



From the Streets: Public and Private Space in an Early Maya City

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Abstract

Modern life in cities involves perpetual tensions between private and public spaces evoking the question whether such tensions existed when cities first emerged. This paper investigates such tensions at the lowland Maya site of Nixtun-Ch'ich' in Petén, Guatemala. The city developed along with other such settlements in the Maya region, sometime between 2800 and 2500 years ago. This anomalous site has the earliest known rectangular urban grid in the Americas. Such grids have not been found in other preColumbian Maya settlements. Gridded urban space requires the invention of public space, streets, and the grid. Even with these three characteristics present, they require social mechanisms (city planning and the means to implement the plan) capable of “rationalizing” city space. They also necessitate the power to regulate public spaces if the grid is to exist over long periods of time. The gridded streets of Nixtun-Ch'ich' seem to be the most public of all spaces at the site. Nevertheless, a *longue durée* examination of the site reveals that private space gradually extended into and decreased the size of public space. These transformations tend to suggest a shift from a more cooperative to a more competitive social environment, which may correlate with elaborated social differentiation and segmentation.

Keywords Public space · Privatization · Urbanization · Maya · City planning · Collaborative states

Modern cities harbor perpetual tensions between public and private spaces—from the privatization of streets to vendors selling on public sidewalks to the homeless occupying parks and transportation stations. The current research investigates the degree to which similar stresses existed in ancient cities and if they are visible archaeologically. Strains on public spaces must have existed in the past just as they do in the present, as public spaces are not a given—they are created, regulated, and contested. This paper

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presents a case study from the Middle (800–400/300 BC) to Late Preclassic (400/300 BC–AD 200) period lowland Maya and suggests that not only did such tensions exist, but the deregulation of public space seems correlated with a shift from a more cooperative to a more competitive social system.

Cities and elaborated social complexity emerged in the Maya region of Mesoamerica in the Middle Preclassic period. At that time, a city was established at Nixtun-Ch'ich' on the western shore of Lake Petén Itzá in Petén, Guatemala (Fig. 1). This city and the nearby community of T'up differ from other known Maya settlements as they were built with an urban grid, which was one of many solutions applied to managing emergent complexity in the region (Fig. 2) (Pugh and Rice 2017; Pugh n.d.). Yet, the urban grid visible in the plan of Nixtun-Ch'ich' was the final product—the outcome of additions and modifications to the original urban form from the Middle Preclassic period until the present. The original form of the settlement is not known, as it may have been leveled in preparation for the gridded city. We vaguely know the initial gridded settlement, which differed from the site plan observable from the surface, as it was less vertically defined and its gridded blocks were much wider. New data suggest a complex architectonic interplay between platforms (largely private spaces) and the streets of the grid (public spaces) over the course of the Preclassic period.

Cities

V. Gordon Childe (1950, p. 3) remarked that “the concept ‘city’ is notoriously hard to define.” Thus, an appropriately vague definition of cities is that they are awe-inspiring settlements with intensified human interactions that differ from those of hinterlands with respect to functions as well as occupational specializations (Bettencourt 2014; Cowgill 2004; Smith 2003; Yoffee 2015, p. 546). The increased opportunities, protection, and/or awesomeness of cities tend to attract additional residents persistently. Large populations interacting in close contact create a sort of “social reactor,” dramatically enhancing social networks and economic and social productivity, but likewise increasing crime and contagious diseases (Bettencourt 2013, p. 1441; Ortman et al. 2014). Such social reactors increase connections of people with similar interests and goals, leading to the spread of information and innovation (Schläpfer et al. 2014, p. 7).

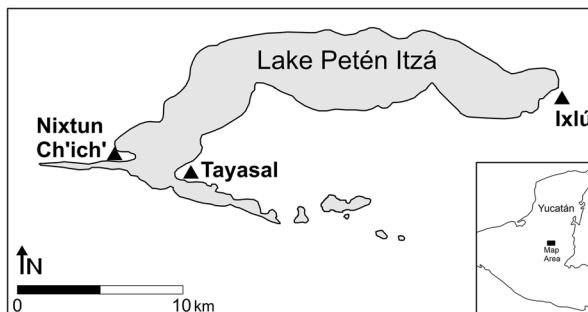


Fig. 1 The location of Nixtun-Ch'ich', Petén, Guatemala. (Surfer/Photoshop)

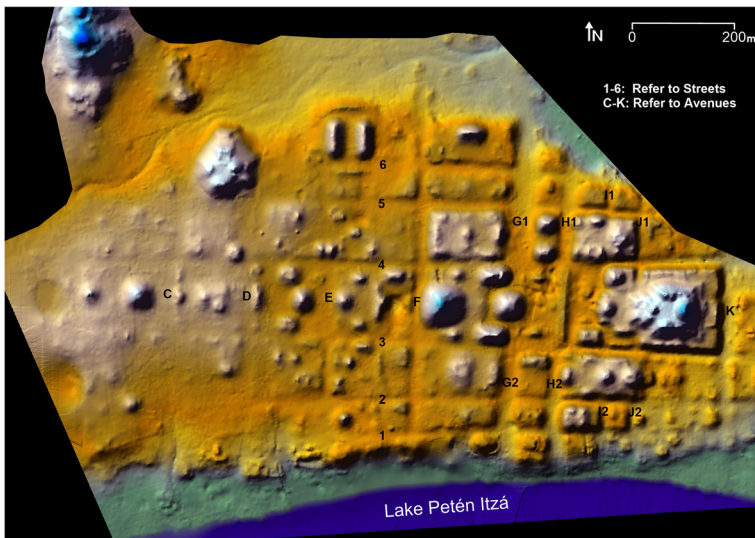


Fig. 2 Plan of Nixtun-Ch'ich' with streets and avenues identified. (Surfer/Photoshop)

Subsequent growth tends to further enhance the social reactor, but infrastructural growth tends to lag behind that of the population (Bettencourt 2014). Consequently, city planners must mediate “tension between social interactivity, transportation costs, and spatial settlement patterns” if the city is to grow and remain socially vibrant (Bettencourt 2013, p. 1440). Failure to adapt to pressures on the infrastructure results in a decrease in social benefits and, thus, instability. As a result, a city’s success at attracting population can ultimately undermine its viability (Bettencourt 2013, pp. 1440–1441).

Cooperative and competitive societies define a continuum between societies that invest heavily in public goods and greater legibility (cooperative) and societies with few of these amenities and often with more dispersed layouts and greater segmentation (competitive) (Blanton and Fargher 2011). Cooperative societies are often “faceless” lacking a cult of rulership and instead focus upon state symbolism, collective images, or images of social/cosmic renewal. Ceremonial spaces in such societies tend to be accessible to larger segments of society. Competitive societies, on the other hand, focus upon images and accomplishments of the ruler as well as their ancestry and connections to the supernatural world. Their ceremonial spaces tend to be more restrictive (Blanton 1998, p.150; Blanton and Fargher 2011; Feinman and Carballo 2018). It would be a mistake to assume that more cooperative societies, which are less centralized, lack a power structure. In fact, such societies actually have a great deal of infrastructural power through enhanced legibility, which allows more efficient management of populations (Blanton 1998, p. 151). Most Mesoamerican cities, including those of the Maya Preclassic period, were cooperatively organized, but those of the Maya Classic period were more competitive in their political structure (Feinman and Nicholas 2012, p. 149; Feinman and Carballo 2018, p. 11).

Streets

Organization is critical to the emergence of social complexity. Space is often reorganized to accommodate increasing populations and to better manage and connect them—to make the population more legible to administrators and the city more legible to the population (Yoffee 2005, p. 33). One such administrative strategy implemented in some modern and ancient states is the planned urban grid (Kostof 1991, pp. 99, 215–218; Rose-Redwood 2006, pp. 59–94; Scott 1998; Blanton and Fargher 2011). Urban grids are more than just buildings with similar orientations—they are generally public streets that form quadrilateral city blocks. In such arrangements, the gridded streets are primary elements of urban organization.

Urban grids include three critical components: public space, streets, and orthogonal plans. Public spaces are difficult to define as they vary significantly cross-culturally (Smith and Low 2006, p. 4). Modern or colonial Maya concepts cannot be used as accurate analogies because Spanish colonialism heavily altered public spaces (see Hanks 2010, pp. 36–39). Thus, here, “public space” is loosely defined as space dedicated to public use, where “public” refers to the general population. A purely public space is a fiction. Private interests extend into public spaces along with the individuals that possess those concerns. Yet, public and private spaces can generally be distinguished because in the former individuals cannot build in, modify, or permanently use the spaces without public approval (Kostof 1992, p. 194). Public spaces are also shared and “have the quality of inexcludability” (Low 2003, p. 186). Access to private space is limited to members of a particular group or invited persons.

Public spaces are a form of “collective consumption” and large amounts of public space tend to suggest a cooperative rather than competitive social system, since resources are dedicated to the general population rather than the elite (Blanton and Fargher 2011, p. 508; Feinman and Carballo 2018, pp. 9–10). On the other hand, fascist societies may use a great deal of “public” space, though activities within such spaces tend to be very regulated and staged (Kostof 1992, pp. 141–143), so these not really public spaces as people do not act freely within them.

Public spaces can be used for a variety of purposes—from leisure activities to economic exchange—and are critical components of the social reactor. Interactions in public spaces are often “passive contact,” allowing people to be social even when they are technically alone. Such contact can allow people to learn social information and may even lead to unplanned higher intensity interactions (Gehl 2011, pp. 17–21). Besides enhancing interaction, public spaces help bring disparate individuals into a larger group and create a common spatial identity (Carr et al. 1993, pp. 202–223). They may also display the primary monuments of the group as well as cues of historical consciousness. Thus, they help to unify populations.

Although I would not go so far as to suggest the existence of a “public sphere” in the Middle Preclassic period (see Inomata et al. 2015), public spaces are very frequent locations of political discussion and action. The existence of public spaces is also political (Kostof 1992, pp. 194–196; Low 2000): the demarcation of private/public space must be accepted by the community (Rykwert 1991, pp. 15–26). On-going struggles center on who controls them, activities suitable to them, their meanings, and their functions (Gutman 1991, p. 249; Low 2017, p. 75–76). Bullies or formal powers-that-be might seek to control or restrict activities in public spaces. Curfews and

prohibitions against loitering or gathering in groups are examples of such controls. Administrative interests can extend into and may nearly completely dominate public spaces (see Low 2000, p. 241–242).

