# The Chronology of Kilwa Kisiwani, AD 800-1500

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## Abstract

In this article, we present the results of a recent programme of high-resolution radiocarbon dating on the urban sequence at Kilwa Kisiwani in southern Tanzania, including Bayesian modelling of twenty-one calibrated 14C dates. These data come from the 2016 excavation of a large trench directly adjacent to trench ZLL, one of the key 1960s excavations that served to establish the original chronology of the town. The new sequence reported here anchors the phases of Kilwa’s development for the first time in absolute terms. The dates, stratigraphy and artefact assemblage offer a number of new insights into the timing and tempo of the occupation at Kilwa, notably placing the first coral buildings and coins at the end of the tenth century. Insights also include findings related to the earliest phases of settlement and periods of possible urban decline. We argue against a trend for understanding Swahili towns according to a common coastal trajectory and suggest that it is important to consider regional diversity by recognizing the particular, episodic sequence at Kilwa.

## Keywords

Kilwa Kisiwani, East Africa, Swahili archaeology, radiocarbon dating

## Introduction

 Over fifty years ago, in 1965, archaeological excavations of Kilwa Kisiwani, Tanzania were concluded by Neville Chittick, by then the Director of the British Institute in Eastern Africa (1974). From the start this was conceived as an exercise in chronology: Kilwa dominated contemporary Swahili historiography (e.g. Axelson 1969; Freeman-Grenville 1962a; Gray 1951; Mathew 1963) and archaeology was planned here as a way to link the monuments of the site to the historical record. This attempt was partially successful, as discussed below, but also problematic due to the nature of the historical sources and a reliance on numismatic evidence. Yet the simultaneous effect was to create a chronology by which urban development on the Swahili coast has been measured ever since. For fifty years, Kilwa has stood as the seminal sequence for understanding the origins and development of towns on the precolonial Swahili coast (Freeman-Grenville 1962a; Horton & Middleton 2000; Nurse & Spear 1985; Wynne-Jones & Fleisher 2015).

 In this article, we present the results of a recent programme of high-resolution radiocarbon dating on the archaeological sequence at Kilwa Kisiwani. This was based on excavation immediately adjacent to an important trench at Kilwa, to the south of the Great Mosque, where Chittick had previously encountered all phases of the site’s development, from the earliest levels onwards. Twenty-one calibrated 14C dates give precision to the dating of this sequence. The current programme of dating was intended to resolve many of the remaining chronological questions about Kilwa’s past, which has been re-interpreted on multiple occasions as archaeological and historical knowledge of the wider coastal context has been revised. In particular, it was designed to address the many implications that Kilwa’s chronology has for understanding the trajectory of coastal urbanism. Kilwa – in common with many areas of the coast and hinterland – has yielded evidence for human occupation over the long term. Early Stone Age deposits were originally identified by Glynn Isaac (in Chittick 1974) and have been reinvestigated recently (Beyin and Ryano 2020); later Stone Age occupation seems to have been spread across the island and region (Wynne-Jones 2005). Here we focus instead on the record of settled life at the site, seen in the successive areas of dense housing that have made up the town over the centuries. In some periods this was a monumental setting, but in the earliest phases we discuss it was a dense site of wattle and daub architecture. We discuss these as a long-term sequence of urban growth.

Kilwa Kisiwani has the most comprehensive historical narrative found on the precolonial coast, including both local histories and travellers’ accounts. It was a landmark excavation at a time when the Swahili coastal past was little known. Thus, Kilwa has often stood as the model by which the development of Swahili coastal culture has been understood. As chronologies have been pushed backwards across the broader region, and artefact assemblages have been better studied, the Kilwa chronology has been reinterpreted without the site being revisited (e.g. Chami 1994; Horton 1986; Horton et al. 1986). In reviewing the chronology of Kilwa Kisiwani, then, there are issues at stake that encompass the fundamentals of how the coastal past is viewed.

