









Research Article

The Jarigole mortuary tradition reconsidered

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The megalithic pillar sites found around Lake Turkana, Kenya, are monumental cemeteries built approximately 5000 years ago. Their construction coincides with the spread of pastoralism into the region during a period of profound climate change. Early work at the Jarigole pillar site suggested that these places were secondary burial grounds. Subsequent excavations at other pillar sites, however, have revealed planned mortuary cavities for predominantly primary burials, challenging the idea that all pillar sites belonged to a single ‘Jarigole mortuary tradition’. Here, the authors report new findings from the Jarigole site that resolve long-standing questions about eastern Africa’s earliest monuments and provide insight into the social lives, and deaths, of the region’s first pastoralists.

Keywords: Eastern Africa, megalithic architecture, funerary archaeology, mortuary practices, pastoralist society

Introduction

The earliest evidence of monumentality in eastern Africa coincides with the initial spread of food production into sub-Saharan Africa during a period of profound climatic, economic and social change (Marshall *et al.* 1984; Garcin *et al.* 2012; Hildebrand *et al.* 2018). Animal herding spread into the region via the Turkana Basin of northern Kenya *c.* 5000 years BP at the

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end of the African Humid Period; desertification of the Sahara at that time propelled mobile pastoralists into sub-Saharan Africa. Lake Turkana shrank dramatically during this period and people began constructing megalithic cemeteries, known as ‘pillar sites’, near its shorelines. These sites are named for their arrangements of columnar basalt and sandstone pillars placed atop large, circular stone platforms or mounds, often with associated stone circles or cairns. The construction of such sites required the coordination of a considerable amount of labour in order to move hundreds of cubic metres of sediment and to drag heavy stones up to 2km over uneven terrain (Hildebrand *et al.* 2011, 2018). Such labour would have been intergenerational, with potentially centuries separating the original builders from those who eventually completed the sites (Hildebrand & Grillo 2012). As a central feature of early pastoralism around the lake, and now its most enduring legacy, these pillar sites provide a window into the social lives of eastern Africa’s first herders and how they coped with a changing world.

Theories regarding who built the pillar sites, and how and why they were constructed, have been strongly shaped by early work at a single site. Jarigole (GbJj1) was the first pillar site to be excavated, resulting in the proposal that pillar sites belong to a previously unknown ‘Jarigole mortuary tradition’. This would have entailed secondary burial—that is, the interment of defleshed, disarticulated remains—within the associated mounds (Nelson 1995). The tradition was assumed to have been imported to the Lake Turkana region by early pastoralists, along with ‘Nderit’ pottery and domestic animals, from some yet-unidentified region to the north. This remained the dominant interpretation of pillar sites for 30 years. Recent excavations, however, have shown that, while other pillar sites were also used as cemeteries by early pastoralists, the observed mortuary practices are strikingly different from the proposed Jarigole mortuary tradition: at these other sites, most individuals are in primary burials—that is, articulated bodies were interred prior to decomposition. At least one site, Lothagam North (GeJi9), is estimated to contain hundreds of individuals within a single, elaborate mortuary cavity (Hildebrand *et al.* 2018). These findings challenge the notion of a single mortuary tradition and raise questions about how potentially diverse social groups maintained connections around and/or across the lake.

Evaluating the Jarigole mortuary tradition requires us to examine the origins of these sites and burial practices. The earliest dates from excavated contexts (*c.* 5000 BP) are from the largest pillar sites, Lothagam North and Jarigole. Located on opposite shores of Lake Turkana, these two sites are separated by approximately 100km across the water, or some 300km by land (Figure 1). Many aspects of their material culture, including stone tools, pottery and beads, are remarkably similar (Goldstein 2019; Sawchuk *et al.* 2019; Grillo *et al.* 2022). Substantial differences in construction and mortuary use between them would raise intriguing possibilities for how the practice of building pillar sites began and spread.

In this article, we report on new excavations at Jarigole that clarify how the site was constructed and used. In addition, we directly compare Jarigole and Lothagam North to explore the nature and origins of the pillar sites and monumentality in eastern Africa. We evaluate the evidence for the presence of a single pan-Turkana mortuary tradition during this period and present new findings and radiocarbon dates from Jarigole that cast fresh light on the lives of eastern Africa’s first herders.

