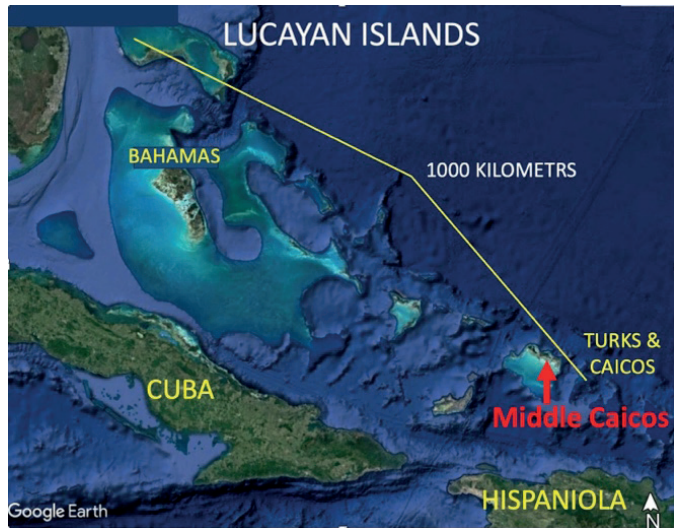


Figure 1. Lucayan Islands.

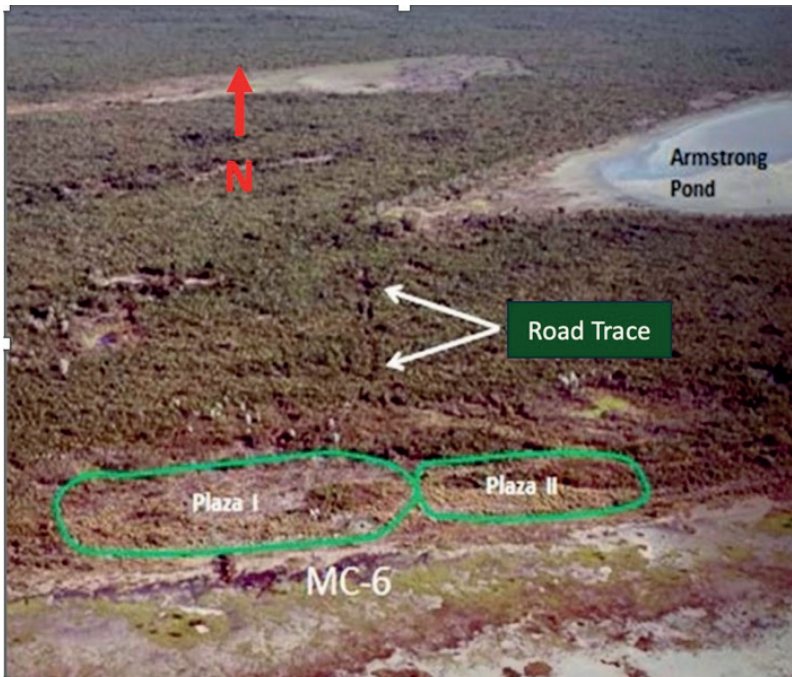


Figure 2. Middle Caicos and MC-6.

MC-6 was substantially undisturbed when initially surveyed in 1976, having been fortuitously located well south of the north coastal areas that were cleared for plantation agriculture by Loyalists in the late 18th and early 19th centuries. Post-loyalist settlements by Turks & Caicos Islanders on Middle Caicos also have been concentrated distant from the site, along the north coast. The result is that MC-6 had remained sufficiently free from significant disturbance and had retained sufficient site integrity to have served as a very productive laboratory for archaeological investigations by a series of researchers (Sullivan, 1980, 1981; Keegan, 2007, 2008, 2013; O'Day, 2002; Sinelli, 2001; Sullivan and Freimuth, 2015).

In 1977 the Road was the subject of aerial photography (Figure 3), which showed the Road standing out clearly when imaged early in the morning when the sun was at a low angle.

During field investigations in 1977 and 1978 the Lucayan Road was ground mapped along with surface collection of Road transects, and test excavation of an associated structure. That investigation was followed up by GPS mapping of the Road in 2018, and in 2023 the Road was revisited for aerial drone photography and engineering assessment. These latter forays were primarily focused on gathering data that would enable modeling of the labor involved in the Road construction.