 Here we present the chronology of urban development at Kilwa, as seen through a high-resolution sequence of radiocarbon dates. These are derived from an excavation sequence that, for the first time, anchors the phases of Kilwa’s development in absolute terms. Elsewhere on the coast the chronology of Swahili settlement has been pushed back into the mid-late first millennium AD. The dates reported here show that Kilwa was not part of the earliest wave of settled life on the coast from the seventh century onwards: the first strata date only from the ninth century AD. In this paper we briefly review the chronology of Kilwa as understood through excavations and historical documents. We then present the excavations and the dates they produced. The concluding section explores the ramifications of the sequence of dates for Kilwa within coastal historiography, in a section intended to show how archaeological knowledge on the coast has been created. Here we argue against a trend for understanding sites according to a common coastal trajectory and suggest that it is important to consider regional diversity. Throughout we argue for both the importance and the particularity of the Kilwa sequence.

## Devising a chronology for Kilwa

### Excavation

 Between 2009 and 2016, the Songo Mnara Urban Landscape project (Wynne-Jones & Fleisher 2016; Wynne-Jones 2013; Fleisher 2014; Welham et al. 2014; Sulas et al. 2017) has conducted large-scale excavations at the site of Songo Mnara in the Kilwa archipelago (Figure 1). These have been accompanied by some limited exploration of Kilwa Kisiwani, mainly through geophysical survey (Fleisher et al. 2012). In 2016 the opportunity arose to excavate at Kilwa Kisiwani, with the objective of recovering a comprehensive stratigraphic sequence for dating the site (Wynne-Jones et al. 2018). This provides a useful reference for understanding Songo Mnara, whose history was tied to Kilwa, but also for revisiting some of the ways we assign chronology to Swahili urban sequences more generally. Chittick’s chronology of Kilwa rested primarily on imported ceramics and we could thus test the chronology through direct radiocarbon dating, a method deemed unreliable by the excavators in the 1960s (Chittick 1974, p. 49) but now increasingly accurate due to Accelerator Mass Spectrometry (AMS), use of calibration curves and Bayesian statistics to refine results.

We excavated a trench in the area of deepest deposits identified by the first excavations at Kilwa, to acquire materials for radiometric dating of the sequence. We were able to excavate in a more controlled fashion than had been the case in the 1960s, aided by the records of those excavations which gave a guide to what stratigraphy would be encountered. In addition to collecting samples for dating, we recorded all artefacts, took bulk sediment samples for flotation, wet and dry sieving down to 1mm mesh, and micromorphological samples of the stratigraphy.

Material for dating was systematically collected from each layer. This included all charcoal, but also charred seeds, fish, and mammal bones. In dating the trench, priority was given to seeds and bone, as these have a much shorter lifespan and would be more indicative of the exact moment of deposition. Where possible, paired samples of marine and terrestrial carbon were dated, in order to calculate and correct for the marine reservoir effect caused by marine sources of carbon dioxide, which can affect radiocarbon dates by several hundred years.

### 14C dating

Radiocarbon measurements were performed using the HVE 1MV tandetron accelerator AMS system at the Aarhus AMS Centre (Olsen et al. 2016). 14C dates are reported as conventional 14C ages BP normalized to −25‰ according to international convention using online 13C/12C ratios (Stuiver & Polach 1977). The 14C concentration for modern samples (after 1950 AD) are provided as F14C. Prior to AMS analysis all samples were subject to sample pretreatment. Charcoal samples were pretreated using the acid-base-acid (ABA) procedure to remove carbonates and humic acids. Subsequently CO2 was produced by combustion in vacuum-sealed vials containing CuO and then graphitized. Shell samples were mechanically cleaned and 10% of the surface was etched off using HCl prior to dissolution in 85% phosphoric acid for CO2 production and graphitization. All samples are calibrated to calendar ages using OxCal 4.3 (Bronk Ramsey 2009). Modern 14C age are calibrated using the Bomb13NH3 calibration curve (Hua et al. 2013) whereas shell samples are calibrated using the global marine calibration curve, Marine13 (Reimer et al. 2013). Non-modern charcoal samples were calibrated using a mixed calibration curve consisting of the Northern atmosphere (IntCal13, 70%) and the Southern Hemisphere (SHCal13, 30%) (Hogg et al. 2013; Reimer et al. 2013) to take into account the effects of the intertropical convergence zone (Crowther et al. 2018).