Streets are public spaces accommodating traffic, communication, exchange, and social interaction. An obvious, yet often ignored, aspect of streets is that they were invented (Kostof 1992, pp. 189–208). Neither innate nor simply empty spaces between buildings, streets are prepared surfaces differentiated from adjacent areas (Rykwert 1991, p. 15). The presence of streets implies the existence of permanent settlements, though some monuments without permanent occupants may have roads leading to them. Consequently, streets become more common with the emergence of sedentary populations. Creating a street involves designating zones of public space that facilitate movement and social interaction (Kostof 1992, p. 189).

Social interaction in streets is not simply a function of pedestrian traffic, as streets function similarly to plazas in this regard. Also, high traffic can have a negative impact on social interactions (Appleyard and Lintell 1972; Gehl 2011, p. 134), as can crime and associated fear (Carr et al. 1993, p. 97). The amount of social interaction is also related to the quality of public spaces—people tend to interact significantly less and quickly move through areas of “poor quality” (Gehl 2011, p. 11).

Public spaces are frequently targeted for private use, which can have mixed outcomes. Privatized streets and other spaces constrain movement and access for most of the population (Low 2003, pp. 224–227). Increased “obstacles” such as street performers, vendors, the homeless, and so on can inhibit movement (Blomley 2007). However, some such “obstacles” (vendors) may be important destinations that contribute to a city’s economy. In fact, in some societies, they may be the primary locations of economic exchange. Other “obstacles” such as street performers can convey the arts, literature, and information to people to which they would otherwise be unavailable (Salzberg and Rospocher 2012). The regulation of some private uses of public spaces can have unintended negative consequences with respect to the social reactor. Thus, temporary private use of public space does not make it any less public—in fact, it may enliven the spaces. On the other hand, the concretization of private interests in the form of extending private space into public space—which is the subject of the current work—will impact the social reactor.

Cities also include other forms of public space such as plazas. William Whyte (1988, p. 128) noted that it is often difficult to differentiate plazas and streets because “[t]he street functions as part of the plaza.” Plazas include movement, but their large spaces allow for larger gatherings. In form, streets and plazas are usually very different as the former tend to be much more elongated. The question, then, is how to functionally distinguish a street from a plaza and if doing so is worthwhile.

Nonetheless, the relationship of plazas and streets is manipulated in practice. Attempts to disconnect the two often have unintended consequences. For example, putting a wall around a plaza can decrease safety and accessibility. What is more, even slightly lowering or raising modern parks and plazas relative to the street causes a significant decrease in use. If they are not clearly visible from the street, they also experience less use (Whyte 1988, p. 129). Access to some public spaces can be restricted to certain segments of the populations—“privatized public spaces” (Kostof 1992, p. 125) (see also Low 2003, pp. 186–187).

Gridded cities can vary in their degree of planning—from adjacent rectangular buildings to city blocks separated and organized by orthogonal corridors (Smith 2007, p. 12–20). Orthogonal grids include straight lines, an overtly human construct that organizes space and enhances its legibility and management (Booth 2012, pp. 69, 161; Kostof 1991, p. 95). A grid organizes lines into a lattice, adding a second dimension as well as intersections, which significantly augment the legibility of space. Urban grids are not composed of mere lines but of streets and their traffic (form and content), coordinated and coupled through a shared and legible system of order. As such, they have the potential to be used as a means of social organization and control (see Grant 2001, p. 237; Kostof 1992, p. 72; Mazza 2009, p. 134, Pugh and Rice 2017). Such spatial tactics are more common in more cooperative states (Blanton and Fargher 2011).

Street or road systems can be focal or non-focal. Examples of focal systems include those leading to/from a specific focal point, such as a monument; between two foci, such as between two residential groups; or polar (spiderweb) grids with multiple roads leading to the focal point. A non-focal or unfocused road system does not privilege particular locations. For example, a perfect rectangular grid creates effective movement between any two points within gridded space, while passing through only one (if any) intersection. Therefore, such grids are the most efficient for the population at large (Walker 2011, p. 168). Hence, purely non-focal rectangular grids lack hierarchies of access. Many large modern cities incorporate both polar and rectangular grids, because the former better accommodates “high-demand destinations” (Walker 2011, pp. 173–174).

An urban grid ties together and organizes the blocks within the city. Blocks can incorporate additional public spaces (e.g., plazas, markets, and some temples), semi-public spaces restricted to certain segments of the population (some temples, guild halls, and palaces), and private spaces (residential groups). Straight, gridded streets increase a city’s legibility to insiders and outsiders, because they standardize space and make it easy to understand, organize, and use (Aristotle 2013, p. 206; Grant 2001; Rose-Redwood 2002, p. 31). The straight roads, linkages, public spaces, and legibility and efficiency of grids enhance the economy of “urban movement” (Blanton and Fargher 2011, pp. 509–512). They form an “infrastructure network” augmenting interactions, thereby promoting economic exchange, information flow, and access to services. Thus, in conjunction with increased population density, urban grids boost the social reactor (Bettencourt 2013; Blanton and Fargher 2011, pp. 507–517; Schläpfer et al. 2014).

Since streets link together spaces, but distance limits day to day interactions, cities include intermediate social groupings, larger than residences but smaller than cities, such as neighborhoods. A neighborhood is vaguely defined as a smaller area—generally less than 800 m in diameter—in which a higher frequency of social interaction occurs (Duany and Plater-Zyberk 1993, p. 18; Smith 2010, p. 137). As a result, people in neighborhoods have a greater probability of establishing social connections (Gehl 2011, p. 19). In cities with streets, these public spaces are critical to life in neighborhood. As Jan Gehl (2011, p. 57) remarks, “Family members meet in the living room, the inhabitants of the residential group meet in the group square, and residents from the entire neighborhood meet on the main street.” Another type of intermediate division within cities is the district, which includes multiple neighborhoods and might

have administrative functions and/or were derived from concentrations of the same ethnic group (barrios). Such areas might include administrative buildings or other public architecture (Smith 2010, p. 140). Consequently, many districts were centrally established, while neighborhoods developed from the bottom-up (Smith and Novic 2012, pp. 4–5).

Districts and neighborhoods vary and their variance can reflect the amount of infrastructural power applied by the state. Such power refers to the degree to which central authorities can effectively propagate their objectives throughout the state. More cooperative societies will tightly integrate their neighborhoods and districts and those in more competitive societies, which do not invest in infrastructural power, will only loosely integrate social segments (Blanton and Fargher 2012a, p. 30).

Some urban theorists have argued that without streets, “there is no city” (Kostof 1992, p. 194). Many Mesoamerican cities lack streets, but they have other public spaces such as plazas (Shaw 2001). Such spaces are the stages “upon which the drama of communal life unfolds” and are political spaces (Kostof 1992, p. 194). They are also places where interactions, however buffered, of persons of various classes can occur and thus encourage social unity (Carr et al. 1993, p. 45).

***Sakbeob* and Plazas**

The Maya developed formal roads or causeways, which they called *sakbeob* (*sakbe*, singular) or “white roads” (Shaw 2008, pp. 4–5). These were generally raised and paved, and many were bordered by parapets (Shaw 2001, p. 261). “Straightness” seems to have been an important consideration in the construction of many *sakbeob* (Normark 2008, p. 232). *Sakbeob* appeared in the Mirador Basin of northern Petén in the late Middle Preclassic period (Hansen 2016, p. 369), which seems typical of the Maya lowlands in general (Shaw 2008, p. 5).

Sakbeob functioned as pedestrian ways, as the Maya had no vehicles or draft animals. In addition, they facilitated and enhanced communications and the flow of economic goods (Shaw 2008, pp. 106–108). Thus, as seen elsewhere, *sakbeob* were critical public spaces that enhanced the social reactor. They joined distance spaces, helping create social unity, and demonstrated political power (Kurjack and Andrews 1976, p. 323; Shaw 2008, pp. 110–111). In addition to facilitating foot traffic, some diverted surface water (Scarborough 2003, p. 52).

Early colonial accounts of Maya rituals document the importance of processions in social renewal (Coe 1965), establishing ordered time and space. Iconography showing human footprints upon roads represented the passing of time and calendrical cycles (Edmonson 1986, pp. 120–126). The paralleling of roads with temporal progression is found in many cultures (Rykwert 1991, p. 22). Ritual processions are more difficult to document for the Precolumbian Maya. Yet *sakbeob*, especially those linked to caves and cenotes (see Halperin 2005, pp. 81–83), strongly suggest processions.

Sakbeob linked sites as well as buildings within sites, producing a dendritic settlement plan that was continued into the Classic period (Chase and Chase 2001, p. 279; Hansen 1998, p. 75). Clusters of residential architecture most likely represent neighborhoods and minor ceremonial centers/multiple ceremonial cores within cities likely represent districts (Smith 2010, p. 148). In some settlements, neighborhoods focus upon particular topographic features, such as hilltops (Hendon 2012, p. 169). The city

plans of many larger cities, such as El Mirador, include a number of cores (district centers) connected by *sakbeob* (Hansen 1998, p. 75). The ceremonial cores are in turn surrounded by various clusters of residential architecture (neighborhoods).

Ceremonial groups linked by causeways created multiple joined nuclei, providing a more dispersed settlement and reducing density. This pattern also allowed for farms and gardens, characteristics of “green cities” (Graham 1999; Isendahl and Smith 2013, pp. 134–138). *Sakbeob* varied in how they were coordinated. They could link places linearly, from one place to another; extend from crossroads in a site’s center to important outer places; or extend with multiple *sakbeob* from the site center. Sometimes, additional branches link to *sakbeob* leading to the center. Of these types of coordination, the first is the least hierarchical in its organization, as the road simply links two places. The last three create a clear spatial hierarchy, as multiple roads lead to and, therefore, privilege a central place (Shaw 2008, p. 96–105).

Plazas were critical public spaces of most Mesoamerican settlements (Inomata and Tsukumoto 2014, p. 3). Like streets, plazas were invented and are constructions, not simply space without architecture. Rather, they were monumental places of performance and critical nodes of the social reactor (Inomata 2014, p. 27). They may also have been among the first forms of ceremonial architecture for sedentary Maya groups (Inomata 2014, p. 30). Plazas have smaller relatives: plazuelas and patios, likely associated with smaller and more exclusive groups. As places of social interaction and movement, *sakbeob* and plazas are related in function and form, but some differences in use suggest that they differed slightly in their meanings and how they were used by the ancient Maya (Shaw 2001, p. 267).

