
32 **INVESTIGATING URBAN FORM AND KINGSHIP: PRELIMINARY RESULTS OF THE 2014 CHAN CHICH ARCHAEOLOGICAL PROJECT**

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In 2014, the Chan Chich Archaeological Project (CCAP) and the Belize Estates Archaeological Survey Team (BEAST) pursued multiple research agendas within the 145,000-acre Gallon Jug/Laguna Seca permit area. At Chan Chich, research into the evolution of the dynastic architecture at the site began with Structure from Motion mapping of Structure A-15 and it continued with excavations designed to identify dynastic architecture associated with a Terminal Preclassic tomb excavated in the Upper Plaza acropolis in the late 1990s. This multi-season investigation will assess changes in architecture attendant to the emergence of divine kingship. Concurrently, the CCAP conducted the first excavations in Courtyard A-3, a courtyard attached to the south side of the Upper Plaza. Additionally, a two-year research project began on the processional architecture at Chan Chich, including excavations on the site's two sacbeob. Away from the site center, BEAST surveyed seismic lines in the permit area and attempted to locate the site of El Infierno, reported in the early 1970s and lost ever since. This paper summarizes the results of the 2014 investigations.

Introduction

Chan Chich is a moderately sized ancient Maya city located in the Three Rivers adaptive region of Belize. The site is approximately 4.25 km east of the Belizean border with Guatemala and sits along Chan Chich Creek. The 2014 season of the Chan Chich Archaeological Project targeted four specific objectives aimed at expanding our understanding of the form and history of this ancient Maya city and its surrounding landscape. The first objective was the initiation of the Chan Chich Dynastic Architecture Project (CCADAP) in the Upper Plaza at Chan Chich (Figure 1). This effort included the Structure from Motion (SfM) mapping of Structure A-15, excavation of the Upper Plaza surface, and excavations of the surrounding monumental structures. CCAP also included excavations in Courtyard A-3 at Chan Chich and preliminary investigations of the site's two causeways and associated structures. Additionally, the Belize Estates Archaeological Survey Team (BEAST) continued survey on the Gallon Jug and Laguna Seca properties.

Chan Chich Dynastic Architecture Project (Operation CC-12)

The 2014 season initiated the CCDAP, a multi-year pursuit aimed at tracking the evolution of kingship and dynastic architecture at Chan Chich. The site has a long history of occupation, beginning in the Middle Preclassic

and continuing through the Terminal Classic (ca. 800 BC to AD 850). Importantly, excavations of the Upper Plaza in the late 1990s uncovered the tomb of a Terminal Preclassic king buried beneath a small shrine platform (Robichaux 2000), representing one of the earliest Maya kings in the eastern Maya lowlands (Houk et al. 2010). The small shrine structure that was originally constructed over the tomb was eventually buried under subsequent construction episodes as the Upper Plaza was built up into an elite acropolis.

Although we now have an informed understanding about the important relationship between divine kingship and monumental architecture in the Maya lowlands during the Classic period, we still know little about the relationship between the earliest Maya kings and the oldest royal architecture. The purpose of the CCDAP is to explore the relationship between a Terminal Preclassic Maya king and the earliest monumental architecture at the site and to trace the evolution of the dynastic architecture from its Terminal Preclassic origins to the Late Classic period (Houk and Zaro 2014).

The first component of CCDAP was to use SfM to map and create 3D models of Structure A-15 and the looters' trenches/tunnels that run through this monumental building (Willis et al. 2014). Structure A-15 is the tallest structure at Chan Chich and makes up the boundary between the Upper Plaza and

Courtyard A-3. The Terminal Preclassic Tomb 2 was excavated near the northern base of

