Supplemental Text 1. Survey methods and conditions.

The settlement data I utilize in this study were collected in my 2005 survey of 105 square kilometers of Chiapa de Corzo and its hinterland. Survey boundaries were established following natural landforms and arbitrary modern features. A few gaps within the intended study area were not surveyed due to a failure to gain permission to enter properties. The survey was executed by myself and three to four local workers walking transects spaced at 50 m intervals. Systematic 100 percent surface collections delineated by stake-and-leash, with 3 m radii, were taken from each ha within the survey area where artifact densities were .5 or more artifacts per square meter. Non-systematic collections were taken from hectares with densities of less than .5 artifacts per square meter, but these collections have not yet been analyzed and are not included in this paper. Collection locations were plotted using a Magellan SportTrak Map GPS unit, with a margin of horizontal positioning error of between five and 15 m.

The use of systematic 100 percent collections of artifacts eliminates some of the bias introduced by the tendency among field workers (with any level of experience) towards collecting or focusing on especially interesting or unusual artifacts at the expense of more ordinary, or less spectacular artifacts. While controlled collections can take slightly longer than grab samples, the data they provide are more useful than subjective estimates of densities, which can differ between individuals, and are less precise (Blanton et al. 1982:9; Kowalewski et al. 1989:25).

Controlled collections also alleviate the problem of distinguishing "sites" from "background noise" (Gallant 1986:408-409), as all areas where artifact densities are high enough are subjected to these collections, whereas lower density areas receive general

collections. Contiguous collection units can be viewed as delimiting traditionally defined sites, and collection units that did not meet density thresholds for controlled collections can either be classified as background noise, or as sites, depending on what threshold the analyst is employing to define these units. As noted in the main text of this article, general collections were not included in the analysis, and as such are treated as background noise. Nonetheless, as discussed below variable surface visibility remains a problem.

The strategy of systematic full coverage survey was employed here rather than a probabilistic sampling strategy, as the former is more suited to the collection of information on settlement hierarchies, the spatial relationships of settlements, and the range of variability among settlements (DeMontmollin 1988:164). Settlements were identified as relatively dense surface distributions of artifacts surrounded by areas of sparse or no artifact distribution. Collection buffers were linked into settlements by calculating the distribution of diagnostic ceramics within controlled collections utilizing a quartic kernel density analysis provided by Crimestat (Levine 2004). Site area here is presented in terms of the 1 ha buffers around each collection. Ideally a full coverage survey should be able to identify all levels of the political hierarchy and the settlement hierarchy, however, as discussed below, it is unlikely that the survey extended over the full territory of the Chiapa de Corzo polity.

Ceramics from the Early Formative through the Terminal Formative were classified primarily following John E. Clark and David Cheatham (2005), with some use of types from other sources (Bryant et al. 2005a, 2005b; Lee 1974; Sanders 1961). The delineation

of settlement boundaries by phase was calculated in a GIS using one ha buffers, once the analysis was completed

The natural vegetation within the study area is variable but generally corresponds to a tropical sub-humid environment, including short scrub savannah, thorn forests, Nangaña (*Gymnopodium antigonoides*) forest, and mixed tropical deciduous forest. Bordering the rivers, and at the base of Cerro Hueco, are stands of tropical evergreen forests. About 49 percent of the study area has been cleared for cultivation, with visibility ranging from 50 to 100 percent. About 24 percent of the survey area was in forest of varying ages, and about 27 percent in grass cover (predominantly fallow fields), with visibility ranging from 0 to 40 percent. In forested areas were visibility was impaired by leaf litter we generally, but not always, cleared areas with machetes in each hectare in order to evaluate artifact densities. We also took advantage of rodent burrows in areas with low visibility to identify artifact concentrations. Grassy areas remained somewhat problematic, and occupation in these areas is likely underrepresented. Surface visibility varied from the start of the survey season to the end, with the highest visibility present toward the end of May, when some farmers burn their fields and many fields are cleared for cultivation.

In some of the low-lying areas along the Santo Domingo River and some of the margins of the Grijalva River cultural deposits are frequently deeply buried beneath alluvium. In response to this problem opportunistic samples were taken from the backdirt piles of brick quarries, which are common along the Santo Domingo River. Nonetheless, the frequent presence of artifacts in these quarry excavations suggest that much of the settlement in the floodplain and first terraces of these rivers may remain undetected,

especially with respect to the Early Formative phases (Sullivan 2009:34). On the other hand, artifact distributions around these quarries are often more concentrated than in other surface contexts, because they consist of sherds cast off by workers in the process of making bricks. As such, controlled collections from these areas may reflect artificially high concentrations of ceramics compared to non-quarry contexts. In terms of total population estimates these two factors may come close to balancing each other out, but the extent to which this is the case is uncertain.

To deal with this potential bias imposed by different contexts I multiplied the counts of diagnostic ceramics from controlled collections from excavated contexts by a factor that reduced the highest value to conform to the highest count of diagnostics from collections of ordinary surface contexts for that phase. The resulting transformation reduces the highest value of Dili phase quarry collection with 24 diagnostic sherds to 9 sherds, and the values of all other Dili phase quarry contexts are adjusted using the same transformation (e.g. multiplied by 0.375). For each phase the transformation for quarry collections is correspondingly distinct. These transformations were not applied to the sherd counts presented in Table 1.

Survey coverage averaged about 0.92 km per day, in 114 days of field work, to a total of approximately 105 km² (excluding approximately 3 km² of rivers in the survey area). A total of 163 sites (defined achronically by concentrations of all artifacts or architectural features separated by 100 m. or less) were recorded by this project, with occupation ranging from the Early Formative through the Colonial Period, and including one possible pre-ceramic site (Sullivan 2009: Appendix E).

Supplemental Text 2. Absolute population estimates and polity size.