**Figure 3.** Aerial Image of Lucayan Road and MC-6.



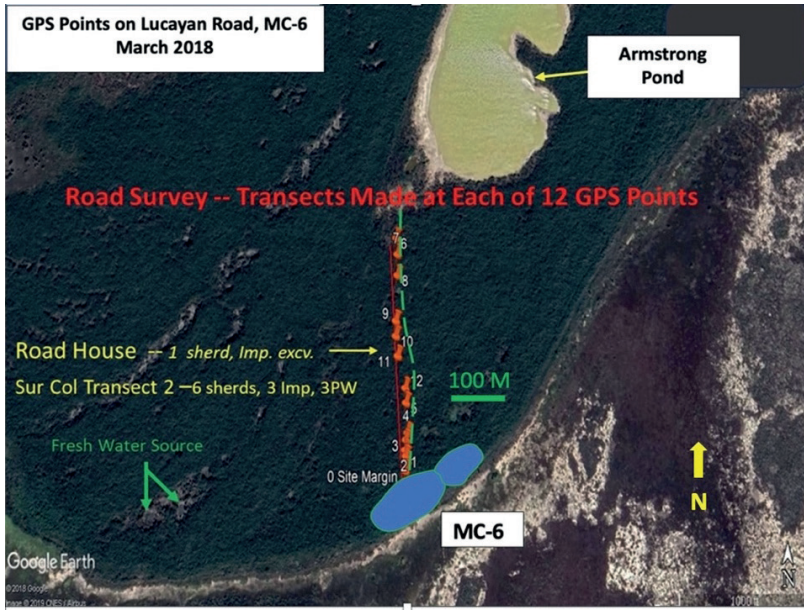


**Figure 4.** Survey Team Member Richard Chase, near Transect 8, Lucayan Road, MC-6, 2018.

The Road was built by removing trees and the transport of loose surface limestone and earth aside to clear a relatively smooth, flat, and hard limestone surface. The cleared material was piled in ridges along the Road edges (Figure 4). For most of the course of the Lucayan Road the flanking ridges are almost entirely stone; but at the northern end, as the Road encroaches on the Armstrong Pond floodplain where soils are thicker, the ridges are mostly composed of soil, suggesting that the surface soil was graded to the sides to expose the hard stone surface below. Thick vegetation made ground photography of the Road challenging. However, Figure 4 is illustrative; it is a photo of a portion of the Road, taken near transect no. 8, during the 2018 survey.

Figure 5 is an aerial view of the Lucayan Road which depicts the GPS positions of Lucayan Road transects recorded in 2018. The transect positions reflect slight flexes in the course of the Road (it is not completely straight), with a general track from south to north of approximately 5 degrees west of true north.

The Road extends close to half a kilometer, stretching from within the main plaza (batey), Plaza I, of MC-6, and transiting north through hardwood forest to the flood plain of a seasonal source of salt, Armstrong Pond (Figures 5, 7-9).



**Figure 5.** Lucayan Road, Transects, MC-6, Armstrong Pond.

Radiocarbon dates from MC-6 (Figure 6) indicate that the site was occupied from the late 15th through mid-16th century. This radiocarbon data, in combination with Chicoid ceramic stylistics, date the site as a Late Ceramic, protohistoric occupation, contemporaneous with the terminal phases of Classic Taino culture in the northern Caribbean.

<i>Location</i>	<i>Lab &amp; No.</i>	<i>Age BP</i>	<i>UNCAL</i>	<i>CAL</i>	<i>RANGE</i>	<i>Reference</i>
MC-6 Plaza 1 Structure 3	ISGS 2623	450 ± 70	1500 ± 70	1496 ± 81	1415 – 1577 68%	Sullivan & Freimuth 2022: 14
MC-6 Plaza 1-N Structure 8	Beta 155021c	400 ± 40	1550 ± 40		1430-1530/ 1560-1630 95%	O'Day 2002:, p. 4
"	Beta 155020c	320 ± 40	1630 ± 40		95%	
A bove 2 Recalibrated		400 ± 40		1522 ± 72	68% 1450-1594	

**Figure 6.** Radiocarbon Dates, MC-6: Sources and Locations.

## Integrated Community Design

The Road is of particular interest in the context of the physical and social space in which it was conceived and utilized as part of the interconnected public architecture and ceremonial spaces within this Lucayan community. Public architecture at MC-6 is taken here to include deliberate community design reflected in distinct residential zones and activity areas surrounding plazas; community/ceremonial space within the plazas; and a stone and earthen-ridge lined court within Plaza I - that was evidently an astronomical observatory (Figures 7-9).

The Road enters the larger batey, Plaza I, from the north, bisecting the northern midden ridge and structural remains. The southern terminus of the Road is within Plaza I. The site is a formally planned community that measures approximate 275x60 meters. The community was structured around two distinct plazas (Figure 7 and Figure 9). Plaza I at MC-6 is surrounded by midden deposits, ranging from 60 cm to more than 1 meter deep, that include structural remnants as well as abundant ceramics, faunal remains and some lithics of Antillean origin. The interior of the Plaza I area is approximately 140 meters long and changes less than 30 cm from end to end, strongly suggesting that it was artificially leveled. There were distinct occupation zones on the northern and southern sides of Plaza I. There is one structural remain at the junction point of the two plaza areas, that central structure is continuous with the Plaza-I South midden (Figure 7).

Plaza II, abutting Plaza I to the east, is a level area cleared of surface stone, and is flanked by limestone rubble ridges. The interior length of Plaza II is approximately 85 meters. There is no evidence of midden accumulation on the flanks of Plaza II, but the cleared central surface of the plaza and the flanking ridges are scattered with ceramic sherds, as well as with fragments of coral and shell.