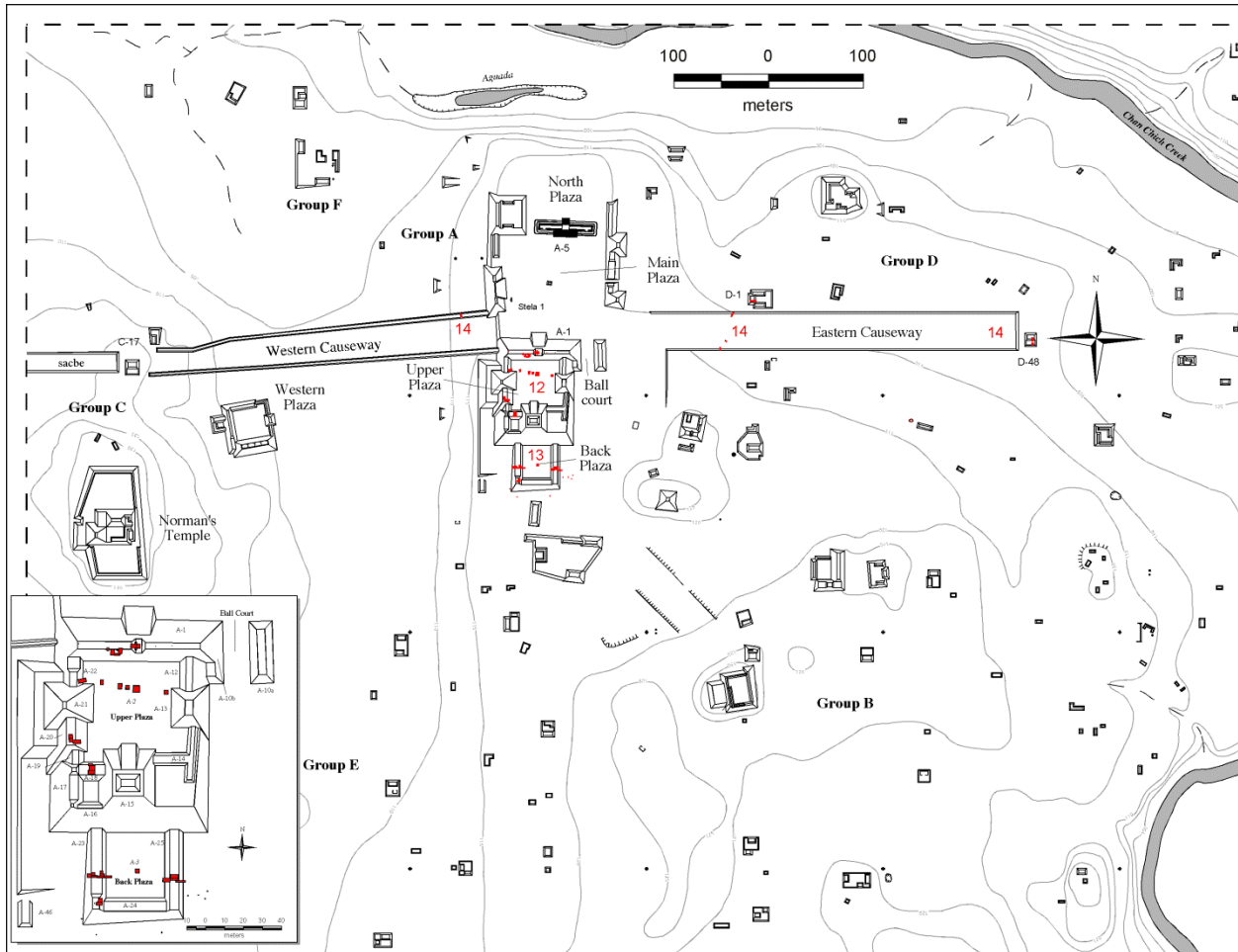


Figure 1. Map of the site core of Chan Chich showing the locations of 2014 excavations and an inset of the Upper and Back Plazas area. The numbers 12, 13, and 14 refer to Operations CC-12, CC-13, and CC-14, respectively.

Structure A-15, indicating that this is an important locale in understanding the relationship between kings and the built environment with which they were associated. Five looters' trenches/tunnels run through this mound giving a partial glimpse of the complex construction history of the structure. By digitally mapping and modeling the ruin, including the looters' trenches/tunnels, we will be able to trace each construction phase of Structure A-15 through a 3D model and ultimately delineate the changing form of the building through time.