The absolute population estimates are derived from a mean of two baselines; the upper baseline is derived from a correlation of population estimates at the Chiapanec capital (modified from Diaz [2001]) to Postclassic ceramic densities from the outskirts of the modern city, which were extrapolated to the area of the entire settlement; the lower baseline is derived from a correlation of counts of stone house foundations and housemounds at the Postclassic site of Nandalumí to Postclassic DAI/C values at that site (Sullivan 2009:38-48; 2012:31-32).

As the extent of the 2005 survey does not encompass what was likely the entire territory of Chiapa de Corzo in any of the phases considered here, I also advance population estimates for the polity as a whole in each phase. To this end, using a variant of Waldo Tobler's Hiking Function (1993:3), I calculate the area of the polity in each phase using a cost distance analysis between contemporary neighboring political centers (Sullivan 2009:325-326), resulting in a series of abutting shapes that are roughly akin to Thiessen polygons, but adjusted to the local topography. The size estimates of the polity therefore change over time, taking into account the rise and fall of neighboring political centers. Polity population totals were estimated by calculating population densities within 1 to 2 hour walking distance zones from the capital. I then apply the observed fall-off rate of population density for each phase within the survey area to the entire estimated polity area (excluding areas where previous surveys documented the lack of Formative Period materials) (Sullivan 2009:87-89).

The estimates for the size of the Dili phase polity and the population of the polity adhere to those presented in Sullivan (2009:88) and are smaller than those of Sullivan

(2012:32) due to differences in the method of creating the cost surface employed in calculating polity size. The polity size estimates employed in Sullivan (2012) were calculated using the cost path function in ArcGIS 9.1 spatial analysis, utilizing a table of Tobler's hiking function values (1993) following the methodology presented in Tripcevich (2006), . While this methodology produced results that are technically correct, the methodology employed in Sullivan (2009: 58, Appendix B) produced results that are intuitively more satisfying. For example, the cost of climbing or descending the steep slopes and cliffs of Cerro Hueco on the west margin of the survey area would appear to be substantially greater than the results produced by the methods presented in Tripcevich (2006), and utilized in Sullivan (2012:32). The Sullivan (2009) methodology is correspondingly utilized in calculations of polity size for all phases in this paper.

In the methodology employed in Sullivan (2009), I lacked information on how to execute the method outlined Tripcevich (2006), which is considerably more simple and straightforward to execute (at least in ArcGIS 9.1). In Sullivan (2009) I converted a dataset of slopes in the area of interest into a cost surface using the inverse of Waldo Tobler's hiking function (1993:3). The methodology involved in calculating cost surfaces could certainly use more work, but as it forms a miniscule part of this paper it is not considered in detail here. A recent useful discussion of problems and potentials inherent in different methods of calculating cost surfaces, and potential solutions is presented in Herzog (2013).

Supplemental Text 3. Methods of Calculating Volume and Labor Estimates

Excavations into structures within the ceremonial zone at Chiapa de Corzo have varied in extent and in the detail of stratigraphic information recorded, but on the whole provide a basis to infer the size and layout of many buildings within the ceremonial zone for each phase. From the Dili phase through the Francesa phase, construction at Chiapa de Corzo was primarily conducted through piling basket-loads of dirt into platforms and stepped pyramid structures that were subsequently finished with an adobe or clay plaster, underlain by cobbles (Hicks and Rozaire 1960:5; Mason 1960a: Figure 3). Superstructures appear to have been perishable wattle and daub constructions. At the beginning of the Guanacaste phase (and elsewhere in the Chiapas Central Depression during the preceding Francesa phase (McDonald 1999:63; Navarrete 1959)) cut-stone and lime-plaster techniques were adopted within the Chiapa de Corzo ceremonial zone.

Volumetric data were calculated for the site of Chiapa de Corzo using existing topographic maps, and estimates of mound size derived from the excavation data at Chiapa de Corzo. The estimates of labor investments advanced in this paper differ from those advanced in Sullivan (2009) because of changes in methods of calculating both volume and labor investment described below, as well as the addition of Dili phase construction sequence in Mound 11, documented in Bachand and Lowe (2011a), and clarified through a personal communication with Bruce Bachand (2012).

In estimating volumes of mounds at Chiapa de Corzo I created a triangulated irregular network (TIN) from a reconstruction of the topography of Chiapa de Corzo in each phase using ArcGIS 10.0 3D Analyst. I then calculated the volume and surface area for each mound using the Polygon Volume tool, under 3D Analysis Tools in ArcGIS 10. Volumes of construction from previous phases of each mound were then subtracted to arrive at the

volume of each mound within the phase. For mounds at hinterland sites, volume was calculated by averaging the area at the top and the base of each structure and multiplying this by the height.

The costs of moving earth and cobble fill are calculated using Aarberg and Bonsignore's (1975:46) formula ($Q \times \frac{1}{(L/V+L/V')} \times H$) for moving earth, "where Q = quantity of earth per load, L = transport distance (m), v = velocity (loaded), v'= velocity (unloaded), and H = hours per day" (Abrams 1994:47). Following Abrams (1994:48), Q is set as 22 kg, v as 3 km/h, v' as 5 km/h, and H as 5. For earth and cobble fill I estimate the procurement distance of 50 m. Limestone cobbles are common on the surface around Chiapa de Corzo, especially in areas without mounds, and there is no reason to believe that either earth or cobbles were procured from much further away. My observations of the composition of mound fill at Chiapa de Corzo suggest that cobbles composed about 10% or less of each construction phase. As such, I allocate 90 % of the volume cost to earth fill and 10% to cobble fill

For the Guanacaste and Horcones phases, I provide estimates for the additional costs of stone masonry for side surface areas and limestone plaster facing for all surface areas. Cost estimates for the quarrying and preparation of limestone block are drawn from James C. Woods and Gene L. Titmus analysis of labor costs for procuring limestone block at the site of Nakbe (1996:298-305), as the masonry of Chiapa de Corzo was manufactured from this material rather than the softer volcanic tuff used in Copan masonry (Abrams 1994:45). It is not currently known where the limestone utilized in cut-stone facing of the Guanacaste and Horcones phases was quarried from, or where the lime

plaster was prepared. In calculating transportation costs for both of these resources I utilize a distance of 0.6 km, the same figure employed by Webster and Kirker (1995:370).