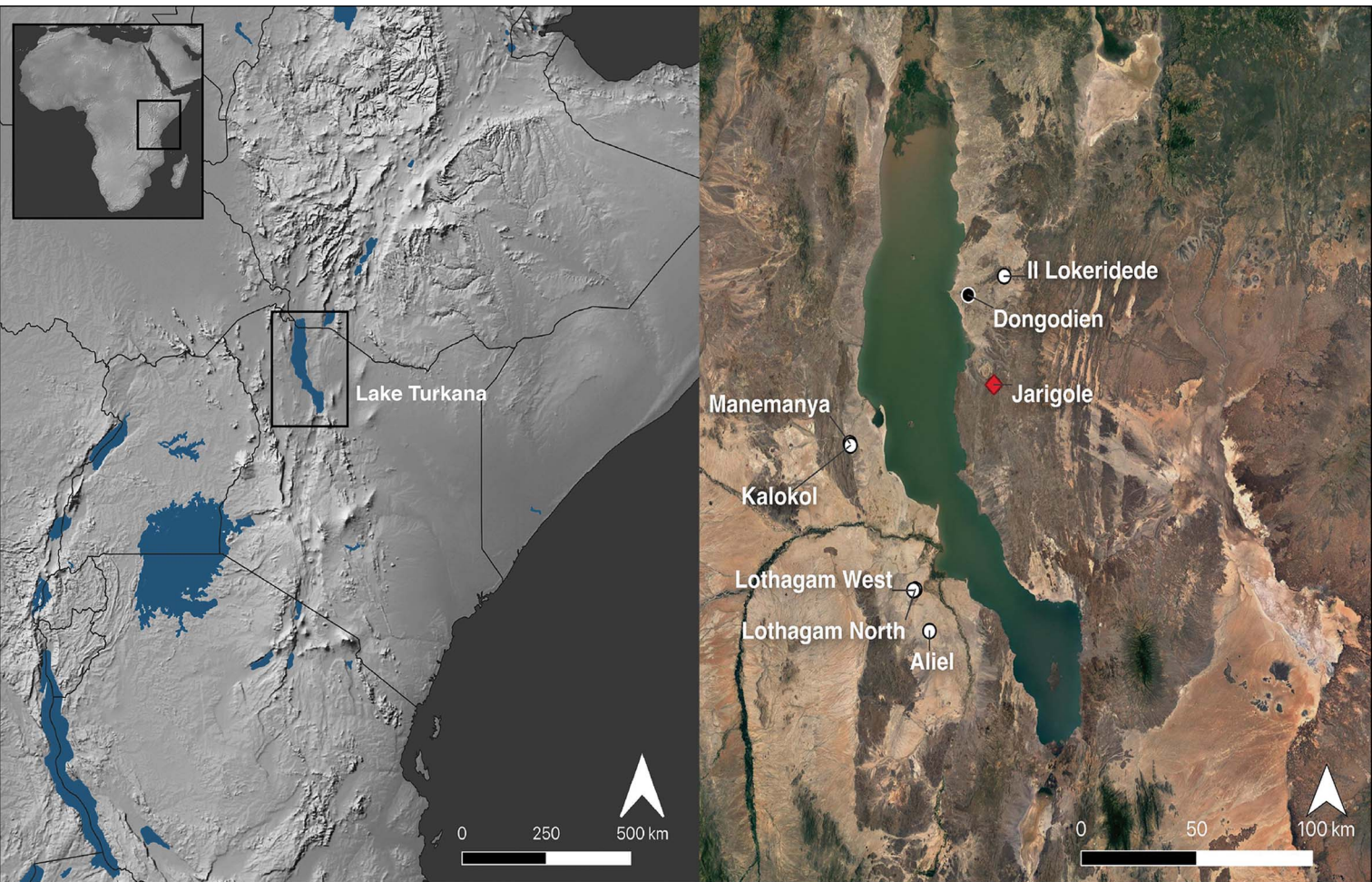


Figure 1. Pillar sites around Lake Turkana (red = Jarigole; white = other pillar sites; black = habitation site). Basemap data by Natural Earth (left) and Google (right) (credit: E. Sawchuk).

Jarigole in the context of pillar sites around Lake Turkana

The pillar sites were first perceived as possible archaeoastronomical sites, and excavations of other megalithic sites in the Turkana Basin suggested that they might also be burial grounds (reviewed by Hildebrand & Grillo 2022; see also Lynch & Robbins 1978, 1979; Soper 1982). The discovery of isolated human remains at Jarigole and limited excavations at Il Lokeridede (GaJi23; Nelson 1995; Githinji 1999) supported the idea of pillar sites as burial grounds. Since then, additional work at multiple pillar sites has established the chronology of their construction and use between *c.* 5200 and 4200 cal BP (Hildebrand & Grillo 2012), explored material cultural and mortuary patterns (Goldstein 2019; Sawchuk *et al.* 2019; Grillo *et al.* 2020, 2022) and documented inter-site variability (Hildebrand *et al.* 2011; Grillo & Hildebrand 2013; Sawchuk *et al.* 2019).