SfM software uses a set of algorithms to identify and correlate feature points in overlapping photographs. The program can then use photographs of the same object, taken from

multiple viewpoints, to calculate the relative position of these points in three-dimensional space. This processing creates a dense point cloud that can be manipulated in various programs. In total, 1,799 photographs were used to create the 3D model of Structure A-15 and its five looters' trenches/tunnels. After processing, a 3D model containing approximately 44,000,000 individual topographic points was created. The model was georeferenced using ground control points visible in the photographs and then imported into ArcGIS (Willis et al. 2014).

Many aspects of Structure A-15's construction history are obvious in these data (Figure 2), although full analysis is pending. However, we can say that using pole aerial

photography to photograph inaccessible parts of the looter's trenches allowed us to model



Figure 2. SfM orthophoto, view to the south, of the interior of the uppermost trench and tunnel on the eastern side of Structure A-15 showing various architectural features, after Willis et al. (2014:Figure 2.7). The room exposed in the tunnel (upper right in image) is not accessible and had never been documented before.

previously unknown architectural elements, including a large vaulted room (Willis et al. 2014). Moving forward, we will begin to trace specific architectural elements throughout all five looter's trenches allowing us to infer the complete form of the architecture for each construction episode of this complex structure, ideally dating back to the Terminal Preclassic period and the construction of Tomb 2.

Excavations in the Upper Plaza and the surrounding monumental architecture revealed extensive information about the final form of the plaza as well as earlier manifestations of the built environment (Herndon et al. 2014). Excavations targeted Structures A-1, A-18, A-20, and A-22, and the plaza surface. This short summary only discusses the work in the plaza and at Structures A-1 and A-18.

Excavations into the Upper Plaza surface were designed to further investigate a stone platform face or linear wall-like feature that was first identified by excavations in 2013 (Kelley et al. 2013). In 2014, we exposed this feature

running east-west across three quarters of the northern portion of the Upper Plaza (Herndon et



Figure 3. Photograph of the platform face or wall buried in the Upper Plaza in Suboperation CC-12-O, view to the north.

al. 2014). It is likely an early south-facing platform buried by subsequent plaza renovations, but its inclusion within a large layer of construction fill may suggest alternatively that it is part of a large construction pen (Figure 3). In addition to the wall-like feature, excavations uncovered as many as nine earlier plaster

surfaces (Herndon et al. 2014). These floors correspond with those identified in earlier excavations (Kelley et al. 2012, 2013) and date to as early as the Middle Preclassic period.

Structure A-18 is a small structure adjacent to the northwest corner of Structure A-15. Excavations revealed a large room with an off-centered doorway facing south into a small courtyard. Beneath the surface of the doorway was a thick layer of construction fill containing a crudely constructed crypt enclosing the skeletal remains of a single individual (Burial CC-B13). No other artifacts were recovered from this burial, making temporal association difficult at this time (Herndon et al. 2014). Ceramic analysis of materials from associated and overlying strata is currently pending and may offer more secure chronological information.

Structure A-1 is the most massive structure at Chan Chich and forms the boundary between the large, public Main Plaza and the smaller, more restricted Upper Plaza. Prior excavations suggested that the final construction episode of Structure A-1 took the form of two large, tandem range structures with four rooms on either side and an additional transverse room at one end facing the central landing (Robichaux et al. 2000). Excavations in 2014 uncovered the eastern end of the western spinewall instead of the hypothesized central-facing room, suggesting Structure A-1 comprises two tandem range buildings with eight rooms, each separated by the central landing. Beneath the central landing, excavations revealed a cut into the penultimate phase floor. Inside the cut was Cache CC-C01, consisting of 17 obsidian blades, and a crudely constructed crypt containing the remains of a single human interment (Burial CC-B11) and four complete Achote Group ceramic vessels (Figure 4) suggesting a Late Classic age for the burial (Valdez and Sullivan 2014). Additional artifacts uncovered in the crypt include ceramic sherds, lithic flakes, three obsidian microblades, and a small piece of pink shell (Herndon et al. 2014).