## Previous archaeological research

Despite the importance of Kilwa Kisiwani for the history of urbanism on the eastern African coast, previous archaeological research at the site is limited to a few projects. Research by Neville Chittick looms largest, with an extensive campaign of conservation and excavation from the late 1950s to 1965. Following a long hiatus, Matteru (1989) conducted limited excavations under the aegis of the Urban Origins in Eastern Africa project. Work by Chami (2006) followed, focused of the island near Husuni Kubwa. Finally, Wynne-Jones (2005, 2007) and Pollard (2008) carried out extensive surveys in the region around Kilwa, focusing on the regional settlement system and maritime landscape, respectively.

### Research by Chittick

 Neville Chittick’s extensive archaeological excavations at Kilwa Kisiwani (1974) have defined all subsequent research. Alongside work by Kirkman at Gede (1954) and on Pemba Island (1959), Chittick’s excavations at Kilwa were some of the earliest in eastern Africa. Chittick’s interpretations were guided by his belief that the Swahili people and settlements were the result of colonisation by Persian and Arab settlers (Chittick 1965). In sum, he argued that Kilwa was initially occupied by coastal fisherman in the late first millennium AD, a site he thought was largely discontinuous with the later foundation of the town through an external ‘Shirazi’ migration in the twelfth century AD. This was followed by a subsequent foreign dynasty, the Mahdali, who expanded the town in the thirteenth to fifteenth centuries; it was the descendants of this ruling dynasty that engaged with the Portuguese at the end of the fifteenth century (Chittick 1975).

 Chittick divided the long sequence at Kilwa into five periods (Table 1). Period Ia began with the first occupation of the site, was dated to the ninth century on the basis of a few sherds of ‘tin-glazed’ white ware, now generally known as white glaze or Opaque-Glazed Wares (Northedge & Kennet 1994; Priestman 2021). Local ceramics from this period included what Chittick called Early Kitchen Ware, now commonly referred to as Early Tana Tradition (Fleisher & Wynne-Jones 2011; Horton 1996), Triangular-Incised Ware (Chami 1994, 1998), or some combination thereof (often ETT/TIW). The site at this date was believed to be of no great size, possibly a temporary encampment of fisherman living on a spit of sand, although there was some iron slag and evidence for shell-bead making. Period Ib was marked by the introduction of imported sgraffiato pottery from Iran, dating to around 1000, but Chittick believed that the nature of the occupation was little changed, with continuing evidence of rectangular wattle and daub houses.

 Period II was dated to the late twelfth century, when coins first appear on the site associated with Ali bin al-Hasan, whom Chittick identified as the first ‘Shirazi’ ruler of Kilwa (cf. Freeman-Grenville 1962a, p. 181; Walker 1936). This was also the period of the first ‘substantial’ stone buildings, and evidence for the burning of lime (specifically from trench ZLL, see below), the construction of the Great Mosque (and with it, a largely Muslim population), a significant increase in the quantity of imported pottery and glass, iron and copper working, and cloth making (Chittick 1974, p. 237-9).

 Period IIIa was assigned to the end of the thirteenth century, aligned with the establishment of the Mahdali dynasty and its first sultan, al-Hasan b. Talut (Chittick 1974, p. 239-41). Local ceramics included Husuni Modelled Ware, a ceramic type exclusive to the Kilwa region. Coin production resumed, especially by the fourth of the Mahdali sultans, al-Hasan bin Sulaiman, who was in power when Ibn Battuta visited Kilwa in 1331 (Gibb 1962, p. 380-1; although see Fauvelle-Aymar & Hirsch 2003). These sultans (and mostly likely al-Hasan bin Sulaiman) were responsible for three great building projects: the Great Mosque extension, Husuni Kubwa and Husuni Ndogo. To this period, Chittick attributed the ‘virtual monopoly of the gold trade’ with southern Africa, a great increase in prosperity measured through imports of especially Chinese pottery, but with ‘hardly any’ of the cheaper Islamic wares (Chittick 1974, p. 239-40). From the mid-fourteenth century there was a measurable decline in prosperity, with the Great Mosque in ruins, and Husuni Kubwa left incomplete. Period IIIb, starting around 1400, represented a revival of prosperity, with a new stone-building boom, including the reconstruction of the Great Mosque, other mosques, as well as domestic buildings. The latter part of the century was again one of stagnation, with few new buildings, and the loss of the gold trade monopoly. When da Gama arrived in 1499, Kilwa, while still large, was being eclipsed by other Swahili towns such as Mombasa and Malindi (Chittick 1974, p. 241; Fleisher 2004).