Many original assumptions about the pillar sites have turned out to be true. Initial construction coincided with the introduction of cattle, sheep and goats to the Turkana Basin (Hildebrand & Grillo 2012; Hildebrand *et al.* 2018); faunal remains from the contemporaneous Dongodien habitation site suggest that early pastoralists also relied on fish and other wild resources (Marshall *et al.* 1984). The introduction of livestock probably involved some degree of population movement and mixture between migrants and local foragers (Sawchuk 2017; Prendergast *et al.* 2019). All pillar sites excavated to date are cemeteries, with men, women and children present (Hildebrand *et al.* 2018; Sawchuk *et al.* 2019). Most were interred with some form of personal ornamentation—predominantly beads made from ostrich eggshell and/or stone. Contrary to the idea that these commemorative practices were imported from elsewhere (Nelson 1995), pillar sites appear to be unique to the Turkana Basin, although they are part of a broader trend of mortuary innovation as pastoralism spread from the Sahara into eastern Africa (Sawchuk *et al.* 2018). In northern Africa, earlier examples of monumentality and ritual behaviour among pastoralists, including cattle burials in megalithic stone structures, have been interpreted as possible social responses to climate change and aridification (di Lernia 2006, 2013; di Lernia *et al.* 2013). While there are no clear connections between Saharan traditions and the pillar sites, the latter may have stemmed, in part, from cultural memories imported with domesticated animals from the north. Why people built pillar sites is perhaps archaeologically unknowable, but communal burial practices may have helped unite dispersed and potentially diverse groups of people, maintaining networks vital for pastoralism around the lake (Hildebrand *et al.* 2018; Sawchuk *et al.* 2018). Beyond places of congregation, these burial grounds may have also served as nodes or ‘persistent places’ for mobile pastoralists to anchor and orient themselves as they moved across otherwise fluid landscapes (Lane 2016).

Jarigole (GbJj1), the first pillar site to see subsurface exploration, was first studied as part of the Koobi Fora Field School programme between 1986 and 1996, under the direction of Harry Merrick. The site is located on the east side of Lake Turkana, approximately 15km south-east of Alia Bay (3°37′48.0″N, 36°21′36.0″E) (Figure 1). It features an elliptical stone platform, with long axes of approximately 40m (north-west to south-east) and 30m (north-east to south-west), ringed by a partial kerf of cobbles and a roughly circular central mound measuring approximately 25m in diameter and about 1m in height (Figure 2). The Koobi Fora Field School excavations (a 12m × 1–2m trench and four other 1m² units)



Figure 2. Jarigole as of July 2019. Above) view of the central mound looking north-west; below) view of the site from Jarigole Hill (in the background above), facing north-east (credit: E. Sawchuk).

reached less than 0.5m below the surface in most units, and never reached bedrock. Thousands of artefacts were recovered from the site, including ceramic sherds and figurines, stone tools, and ostrich eggshell and stone beads, in addition to fragmentary human and animal bone. The discovery of human remains at the site, as well as limited evidence from excavations at Il Lokeridede (GaJi23; Nelson 1995; Githinji 1999), was used to support the hypothesis that these sites were intended primarily for burial purposes. These excavations, however, have remained unpublished, aside from a brief magazine overview (Nelson 1995), a governmental report (Koch 1993) and a preliminary paper on ceramic sourcing (Koch *et al.* 2002).

The Koobi Fora Field School researchers proposed a two-step process for the Jarigole mortuary tradition: primary burial or other treatment off-site, in which bodies were defleshed and disarticulated, followed by secondary burial of fragmentary remains at a pillar site. As evidence, Nelson (1995) cited the isolated, commingled and disarticulated nature of the human remains scattered throughout the Jarigole mound, which showed no evidence of originating from disturbed primary burials. Material culture scattered throughout the fill deposits of the mound were interpreted as grave offerings, with both human bone and artefacts “mixed into the fill as new burials intruded into and scattered the contents of the old” (Nelson 1995: 52). In one of the final field seasons before Koobi Fora Field School excavations at Jarigole ceased in 1996, one of the deeper units yielded an articulated, flexed skeleton beneath several large rocks, 0.60–0.65m below the surface, in deposits “only just penetrating the lower part of the fill” (Nelson 1995: 52). This prompted questions about whether other rock clusters might conceal primary burials.