Nixtun-Ch’ich’

The core of Nixtun-Ch’ich’ stands west of the Candelaria peninsula on the western side of Lake Petén Itzá, with a narrow arm of the lake forming its southern edge (Figs. 1 and 2). Part of the site’s urban grid extends onto the western third of the peninsula and largely terminates at a large wall and ditch complex (see Rice 2009, Fig. 2). Settlement continues 150 m beyond the wall and then disappears except for a large platform (Str. ZZ1) at the eastern end of the peninsula. This platform was initially constructed in the Terminal Early Preclassic period (pre-1000/900 BC) with the earliest calibrated radiocarbon assay (Beta 232952) dating to 2900 ± 40 years ago with a 2-sigma range of 1270–1010 BC (Rice 2009, p. 408) (Table 1; note that all dates below are 2-sigma calibrated ranges). Unfortunately, a plateau in the calibration curve makes precise dating difficult for most of the Middle Preclassic period.

Construction was clearly concentrated upon higher parts of the peninsula leaving low-lying areas between Str. ZZ1 and the site core as well as areas immediately north of the site largely vacant. The area of the site is flat relative to karstic hills to the north, but limestone bedrock stands *ca.* 15 m above the lake level on a ridge extending east to west along the center of the site. The site continues west and north of the urban core.

The limestone ridge is crowned and accentuated by a 1780-m-long east-to-west alignment of 21+ buildings and two reservoirs in the site core (Pugh and Rice 2017; Rice and Pugh 2017). This alignment may extend another 1270 m to the east as well (Pugh *n.d.*). Such east/west axes are characteristic of the Preclassic period (Estrada-

Table 1 Select radiocarbon dates from Nixtun-Ch'ich'

Sample	Context	δ 13C	C14 age	Calibrated range (2σ) ^b	Material
AA110392	Fourth Street, N4089, E3790, Level 15a	-26.2	2418 ± 22	730–406 BC	Charcoal
AA110393	Fourth Street, N4089, E3790, Floor 12a	-26.1	2454 ± 27	754–414 BC	Charcoal
AA106865	Third Str., N3885, E4523, Floor 1	-10.7	2457 ± 24	755–416 BC	Charcoal
AA110394	Fourth Street, N4089, E3790, Floor 10a	-25.6	2472 ± 23	767–488 BC	Charcoal
AA107442	Fourth Str., N4074, E4391 Level 12	-26.2	2472 ± 24	768–486 BC	Charcoal
AA110390	Fourth Street, N4089, E3790, Level 19a	-14.9	2475 ± 22	767–511 BC	Charcoal
AA107441	Fourth Str., N4064, E4391, Floor 1	-25.8	2492 ± 24	771–540 BC	Charcoal
AA107489	Sixth Str., N4279, E4074, Level 12	-25.7	2515 ± 37	796–522 BC	Charcoal
AA110391	Fourth Street, N4089, E3790, Level 14a	-24.2	2553 ± 23	801–562 BC	Charcoal
AA107440	Fourth Str., N4064, E4391, Level 14	-26	2532 ± 31	798–543 BC	Charcoal
AA110389	Fourth Street, N4089, E3790, Floor 15a	-24.8	2631 ± 24	830–791 BC	Charcoal
Beta 232952 ^a	Str. ZZ1, Level AA	nd	2900 ± 40	1270–1010 BC	Charcoal

^a Table 2 of Rice (2009)

^b Dates calibrated with Oxcal 4.2

Belli 2011). Along this axis lie a triadic group and three E-Groups—each consisting of two opposing structures across a plaza and thought to have had astronomical functions (Freidel et al. 2017). They also seem to be integrative and perhaps the foundations of political authority (Doyle 2012, pp. 369–374). One E-Group stands immediately west of a triadic group, which is another arrangement characteristic of numerous Preclassic lowland sites (Estrada-Belli 2011, p. 67).

The grid blocks are trapezoid-shaped and bilaterally symmetrical along the central axis, which is oriented approximately 94° 40' clockwise of east (Pugh n.d.). Thus, the east-to-west line of buildings was truly an *axis urbis*. The angle bisectors of Third and Fourth Streets (94° 27'), Second and Fifth Streets (95° 7'), and First and Sixth Streets (94° 40') are parallel with each other as well as the *axis urbis* and Avenue F to within half a degree. Thus, the bilateral symmetry of the grid was very precise.

No images of Middle or Late Preclassic rulers have been found at Nixtun-Ch'ich' and a large amount of space was invested in the streets as well as the central axis. The grid of Nixtun-Ch'ich' was largely non-focal; thus, none of the living platforms were overtly privileged by the streets and avenues. These points and the immense investment in public space at Nixtun-Ch'ich'-ich' suggest a more cooperative rather than a competitive city/social system. However, given the amount of centralized planning, it

is very likely that a central ruler headed the social system. Such a ruler would have not had the luxury of using state resources to proclaim their grandiosity and would likely have been accountable for their actions and their ambitions restrained (see Blanton 1998; Blanton and Fargher 2012b, p. 108).

It is becoming apparent that states began to emerge in the Maya lowlands in the Middle Preclassic period (Sharer and Traxler 2016, p. 26; Hansen 2016, p. 330) and Nixtun-Ch'ich' may have headed one such state. Data from previous research and recent preliminary surveys in the area surrounding Nixtun-Ch'ich' suggest secondary centers, each with one E-Group; tertiary centers, with no E-Group, but with some ceremonial architecture and an *axis urbis*; and smaller settlements (Pugh n.d.). A great deal of research is needed to define this hypothetical state, but we do know that Nixtun-Ch'ich' did not stand alone—it was surrounded by a number of smaller Middle Preclassic centers. It was by far the largest site in the area with the most impressive array of ceremonial assemblages in the Middle Preclassic period.

The Nixtun-Ch'ich' polity would have been a secondary state likely deriving some of its institutions from Chiapas, the Olmec, or Maya polities such as Ceibal or the Mirador Basin in contact with those areas (Clark 2016, p. 220–221; Inomata 2017, p. 240). An Olmec-style greenstone mask fragment encountered at Nixtun-Ch'ich' evidences some sort of interaction, whether direct or indirect (Pugh n.d.).

The Streets of Nixtun-Ch'ich'

Although the occupants of Nixtun-Ch'ich' might have referred to their roads as *sakbeob* or a cognate, these corridors differed in form and urban positioning from constructions referred to as *sakbeob* by archaeologists. Thus, I refer to the grid corridors of Nixtun-Ch'ich' as east-west “streets” and north-south “avenues” (adopting standard nomenclature of Guatemala and New York City) to avoid confusion.

The streets descend from west to east and the avenues rise from the north and the south toward the *axis urbis*. During our excavations at Nixtun-Ch'ich' in 2013, we realized that the sloping corridors channeled groundwater. Most of the modern watershed moves through the corridors—the buried plaster floors act as an artificial perched water table—and drains to the north and south and eventually into the lake. The water still pools in some corridors during the rainy season. Again, however, these characterizations are based upon the current, grass-covered, ground surface. Water would have moved more efficiently across the original smooth, less permeable corridor surfaces. These surfaces also had long construction histories and some were heavily modified over time. Thus, we know that the corridors doubled as drainageways, but this function likely varied through time.

The streets and avenues comprise at least 23% of the urban core. It is hard to compare this number to modern pedestrian ways, since many modern roadways double as pedestrian ways when there are no sidewalks or when sidewalks are crowded. In addition, as argued below, the widths of the streets at Nixtun-Ch'ich' seem to have decreased as the city grew.

Most of the corridors had plaster surfaces. Excavations reveal that plaster surfaces averaged 4 cm in thickness and each square meter of plaster overlays 0.31 m³ of construction fill. Thus, approximately 5944 m³ of plaster and 46,584.5 m³ of fill would have composed the surveyed portions of the grid (gridded areas to the east and west are not

included in this estimate). The urban grid was imposed in the Middle Preclassic period (Table 1), but its form was maintained—with some modification—into the Late Preclassic period. This urban grid was monumental in scale (Pugh and Rice 2017), yet it differed from monuments such as temples, as it was ubiquitously rather than centrally located.

Neighborhoods and districts are hard to discern within Nixtun-Ch'ich'. Unlike other Maya cities, which have clusters of residences reflecting neighborhoods, the regularization of the grid may conceal such groupings. However, three or more spatial zones seem clearly demarcated. The central east to west trapezoid is the primary “civic-ceremonial zone” and forms the urban epicenter (following Smith 2010, p. 138). The trapezoids to the north and south of the urban epicenter are primarily residential, though they do include some small ceremonial groups. A fourth zone, also residential, lies to the east of the large wall and ditch complex to the west of the urban core.

If E-Groups were political buildings, in addition to their other ceremonial functions, then Nixtun-Ch'ich' had three administrative groups along its central axis. The fact that they stood on the axis suggests that they were top-down imposed district centers rather than neighborhood centers. Neighborhoods are harder to discern. Most of the individual urban blocks were not large enough to house a neighborhood, but the streets connecting the blocks allowed ample opportunities for face-to-face interactions and neighborhood identity formation as Gehl (2011, p. 57) assessed of modern cities. Neighborhoods at Nixtun-Ch'ich' may have largely correlated with districts given that the size of the districts is only slightly larger than modern neighborhoods, which tend to extend a 5-min walk or 400 m from the neighborhood center (following Duany and Plater-Zyberk 1993, p. 18). Yet, it seems more likely that districts were divided into neighborhoods based upon the linear streets, the locations of everyday interactions, rather than concentric rings around the E-Groups.

Construction History of the Urban Grid

The urban grid appears to have been well planned, yet the gridded diagram observed in the plan of Nixtun-Ch'ich' is the outcome of over 2500 years of construction. Public spaces in cities are frequent locations of “spatial contestation” (Low 2017, p. 75). Since such spaces are largely created through the regulation of construction and the use of space, some of the tensions that occurred as the Maya shifted to a more competitive social system were play out in and emerged from the streets of Nixtun-Ch'ich'. Between 2013 and 2017, Proyecto Itza excavated a number of units into the grid corridors and other areas to investigate the history of tensions between public and private interests. Below, I highlight those excavations which are most telling of the grid's construction history during the Preclassic period. Table 2 summarizes the excavation units and associated radiocarbon dates; for ease of reading, the units are identified by Roman numerals I through XII following initial mention of their grid coordinates.