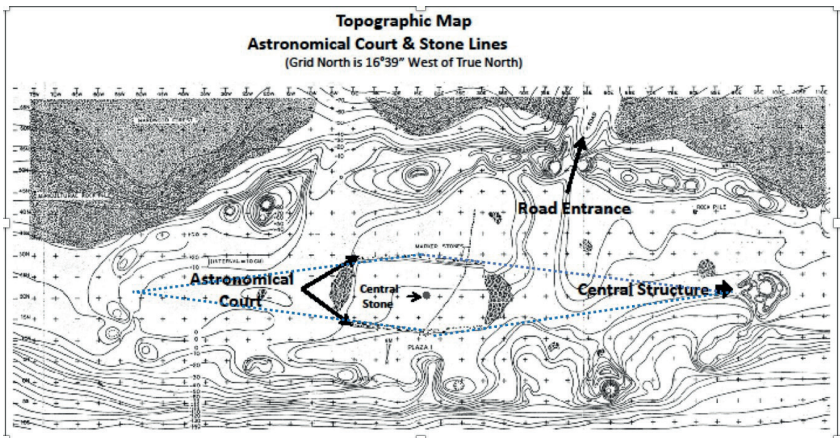
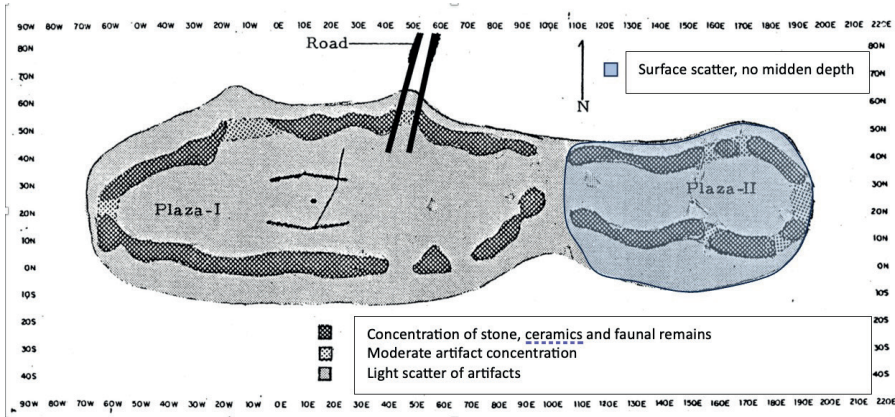


Figure 7. Plaza I, MC-6, Road Entrance.





**Figure 8.** C-6, Plaza I and Plaza II.

In 1977 a surface collection was made of more than 15,000 ceramic sherds from the Plaza I area, and of 2,400 sherds from the Plaza II zone. The percentage of imported ceramics among the surface collections varied notably.

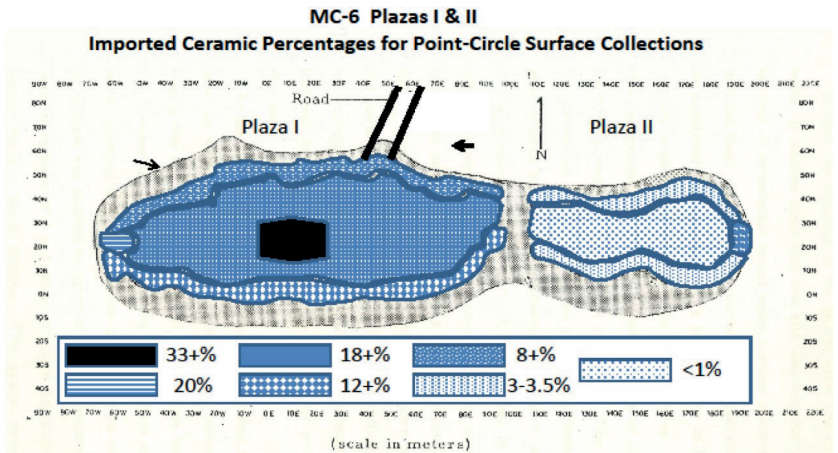
Imported ceramics are easily identified since the Lucayan Islands are entirely sedimentary, while the Greater Antilles are principally igneous and metamorphic formations. Imported ceramics have distinctive paste as well as igneous and metamorphic tempering. These traits stand in contrast to the shell tempered local ceramics, a variant of Palmetto Ware, that have soft friable paste derived from local clays, of which of Saharan aeolian deposits are a component.

The imported ceramics at MC-6 are consistently in Late Ceramic Chicoid style. The relative percentages of imported ceramics among surface collections on Plaza I and Plaza II are shown in Figure 9 (Sullivan, 1981, pp. 143-151; Sullivan and Freimuth, 2015, pp. 7-9). The ceramics were collected in timed sessions made within discrete surface units. We note that the surface collections are biased toward imports, which are easier to see against the background soil than is the locally made Palmetto Ware, because of their distinctive color and surface finishes. Nonetheless, that bias is consistent and homogenized across two months of collections made by than 40 different collectors. We assess that the relative frequency of ceramic imports in the surface collections reflects differential use by occupation zone and activity area.

The highest frequencies of imports occur in and around Plaza I (Figure 9). The Plaza area, inside the flanking north and south occupation zones, shows higher frequency of ceramic imports than the occupation zones themselves; and the highest of all is within the central stone lined court. The far western margin of the Plaza I area, where the North and South occupation zones meet, is higher in imports than the flanking occupation zones. In the Plaza II area imported ceramics are notably less common than in Plaza I; they are similarly present north and south of the plaza; most frequent along the ridge to the



east of the plaza; and least common in the plaza area itself. There is a stark contrast between the percentage of imports in the Plaza I central court (33%), vs the central part of Plaza II (< 1%).