Courtyard A-3 (Operation CC-13)

The 2014 season marked the first excavations in Courtyard A-3, a large courtyard located south of the Upper Plaza and separated from it by Structure A-15. Courtyard A-3 is

approximately 7 m lower in elevation than the Upper Plaza and is surrounded on the west,



Figure 4. Four complete vessels excavated from BU CC-B11, preliminarily assigned to the Late Classic Achote Group. Clockwise from upper left corner: Vessel 1, Vessel 3, Vessel 2, and Vessel 4.

south, and east by three low-lying platforms, Structures A-23, A-24, and A-25, respectively. The 2014 excavations of Courtyard A-3 aimed to establish a history of the form and function of this space via excavations of Structures A-23 and A-25, and the courtyard surface (Vazquez et al. 2014).

Excavations into the courtyard surface revealed only one Late Classic construction episode before reaching bedrock; however, Structures A-23 and A-25 consisted of at least two Late Classic construction episodes (Vazquez et al. 2014).

The final form of Structure A-23 consists of a terraced substructure topped by low masonry walls in the central part of the building. Excavations revealed two separate areas of dense, ashy soil with many fragmented vessels, including several Tinaja Red jars (see Valdez and Sullivan 2014). Additionally, deer bone, ground stone, and broken bifaces that were repurposed as knives were also recovered, indicating that this structure may have been used for food preparation. Excavations at the southern end of the structure encountered an infilled room that was presumably once vaulted. The room had been partially filled and the exterior landing in front of it elevated approximately 1 m in a major remodeling

episode, which saw the vaulted roof dismantled and a perishable structure constructed on top of the remaining low masonry walls. Based on ceramics removed from Structure A-23, the bulk of the construction of Courtyard A-3 occurred during the Late Classic period, but this area was also occupied into the Terminal Classic.

The final form of Structure A-25 was also a terraced platform supporting a building with low, masonry walls on its summit. The function of Structure A-25 during this final phase is still unknown, as no diagnostic artifacts or architecture were found. The form of the penultimate construction episode is unclear without further excavation.

Processional Architecture (Operation CC-14)

Chan Chich has two 40-m wide *sacbeob* that enter the Main Plaza in front of Structure A-1 from the east and west. These *sacbeob* and associated structures are the focus of a two-season investigation of the processional architecture at the site (Booher and Nettleton 2014). Following Keller's (2006) dissertation work on the causeways at Xunantunich, excavations of the processional architecture at Chan Chich were aimed at determining the construction history and form of the causeways, as well as identifying artifacts that may have been discarded along the causeways during processions. Additionally, the project aims to identify the function of two shrine structures located at the termini of each causeway. An associated courtyard group was also investigated in 2014.

Excavations of the two causeways revealed that each consisted of a single construction episode. The eastern causeway was made from crudely constructed walls of uncut stones that retained the construction fill of the elevated causeway. The western causeway was also elevated; however, it differed from the eastern causeway in that it had parapets fashioned from cut limestone blocks. Although the ceramics collected from these excavations have yet to be analyzed, the construction of the two *sacbeob* likely took place during the Late Classic (Booher and Nettleton 2014).

Preliminary excavations targeted Structure D-48, one of the two suspected termini shrines, in 2014. It is a small structure with a south-

facing patio at the terminus of the eastern causeway. Excavations revealed the final form as a series of steps and terraces leading to the summit of the structure. A dense array of artifacts was recovered from the limited excavation of Structure D-48, including hundreds of ceramic sherds, a possible ceramic game piece, dozens of lithic tools, obsidian fragments, and metate fragments (Booher and Nettleton 2014). Once ceramic analysis has been completed we will be able to place Structure D-48 within the context of the construction history of Chan Chich as well as evaluate its possible function in processions.

Courtyard D-1 was not part of the original excavation plan, however its proximity to the causeway indicated that it might be associated with the processional architecture of Chan Chich. Excavations of Structure D-1 and the surface of the courtyard revealed at least two construction episodes. The earlier form of Structure D-1 was a raised room with a patio extending to the east. Preliminary analysis suggests this room was later filled in and a platform constructed over the top. A burial (Burial CC-B12) was found close to the ground surface and inside the filled room. The interred individual was oriented with his or her head to the west and feet to the north; a small overturned bowl was found on top of the body's midsection. Based on preliminary analysis the vessel is an Achote Black bowl and dates to Tepeu 2 (Lauren Sullivan, personal communication, 2014). The proximity of the burial to the ground surface and its location within the construction fill suggests it was likely interred after the room had been filled, possibly by the individuals occupying the summit of the final phase platform.