Avenue H2

Avenues G and H are the widest of the corridors. Like most avenues around the ceremonial core formed by Structures Z1, Z2, AA1, and BB1, they do not cut across the *axis urbis* (Fig. 3). It is possible that antecedents of these buildings predated the site grid, because the grid seems planned around them. The paths of Avenues G and H are

Table 2 Summary of selected test units in corridors and radiocarbon dates

Corridor	Test unit	Context	¹⁴ C ID ^a	CAL 2σ date ^a	
4th Street	I	N4065/E4391	Levels 13–14	AA107440	2532; 798–543
			Floor 1	AA107441	2492; 771–540
4th Street and Avenue F	II	N4074/E4391	Levels 12, 1b	AA107442	2472; 768–486
	III	N4073/E3945	Platform Y		
	IV	N4084/E3945	4th Street		
	V	N4093/E3945	Platform Q		
	VI	N4072/E3964	Avenue F		
	VII	N4072/E3976	Platform Z		
	3rd Street and Avenue E	VIII	N4089/E3790	Floor 10a	AA110394
			Floor 12a	AA110393	2454; 754–414
			Level 14a (fill)	AA110391	2553; 801–562
			Level 15a (fill)	AA110392	2418; 730–406
			Floor 15a	AA110389	2631; 830–791
			Level 19a (fill)	AA110390	2475; 767–511
IX		N4102/E3790	Platform Q-II wall		
X		N4137/E3790	Platform Q		
XI		N4080/E3790	Avenue E		
XII		N4080/E3798	Platform Y		

^a Dates are BC. See Table 1 for full information on samples and dates

broken by Structures Z2 and AA1 of an E-Group that forms part of that axis. However, these avenues are level with the plaza of the E-Group and seem to lead into this plaza. The widths of Avenues G and H indicate greater expenditure toward the public domain. Their access to the south shoreline and the far northern side of the urban core suggest efforts to create entrance into the city center—specifically the E-Group. The southern part of Avenue G, Avenue G2, lies south of Structure Z2, the possible western pyramidal structure of the E-Group, while the southern part of Avenue H, Avenue H2, lies south of Structure AA1, the elongated eastern structure of the assemblage. Thus, these corridors may have been ceremonial entrances into the E-Group and perhaps also the triadic group (BB1).

Excavations placed on both the eastern and western edges of Avenue H2 (Fig. 3) revealed relatively level bedrock covered by thin ballast and the initial corridor surfacing, both dated to the Middle Preclassic period. The leveled bedrock may have been the original corridor surface. Later, Middle Preclassic platform extensions were built upon the initial plastered surface on both sides of the corridor. On the eastern side, a Late Preclassic extension further widened the platform and covered part of the plaster surface but maintained the same plaster surface as a corridor. I expect that this happened on the western side as well, though we did not test this assumption. Later in the Late Preclassic period, the plaster surface and fill of Avenue H2 were destroyed on both sides of the corridor in order to access bedrock. Rectangular cuts in the bedrock indicate it was quarried for construction materials. The plaster surface was never repaired, though it may have served as an unsurfaced corridor and would have certainly

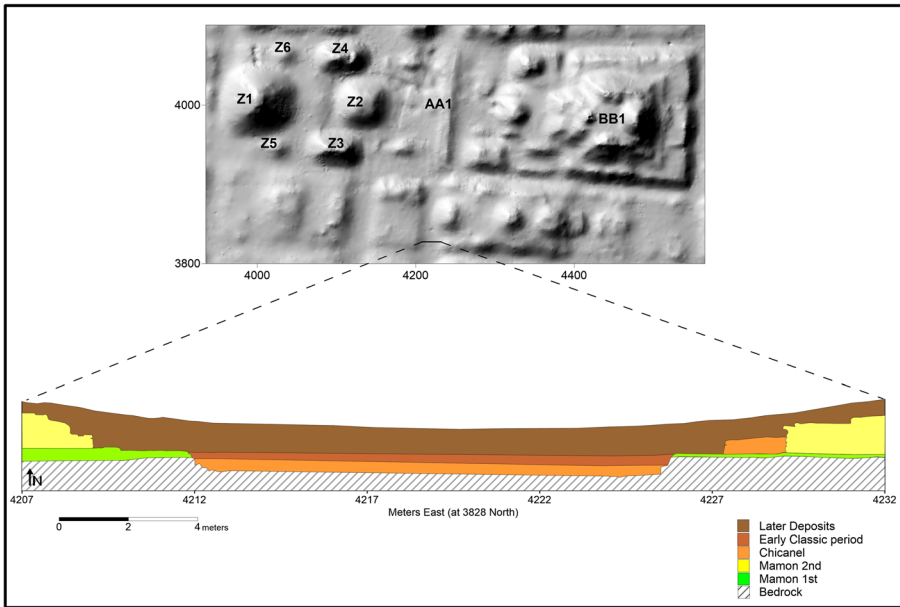


Fig. 3 Reconstruction of construction events in Avenue H2, Nixtun-Ch'ich'. (Surfer/Photoshop)

drained water. Indeed, drainage could have been the primary function of the deepening of the corridor. Water still pools at the intersection of Avenue H2 and the E-Group plaza during the rainy season.

In sum, the original Middle Preclassic construction of Avenue H2 was more than 25 m wide and could have been a plaza rather than a corridor. It was later decreased to 20.1–20.7 m wide and still later was narrowed to 18.3 m. Finally, a 13.1-m-wide “quarry” accessed bedrock. Portions of the corridor surface remained leaving “sidewalks” on both the east and west sides of the quarried corridor. If the slope of this quarry was the same as that of the surface, it would have increased the drainage load of this area, as the quarry was lower than the original surface.

4th Street

Third and Fourth Streets are the longest corridors and border the *axis urbis*. We have mapped *ca.* 1300 m of both streets, but a new survey suggests that they may be 2300 and 1900 m long, respectively.

Three long excavation trenches investigated 4th Street. An 18-m-long excavation (N4080, E4391) placed north of Platform BB1 (Fig. 4), the triadic group, encountered evidence that the street had been narrowed (Pugh and Rice 2017, pp. 588–589). The excavation did not test the northern edge of the corridor. Bedrock in the southern test unit (N4065, E4391; Unit I) was uneven and was lower in the middle of the corridor than along the southern edge (Fig. 5). The bedrock contained pockets of dense dark clay with Terminal Early Preclassic ceramics (Levels 13–14), dated to 798–543 BC (Tables 1 and 2). Fill deposited upon the clay was capped by the initial plaster corridor surface (Floor 1), which was dated to 771–540 BC. A test unit (N4074, E4391; Unit II)

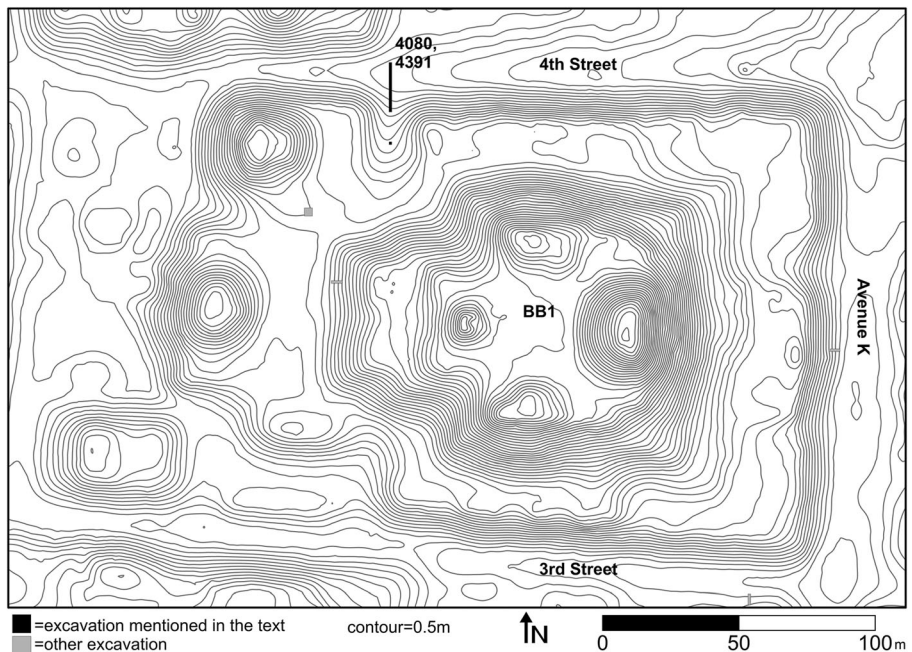


Fig. 4 Excavations in and near Platform BB1, Nixtun-Ch'ich'. (Surfer/Photoshop)

in the middle of 4th Street encountered fill (Levels 12 and 12b) between the plaster street surface and bedrock, which was primarily composed of clay similar to Levels 13 and 14 in Unit I (see Rice et al. 2018). Carbon recovered from this fill dated between 768 and 486 BC.

The southernmost portion of the excavations encountered the northern edge of Platform BB1. This nearly 2-m-high wall was built upon the initial plaster corridor surface (Floor 1), so the corridor was clearly once wider. The southern 6.6 m of the corridor surface was later covered with fill (Middle Preclassic period) and a sloped surface (Level 7) composed of irregular though tightly fitted and coursed flagstones (Figs. 5 and 6). Similar flagstone surfaces have been found elsewhere at Nixtun-Ch'ich' and at Nakbe (see Hansen 1998, pp. 60–61). The sloped surface was presumably a ramp accessing the triadic group (Platform BB1) and likely a drain.

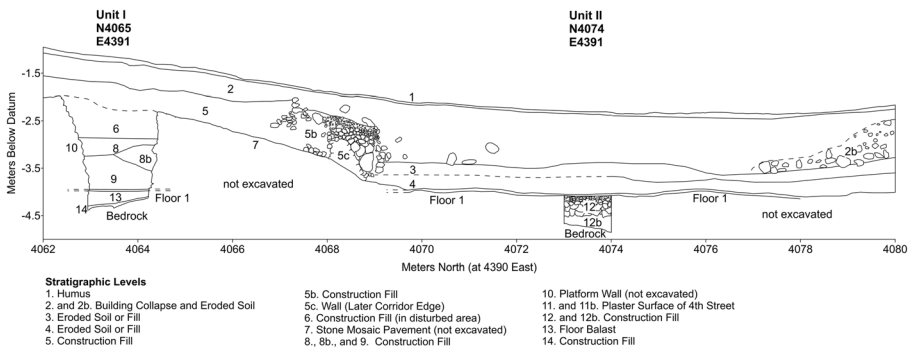


Fig. 5 West profile of Excavation N4080, E4391, 4th Street, Nixtun-Ch'ich'. (Surfer/Photoshop)

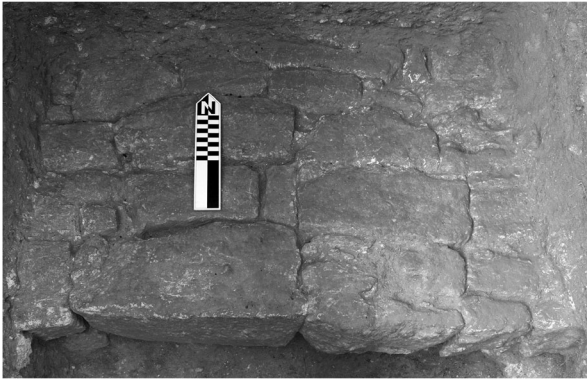


Fig. 6 Flagstones (Level 7) in N4080, E4391, 4th Street, Nixtun-Ch'ich'. (Photo/Photoshop)

A Late Preclassic period corridor edge (Level 5c) and fill later covered the sloped flagstone surface. The wall was partially composed of flagstones removed from the southern portion of this surface (Level 6). This construction narrowed the southern portion of the corridor by 5.9 m. The northern portion of the initial corridor surface was still in use at this time. While undetected by excavations, the plaster surface must have been renovated at some point as this portion of 4th Street must have been in use for several hundred years.