I estimate the volume of masonry blocks in structures through a calculation of the surface area of the sides of mounds, with an estimate of 4.22 m² covered by each cubic m of block, a figure derived from Webster and Kirker (1995:369). The estimates I employ ignore the real possibility that masonry blocks were recycled from the Guanacaste to the Horcones phase. No estimates of labor costs were attempted for superstructures, which in most cases appear to have been perishable wattle and daub structures (the Horcones phase Mound 5 [Lowe 1962:5-34] and Mound 3 [Tucker 1970] superstructures being significant exceptions). A summary of labor costs for individual tasks is provided in Supplemental Table 1.

Supplemental Text 4. La Venta Chronology

An earlier draft of this paper included a more pronounced presumption that the site of La Venta, Tabasco was the source of the MFC pattern, following John Clark (Clark and Hansen 2001:3, 6). While this presumption is not critical to the arguments in this paper, and has largely been removed from the text, it is worth a brief discussion. The available data indicate that the northern mound of the MFC configurations at La Venta, Mound C-1, dates to the Middle Formative period. However, when its first stages were constructed remains speculative (Berger et al. 1967:13; Drucker et al. 1959:264-267; González Lauck 1997:81; Heizer 1968:19; Pool 2007:160). The currently available dates from Mound C-1 are later than the earliest construction phases represented at the MFC at

Chiapa de Corzo (Bachand et al. 2008; Bachand and Lowe 2011a, 2011b; 2012:Table 4; Lowe 1962:56; Mason 1960a:3; 1960b:1), and later than Ceibal's E-group in the Maya lowlands (Inomata et al. 2013a:467; 2013b:3-4).

Inomata et al. interpret the results of their Bayesian statistical reanalysis of an assortment of carbon dates from La Venta (2013a:468, 2013b: 5-6) as suggesting that the site may have been a relatively minor settlement before 800 BC. On the other hand, three of the four dates from carbon collected around the civic-ceremonial precinct produced dates ranging from 1400-900 BC (Berger et al. 1967:3) (which Inomata et al find problematic for a number of valid reasons [2013b:6]), which leave open the possibility that the ceremonial precinct is relatively early. Mound C-1 is very large and likely contains multiple building episodes, but until further archaeological excavations at La Venta take place, the presumption of the site as the source of the MFC pattern remains speculative.

Supplemental Text 5. Notes on the MFC pattern and the subsequent Late/Terminal Formative E-Group configuration

The Middle Formative Chiapas (MFC) configuration.

Clark and Hansen describe the MFC pattern as consisting of "a north-to-south axial arrangement of regularly spaced pyramidal platforms and plazas. The tallest platform or pyramid is located to the north, and in the south is a paired arrangement of a long, low mound flanked on the west by a tall pyramid" (2001:4). This pattern of an E-Group, with an acropolis like structure to the northeast is repeated at least at six contemporary sites in

and around the Chiapas Central Depression (Clark and Hansen 2001:5). The positional equivalent of La Venta's Mound C-1, located approximately 510 m to the north of the center of the E-Group at La Venta, is present at the site of Chiapa de Corzo in Mound 36. Rougher equivalents are present at Ocozocoautla, Tzutzuculi, La Libertad, (the equivalent at each of these sites is about 200 m closer to the E-group), and possibly Mirador, Chiapas[1] (see Figure 1, Supplemental Figure 1). The contemporary political centers of San Isidro and Finca Acapulco, both of which had earlier occupations than Chiapa de Corzo, lack this equivalent. The contemporary lowland Maya site of Ceibal appears to lack a northern mound, as do Late Formative Lowland Maya sites with E-groups.

This contrast suggests that Chiapa de Corzo and the other sites with La Venta Mound C-1 equivalents shared aspects of ritual behavior with La Venta that these other sites did not. Given the markedly larger dimensions of the space delineated by the Mound C-1 equivalent, these aspects may have involved the participation of a greater number of the general population.

Significantly, the initial layout of Chiapa de Corzo's civic ceremonial zone lacks an equivalent to La Venta's A/C Complex (as do all other sites with the MFC pattern in Chiapas) (Clark and Hansen 2001:5). While we still do not know the chronological relationship of Complex A/C at La Venta to the C/B/Central Plaza complex, the absence of an equivalent space in the initial layout of the Chiapa de Corzo civic-ceremonial zone is interesting. The area where an equivalent to La Venta's Complex A would lie at Chiapa de Corzo is located in the valley directly to the north of Mound 36, which makes it clear that the original designers of the civic-ceremonial zone at Chiapa de Corzo did

not anticipate the need for this sort of complex. The Dili phase sponsors of this construction appear rejected the need for a restricted access elite civic-ceremonial zone, but otherwise replicated (or followed the same template as) the open plaza design of La Venta's Central Plaza.

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Robert M. Rosenswig et al. (2013:1504-1506) tentatively identify an E-group at Izapa with LIDAR imagery of Mounds 71 and 73, which they point out, is located (about 280 m) to the south of Mound 30a, which dates to between 850 and 750 cal. BC. To the extent that the Izapa arrangement can be considered an E-group (the long mound, 73, is unusually short relative to the size of Mound 71), Mound 62 is located to the northeast of the long mound, 73, which could have served as an acropolis (Rosenswig et al. 2013: Figure 11a). If the Mound 30a stood as an equivalent to La Venta's C-1 and Chiapa de Corzo's Mound 36, then Izapa can be characterized as containing the complete MFC pattern, with the shorter plaza arrangement described above for Ocozocoautla, Tzutzuculi, and La Libertad.

The Guanacaste and Horcones E-Group configuration.