**Figure 9.**

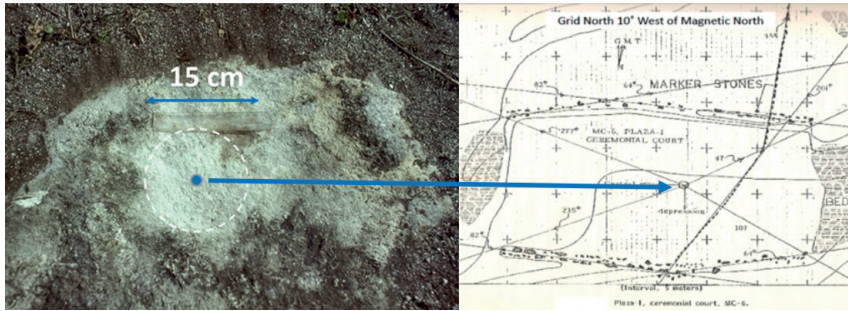
Plaza I and Plaza II are different. This distinction between the Plazas has been interpreted as a reflection of differences in kinship ties and social status Sullivan (1981, p. 431). Keegan (2007, pp. 174-175) reported that his follow-up subsurface testing and that of Roth (2002) along the margins of Plaza II did not produce material suggestive of occupation and may have been consistent with use as house gardens. The presence of ceramics in Plaza II, where there is a scarcity of midden, indicates it was not a residential zone, and suggests that food was consumed there in association with group activities, which we separately suggest are likely to have been social-ceremonial gatherings. Drawing upon Rouse’s summary description of Classic Taino village traits (1992, pp. 8-17), we suggest that Plaza II may have served variously as a ball court and / or, dance plaza, the venue for festival or ritual “arietos”.

Within Plaza I there is a central court, flanked by low stone and earthen ridges, that jointly form the central portion of a parallelogram, the east and west limits of which close just inside the ends of Plaza I (Figure 7). The central court measures approximately 20x30 meters. Within the court, there is an introduced stone, centered from north to south between the flanking stone and earth ridges, and offset slightly to the east (Figures 6 and 9).

Transit azimuth observations along the flanking ridges of the court, and with the instrument plumb-bob at the mid-point of the court central stone (Figure 10), in combination with Stellarium celestial software, reconstructions at the Smithsonian Air and Space Museum Planetarium, and on-site observations

at the summer solstice in 1980, have demonstrated that the court was an astronomical observatory (Sullivan, 1981; Sullivan and Freimuth, 2015).

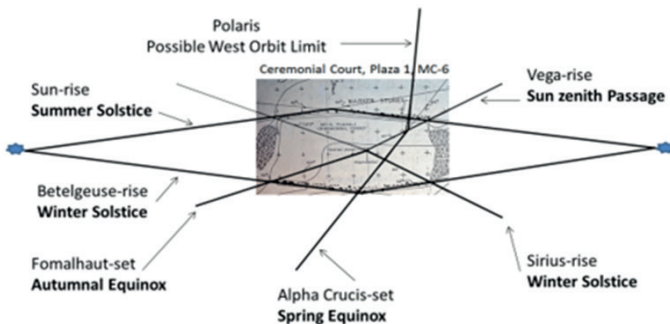
**Site Datum Point -- Central Stone and Star Court**



**Figure 10.**

The azimuths recorded in the court structure correspond with the annual cycle of the sun, to include the summer and winter solstices, zenith passage of the sun, as well as the spring and fall equinoxes (Figure 11). These key celestial cycle events are recorded in the azimuths of the long axes of the flanking stone and earthen ridges, and from the central stone toward the horizon rising and setting positions of the sun and selected stars of the first magnitude. The court, which we term the Star Court, was a celestial calendar. MC-6 had at its heart, an astronomical timepiece, that recorded the cycle of the seasons through observation of the repeated movement of celestial bodies along the horizon.

Astronomical alignments indicate that the Ceremonial Court is an Astronomical Calendar  
Interpreted as a component of ceremonialism associated with social control of the village cacique  
(S. Sullivan, G. Freimuth, 2015)