Since 2009, excavations at pillar sites to the west of Lake Turkana (Figure 1), especially those at Lothagam North, have changed our understanding of the mortuary behaviours practised at these sites. For example, whereas Nelson (1995) interpreted Jarigole’s mound as the initial construction, with burials subsequently dug into it, Lothagam North’s construction began with the removal of 120m² of sand to create a deep cavity reinforced by a perimeter of sandstone slabs. Initially, people placed bodies in pits dug into the soft sandstone bedrock at the base of the cavity; over time, people added numerous additional burials in various positions and orientations, often placing large rocks atop heads and/or torsos. Before the space was exhausted, people capped the cavity with sediment containing broken pottery, other artefacts and isolated human remains, creating a low mound. The 2012–2014 excavations recovered evidence for a minimum of 44 men, women and children. The density of excavated burials, coupled with estimates of the cavity’s dimensions from ground-penetrating radar survey, suggests at least 580 individuals were interred at the site (Hildebrand *et al.* 2018; Sawchuk *et al.* 2019).

The uppermost deposits at both Lothagam North and Jarigole have yielded similar material: isolated, fragmentary human remains and various artefacts. The *in-situ* interments at Lothagam North, however, were all discovered more than 0.6m below the surface, in the mortuary cavity. Two thirds of the burials were primary, indicating that individuals were brought to the site and buried soon after death; others were secondary ‘bundle burials’, or too poorly preserved to assess. The results from Lothagam North therefore raised the possibility that the original excavations at Jarigole, which do not appear to have extended more than 0.5m below the ground surface in most units, may have stopped short of any deeper,

primary inhumations, and consequently that site formation and mortuary practices at these two pillar sites do not, in fact, differ substantially.

New findings from Jarigole

In July 2019, we commenced new fieldwork at Jarigole to test the hypothesis that deeper excavations would reveal a mortuary cavity and primary burials. We removed backfill from a 7 × 1 m section of the Koobi Fora Field School trench to expose the stratigraphy and deepen the excavations in the southernmost 2 × 1 m. An additional 2 × 1 m section was reopened in the centre of the mound, and a new 2 × 1 m trench placed adjacent. Although our deepest excavations reached 1.6 m below the surface in the centre of the mound, we still did not find sterile substrate or bedrock. Two previously excavated 1 × 1 m units and a new 0.5 × 0.5 m unit were opened to revisit the stratigraphy and provide context for the stone platform construction (Figure 3). Excavation methods followed protocols from other pillar sites (Sawchuk *et al.* 2019) and the finds are curated with the earlier Jarigole collection at the Nairobi National Museum.

Our findings demonstrate that Jarigole's construction began with the excavation of a planned mortuary cavity and the building of a surrounding circular stone platform. This platform consists of a series of short, basalt cobble retaining walls with rubble filling the spaces between them (Figure 4). Toward the centre, this platform terminates abruptly at a large, central mortuary cavity extending more than 1.6 m below the current mound surface. Unlike at Lothagam North, where the cavity was dug into loose sand that had to be held in place by large, tilted sandstone slabs, the compacted sterile substrate at Jarigole appears to have held firm without need for reinforcement.

In-situ articulated burials were found at Jarigole more than 1.1 m below the top of the mound surface—deeper than any of the excavations carried out by the Koobi Fora Field School. Above the burials, the deposits were consistent with what has been previously recorded, containing only fragmentary, isolated remains, of which the majority are small elements, such as teeth and phalanges. Below, six burial features, marked by large rocks, contained the remains of at least nine individuals (Table 1). Burials 1–3 were found in closely spaced pits on the northern perimeter of the mortuary cavity (Figure 5), beginning at approximately 1.1 m below the current ground surface. Burials 4–6 were recovered from the centre of the mound at approximately the same depth—around 1.15 m below the surface. All of the individuals were flexed, primary burials and variously orientated, with the exception of Burial 5, which consisted of at least three (based on crania) commingled, disarticulated individuals. Whether this specific feature represents an intentional secondary burial or the presence of one or more primary burials that had been disturbed by the interment of Burial 6, which is located immediately below, is unclear. None of the other burials appear to have been disturbed. Isolated skeletal elements from features visible in the trench profiles were also recovered, indicating dense burial deposits. Among the total assemblage of recovered human remains, adults of both sexes, as well as juveniles, are represented.

As with the previous excavations, artefacts, as well as isolated human and animal remains, were found scattered throughout the deposits. Finds include ostrich eggshell and stone (predominantly amazonite) beads, lithics, broken Nderit vessels, ceramic animal figurines