As noted in the main text of this article, during the Late and Terminal Formative periods at Chiapa de Corzo, constructions on the southern end of the civic-ceremonial

zone reconfigured the E-Group to closely resemble patterns observed at contemporary sites in the Maya Lowlands. There are, however, several important differences between the Late Formative Chiapa de Corzo arrangement and those of the Maya Lowlands. Unlike the Maya E-Groups, the northern side of the Chiapa de Corzo E-Group and E-groups at other sites in the Chiapas Central Depression, was not delineated by a mound, which likely reflects a degree of continuity with the Middle Formative period ceremonies that continued to take place in the MFC complex. Another salient difference is the absence of triadic temple arrangements that are prevalent in E-Group arrangements in the Maya Lowlands from the Late Formative period (Hansen 1998:71-81; Taube 1998:468). Among other things, these data suggest that differences between the E-Groups in the Chiapas Central depression and those of the Maya Lowlands are not soley the product of independent and parallel developments (e.g. Doyle 2012:358), but also resulted from elite interaction and the exchange of ideas between the two areas.

[1] At Mirador the La Venta C-1 equivalent, M33 is small (about 70 cm. tall, and about 22 m in dia.) and currently separated from the rest of the group by a steep-walled gully (Agrinier 2000: Figure 1).

Supplemental Text 6. Burial Data from Chiapa de Corzo

Dili phase

Burials from the Dili phase are still rare. As of this writing five Dili phase burials have been recovered (Supplemental Table 2); four of these (Agrinier 1964:9; Lowe and Agrinier 1960:54) were simple interments with a single jade bead associated with one of them. Bachand et al. encountered a late Dili phase/early Escalera phase burial at the base

of Mound 11 (Burial C-1), which was accompanied by a serpentine bead, a shell, a pair of roughly made greenstone earspools, and several greenstone pebbles, as well as three pots which included a fancy shell-shaped pot similar in form to pots documented in the Gulf Olmec region (2008:113, 118, 140). The contents of Burial C-1 suggest that towards the end of the Dili phase status differentiation was expressed in burials, but was much less pronounced than it would become in the subsequent Escalera phase (Supplemental Tables 2-3).

Escalera phase

Burial evidence for increasing social differentiation between subjects and rulers becomes more pronounced in the Escalera phase than in the Dili phase (Supplemental Table 3). One of the most spectacular burials at Chiapa de Corzo came from Mound 17; Burial 11, a tomb burial that contained a female, age estimated at over 40 years, accompanied by eight vessels, several of which appear to be copies of La Venta ceramics and at least one of which appears to be a La Venta import (Clark 2000:50). This burial is also the one of the richest burials found at the site, with 13 pieces of shell, and 60 jade ornaments, and two alabaster tecomates (Clark 2000:50; Lee and Clark 2015). Clark, on the basis of the quantity of La Venta imports and La Venta-like ceramics in this burial has suggested that this woman was from the La Venta royal lineage, brought in to Chiapa de Corzo through a hypogamous marriage designed to strengthen or establish a new royal lineage (2000:48). Cheetham and Lee (2004) find further support for a La Venta identity for the lineage that resided on the Mound 17 platform in the large quantity of imported La Venta ceramics in the fill of this mound.

Recent excavations into Mound 11 at Chiapa de Corzo (Bachand and Lowe 2011a:81-82, 2012:50-64) uncovered an Escalera phase royal burial, Tomb 1, which contained two richly furnished principal individuals and a retainer, with burial goods from the Gulf Coast, the Pacific Coast, jade from the Motagua Valley of Guatemala, and Pachuca obsidian from Central Mexico. Two later richly furnished Escalera phase burials, uncovered in the partially excavated Burial 4, also in a tomb, were also found in Mound 11 (Bachand and Lowe 2011a:82; Lowe 2013:23). These burials, paired with the Mound 17 burial, indicate that some individuals were highly privileged over others, at least in death, during the Escalera phase. The individuals in Tomb 1 of Mound 11, and Burial 11 from Mound 17 were accompanied by La Venta style ceramics and/or ornaments (Bachand and Lowe 2011a:83, 2012:57-63). Bachand and Lowe hesitate to attribute the data from the Mound 11 burials as evidence for "influence" from La Venta, due primarily to chronological uncertainties between the dates of ceramic styles at the two sites (2011a:83, 2012: 62-64). Nonetheless, this evidence suggests that the royal lineage were claiming a distinct ancestry from their subjects, an ancestry that may have been linked to the La Venta dynasty.

Francesa phase

The sample size of burials from the Francesa phase is relatively robust, with 86 burials currently attributed to the phase, the majority of which were buried with a relatively humble assortment of offerings (Supplemental Table 4). Of the 86 burials, 41 were located in what would become the Mound 1 plaza. In contrast to what we know of previous and subsequent phases, there was a remarkable integration of people of varying statuses within this burial population, as some of the richest burials at the site, in terms of

shell (Burials 127 with 104 pieces) and jade (Burial 115 with 305 pieces) were found in this area. With the exception of several of the Francesa phase Mound 17 burials, mound burials during this phase are not remarkable in terms of grave goods. If we exclude the outlier of the Mound 17 Burial 6 tomb burial and its retainers, which as discussed below, may date to the Escalera or Francesa phase, the 38 mound burials have a mean vessel count of 3.13, a mean shell ornament count of 3.64, and a mean jade ornament count of 1.65, compared to the 49 non-mound burials, which have a mean vessel count of 2.17, a mean shell ornament count of 6 and a mean jade ornament count of 11.53. Out of the 36 mound burials, 89 percent were accompanied by vessels, 22 percent by shell ornaments, and 22 percent by jade ornaments. Of the 48 non-mound burials 75 percent had ceramics, 19 had shell ornaments, and 21 percent had jade ornaments. These data reflect a lack of strong distinctions between the mound and non-mound burial population in terms of goods.