**Figure 11.** Star Court Astronomical Alignments.

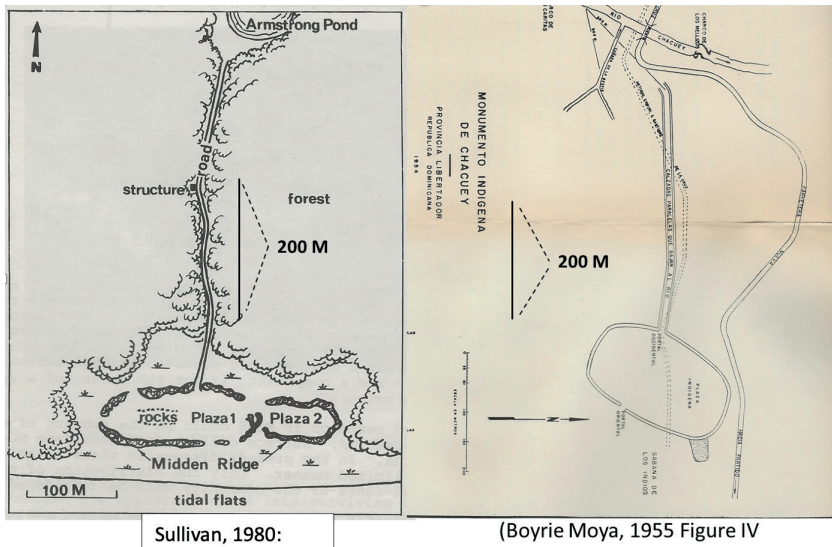
## Regional Parallels

There are several parallel examples of astronomical orientation of plazas at Taino sites. Astronomical observations and functions of Taino plazas/bateys as astronomical observatories has been analyzed at several sites, including MC-6, by Rodríguez Álvarez (2010). He ascribed astronomical alignments and functions to multiple bateys in the Dominican Republic and Puerto Rico, with particular attention to Chacuay and the ceremonial centers at Tibes and Caguana, to include focus on the role of central stones in bateys that evidently served as points of astronomical observation (*Ibid*, pp. 187-226). Those central stones are similar in placement and function to the central stone at MC-6. Álvarez interpreted the intentional astronomical alignment of Taino site plazas in terms of the recording of celestial cycles in correlation with the yearly progression of seasons in order for the Taino to determine when they could obtain needed resources (*Ibid*, p. 271). Rogiou Lamarche (1984, p. 10) observed that the main axis of the plaza in Chacuey, a Late Ceramic Dominican site, was oriented toward the sun rising position at the winter solstice. Fabiola Jara (2015, pp. 931-944), in a study of the astronomical practices of lowland South America Arawak speakers, noted a common practice of observation of the solstices and equinoxes, and astronomer focus on the seasonal appearance of specific stars in association with local cycles, including the onset of the rainy season, as contributors to scheduling of economic activities. The archaeoastronomy of the Plaza Principal at Tibes, with emphasis on celestial observations made from a central stone, similar in placement to the central stone at MC-6, was presented at the IACA Congress in 2017 (Sullivan *et al.*, 2017).

The Lucayan Road on Middle Caicos has counterparts in Taino sites to the south in the Greater Antilles. Road-like structures at Late Ceramic Taino sites occur in Puerto Rico in association with bateys and ceremonial precincts (Rouse, 1992, pp. 113-116). Earthen ridge-lined roads or causeways are present at Classic Taino sites on Hispaniola, notably at Chacuey (Figure 12), El Cacique, and San Juan de la Maguana (Alegria 1983, pp. 34-54). Late ceramic sites with plazas/bateys are known from late Taino sites in eastern Cuba, notably at Laguna de Limones and Pueblo Viejo (Etayo, 2015, p. 147); and are widespread in late ceramic village sites in Hispaniola, Puerto Rico and nearby Virgin Islands. In the Dominican Republic the majority of bateys are associated with Boca Chica (Chicoid) ceramics; in the Puerto Rico most are characterized by late, Period IV, Capa pottery.

There is a concentration of bateys in the northwestern Dajabon-Mao district of the Dominican Republic (Alegria, 1983, pp. 34-60). The closest trade links of MC-6 are with Hispaniola, northwestern Hispaniola in particular. The described Antillean distribution of late ceramic villages with plazas and bateys coincides closely with Rouse's map of the Classic Taino culture area; and which included

the Turks & Caicos Islands (1992, Figure 3, p. 8). Rouse observed MC-6 firsthand; he had visited the site and walked the Lucayan Road in the fall of 1977. Further documenting the cultural linkage, The Lucayans of the Turks & Caicos spoke the Classic Taino dialect (Granberry and Vescelius, 2004, p. 14).



**Figure 12.** Plazas and Roads at Chaquay and MC-6.

### Road as a Public Work

The Road, plazas and Star Court are an integrated suite of planned public works, which were the products of organized community labor. These constructions formed the framework for public ceremonial space at the site. The design, construction and use of these ceremonial spaces reflected a portion of the reciprocal roles and interactions of the local Lucayan cacique and the people living within the MC-6 community, and more broadly, the people living within the cacique’s sphere of influence, who may have visited the site and taken part in ceremonial and economic activities. The level of effort involved in the construction of the Road is considered here as a contributor to modeling the social interaction that generated cooperative community work to create a venue for ceremonial observances.

The Road itself takes on a ceremonial patina because it is a monumental work built beyond utilitarian requirements, and it is physically connected to the main site plaza, which we consider social-ceremonial space. On land, the Lucayans and their Taino kin transported materials by hand, or in hand-held containers on foot. The internal width of the MC-6 Road ranges from 7 to 11



meters. A comparable Taino road feature, also flanked by low ridges, occurs at Chacuey, Dominican Republic (Figure 12), where the road averages 10 meters in internal width (Boyrie Moya. 1955, p. 47). Demonstrating traits similar to those of the MC-6 Road, the Chacuey road extends from within the site main plaza to a point close to a body of water (*ibid*, p. 48).

In modern urban usage, a path 3 meters wide is ample for two directional movement of pedestrians (<https://ruraldesignguide.com/physically-separated/shared-use-path>). By that measure, the MC-6 Road is large enough for 4 to 5 people to walk abreast; or, for multi-person groups to pass one another freely in both directions.