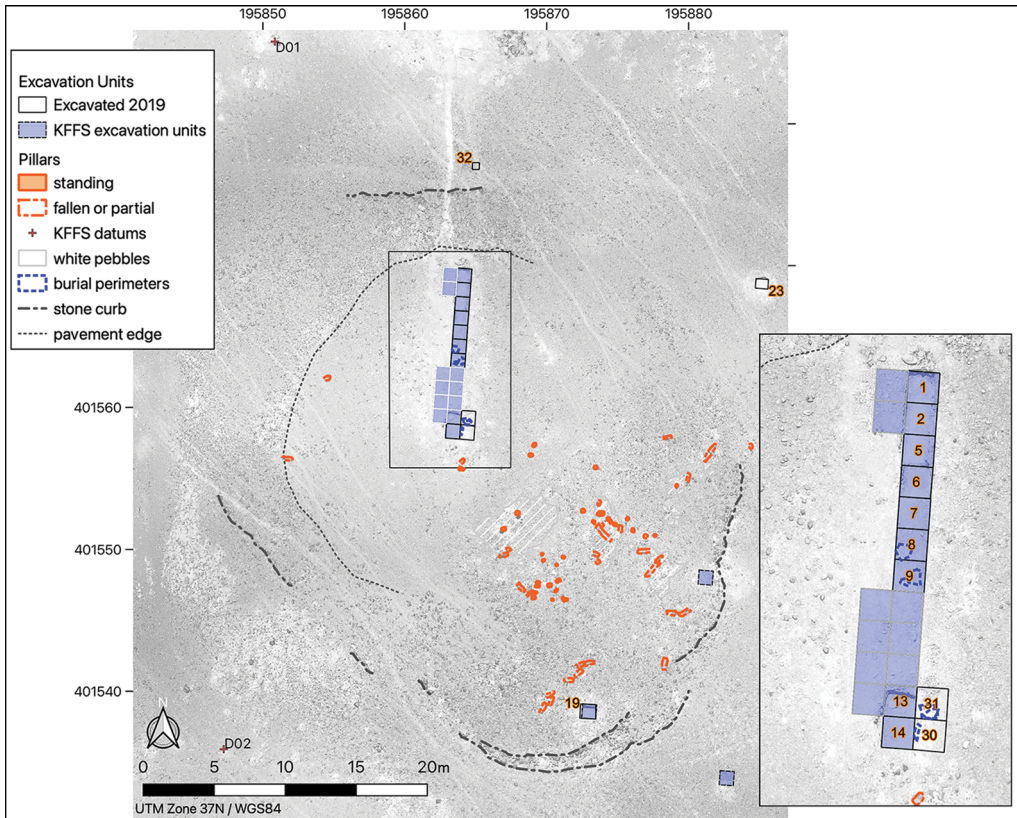


Figure 3. Jarigole site plan, indicating Koobi Fora Field School (KFFS) and new excavation areas (credit: D. Contreras).



Figure 4. Eastern profiles of 2019 excavations (credit: A.C. Hill).

(Figure 6a), and fragments of ochre and charcoal. The Nderit ceramic assemblage includes a striking phallic bottle neck—the first of its kind to be found in eastern Africa (Figure 6b). Artefact types and densities were similar in the cap deposits and infill deposits below, with additional beads from jewellery or garments worn by deceased individuals recovered from

Table 1. Bioarchaeological context for burials excavated in 2019 (Ad = adult; YAd = young adult; MAd = middle-aged adult; M? = probable male; F? = probable female; ? = undetermined sex).

Burial	MNI	Type	Age/sex	Position	Side	Orientation (<u>head</u>)	Facing	Context	Associated artefacts
B-1	1	Primary	MAd/?	Flexed	L	<u>S</u> -N	E/down	Pit on edge of cavity	Amazonite beads near neck, ostrich eggshell beads in fill
B-2	2	Primary	Ad/?	Flexed	R	<u>SE</u> -NW	?	Over-lapping pits on edge of cavity	Ostrich eggshell beads in fill
		Primary	Ad/?	Flexed	L	<u>S</u> -N	W		
B-3	1	Primary	MAd/F?	Flexed	R	<u>NE</u> -SW	W	Pit on edge of cavity	Ostrich eggshell beads, ochre in fill
B-4	1	Primary	YAd/F?	Flexed	R	<u>S</u> -N	E	Central mortuary cavity	>100 amazonite/other stone beads around neck, ostrich eggshell beads in fill
B-5	3	Secondary	YAd/M?	-	-	-	-	Central mortuary cavity	Ostrich eggshell beads in fill; limestone disc 'earring'
		?	Ad/?	-	-	-	-		
		?	Ad/?	-	-	-	-		
B-6	1	Primary	Ad/?	Flexed	R	<u>E</u> -W	N	Central mortuary cavity, in pit directly below B-5	Bracelet of approximately 330 ostrich eggshell beads around right wrist



Figure 5. Burial 3 in a pit at the northern edge of the mortuary cavity. Burials 1–2 were recovered from pits in the background (credit: E. Sawchuk).