Guanacaste and Horcones phases

The existing sample of burials from the Guanacaste and Horcones phases (Supplemental Tables 5 and 6) is heavily skewed towards the elite, with 31 of the 38 known Guanacaste phase burials and all ten of the Horcones burials coming from inside of cut-stone and plastered structures (Agrinier 1964:33-37; 1975:33-39; Lowe and Agrinier 1960:39-54; Martinez Espinoza and Lowe ca. 1989; Tucker 1970:39-52). During the Guanacaste phase the use of tomb burials was revived at Chiapa de Corzo, with one tomb found in Mound 32 (Martinez Espinoza and Lowe ca. 1989) near the northern margin of the site, another at the northwestern base of Mound 3 (Lowe 1962:38)

and one in the early stages of Mound 1 (Agrinier 1964:33; Lowe and Agrinier 1960:47-52).

Guanacaste phase mound burials were markedly better furnished than non-mound burials, with mean counts of 6.7 vessels, 1.7 shell ornaments, and 4.3 pieces of jade for mound burials, compared to 3.3 vessels, zero shell and .1 jade ornaments in the non-burial population. Of the 32 mound burials 94 percent had ceramic vessels, 23 percent had shell ornaments and 13 percent had jade ornaments, although no jade ornaments were found in Mound 3. In the six non-mound burials 48 percent had ceramic vessels, none had shell ornaments, and about 2 percent (n=1) had jade ornaments (Supplemental Table 5). These data suggest much more pronounced differences in grave furnishings between mound and non-mound contexts, and a greater segregation of the burial population by status than was present in the Francesa phase.

Notably, the ceramic inventory of the richly furnished Guanacaste Mound 1 tomb burial (Tomb 7) consisted of 35 vessels, all of which appear to have been imported from around Mesoamerica, with origins including El Salvador, Oaxaca, the Gulf Coast, and the Maya Lowlands of Guatemala (Agrinier 1964: 33; Lowe and Agrinier 1960: 49). This is also the only known burial at the site from the Guanacaste phase with earplugs (two others had earspools). The exclusively foreign ceramic assemblage of Mound 1's Tomb 7 contrasts strongly with the predominantly local assemblages of the 20 Mound 3 burials (an elite residential structure located to the southwest of the Mound 1 plaza) (Tucker 1970) and the exclusively local assemblages of Mound 32 (a temple on the northern margin of the MFC civic-ceremonial zone) tombs (Martinez and Lowe ca. 1989). This inclusion of an inventory of entirely imported vessels, as well as the unusual ear

ornamentation, may reflect an emphasis on the interaction of the ruler with a variety of external polities. The contrast in mortuary assemblies between Mound 1 and Mounds 3 and 32, may reflect an emphasis on the differences between the royal lineage and non-royal elite lineages in the Guanacaste phase.

It is also worth mentioning that the two burials from Mound 17 (2a and 2b), attributed to the Guanacaste phase by Lee (ca. 1971) are described as containing Mundet Red and Nicapa Resist ceramics, which following the current ceramic chronology are more characteristic of the Francesa and Escalera phases, respectively (Bryant et al. 2005:166-177,179-195, 198-225; Clark and Cheetham 2005:378-385, 395).

All of the ten known burials from the Horcones phase are from the elite contexts of Mound 1 (Agrinier 1964:37; Lowe and Agrinier 1960:39-47) and Mound 3 (Tucker 1970). All of the four Horcones burials in Mound 1 were tomb burials, and jade ornaments were restricted to the Mound 1 burials. All but one of the Mound 1 tombs had been re-opened to remove body parts and objects during and immediately after the Horcones phase, either in rites of ancestor veneration or desecration. What remained of the looted Mound 1 burials suggest that they were furnished with an abundance of exotic ceramics, such as Usulutan wares from El Salvador, and vessels from the Maya Lowlands (Lowe and Agrinier 1960:39-49).

Two of the five Horcones Mound 3 burials were accompanied by ornaments of imported shell. One of these was a tomb and the other a cist burial. The Mound 3 tomb burial, C-3-217, also had bone earspools (Tucker 1970). Vessels imported from the Maya Lowlands were present but infrequent in the Mound 3 burials and Usulutan wares were absent. While the Horcones burial sample size is very small, the differences

between the Mound 1 burials and the Mound 3 burials suggest that the differentiation between rulers and lower tier elites continued into this phase. The absence of any Horcones phase commoner burials may indicate an alternate form of mortuary treatment for commoners, or simply that the commoner burial ground has not yet been discovered.

Supplemental Text 7. Details on the Francesa phase (500-300 BC) occupation.

During the Francesa phase Chiapa de Corzo reached its peak Formative period population, estimated at around 1700 people. One significant development in the Francesa phase civic-ceremonial zone at Chiapa de Corzo was the conversion of the swampy area or reservoir to the south of the E-Group into a cemetery, in what would later become the Mound 5 plaza (Lowe 1964:68). The burials in this cemetery, as noted in Supplemental Text 6, ranged from individuals unaccompanied by burial goods to lavishly furnished burials with abundant marine shell, jade, and fancy vessels, suggesting that different social classes were relatively integrated, at least in death.

Apart from the Mound 5 plaza modification there appear to have been few significant alterations to the central part of the civic-ceremonial zone during the Francesa phase. The existing Mounds 7, 11, 12, 13, 17, and 36 were all expanded, and a few mounds appear to have been added to the periphery of the central civic-ceremonial space (Bachand et al 2008; Bachand and Lowe 2011a; Hicks and Rozaire 1960; Lowe 1962; Mason 1960a, 1960b). Mound 7 was also modified to conform to the dominant architectural orientation during this phase (Lowe 1962:46). But these changes would not have strongly affected the structure of ceremonies within the MFC ceremonial zone.

Nonetheless, the infilling and conversion of what was likely a Dili and Escalera phase reservoir into a cemetery, a cemetery that evidently accommodated elites and commoners alike, marks a strong transition in the use and meaning of this space.

Control over Labor and the Expression of Status Differentiation

The Francesa phase architectural additions to Mounds 7, 11, 12, 13, 17, and 36, combined with the new constructions of Mounds 4, 8, and 33 total approximately 21,472 m^3. This results in an estimated investment of about 22,403 person days, or 65 days with 20 percent of the estimated population of Chiapa de Corzo. Labor investments into filling the reservoir are not included in these calculations. Most of the mound construction in the ceremonial precinct over the course of this phase appears to have been incremental, and likely imposed no serious burden on the local population.