In this context, Columbus (quoted in Navarette, 1945: 230-235), noted an encounter in 1492 with a Taino cacique on the coast of northern Haiti in which the cacique was accompanied by a retinue of 200 people, and was carried on a litter. The Lucayan Road appears to be wide enough to accommodate the transit of a litter with bearers of up to 6 meters wide. This ethno-historical observation, made along the north shore of Haiti, is perhaps telling, since the strongest trade ties of MC-6 around the time of European contact was with Hispaniola (Keegan, 2007, p. 184; Berman *et al.*, 2013, p. 270). More specifically, the people of MC-6 were evidently in contact with the Classic Taino speaking peoples of northwestern Hispaniola, from Monte Cristi west along the north coast of Haiti, which is the indicated coastal source zone of distinctive imported ceramics found at MC-6, which included vessels with ferro-magnesium tempering, and ceramics with white slip and broad line incision (Sullivan, 2022, pp. 7-8).

The construction of the Road required planned and coordinated community effort. The commitment of time and energy to build the Road is analyzed here and may be instructive regarding the collective effort and roles of the hypothesized MC-6 cacique and the people under the cacique's influence who were jointly involved in the Road design and its construction. Results of the 2018 and 2023 Road surveys appear below. The 2018 assessment contributed to a presentation at the 2019 SAA meeting in Albuquerque. The 2023 survey expanded on-site engineering assessment.

### **MC-6 modeled as seat of a cacique**

A combination of site features has led to characterization of MC-6 as the seat of a powerful cacique with regional ties, and probable multi-site influence or authority (Sullivan, 1981; Berman *et al.*, 2013; Keegan and Mclachlan, 1989; Keegan, 2007, 2014; Sullivan and Freimuth, 2015; Sinelli, 2010; Ostapkowicz, 2023). The strong evidence of regional exchange manifest in the extensive presence of imported ceramics and lithics from the Greater Antilles at MC-6 stimulated description of the site as a key component of a "Northern

Caribbean Economic and Social Interaction Sphere” (Sullivan, 1981, p. 412); which Berman *et al.* (2013, p. 270) focused more narrowly upon exchange with Hispaniola and eastern Cuba for the Turks and Caicos. The archeological traits that contributed to this characterization include formal community planning, strong evidence of regional trade, the concentration of imports in some site residential areas, public ceremonial spaces in the form of the plazas and the Road; and, importantly, the empirical link of the community via the Road to a source of an exportable commodity—salt – at Armstrong Pond. Multi-village regional authority for a cacique corresponds with the concept of “Cacicazgo”, headed by a Paramount Cacique, “under whose control are districts and villages governed by a hierarchy of subordinate chiefs (Oberg, 1954, p. 484).

### Workforce requirements for Road construction

The 2018 survey incorporated 12 GPS registered transects (Figure 4). We recorded the overall length of the flanking stone walls, and at each transect we measured the internal width between the stone rows, external width from outer edge to outer edge of the stone rows; stone row width, and stone row height. Road measurements appear in Table 1.

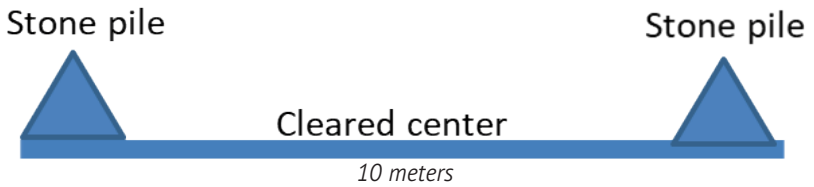
Table 1 provides measurements of the width of the Road and the flanking rows of stacked stone; stone pile length and height, and averaged readings.

**Table 1.** Road and Flanking Stone Pile Dimensions

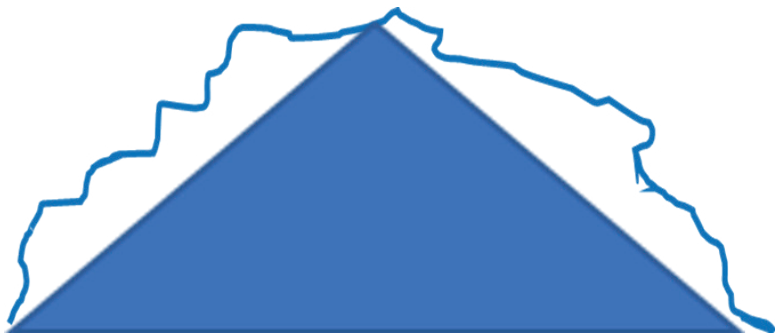
<i>The data obtained was as follows</i>	
Length of flanking stone walls	470x2= 940 m
Maximum & minimum external width	7.2 m - 11.28 m
Maximum & minimum internal width	4.6m - 6.6 m
Maximum and minimum stone pile width	1.22 - 3.35 m
Maximum and minimum stone pile height	.46 m - .76 m
<i>That data averaged were</i>	
Stone pile width	1.61 m
Stone pile height	.64 m
External width	8.71 m
The area cleared of trees and brush (470x8.71)	4,094 m <sup>2</sup>

One measure of the labor involved in the construction of the road is the weight of the materials moved. The flanking ridges are almost entirely composed of limestone. A cubic meter of limestone weighs about 2,711 kilos (<https://www.aqua-calc.com/calculate/volume-to-weight>). To approximate the volume of the stone involved, the flanking stone rows are modeled as

prism. The stone rows are composed of stacked rough stone and are irregular in profile, with some interior gaps between stones. A prism approximates the consolidated mass of the irregular stone pile.