Figure 6. New ceramic finds from Jarigole: a) animal figurine; b) fragment of phallus-shaped ceramic bottle found near the Burial 4 individual (credit: K. Grillo).

the burials in lower levels. Most individuals were associated with some form of ornamentation (Table 1). The individual in Burial 4 was found with more than 100 amazonite and other stone beads near their neck and chest, which were perhaps worn as a necklace (Figure 7). Over 300 small (approximately 3mm in diameter) ostrich eggshell beads, which encircled the right radius/ulna of the individual in Burial 6, appear to be a bracelet. Other ornaments include over 4000 ostrich eggshell beads both associated with burial features and scattered throughout the cavity.

Dating the deposition of both burials and fill at Jarigole, as well as at other pillar sites in the Turkana Basin, is challenging, given the risks of inbuilt age in the available dateable materials. Ostrich eggshell beads may be made from old material and may have circulated before being buried; charcoal is likely to have a smaller offset but may still incorporate both old wood and residence time effects. Radiocarbon dates on these materials provide *termini post quem* rather than dates of deposition, however, as it is unlikely that every sample has an age offset, much less the same one. As dates on charcoal should more closely approximate date of deposition than those on ostrich eggshell beads, a single-phase Bayesian model incorporates the new dates on both charcoal and ostrich eggshell, which captures the span during which Jarigole was likely in use (Table 2; Figure 8). Because no chronological data are available that can constrain the beginning of the phase, the model potentially overestimates the age of the earliest deposits at Jarigole; this might be addressed in future through outlier modelling (e.g. Bronk Ramsey 2009b). This tendency to overestimate the duration of use is perhaps balanced by the fact that the model obviously cannot account for any earlier deposits that remain unexcavated. While these uncertainties remain, this approach to the radiocarbon evidence suggests a period of use that is relatively short, from 4940 to 4630 BP (95% range of phase kernel density estimate: Bronk Ramsey 2017). This is consistent with the radiocarbon evidence from Lothagam North (4920–4650 BP at 95% range of phase kernel density estimate), suggesting that both



Figure 7. Amazonite and other stone beads found near the neck of the Burial 4 individual (original layout for necklace is unknown) (credit: K. Grillo and E. Hildebrand).

cemeteries were in use for approximately three centuries at the beginning of the fifth millennium BP. A single outlier from Lothagam North, which was excluded from analysis, may suggest a subsequent phase of use approximately three centuries later. This would be consistent with similar dates from the pillar sites at Kalokol and Manemanya (Figure 8; see also the online supplementary material (OSM)).

Discussion

The similarity in the mortuary cavities at Jarigole and Lothagam North indicates that the people who constructed these sites followed a predetermined plan that began with a significant investment of labour to excavate a large area for burial. Coordination is evident in the sites' parallel use, which encompassed placement of the deepest burials in pits (at least on the cavity's periphery at Jarigole), followed by interment of mostly articulated, as well as some disarticulated, individuals in various positions and orientations, typically marked with large rocks. Then, at some point before the cavities were entirely filled with burials, at both

Table 2. Radiocarbon dates from Jarigole. Dates from Koobi Fora Field School excavations have been adapted into the 2019 excavation unit numbering system; based on available field notes, the Koobi Fora Field School datum is thought to be at/close to the excavation surface. All dates were calibrated in OxCal v4.4.2 with a mixed IntCal20 and SHCal20 calibration curve (Bronk Ramsey 2009a; Hogg *et al.* 2020) per Marsh *et al.* (2018) and rounded to the nearest five years.

Context (unit/level/depth below surface)	Material	Uncalibrated date BP	cal BP (at 95% confidence)	Lab #	Reference
Central cavity (U31, L31, 1.56m), B6 bracelet	Ostrich eggshell bead	4275±15	4860–4655	UCIAMS 229043	This study
Central cavity (U30, L8, 0.30m)	Ostrich eggshell bead	4215±15	4840–4620	UCIAMS 229042	This study
Edge of cavity (U8, L5, 1.12m), B3 pit	Charcoal	4185±15	4830–4580	UCIAMS 229026	This study
Edge of cavity (U9, L3, 1.14m), above B2	Charcoal	4165±15	4825–4535	UCIAMS 229027	This study
Central cavity (U31, L17, 0.60m)	Charcoal	4130±15	4810–4520	UCIAMS 229028	This study
Koobi Fora Field School: intermediate cap fill (U14, 0.65m), with burial	Ostrich eggshell bead	4401±39	5260–4840	AA85133	Hildebrand & Grillo 2012
Koobi Fora Field School: intermediate cap fill (U14, 0.55m)	Ostrich eggshell bead	4381±39	5045–4840	AA85131	Hildebrand & Grillo 2012
Koobi Fora Field School: upper cap fill (U14, 0.05–0.10m)	Ostrich eggshell bead	4251±39	4865–4585	AA85132	Hildebrand & Grillo 2012
Koobi Fora Field School: lower cap fill (U14, 1–1.05m)	Ostrich eggshell bead	4146±53	4830–4445	AA85134	Hildebrand & Grillo 2012