Rulers may have been afforded privileged burial treatment, as suggested by the discovery of Burial 6 in Mound 17, an adult male buried atop two retainers, one of the most lavishly furnished burials yet found at Chiapa de Corzo in terms of shell and jade artifacts (Lee 1971:23; Lee and Clark ca. 2015; Lowe 2013). However, it is notable that the second richest burial in terms of jade (Burial 115) and shell (Burial 127) both come from the Mound 1 plaza, which, as noted above, also contains numerous Francesa burials with very few and humble goods, or no goods (Agrinier 1964:10-33). Furthermore, there is currently no evidence for tomb burials in the Francesa phase despite Escalera phase precedents.

In a geopolitical context it is important to remember that during the early part of the Francesa phase the Gulf Coast Olmec site of La Venta appears to have been largely abandoned (González Lauck 1995:38; 1997:93; vonNagy 2003:1018-1035). Given the evidence for ties between the Escalera phase ruling lineage of Chiapa de Corzo to the rulers of La Venta, this collapse may have negatively affected the status of the ruling dynasty at Chiapa de Corzo. Nonetheless, ceremonial activities at the center and the overall system of governance appear to have been largely unaffected. Indeed, the system of governance may have grown more complex and integrated the hinterland to a greater extent than it had in the Escalera phase.

Political Organization in the Hinterland

The total population within the survey area remained largely unchanged, but villages decreased slightly in size and Chiapa de Corzo continued to grow. The change in the number of people living in villages as opposed to hamlets is significant but not at all strong (χ^2=10.2 $p < .01$ V= .033). Four of the 11 Escalera phase hinterland villages maintained populations of over 100 into the Francesa phase (six of these were reduced to hamlets, and one was abandoned) (see Figures 7a and 7b). Compared to the Dili - Escalera transition, this is a relatively stable transition; however, it does suggest that the rulers at Chiapa de Corzo continued to forcibly resettle people.

Within the survey area the Escalera phase political hierarchy remained largely intact, with some reduction in the ability of hinterland leaders to attract followers into their settlements; all but one of the Escalera phase lower tier political centers continued to be

occupied. Of the three second tier political centers from the Escalera phase, Ribera Amatal remained the second largest settlement in the survey area after Chiapa de Corzo, one was abandoned, and another declined in population from a village to a hamlet.

On the other hand, about 40 km west of Chiapa de Corzo, about half the distance towards the coeval political center of Ocozocoautla (see Figure 1), the second tier center of San Agustin was built during the Francesa phase. San Agustin had a 5.25 m tall platform mound measuring about 17 x 29 m. A richly furnished Francesa phase cist burial, consisting of a principal burial with a retainer, was found inside of this structure (Navarrete 1959: 5). The furnishings of this burial suggest that the individual interred here was of a royal lineage. The residential platform of this site shares Francesa phase construction techniques with Chiapa de Corzo (but also with Ocozocoautla [McDonald 1999:63]), as well as the Chiapa de Corzo orientation of approximately 28˚east of true north (Navarrete 1959). The shared orientation suggests that elites at this site were subject to, or affiliated with, the Chiapa de Corzo ruling lineage, rather than rulers of an independent polity or subjects to the large site of Ocozocoautla, which has a very different orientation from that of Chiapa de Corzo. The site of San Agustin provides stronger evidence for a three tiered political hierarchy in the Francesa phase than is currently available for the Escalera phase.

The available data from construction and burial activity at Chiapa de Corzo suggest that status differences may have declined with the demise of the ruler's allies or overlords at La Venta. Despite this decline, new construction and the expansion of earlier architecture appears to have continued largely unabated at Chiapa de Corzo, and with the notable exception of the conversion of the reservoir to the southeast of the E-group into a

cemetery, ceremonial activity does not appear to have been strongly altered. At the same time, the survey data, and data from excavations at San Agustin, suggest that aside from some minor population declines in hinterland settlements, the political hierarchy was largely unaffected by these changes.

Supplemental Text 8. Broader context of Late and Terminal Formative population declines at Chiapa de Corzo.

Broader political or ecological trends may also have had a role in this process, as the frequency of sites declined Chiapas Central Depression during the Late Formative (Bryant et al. 2005:265; Warren 1978:Figures 6 and 7). At Izapa in the Soconusco population may have also declined, as there is a reduction in the number of occupied mounds during the Late Formative period (Rosenswig et al. 2013:1502). However it is not yet clear whether this decrease in occupied area took place in the face of a stable or increasing population in the Izapa hinterland, or if as in the Upper Grijalva and parts of the Central Depression Chiapas outside of the Chiapa de Corzo survey area, took place in a context of overall population decline.

References

Aarberg, S and J Bonsignore

1975. A Consideration of Time and labor Expenditure in the Construction Process at the Teotihuacan Pyraid of the Sun and the Poverty Point Mound. . In *Three Papers on Mesoamerican Archaeology*, edited by J. A. Graham and R. F. Heizer, pp. 40-78. Contributions of the University of California Research Facility. University of California., Berkeley, California.

Abrams, Elliot M.

1994 *How the Maya Built their World: Energetics and Ancient Architecture*. University of Texas Press, Austin, Texas.

Agrinier, Pierre

1964 *The Archaeological Burials at Chiapa de Corzo and Their Furniture*. Papers of the New World Archaeological Foundation, no. 16. Brigham Young University, Provo, Utah.

1975 *Mound 1a: A Late Preclassic Architectural Complex*. Papers of the New World Archaeological Foundation. Brigham Young University, Provo, Utah.

Bachand, Bruce R. , Lynneth S. Lowe and Emiliano Gallaga

2008 *Chiapa de Corzo Archaeological Report of the 2008 field season, English version of report*.

Bachand, Bruce R. and Lynneth S. Lowe

2011a. Chiapa de Corzo y los olmecas. *Arqueología Mexicana* 107:74-83.