**Figure 13.** Graphical Representation of a Lucayan Road Transect.  
*Stone Pile Outline* *Prism Abstraction*



**Figure 14.** Graphic of Stone Pile Abstracted as a Prism.

The formula for determining the volume of a prism is:  
 Volume of prism = Base area x length  
 Base area= base width x height/2 = 1.61 m x .64 m/2= .5152 m  
 Length= 470 x 2= 940  
 Volume = .5152 m x 940 m= 484.288 (484) cubic meters of limestone  
 The weight of that mass of limestone is calculated as:  
 484 x 2,711 kilos per cu meter= 1,312,124 kilos x 2.2= 2,886,673 lbs

An exceptionally large stone was moved out of the roadbed and stacked along the margin; it measured 1.68 m x 1.02 m x .46 m. A rectangular block of these dimensions would have a volume of .788 cubic meters. The weight of such a block would be .788 x 2,711 kilos= 2,136 kilos, x 2.2= 4,699 pounds. The rounded edge ellipsoid shape of this rock means that it weighs something less, but above 4,000 lbs. in any case.

Movement of such large stones required a group cooperative effort. Transposition of a very large stone, such as the example above, could have been effectuated by several individuals working together using wooden pry poles,

sliding it across the ground. No special technology or unique skills were required. Any able-bodied adolescent or adult could have contributed to the effort.

A stone measuring more than 2m in length, located in the Road ca. 20m north of MC-6, was not moved from the roadbed. Moving this was probably within MC-6 residents' capabilities. If so, then its position is intentional, and may mark a boundary or control point. *We recommend that in the future the stone should be righted and the under surface examined for petroglyphs.*

Otherwise, no petroglyphs were observed on the stones flanking the Lucayan Road, and the stones did not appear to have been arranged originally to stand erect. They were simply stacked.

In consideration of the amount of community labor involved in the Road construction, we offer the following calculations. They are based upon an approximate total weight of stone moved of 2,886,673 lbs. lbs., and upon variables of the number of people working, the weight of stone to be moved, and the number of days required to accomplish that task. A common weight for man-portable bulk items is 50 pounds – e.g., which is a common weight for a bag of cement. Moving 1000 lbs. is the equivalent of the movement of 20 bags of cement weighing 50 lbs each. The stones removed from the roadbed only needed to be moved a few meters. Moving 50 lbs a few meters is not an overtaxing burden.

**Table 2.** Estimates of Labor Involved in Road Construction

No of people	1000 lbs./day	Days	2000 lbs./day	Days
1	“	2,887	“	1,443
2	“	1,443	“	722
5	“	577	“	289
10	“	289	“	144
20	“	144	“	72

Moving the rock was just one task. Clearing trees and brush from the course of the road was another. The area cleared measured 4,094 m<sup>2</sup>. Roadbed clearing labor: If 20 people collectively clear 100 sq. meters of trees and brush per day, roadbed clearing would take ca. 41 days. Considering the physical challenge and labor time involved in stump and root removal, 2 months is more probable. With the foregoing in mind, 20 people, collectively clearing daily 40,000 lbs. of rock (2000 lbs. each), would take 72 days (ca. 10 weeks) to clear the Road. Add to this the needed preparatory work of clearing the trees and vegetation from the roadbed, then about 4 to 5 months of labor by 20 people appears reasonable.



We have not calculated the hours per day of labor required but have simply offered a model of the weight of materials potentially moved daily and a candidate rate of vegetation clearing. Without attempting precision with regard to hours of effort, we advance the assumption that the labor was part time, some number of multiple hours per day, over a few months. The road construction work need not have been continuous and may have taken place over multiple seasons. Maintenance of the Road would have been constant/periodic, but at a relatively low-level of effort.

Relevant in terms of total effort, but for the most part not qualitatively different, was the community labor required for construction and maintenance of the remainder of public architecture at MC-6, of the plazas and the ceremonial court. Collectively, the public architecture at MC-6 could have been constructed by a relatively small group of people, working part time, over a period of months, which may have been distributed over multiple seasons. Each of these required community labor, and each reflected direction from a central authority, i.e., the cacique, and empowered associates. As noted, most of the labor involved in site construction was unspecialized, with contributions from small group of specialists, which is consistent with the findings of Abrams (1987) for labor contributions to the construction of Copan in the Yucatan. Our findings are also in general accord with the assessment of the amount of labor and skill levels required for construction of plazas at Tibes, as reported by Torres, Curet *et al.* (2014, p. 146).

### **Role of a Cacique in Public Architecture, Planning and Ceremonialism**

The Road was one element of several connected components of public architecture at MC-6. Fox *et al.* (1996, p. 483) observed that, “Large-scale public architecture, as the most highly visible material symbol of political authority, has traditionally been central to archaeologists’ definitions of social complexity... I view these public sites not as “inert containers” for social action, but as meaningful settings in a “lived” landscape which were actively used and interpreted in ritual to create and manipulate perceptions of social differences.”

In the Caribbean, public architecture in the form of plazas and batays were the product of organized community labor. “In addition to serving as the venue for community gatherings and ceremonialism, they reflected the power and organizational influence of the cacique and helped cement cultural identity and strengthened group solidarity” (Torres, Curet *et al.*, 2014, pp. 146-147).