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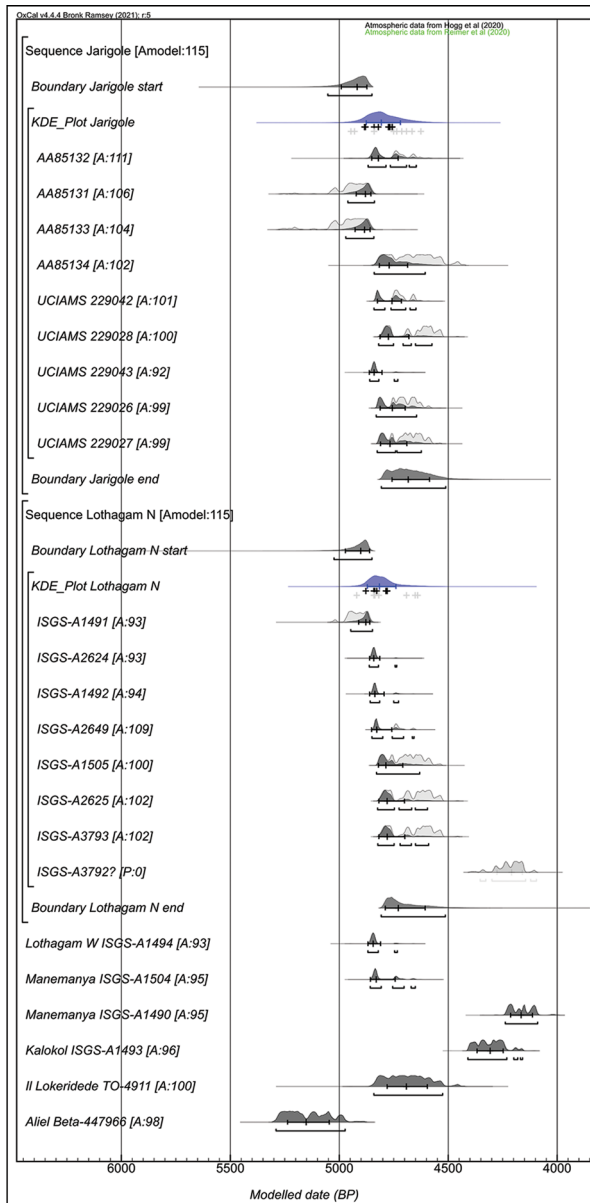


Figure 8. Radiocarbon dates from Jarigole (Table 2) and other pillar sites (see the online supplementary material (OSM)). All dates are from excavated contexts, except Aliel. Modelled in OxCal 4.4.2 (Bronk Ramsey 2009a, 2021) using a mixed curve (following Marsh et al. 2018) that incorporates the uncertainty of not knowing the appropriate mixture of IntCal20 and SHCal 20 (Hogg et al. 2020) in locations near the Intertropical Convergence Zone (ITCZ). Jarigole and Lothagam North are modelled as independent phases, with available radiocarbon dates from other pillar sites included (unmodelled) for comparison. Brackets at left indicate model structure; with the single late date (ISGS-A3792?) from Lothagam North excluded as an outlier (indicated in light grey), the dates are consistent with the model parameters ($A_{model} = 115$). The kernel density estimate plots of each phase (in blue) summarise the posterior distributions of the modelled dates in each phase to produce estimates of the span of each phase (Bronk Ramsey 2017) (credit: D. Contreras).

sites, the remaining space in the cavities was filled with sediment containing a mixture of beads, broken pots and human remains (among other material), and capped by circular platforms featuring low mounds and pillars.

While Jarigole is therefore no longer an outlier from the regional tradition, there are still notable differences compared with Lothagam North. The cap deposits at Jarigole are nearly twice as deep, which explains the original excavators' interpretation that it was a secondary burial ground. This raises the question of whether Jarigole's use as a primary burial site was intentionally less intensive and/or endured for a shorter duration than at Lothagam North, resulting in more of the cavity being filled with sediment when the burial cavity was capped. Another key difference is found in the ceramic figurines, which are relatively common at Jarigole (Hildebrand *et al.* 2018: fig. S2) but absent at every other pillar site excavated to date. This exemplifies the presence of inter-site variability that seems deliberate and meaningful, such as site-specific preferences for different types of stone for beads (Sawchuk *et al.* 2019). Given the scope of this tradition across time and space, some of this variation possibly reflects differences between the local communities who created and used these cemeteries. It is also possible that the sites were used by multiple groups with diverse origins, identities and/or material practices.