2011b *La Tumba del Montículo 11 de Chiapa de Corzo y los Olmecas del Formativo Medio.* Paper presented at the Encuentro Arqueología de Chiapas: Avances e Interpretaciones Recientes: 60ª aniversario de la fundación arqueolígica del nuevo mundo., San Cristobal de las Casas, Chiapas, Mexico.

2012. Chiapa de Corzo's Mound 11 Tomb and the Middle Formative Olmec. In *Arqueología Reciente de Chiapas: Contribuciones del Encuentro Celebrado en el 60 Aniversario de la Fundación Arqueológica Nuevo Mundo*, edited by L. S. Lowe and M. E. Pye, pp. 45-68. Papers of the New World Archaeological Foundation. vol. 72. Brigham Young University, Provo, Utah.

Berger, Rainer, John A. Graham and Robert F. Heizer

1967. A Reconsideration of the Age of the La Venta Site. *Contributions of the University of California Archaeological Research Facility* Studies in Olmec Archaeology:1-24.

Blanton, Richard E., Stephen A. Kowalewski, Gary M. Feinman and Jill Appel

1982 *Monte Alban's Hinterland, Part 1: The Prehispanic Settlement Patterns of the Central and Southern Parts of the Valey of Oaxaca, Mexico.* Prehistory and Human Ecology of the Valley of Oaxaca, V. 7. University of Michigan Museum, Ann Arbor, Michigan.

Bryant, Douglas Donne, John E. Clark and David Cheetham

2005 *Ceramic Sequence of the Upper Grijalva Region, Chiapas, Mexico, Part 1*. Papers of the New World Archaeological Foundation, 67. Brigham Young University, Provo, Utah.

Cheetham, David and Thomas A. Lee

2004 Cerámica Zoque Temprana en Chiapa de Corzo: Secuencia, Transición, y Relaciones Externas. In *2004 Anuario, Centro de Estudios Superiores de México y Centroamérica.*, pp. 287-315. Universidad de Ciencias y Artes de Chiapas, Tuxtla Guitierrez, Chiapas, Mexico.

Clark, John E.
2000 Las culturas de Chiapas en el periodo prehispánico. In *Las culturas de Chiapas en el periodo prehispánico*, edited by Dúrdica Ségota, pp. 37-135. CONACULTA, Tuxtla Gutierrez, Chiapas, Mexico.

Clark, John E. and David Cheetham
2005 Cerámica del Formativo de Chiapas. In *La Producción Alfarera en el México Antiguo*, edited by B. L. M. Carrión and Á. G. Cook, pp. 285-434. vol. I. Instituto Nacional de Antropología e Historia, Mexico City.

Clark, John E. and Richard D. Hansen
2001. The Architecture of Early Kingship:Comparative Perspectives on the Origins of the Maya Royal Court. In *Royal courts of the ancient Maya*, edited by I. Takeshi and D. H. Stephen. Westview Press, Boulder, Colo.

DeMontmollin, Olivier
1988. Scales of Settlement Study for Complex Societies: Analytical Issues from the Classic Maya Area. *Journal of Field Archaeology* 15:151-167.

Díaz del Castillo, Bernal
2001 *Historia verdadera de la conquista de la Nueva España*. 2nd ed. Editores Mexicanos Unidos, [Mexico City].

Doyle, James A.
2012. Regroup on "E-Groups": Monumentalitiy and Early Centers in the Middle Preclassic Maya Lowlands. *Latin American Antiquity* 23(4):355-379.

Drucker, Philip, Robert F. Heizer and Robert J. Squier
1959 *Excavations at La Venta, Tabasco, 1955* Bulletin 170. Smithonian Institution Bureau of American Ethnology, Washington, D.C.

Gallant, Thomas W.
1986. "Background Noise" and Site Definition: a Contribution to Survey Methodology. *Journal of Field Archaeology* 13:403-418.

González Cruz, Arnoldo and Martha Cuevas García
1998 *Canto versus canto: manufactura de artefactos líticos en Chiapa de Corzo.* INAH Colección Científica, Mexico, DF.

González Lauck, Rebecca
1995. La Venta: Una Gran Ciudad Olmeca. *Arqueología Mexicana* 11(12):38-42.

1997. Acerca de Pirámides de Tierra y Seres Sobrenaturales: Observaciones Preliminares en Torno al Edificio C-1, La Venta, Tabasco. *Arqueología Mexicana* 17:79-97.

Hansen, Richard
1998. Continuity and Disjunction: The Preclassic Antecedents of Classic Maya Architecture. In *Function and Meaning in Classic Maya Architecture.*, pp. 49-122. Dumbarton Oaks Research Library and Collection, Washington, DC.

Heizer, Robert F.
1968. New Observations on La Venta. In *Dumbarton Oaks Conference on the Olmec, October 28th and 29th, 1967*, edited by E. P. Benson. Dumbarton Oaks Research and Library Collection, Washington, D.C.

Herzog, Irelma
2013. The Potential and Limits of Optimal Path Analysis. In *Computational Approaches to Archaeological Spaces*, edited by A. Bevan and M. Lake, pp. 179-212. West Coast Press, Walnut Creek, California.

Hicks, Fredrick and Charles E. Rozaire
1960 *Mound 13, Chiapa de Corzo, Chiapas, Mexico*. Papers of the New World Archaeological Foundation, No. 10. Brigham Young University, Provo, Utah.

Inomata, Takeshi, Daniela Triadan, Kazuo Aoyama, Victor Castillo and Hitoshi Yonenobu
2013a. Early Ceremonial Constructions at Ceibal, Guatemala, and the Origins of Lowland Maya Civilization. *Science* 340( ):467-471.

2013b. Supplemetary Materials for Early Ceremonial Constructions at Ceibal, Guatemala, and the Origins of Lowland Maya Civilization. *Science* 340S:2-35.