Belize Estates Archaeological Survey Team (BEAST)

The CCAP/BEAST permit area includes 145,000 acres of land encompassing Gallon Jug Ranch, Laguna Seca, and a buffer around Chan Chich that extends onto Yalbac Ranch. The primary objective of BEAST in 2013 and 2014 was to update the inventory of sites in the permit area, a task originally undertaken by the Rio Bravo Archaeology Project (RBAP) directed by Thomas Guderjan (Guderjan et al. 1991). BEAST surveyed along seismic lines, revisited

previously recorded sites, and conducted targeted survey (Figure 5). In 2013, BEAST

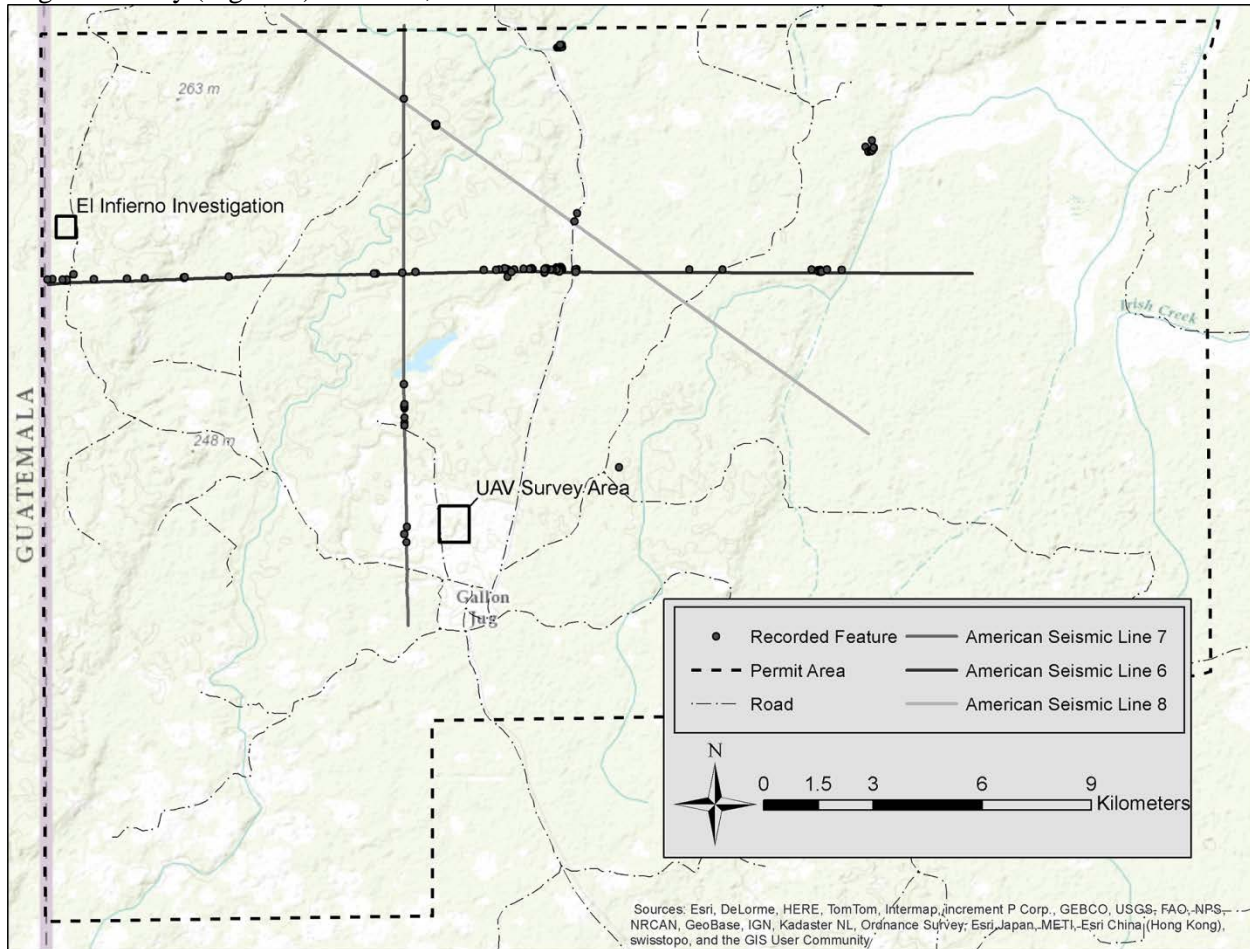


Figure 5. Map of CCAP/BEAST permit area with locations of surveys conducted in 2014 (after Sandrock and Willis 2014: Figure 6.1).

identified four new sites and surveyed over 40 km of transects cut by American Seismic, LLC. This year BEAST surveyed 36.2 km of transects, revisited several previously recorded sites to assess their condition and update their locations, attempted to locate the site of El Infierno, and conducted unmanned autonomous vehicle (UAV) survey of Gallon Jug Ranch.

The ancient Maya sites of Punta de Cacao and Gongora Ruin and the nineteenth-century logging camp of Qualm Hill were successfully re-located. A large wall-like feature, winding some 500 m, was also mapped. Despite a focused search, the site of El Infierno was not found.

In addition to pedestrian survey, which mapped 117 previously unrecorded structures, BEAST used a custom modified DJI Phantom

UAV to map a portion of the pastures on Gallon Jug Ranch resulting in the identification of several hilltop structures (see Sandrock and Willis 2014). BEAST surveyors later ground-truthed and mapped the location of the structures.

Conclusions

The 2014 season of the CCAP successfully achieved its research goals and identified many queries for future research. The inaugural season of the CCDAP successfully determined the final form of Structures A-1, A-18, A-20, and A-22. Additionally, excavations revealed glimpses into the long and complex construction history of the structures surrounding the Upper Plaza. SfM mapping of Structure A-15 successfully recorded the

exterior of the mound as well as the interior looters' trenches/tunnels. The SfM models will be analyzed for architectural sequences, and future investigations will continue to explore early architecture via excavation of the monumental architecture surrounding the Upper Plaza.