4th Street and Avenue F

A large excavation block and several other units tested the corner of 4th Street and Avenue F (Fig. 7). The excavations into 4th Street in this area were the only ones that revealed bedrock in a corridor higher than that beneath the adjacent platforms (Fig. 8). The earliest surfacing (Floor 6b) (N4084, E3945; Unit IV) was built only 5 cm above bedrock. This initial floor was renovated five times, the lower three constructions (Floors 4b–6b) having Middle Preclassic diagnostics and the upper three (Floors 1b–3b) having Late Preclassic sherds in their fill. The latest construction of the street was 8.8 m wide. The lower terraces of both platforms bordering 4th Street (Platforms Q and Y) stood only 0.67 m above the final corridor surface.

The latest construction of the northern edge of Platform Y (Platform Y-I, Late Preclassic period), which bordered the southern edge of 4th Street, was composed of large cut soft limestone ashlar. Despite the quality of the stones, they were only roughly coursed and may have been recycled from an earlier construction. The northeast corner of Platform Y-I seemed stepped, like the northwest corner of Platform Y-I (below). The latest floor of the corridor extended under the southern edge of the corridor to an earlier platform edge (Platform Y-IIa; Late Preclassic period). Platform Y-IIa was composed of small, brick-like, cut-limestone blocks set in courses (ranging from stacked to offset bond) covered with a coat of stucco. The construction of Platform Y-I narrowed 4th Street by over a meter. Near the corner of Platform Y-IIa, the side terraces became more like steps as they decreased in height and their number increased. We did not investigate whether the corridor surfacing extended underneath the north wall of Platform Y-IIa, but we did find that it extended under the east wall of Platform Y-IIa bordering Avenue F (below).

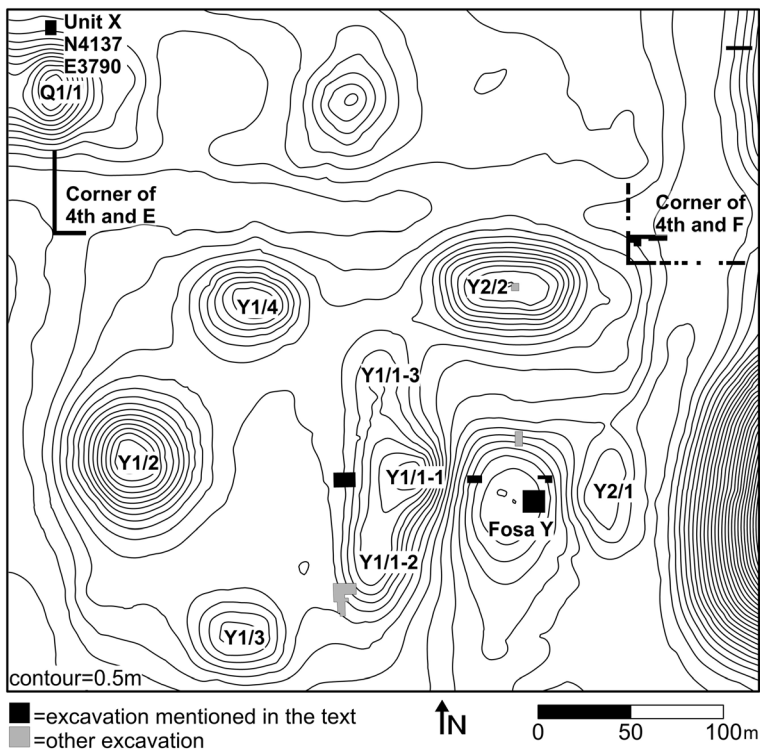


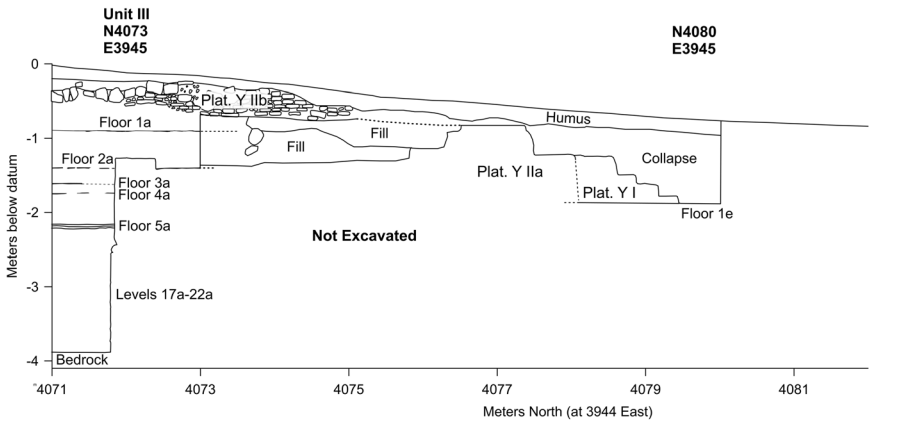
Fig. 7 Excavations in and near Platform Y, Nixtun-Ch'ich'. (Surfer/Photoshop)

Interestingly, the masonry styles of Platforms Y-I and Y-IIa correspond to those of the final two constructions of Structure Y1/1, the eastern building of another E-Group that stands upon Platform Y. Thus, the construction of Platforms Y-I and Y-IIa was likely part of major Late Preclassic period renovation events connected with that complex. These events may also correspond with later offerings placed in Fosa Y, a large sinkhole to the east of the E-Group in Sector Y (see Rice and Pugh 2017).

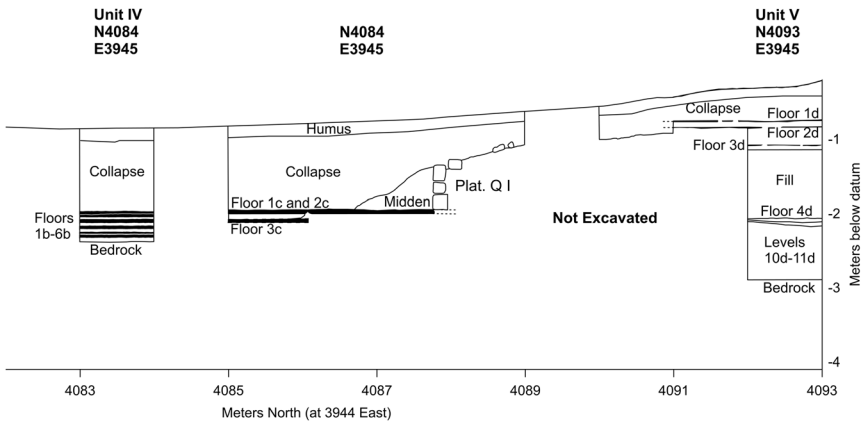
A wall composed of small ashlar set in courses (ranging from stacked to offset bond) (Platform Y-IIb), very similar to that in Platform Y-IIa, stood in the highest portion of the excavation. This construction appears to have been a higher terrace of Platform Y-II, but it was too disturbed by Late to Terminal Classic (AD 600–900) constructions to date securely.

A test unit into Platform Y (N4073, E3945; Unit III) revealed four plaster surfacings or floors (Floors 1a–4a), the highest two of which likely corresponded with Platforms Y-I and Y-II. Excavations did not reveal the function of Floor 3a, but it was most likely an earlier platform terrace. Floor 4a may have been a platform terrace, but it is roughly level with Floor 1e of 4th Street and Floor 3m of Avenue F. Thus, it could have been a corridor surface, though excavations did not conclusively link Floor 4a with the other floors.

The only other surface of note within the platform edge was a lens of gray clay upon a lens of dark, sticky clay (Floor 5a) upon a thick layer of light gray crushed limestone and clay fill (Levels 17a–22a) dated to the Terminal Early Preclassic period. Such construction levels featuring dark (black, brown), sticky clay may predate plaster surfaces (Rice et al. 2018, pp. 760–761). Given that all constructions of 4th Street were surfaced with stucco, this



a South Side



b North Side

Fig. 8 West profile of Excavation 4093, 3945 into 4th Street, Nixtun-Ch'ich' (North and South Sides). (Surfer/Photoshop)

clay surfacing was likely earlier and unrelated to the corridors. Some earlier constructions were likely demolished and it is possible that the corridor surfaces replaced something else. Furthermore, Floor 5a and the fill beneath it predated the corridors.

Since only the latest of the six constructions of 4th Street (Floor 1b) in Unit N4084, E3945 (Unit IV; Fig. 8) can conclusively be matched with platform construction in this area, it seems likely that the five earlier street surfaces (Floors 2b–6b) were associated with earlier constructions of the platform. Although only three or four such constructions were recorded in Unit III, five appeared in excavations into the middle of Platform Y.

Only three plaster platform surfaces were recorded beneath Platform Q, adjacent to north side of 4th Street in Unit N4093, E3945 (Unit V; Fig. 8). Floors 1d and 2d were Late Preclassic and Floor 3d dated to the Middle Preclassic period. The latest edge of Platform Q was terraced and composed of roughly coursed cut ashlars, similar to the edge of Platform Y-I. We did not encounter earlier platform edges in this excavation, so the earlier width of 4th

Street cannot be estimated. Our excavations in this area were less substantial than within Platform Y, but we did encounter a lens of Terminal Early Preclassic gray clay upon a lens of the dark sticky clay (Floor 4d), which was only 10 cm higher than the very similar deposit (Floor 5a) in the northeast corner of Platform Y. Like the latter, that in Platform Q was built upon fill composed of light gray clay and crushed limestone (Levels 10d-11d).