Intriguing questions therefore remain concerning when and how individual pillar sites were capped. From where did the sediments for the cap deposits originate, and why do they contain so many artefacts and human remains? At both Jarigole and Lothagam North, thousands of ostrich eggshell beads, hundreds of Nderit sherds (seemingly from deliberately broken pots), and other artefacts are present throughout the cap fills, as though they were intentionally brought to the site and scattered (Nelson 1995; Sawchuk *et al.* 2019; Grillo *et al.* 2022). Isolated human remains are similarly frequent—especially teeth and hand bones.

There are several possible scenarios for how these pillar sites were completed. First, the mortuary cavities might have previously contained more burials, with the upper interments being removed during the capping process, resulting in their remnants becoming incorporated into the fill. This seems unlikely (albeit not impossible), given how dense and fragmentary the *in-situ* burials are at lower depths and how few isolated remains are present in the cap deposits; any removal would thus have had to have been very thorough. Second, carnivores could have disturbed the upper layers. This is unlikely, given the absence of gnaw marks and the low density of remains and types of skeletal elements present. Third, sediment for the cap deposits could have been sourced from nearby cemeteries, habitation sites and/or middens. This too seems unlikely, as no such sites have been found near either Jarigole or Lothagam North, the density of Nderit sherds and ostrich eggshell beads is relatively consistent throughout the platforms, and larger elements are absent among the isolated human remains. A fourth scenario, which seems to be the most parsimonious, is that people brought artefacts and isolated human remains to pillar sites and scattered these elements as part of a mortuary ritual, and that this practice continued after primary burial ceased, as the remaining cavity was being filled. If this suggestion is accurate, then the original interpretations of the Jarigole mortuary tradition were, to a degree, correct: parts of individuals who died elsewhere were routinely mixed into the fill, along with broken pots, beads and other offerings, potentially during and after the phases in which Jarigole was used for primary burial (see also Lane 2016).

The new evidence from Jarigole prompts a reconsideration of how herders organised themselves across this landscape, and how death and burial impacted everyday life. Nelson (1995) reasoned that pastoralists who ranged over several hundreds of kilometres might choose to inter expediently and/or prepare the dead elsewhere, and then bring their remains to a pillar site at certain points in the seasonal cycle. While this may have been true during some of Jarigole's period of use, the prevalence of primary, *in-situ* burials during the early stages of use demonstrates that many individuals were brought to the site and interred shortly after death. Groups must have been within a few days' walk from a pillar site to enable these burials, and/or funerary rituals were important enough for people to cease other activities and travel whenever a death occurred. It is impossible to distinguish between such possibilities without a better understanding of early herder mobility around the lake, which is difficult to reconstruct, given that most of our available information originates from these mortuary sites. Even if communities remained relatively close to the lakeshore, Turkana's shorelines shifted over time. In addition, we do not know whether funerals were large gatherings or smaller affairs, why individuals were interred in primary *vs* secondary burials (or perhaps scattered in the mortuary fill), nor whether inclusion at a specific site was based on place of birth or death, or other determinants (Sawchuk *et al.* 2019). Future research on individuals and isolated remains excavated from different pillar sites using isotopic and ancient DNA analyses will be critical for interrogating both mortuary and mobility patterns among these pastoralist groups and for reconstructing aspects of their lives from their treatment in death.

Conclusions

The original concept of a Jarigole mortuary tradition, which had already been revised based on evidence from the western pillar sites (Sawchuk *et al.* 2019), can now be completely overhauled. The relative consistency of site formation processes at both Jarigole and Lothagam North, along with evidence that they were constructed and used contemporaneously, suggests that pillar sites do indeed represent a unified mortuary tradition that was developed in and practised throughout the Turkana Basin. Contrary to initial interpretations, however, this primarily involved the transport of the deceased to pillar sites for burial soon after death. Future research aimed at reconstructing patterns of individual and group mobility from the remains of individuals buried at these sites will be instrumental in untangling the interconnected social landscapes that extended across the Turkana Basin at a time of profound environmental and economic upheaval. Understanding the origins of pillar sites not only speaks to the context in which pastoralism began in eastern Africa, but also the diverse ways in which these societies responded to change with innovation that united the living through interring the dead. This case study likewise serves as an important comparative reference for the growing archaeological literature on pastoralist mortuary practices (e.g. Doumani *et al.* 2015; Núñez *et al.* 2017; Jaffe 2020) and their social significance worldwide.

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Supplementary materials

To view supplementary material for this article, please visit <https://doi.org/10.15184/aqy.2022.141>.

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