The final form and function of some of the architectural elements in Courtyard A-3 were also determined. Excavations revealed that the plaza was a single construction episode surrounded by buildings consisting of at least two construction episodes. Excavation of Structure A-23 revealed a large amount of broken utilitarian vessels, animal bone, and cutting implements suggesting that this area was most likely used as a food preparation area.

Excavations of the processional architecture determined the final form and construction history of the east and west *sacbeob* and revealed they were both constructed in a single event, but take different forms. Excavations in Courtyard D-1 revealed the form of the final two construction episodes of Structure D-1, as well as an intrusive burial. All three areas of Chan Chich that were investigated this season revealed evidence of Late Classic occupation. Courtyard A-3 also provided evidence for a Terminal Classic occupation, while the Upper Plaza has yet to present any evidence of a Terminal Classic occupation. This may suggest activity was refocused away from the Upper Plaza during this period.

Finally, survey conducted by BEAST identified 117 previously unrecorded structures and revisited four archaeological sites. The efforts of BEAST provided many avenues for future investigations within the permit area, including the proposed 2015 investigations of Qualm Hill camp. Additionally, BEAST demonstrated the effectiveness of drone survey over cleared landscapes.

In sum, the results of the 2014 season of the Chan Chich Archaeological Project combine to inform on the complex and dynamically changing urban landscape surrounding the ancient city of Chan Chich. Excavations in and around the urban epicenter continue to expose its complex and long-lived construction history, while survey work in the region is helping to define the cultural landscape that constitutes

Chan Chich's urban hinterland. Future work will build on these results with a continued focus on delineating chronology, particularly among early architectural features, and tracing dynastic architectural change and kingship at the site from the Terminal Preclassic through its abandonment in the Terminal Classic period.

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