Avenue F

As part of our work on the northeast corner of Platform Y, a series of units tested 30 m of Avenue F (Fig. 9). Measuring *ca.* 720 m, Avenue F is the longest avenue, although it is half the length of the longest streets (Fig. 2). It also passes between Structure Z1/1, the second tallest building at the site and Fosa Y, another important ceremonial feature (see Rice and Pugh 2017). It is one of the few avenues that cuts across the *axis urbis* and is the only one that is nearly perfectly perpendicular to that axis. Thus, its orientation seems well planned. It is likely that this was a vital corridor for traffic flow and ceremony.

The final construction of Avenue F (between the platforms) was 18.6 m wide and its surface was uneven (Fig. 9). While the eastern and western edges of the corridor are the same height, the corridor dips 0.58 m in the center at 6.3 m from the eastern corridor edge. The dip likely facilitated water drainage through the corridor, while also permitting pedestrian traffic. The final corridor surface (Floor 1 m) continued under the latest platform wall to its west (Platform Y-I) until meeting a second buried wall (Platform Y-II)—thus, this side of the corridor was once 1 m wider. Excavations encountered two offerings of ceramic vessels (very late Middle Preclassic period) in the fill of Platform Y-II. The floor also extended another 5.7 m underneath Platform Y-II; thus, it was once even wider and met a third wall (Platform Y-III). The corridor floor continued another 1.3 m until meeting Platform Y-IV, where it may have ended—excavations did not test whether it continued under this wall. However, it is level with Floor 4a, so it is possible that it continued beyond our excavations. Thus, the initial east wall of Platform Y was renovated at least three or four times, narrowing the width of the corridor by 8 m or more.

A test unit (Unit N4072, E3964; Unit VI) in the center of Avenue F (Fig. 9) encountered an earlier surface that was also uneven. Another test unit 58 m to the north revealed three floors in Avenue F. A third excavation 162 m to the south likewise encountered three superimposed surfaces in the corridor, though it also exposed three additional deeply buried surfaces of unknown function. These two units contradict the data from excavations at the corner of 4th Street and Avenue F and indicate that the avenue had at least three extant constructions. Excavations in the center of the platform found the edge of a low structure built immediately upon bedrock, so it is possible that the flat bedrock, which was likely artificially leveled, was once used as surface in some areas.

The edge of Platform Z bordering the eastern edge of Avenue F (Fig. 9) was poorly preserved and dated to the very end of the Middle Preclassic period. The one preserved floor (Floor 11) encountered in the test unit (N4072, E3976; Unit VII) into the platform was dated to the Middle Preclassic period. It was level with the street excavations; therefore, it is likely that the eastern edge of Avenue F was originally much wider. Beneath Floor 11, excavations revealed a Middle Preclassic layer of crushed limestone (Floor 21) that could have been an earlier floor. Beneath this was a thin lens of dark clay (Floor 31) upon light-colored crushed limestone and clay fill (Level 81 and 91) dated to the Terminal Early Preclassic period similar to that noted in Platforms Q and Y.

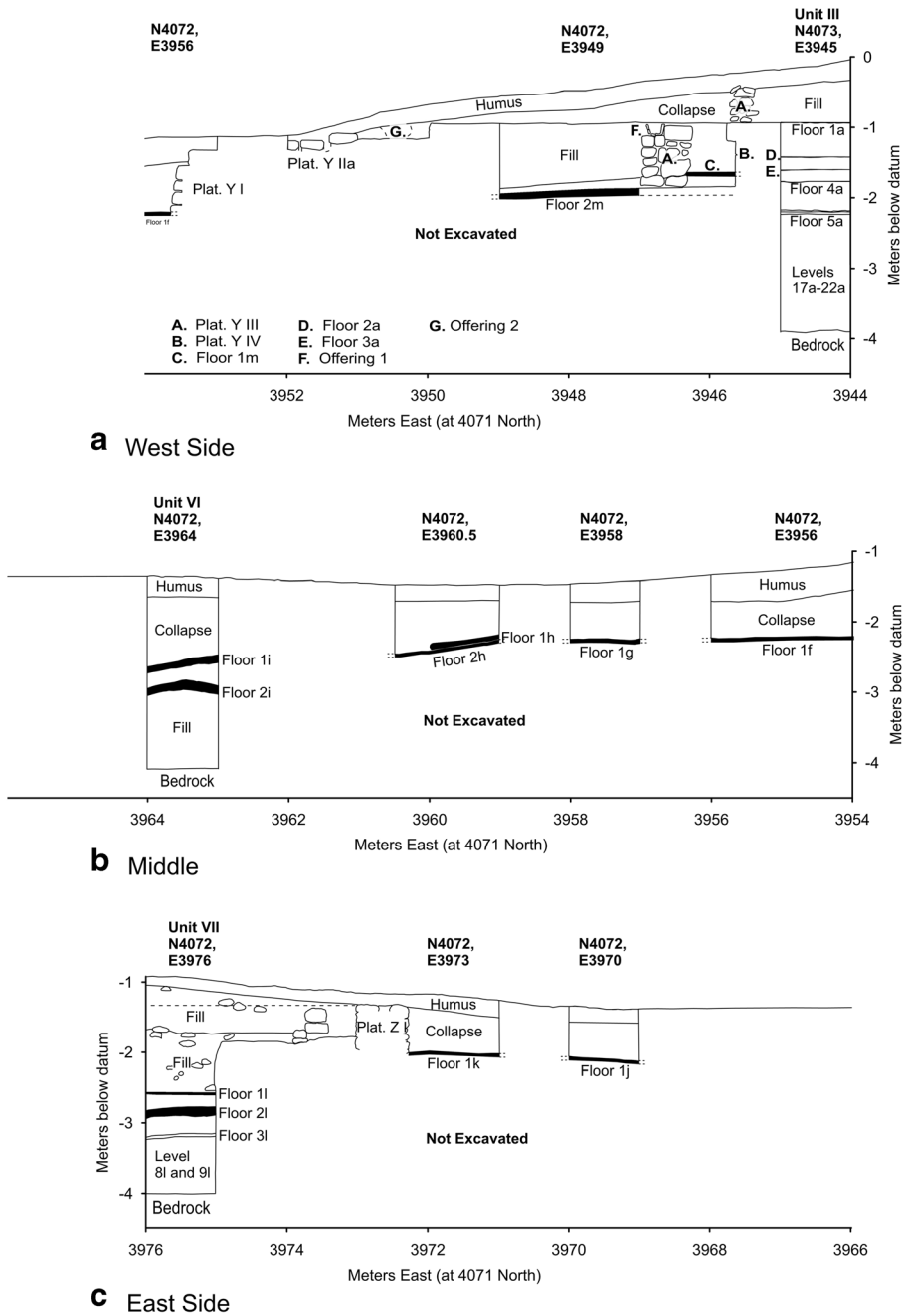


Fig. 9 South profile of Excavation 4072, 3976 into Avenue F, Nixtun-Ch'ich'. (Surfer/Photoshop)

In sum, the excavations at the northeast corner of Platform Y revealed that both 4th Street and Avenue F were narrowed substantially over time. Furthermore, the earliest constructions of Platforms Q, Y, and Z were all similar. The initial surfaces (Terminal Early Preclassic period) were built upon a dark sticky clay lens, which rested upon light-colored clay and crushed limestone fill. We encountered nearly identical lenses and associated fill in the center of Platform Y. However, we did not encounter this material in 4th Street or Avenue F. Thus, either the constructions of the corridors were coordinated or they were once one enormous platform forming a large plaza that was partially demolished to construct 4th Street and Avenue F.

3rd Street and Avenue E

An L-shaped excavation, 23 m north-south (Fig. 10) and 9 m east-west (Fig. 11), tested the intersection of 4th Street and Avenue E (Fig. 7). Bedrock in the center of 4th Street (Fig. 10) was 1 m lower than that underneath the southern edge of Platform Q. Moving south into the center of Avenue E, the bedrock rose 0.42 m higher than the center of 4th

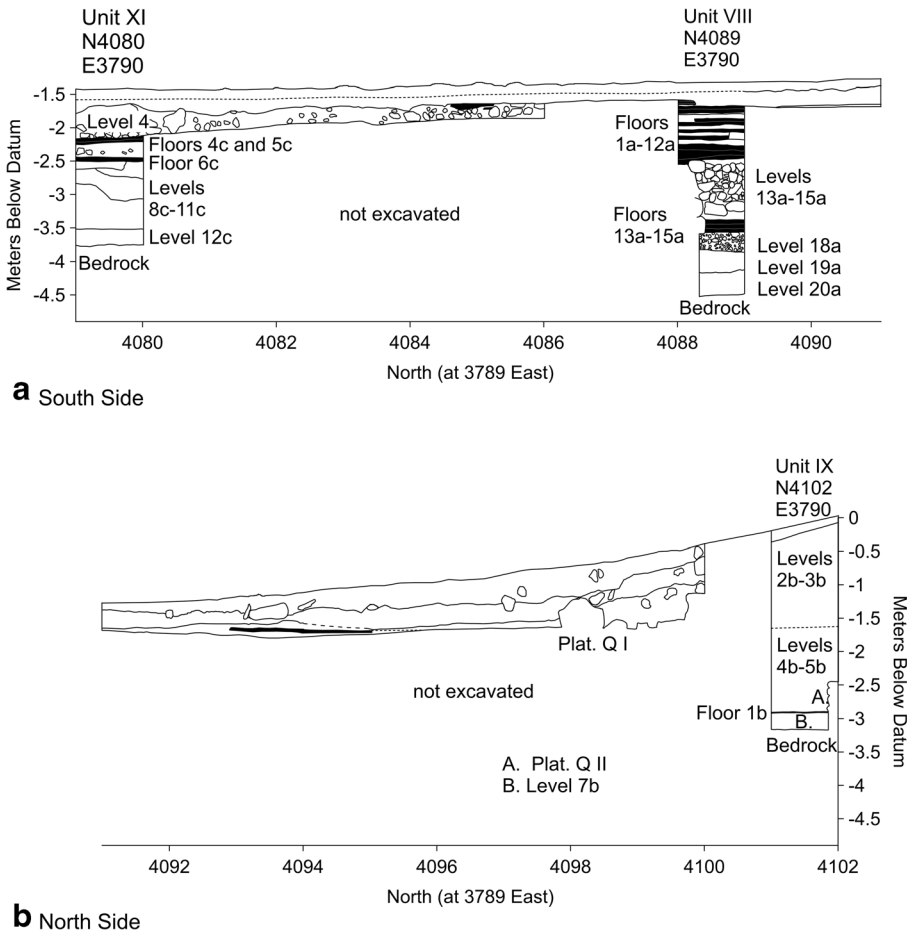


Fig. 10 West profile of Excavation 4102, 3790 into 4th Street, Nixtun-Ch'ich'. (Surfer/Photoshop)