Kowalewski, Stephen A., Gary M. Feinman, Laura M. Finsten, Richard E. Blanton and Laura M. Nichols
1989 *Monte Alban's HInterland, Part II: Prehispanic Settlement Patterns in Tlacolula, Etla, and Ocotlan, the Valley of Oaxaca, Mexico.* Museum of the University of Michigan, Ann Arbor, Michigan.

Lee, Thomas A.
Ca. 1971. Salvage Excavations at Chiapa de Corzo Mound 17. Paper on file at the New World Archaeological Foundation, San Cristobal de las Casas, Chiapas, Mexico.

1974 Mound 4 Excavations at San Isidro, Chiapas, Mexico. Papers of the New World Archaeological Foundation, No. 34. Brigham Young University, Provo, Utah.

Lee, Thomas A. and John E. Clark
Ca. 2016 *Chiapa de Corzo, Mound 17: Comparative Analysis of a Salvage Excavation*. Papers of the New World Archaeological Foundation. Brigham Young University, Provo, Utah. In press.

Levine, Ned
2004 *Crimestat III A Spacial statistics Program for the Analysis of Crime Incident Locations*. Ned Levine and Associates and the National Institute of Justice., Washington, DC.

Lowe, Gareth
1962a *Mound 5 and Minor Excavation, Chiapa De Corzo, Chiapas, Mexico*. Papers of the New World Archaeological Foundation. Brigham Young University, Provo, Utah.

Lowe, Gareth W. and Pierre Agrinier
1960 *Mound 1, Chiapa de Corzo, Chiapas, Mexico*. Papers of the New World Archaeological Foundation. New World Archaeological Foundation, Brigham Young University.

Lowe, Lynneth S.
2013. Origen y desarrollo de las costumbres funerarias de élite en Chiapa de Corzo. In *Religion Maya: Rasgos y Desarrollo Histórico* edited by A. Sheseña, pp. 19-31. UNICACH, Tuxtla Guitierrez.

Martinez Espinoza, Eduardo and Gareth Lowe
ca. 1989. Montículo 32, Chiapa de Corzo, Chiapas: su salvamiento y consolidación.

Mason, J. Alden
1960a *Mound 12, Chiapa de Corzo, Chiapas, Mexico*. Papers of the New World Archaeological Foundation, No. 9. Brigham Young University, Provo, Utah.

1960b *The Terrace to North of Mound 13, Chiapa de Corzo, Chiapas, Mexico*. Papers of the New World Archaeological Foundation, No. 11 . Brigham Young University, Provo, Utah.

Navarrete, Carlos
1959 *Explorations at San Agustin, Chiapas, Mexico*. Papers of the New World Archaeological Foundation. Brigham Young University, Provo, Utah.

Pool, Christopher A.
2007 *Olmec Archaeology and Early Mesoamerica*. Cambridge University Press, New York.

Rosenswig, Robert M., Ricardo López-Torrijos, Caroline E. Antonelli and Rebecca R. Mendelsohn

2013. Lidar Mapping and Surface Survey of the Izapa State on the Tropical Piedmont, Chiapas, Mexico. *Journal of Archaeological Science* 40:1493-1507.

Sanders, William T.

1961 *Ceramic Stratigraphy at Santa Cruz, Chiapas*. Papers of the New World Archaeological Foundation, No.13. Brigham Young University, Provo, Utah.

Sullivan, Timothy D.

2009. The Social and Political Evolution of Chiapa de Corzo, Chiapas, Mexico: An Analysis of Changing Strategies of Rulership in a Middle Formative through Early Classic Mesoamerican Political Center. Ph.D. dissertation Department of Anthropology, University of Pittsburgh, University of Pittsburgh, Pittsburgh, Pennsylvania.

2012. Strategies in the Foundation of the Middle Formative Political Center of Chiapa de Corzo, Chiapas, Mexico. In *Arqueología Reciente de Chiapas: Contribuciones del Encuentro Celebrado en le 60º Aniversario de la Fundación Arqueológica Nuevo Mundo.*, edited by L. S. Lowe and M. E. Pye, pp. 31-44. 72 ed. Papers of the New World Archaeological Foundation. New World Archaeological Foundation, Brigham Young University, Provo, Utah.

Taube, Karl J.

1998. The Jade Hearth: Centrality, Rulership, and the Classic Maya Temple. In *Function and Meaning in Classic Maya Architecture.*, edited by D. H. Stephen, pp. 427-478. Dumbarton Oaks Research Library and Collection, Washington, DC.

Tobler, Waldo

1993 *Non-Isotropic Modeling. Technical Report 93-1*. National Center for Geographical Information and Analysis., Santa Barbara, California.

Tripcevich, Nicholas

2006 *GIS and Anthropology: Workshop 2009, Week 9-Anisotropic cost surfaces*. University of California, Berkeley, Berkeley, California, http://mapaspects.org/courses/gis-and-anthropology/weekly-class-exercises/week-9-anisotropic-cost-surfaces-and-least-cost-, July, 2014.

Tucker, Tim M.

1970. Excavations at Mound 3, Chiapa de Corzo, Chiapas, Mexico. M.A. thesis., Brigham Young University, Provo, Utah.

vonNagy, Christopher Lynn

2003. Of Meandering Rivers and Shifting Towns: Landscape Evolution and Community within the Grijalva Delta, Tulane, New Orleans.

Warren, Bruce William
1978. The Sociocultural Development of the Cetral Depression of Chiapas, Mexico: Preliminary Considerations. Unpublished Dissertation, Department of Anthropology, University of Arizona, Tucson, Arizona.

Webster, David and Jennifer Kirker
1995. Too Many Maya, Too few Buildings: Investigating Construction Potential at Copan, Honduras. *Journal of Anthropological Research* 51(4):363-387.

Woods, James C. and Gene L. Titmus
1996. Stone on Stone: Perspectives of Maya Civilization from Lithic Studies. In *Eighth Palenque Round Table, 1993*, edited by M. G. Robertson, M. J. Macri and J. McHargue, pp. 479-489. Prec-Columbian Aart Research Insititute, San Francisco, California.