We do not know if the labor for construction of the Lucayan Road and ther public architecture at MC-6 came only from residents of MC-6. The local

cacique, who Keegan (2007, pp. 1-91) assessed as possibly being of the lineage of the very powerful early historic cacique Caonabo, may have held sway over multiple communities. If so, members of those outlying linked communities may have contributed to the labor pool, perhaps as a component of community solidarity and service in association with festive gatherings (*Ibid*, p. 142).

However, the integrated design of the residential zones, plazas and Star Court at MC-6 required a central planning authority - that of the cacique and of an associated elite. In particular, the conceptualization, design, construction, and use of the astronomical observatory in the Star Court required very specialized skills and knowledge sets, that had to have been accumulated and passed down over a very long period - many years, and probably many generations. While the cacique exercised specialized leadership skills that were not required of most community members, the astronomers were true craft and knowledge specialists.

The cacique, and empowered associates, are the logical reservoirs of specialized astronomical knowledge. They are likely to have used the astronomical calendrics and associated mythological structures to lead and regulate arietos- public ceremonial activities with magical and religious elements, that would have been acted out in the village plazas. One such ceremonial activity might have been associated with the salt harvest and exchange activities.

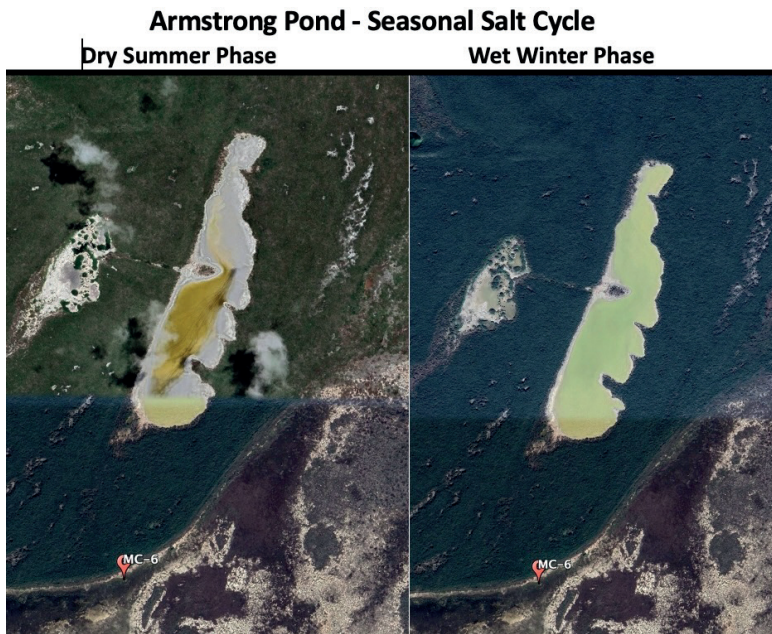


Figure 15.

### Harvested Salt Armstrong Pond



**Figure 16.** Salt Formation in Dry Season, Armstrong Pond.

The Road, plazas and Star Court were an integrated suite of public works, that were the product of organized community labor. This ensemble of public spaces, had at their core the celestial calendar, particularly the cycle of the sun. The Road extends from Plaza I, near the Star Court, to the margins of Armstrong Pond, which commonly produces vast volumes of crystalline salt in the summer (Figure 15 and Figure 16).

Sun and wind evaporated salt is a seasonal and ephemeral resource on Middle Caicos. The saline Armstrong Pond commonly starts to bake out and precipitate salt in late June. Peak salt production at Armstrong Pond coincides with the summer solstice and sun zenith passage southward, in the period from circa June 21<sup>st</sup> to 12 July.

### Conclusions

The Lucayan Road is part of an interconnected assemblage of public works at MC-6 that included two Plaza areas that provided common spaces for gatherings that are likely to have included arietos and ceremonial activities. The bulk of these public works were the product of unskilled labor that would have required only a part time commitment by community members to accomplish.

The Road connects Armstrong Pond, the source of a vital resource, salt, with Plaza I of MC-6. In the center of Plaza I is the Star Court, which is an astronomical calendar that records key celestial events, the summer solstice and sun zenith passage prominent among them. The astronomical observations and construction of the Star Court within Plaza I would have

required personnel with specialized knowledge, accumulated over many years of celestial observations. Surrounding the Star Court in Plaza I, and within the adjoining Plaza II, are public, ceremonial spaces.

The suite of evidence suggests that ceremonial activities, coordinated by the cacique and an associated elite with specialized astronomical knowledge, used the celestial calendar to schedule ceremonial assemblages. These gatherings, as well as work on the site's public architecture, may have included participants from outlying dependent communities within a regional cacicazgo centered on MC-6.

In the context of the Lucayan Road connection between Plaza I and the Star Court with the salt source at Armstrong Pond, those ceremonies are likely to have included observance of the summer solstice and southward sun zenith passage in late June to early July. Those key solar events heralded the beginning of the Middle Caicos dry season that was essential for the crucial economic activity of salt gathering for export. The salt trade is assessed as underpinned regional trade relationships, associated kinship networks and alliances, and MC-6 community prosperity.

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