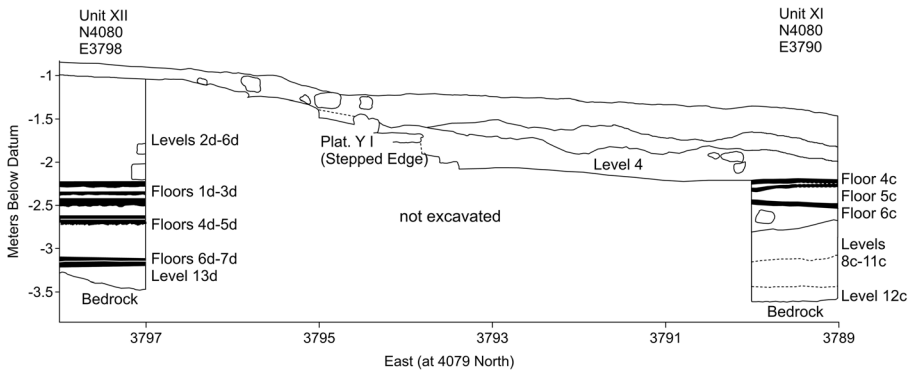


Fig. 11 South profile of Excavation 4080, 3798 into Avenue E, Nixtun-Ch'ich'. (Surfer/Photoshop)

Street. The bedrock in the center of Avenue E is 0.98 m lower than that beneath the northwest corner of Platform Y (Fig. 11). Thus, bedrock elevations vaguely paralleled those of the corridors and platforms in this area.

A test unit (N4089, E3790; Unit VIII) (Fig. 10) found that the initial plaster surface in the center of 4th Street (Floor 15) stood 0.98 m above bedrock and was covered with two later surfaces. We do not know if the initial three surfaces, which dated to the Middle Preclassic period, were corridor or plaza surfaces. Floor 13 was covered with 0.91 m of large stone fill and ballast (Levels 13a–15a) dated to the Middle Preclassic. Many of the stones were nicely dressed and likely originated from a dismantled construction. This fill was covered by a series of 12 corridor surfaces. The upper six floors were dated by ceramics to the Late Preclassic period and the lower six dated to the Middle Preclassic.

Several charcoal samples encountered in various levels from the seventh floor down to the initial fill layers of Unit VIII were submitted for radiocarbon assay. All dates fell within the Middle Preclassic range (Table 1). Some of the charcoal samples submitted for radiocarbon assay were secondary refuse. The earliest of the 12 corridor surfaces (Floor 12a) dated to 754–414 BC (Tables 1 and 2). The thick fill layer beneath this floor dated to 801–562 BC. The earliest plaster surface (Floor 15a) dated to 830–791 BC. Although these three dates provide a nice sequence, charcoal in the fill (Level 19a) between bedrock and the first floor yielded a date of 767–511 BC. Because this stratigraphically lower sample produced a later range than the two above, it appears that some of the samples were simply carbon incorporated in recycled fill. Only the date of the early fill layer (Level 19a) provides a viable *terminus post quem*.

The southern edge of Platform Q included a poorly preserved Late Preclassic period wall (Platform Q-I) that corresponded with the three latest corridor surfaces defined in Unit VIII. Just 1.2 m north of this wall was a second wall, though we are uncertain if this was an earlier construction or an internal retaining wall. A test unit (N4102, E3790; Unit IX) into the platform revealed 2.38 m of platform fill. The upper portion of the fill (Levels 2b–3b) dated to the Late Preclassic period and the lower portion (Levels 4b–5b) to the Middle Preclassic. A floor was not encountered between the two fill events, but a test unit (N4137, E3790; Unit X) into Platform Q, 31 m north of Unit IX, indicated that such a Middle Preclassic floor did exist, but was not preserved, on the southern platform edge.

Beneath the fill in Unit IX was the Middle Preclassic period construction of the platform wall (Platform Q-II). Because the floor (Floor 1b) south of this wall is not level with any floors in Unit VIII, it seems certain that another platform terrace edge



Fig. 12 The northwest corner of Platform Y at 4th Street and Avenue E, Nixtun-Ch'ich'. (Photo/Photoshop)

lies to the south and likely corresponds with Floors 13a–15a. Floor 1b was separated from bedrock by a layer of gray sticky clay (Level 7b) with Middle Preclassic pottery diagnostics. The numerous floors in Unit VIII, as well as five surfaces of Platform Q encountered in test Unit X to the north, reveal that we missed the majority of the construction phases of the southern edge of Platform Q.

Floors 1–3 had been destroyed in the area of the test unit (N4080, E3790; Unit XI) in the Middle of Avenue E (Fig. 10), though the Late Preclassic period fill beneath these floors (Level 4) survived. Floors 4c and 5c were sloped and likely corresponded with Floors 4a and 5a in Unit VI. Floor 6c is level with Floor 12a in Unit VIII, but the fill beneath it dated to the Late Preclassic, so Floor 6c most likely corresponded with Level 6a in that unit. The fill (Levels 8c–11c) was separated from bedrock by a layer of brown sticky clay (Level 12c) dated to the Middle Preclassic period. No corridor surfaces in Unit XI corresponded with Floors 13a–15a in Unit VIII. These surfaces may have been destroyed, but it is possible that the flat bedrock in Unit X once served as a surface.

A 9-m-long excavation tested the northwest corner of Platform Y (Fig. 11). This excavation revealed that the edges of the northwest corner of Platform Y were stepped (Fig. 12), but these steps were partially covered by Level 4, the fill beneath the initial corridor surfaces, which did not survive in this area (Fig. 11). Hence, the corridor was once widened to cover part of the northwest corner of Platform Y. Test unit N4080, E3798 (Unit XII) revealed that a large amount of Late Preclassic period fill (Levels 2d–6d) built up the platform, but below this fill were a series of seven floors. The first three date to the Late Preclassic period. Floor 1d is level with Floor 4c and was likely a corridor surface. Thus, the latest northwest corner of Platform Y covers part of an earlier corridor surface. Similarly, Floors 2d and 3d likely correspond with Floors 5c and 6c in Unit IX. Floors 4d–7d date to the Middle Preclassic period and, therefore, represent a construction not present in Unit XI. However, given that Unit VIII also revealed several Middle Preclassic floors, it seems likely that some earlier corridor surfaces had been demolished in Unit XI. Bedrock in Unit 12 sloped downward toward Avenue E.

The excavations at the corner of 4th Street and Avenue E indicated that the corridors tended to narrow over time, although the latest construction of Avenue E pushed back a little when it covered part of Platform Y. Whereas this is the only such case encountered by our research thus far, it does demonstrate that the trend toward narrowing of corridors was not always linear.

Summary

Thus far, I have considered private and public spaces as if they were constant. However, we can neither assume that the ancient Maya considered the two terms in the same manner that we do today, nor that the “meaning” or functions of the spaces remained constant between the Terminal Early Preclassic and the Late Preclassic periods. Nevertheless, in the absence of empirical evidence of ancient conceptualizations of public and private spheres, our use of space as a proxy indicator has provided a number of observations.

First, the urban blocks were separated from one another by roads and raised higher than the corridors that surrounded them. However, the blocks were not completely sealed off by walls and the conceptual and practical divisions between public and private space are very fuzzy. The urban blocks were not purely private, as most contained plazas or plazuelas, although residential plazuelas can be reasonably considered private spaces. The plazas of some Middle Preclassic period ceremonial groups were public as they were not distinguished from adjacent corridors. Yet, others were likely less public as they were raised slightly. The upper plaza of the Late Preclassic triadic group seems much less public as it is small and out of view from the streets.

Most blocks were raised and placing a plaza on a higher platform—even with stairways—would have decreased its accessibility. Furthermore, if bounded public spaces are cared for by a segment of the population, then it is unlikely that they will serve the general public in the same way that they served the specific public (the members of the segment). Thus, they should be considered privatized public spaces. As neatly stated by Spiro Kostof (1992, p. 184) “As long as the public space has been provided through the courtesy of a private concern in line with its own interests, that space cannot stand in for a genuine town square.” Even in cases in which public ceremonial groups increased in size, generalized public space was sacrificed for more specific types of public space.

Second, the spaces surrounding the platforms were not simply empty spaces but were access points between the blocks that also connected the blocks with the outside world. Thus, these spaces were constructions to enable efficient movement and social connectivity within the partitioned city. They also allowed access to the area outside of the city and from the outside to within. The corridors at Nixtun-Ch’ich’ predated or were contemporary with the development of *sakbeob* in most of the Maya lowlands, so it is unlikely that the occupants were simply reworking an existing form into a novel configuration. The corridors at Nixtun-Ch’ich’ were roads, just like *sakbeob*, but given the differences in use as well as their unique history, the former cannot really be considered to be *sakbeob* proper.

Certainly the streets of Nixtun-Ch’ich’ were “white,” but they do not match archaeological classification of *sakbeob* as “raised causeways” (Stanton and Freidel 2005, p. 227). Although underlain by fill, the streets of Nixtun-Ch’ich’ were consistently lower than the surrounding built environment. Also, *sakbeob* are only occasionally bordered by buildings and their edges are formed from parapets and/or their height.

Finally, *sakbeob* differ from streets as the former are often expedient connections between specific buildings or groups or long-distance connections between cities.

In addition to pedestrian ways, the corridors were also drainageways, as they would have drained surface water. Following the natural inclines of the bedrock, they sloped west-to-east and from the axis to the north and south. The slopes and low porosity of the plastered corridors would have enhanced the drainage of surface water. Thus, instead of blocking and controlling water movement, drainage was facilitated within the corridor, again differentiating these constructions from many *sakbeob*.

Such drainage would not have made the corridors impassible, as demonstrated by the spoke corridors of the spider grid of modern Flores, Guatemala, which continues to drain surface water today. The streets of Flores have a greater incline and are narrower than those of Nixtun-Ch'ich', but a person can walk down most streets after a rainstorm. The width and convexity of many corridors at Nixtun-Ch'ich' would have channeled much water through the corridor center and allowed pedestrian movement along the edges. Many of the platform edges included low terraces that would have also facilitated traffic. It does not rain constantly in Petén. Even during the rainy season, it generally rains less than an hour a day. The width of the corridors far exceeds that necessary to drain the site rapidly; thus, the primary use of the corridors was for pedestrian traffic, not drainage. On the other hand, the convex shape of some roads and coordination of corridor elevations to drain water away from the site core suggests effort and resources spent for the public good.

Roads had a temporal connotation related to the human life cycle, the sun's path, cycles of time, and creation (Keller 2009, pp. 137–146), yet we cannot assume that they had this significance when first developed. The straightness of the roads also might have been significant. In modern Yucatec Maya, the polysemous term *toh* translates to a number of interrelated terms including “straight,” “correct path,” “truth,” “honored,” “righteousness,” “clarity,” “without sin,” and “good health” (Barrera Vásquez et al. 1980, pp. 800–801). Thus, the straight line of the *axis urbis* as well as the streets and avenues may have signified a righteous city in tune with the first movement: the sun. Tollan—the creation place—is also connected to this term and Nixtun-Ch'ich' could have also embodied such a creation place (Rice 2018; Rice and Pugh 2017, p. 14). These factors may have been considered in the planning of Nixtun-Ch'ich', though we have no written record of the city's planning, so we cannot know for certain. Such meaning, if it did exist, may not have played much of a role in daily life on the streets except during ritual processions.

A third general observation is that the urban grid of Nixtun-Ch'ich' was largely non-focal. The streets and avenues of Nixtun-Ch'ich' deviate from all of Justine Shaw's (2008, pp. 96–105) patterns of *sakbeob* because important places do not stand at their termini. Rather than emphasizing destinations first and the line between second, they solely emphasize the line and the links (crossroads) in the lines. They were not linked to specific groups but to the whole. Although the grid was generally non-focal, it did not ignore the central precinct. The city streets are centered upon the *axis urbis* and the ceremonial core interrupts the path of many avenues. Furthermore, the design of the grid was not visible from the ground, but the *axis urbis* was. Thus, while the grid made the landscape legible, the axis helped navigation in much the same way that inhabitants of modern New York City use the Empire State building or the Freedom Tower to orient themselves.

In addition to being non-focal/destination neutral, the streets are shared. A person could not have moved from one platform to another without crossing a street; therefore, if they wished to travel, the streets were a necessity. The space of the streets is continuous: we have encountered no stairs or gates that would have broken the flow of traffic. Consequently, the grid corridors were the most public of all of the spaces at Nixtun-Ch'ich'. One exception to this "rule" is the plaza between Avenues G1 and G2 and Avenues H1 and H2, which is at the same level as these avenues. Hence, movement into this plaza from these roads was also unhindered. Without further evidence, then, this plaza also seems very open to public access. The plaza contains an E-Group and was the main access point to a triadic group.

The non-focal/destination neutral grid of Nixtun-Ch'ich' certainly contrasts with the dendritic settlement plan of El Mirador and later Classic period centers such as Tikal. The dispersed districts and neighborhoods of these cities may have been an adaptation promoting intercity agricultural production (Isendahl & Smith 2013, p. 137–138). However, another possibility is that the dendritic settlement plan could have been the result of weak central power and inefficient mechanisms of centrality (Inomata 2006:818; Feinman and Nicholas 2012, p. 133). What is more, greater dispersion would have enhanced segmentation as face to face contact with members of the larger city would have decreased. The urban grid of Nixtun-Ch'ich' on the other hand clearly reflects investment in integrative technologies and, therefore, a more cooperative system (following Blanton and Fargher 2011, p. 508). Central authority in the form of the axis urbis also kept the district administrative centers (E-Groups) in line, literally.

Fourth, over time, the space of blocks increased and that of the corridors decreased. Many of our thoughts about traffic flow and planning at Nixtun-Ch'ich' (Pugh and Rice 2017; Rice and Pugh 2017) rest on the map derived from data collected from the modern surface of the site. Nevertheless, this site had a long history. All excavated streets reveal that the corridors were initially constructed in the Middle Preclassic period. Most corridors were resurfaced several times. Finally, the widths of all corridors decreased over the course of the Middle Preclassic and experienced further narrowing during the Late Preclassic period. As the corridors' spaces decreased, the platforms swelled. In most cases, this process involved the reduction of public space and increase of private space. However, returning to a point mentioned in the beginning of this paper—the ordered roads evident in the site plan are the final product. Thus, the widening of corridors and narrowing of streets seem devised through central planning.

Lastly, writing and calendars emerged in the Maya lowlands during the Late Preclassic period (Saturno et al. 2006) and along with them divine kingship (Freidel and Schele 1988; Estrada-Belli 2016, p. 251; Martin 2016). Thus, the corridor widths negatively correlated with these new forms of administration and social organization. Such a trend is expected as public goods become less valued as social organization became more competitive and bureaucracies lost their power to constrain the desires of social elites. Perhaps more importantly, urban grids are a form of legibility not directly controlled by elites after their construction. On the other hand, calendars and texts are esoteric media upon which elites can capitalize; thus, it makes sense that this form of legibility would thrive in a more competitive state. In addition, neglecting the infrastructure can help break down social connectivity and may lead to segmentation (adapting Bettencourt 2013, p. 1440), which is a characteristic of more despotic styles of rulership (Blanton and Fargher 2011, p. 506).

Images of Late Preclassic despots have not been observed at Nixtun-Ch'ich', but they emerged throughout the Maya region such as at nearby Tikal, where the ruling dynasty may have been founded at around AD 100 (Freidel and Schele 1988, p. 552; Martin and Grube 2008, p. 27). At this time, Nixtun-Ch'ich' continued to narrow but maintained the corridors. A massive building campaign including the triadic group (Structure BB1) also occurred at the site. However, a rival, Tayasal, which was once a small Middle Preclassic center rose to become a Late Preclassic city. It had two triadic groups and may have become the seat of rulership displacing Nixtun-Ch'ich'. By the Early Classic period (AD 200–600), very elaborate tombs appeared at Tayasal (see Chase 1983, p. 401–423) and Nixtun-Ch'ich' was largely abandoned. The grid had been maintained for over 700 years, but it was likely not considered a proper spatial arrangement, as dispersed settlements were better suited for the competitive world surrounding despotic kings.

Conclusions

Human settlement is often imagined as gradually emerging with ever greater complexity matching that of the society at large. Yet innovations such as the Nixtun-Ch'ich' grid seem to defy such linear development. Another—perhaps even more defiant—example is that of Poverty Point in Louisiana, where settlement was composed in a radial or polar grid around 1000 years before Nixtun-Ch'ich' (Sassaman 2005, p. 336). Anomalies do not establish rules, but they do illuminate what was possible. Extreme administrative advances also suggest that some change was punctuated rather than gradual (see Spencer 1990). While the urban grid was not used at most other Maya sites, the fact that it appeared at Nixtun-Ch'ich' indicates that social complexity involves innovation as well as experimentation.

Public spaces were critical to the development of social complexity. They contributed to diversification and stratification as space was divided and possibly restricted. All people in public spaces have individual objectives. Social segments, likewise, include people with common goals, though the interests of group members will not completely coincide. Elevating plazas above streets makes activities on them less visible to people in the street and reduces the ease of access. Thus, they are less public and more private than the streets below them. Some blocks at Nixtun-Ch'ich' include further dividing and raising. The Late Preclassic period triadic group (Group BB), for example, includes an elevated small plaza within its triadic group, which would have not accommodated massive crowds.

Private and public spaces lie on the ends of a continuum. Exclusive spaces that have either been privatized by a social segment or simply originally built to serve that segment are not purely public, because they do not serve the general public. Yet, they are not purely private, since they serve the population of the segment. Nixtun-Ch'ich' residences were the most private and the gridded streets and one plaza were the most public of spaces. The presence of smaller plazas rather than large plazas, which are found in other Preclassic sites, likely indicates that the space of Nixtun-Ch'ich' was more controlled/rationalized (Reese-Taylor 2017, p. 595). Such privatized public spaces suggest segments in the population and, perhaps, a more cosmopolitan city. The rationalization and planned segmentation also imply the presence of planners or coordinators and that the public/private dichotomy becomes increasingly formally “gray” along with the emergence of complexity.

The narrowing of the streets suggests a weakening of their regulation—in other words, the state was not as invested in them as they had been when they were first

constructed. The decrease in public space would have likewise decreased the connectivity integrating the districts and neighborhoods. Thus, while the grid was maintained until the Late Preclassic hiatus/collapse, its integrative qualities had been compromised reflecting a trend toward greater segmentation and dispersion.

Competitive societies do not invest as heavily in infrastructural power; therefore, districts possess greater autonomy and the secondary elite greater independence. They often include the houses of elites surrounded by clusters of residences of constituents (Blanton and Fargher 2012a; Lemonnier 2012, p. 195; Arnauld et al. 2012, p. 219). As a result, the overall city may be dispersed. If the initial-planned Nixtun-Ch'ich' with its more ample public spaces is contrasted with typical Classic period cities, the districts of the latter seem dissected. While Classic period roads continued to link, they did so in a hierarchical manner and facilitated the distancing of the districts and perhaps the strengthening of neighborhood integration within districts. So district bonds and identities were likely strengthened and those of the city at large weakened. The trend toward privatization at Nixtun-Ch'ich' supports Blanton and Fargher's (2012a, p. 42–43), "Hypothesis 1," which argues that intermediate units (districts) introvert when public goods are insufficient. It is also likely that secondary elites experienced greater independence and neighborhood and district social identities became more pronounced.

Although early public spaces may have generally been organized by consensus rather than by elites (Inomata et al. 2015, p. 529), the public spaces of Nixtun-Ch'ich' seem to have been planned from above. We do not know if these planners were religious, political, or building (masonry) elites, but they certainly left their mark upon the city, which has remained for 2500 years. However, while planning seems centralized, we have found no images of these leaders and the initial gridded city seems to have represented a social system based upon cooperation. Yet, the fact that the grid was regulated over a long period of time (likely several hundred years) suggests some sort of constancy in planning. In addition, raised restricted spaces, which became higher over time, just as they widened, likely reflected and facilitated exclusivity.

The expansion of private space into public space would have degraded the social vibrancy of Nixtun-Ch'ich', as it would have decreased the infrastructure of the social reactor. In other words, the infrastructure in the form of corridors and their public spaces would have decreased as population increased. The increased privatization of public spaces likely related to larger trend toward competitive behaviors on the part of the ruling elites as despotic rule became vogue in the Maya lowlands. However, while narrower, the streets remained a vital part of the city.

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Compliance with Ethical Standards

Conflict of Interest I have no conflicts of interest.

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