Historical data were used to guide this reconstruction, derived largely from two documents, the *Chronicles of the Kings of Kilwa*, a sixteenth-century précis that was written down by the Portuguese historian Joao de Barros, and the Arabic *History of Kilwa*, which survives in a nineteenth-century copy, but probably also dates originally to the sixteenth century (Chittick 1969; Freeman-Grenville 1962a, b; Saad 1979; Strong 1895; Theal 1964, p. 4, 233-4, 240-4). The opportunity to make a direct link between Kilwa’s archaeology and history occurred because a number of the rulers of Kilwa minted coins (Fleisher & Wynne-Jones 2010; Freeman-Grenville 1957; Perkins 2015; Walker 1936), found in stratified locations throughout the site. On the basis of his discoveries, Chittick published a number of historical papers as well as a detailed historical narrative in the final monograph (Chittick 1963, 1965, 1974, p. 235-45, 1977).

 In order for the archaeologically-derived periodisation to correspond to the known dynastic lists of the *Chronicle* and *History*, Chittick (1965, p. 277-8) proposed major revision. Freeman-Grenville (1962a, p. 66-73) had set out in detail 51 rulers of Kilwa by counting regnal years, between 957 with the arrival of Ali bin al-Husain (?Hasan) the first ‘Shirazi’ ruler, and one of the last Sultans, al-Malik al-Adil, who was alive in 1520. Chittick (1965, p. 279) equated the arrival of the Shirazi with the advent of stone building and coin production; having dated this transition to c. 1200 a major shortening of these lists was required. This was achieved by removing nine sultans, mentioned in the *Chronicle* but omitted from the *History*, who ruled in Freeman-Grenville’s chronology between 1129-1277. Thus the ‘Shirazi’ dynasty of five rulers was assigned to the thirteenth century, immediately preceding the accession of the Mahdali in c. 1300. The famous sultan al-Hasan bin Sulaiman came to the throne around 1320, so Ibn Battuta’s visit would have taken place in the earlier part of his reign, with Husuni Kubwa’s construction, which Battuta does not mention, dating to after 1331 and left unfinished at the sultan’s death in c. 1340.

### Challenges to Chittick’s chronology

Chittick’s ‘Shirazi’ chronology was seriously challenged by the recovery of a hoard of Kilwa-type coins at Mtambwe Mkuu on Pemba Island (Horton et al. 1986). The hoard contained more than 2,000 locally minted silver coins, along with 12 gold coins from foreign mints. Amongst the silver issues are 30 coins of Ali b. al-Hasan, with strong stylistic connections to the Kilwa copper versions. The hoard is thought to have been buried in the late eleventh century, based on a *terminus post quem* of AD1066 (based on the foreign gold coins). Ten rulers’ names are represented in the hoard; Ali b. al-Hasan is the earliest of these in numismatic series. Thus, with a late-eleventh century deposition date, the coins of Ali b. al-Hasan were presumed to date somewhat earlier; assigned to the early eleventh century rather than Chittick’s determination of late twelfth/early thirteenth century.

 Further challenge to the chronology assigned by Chittick was posed by a generation of research on ‘urban origins’ along the Swahili coast (Sinclair & Wandibba 1988; Wynne-Jones & Fleisher 2015). Excavations at Shanga during the 1980s (Horton 1996), the reinterpretation of Manda and sites on Zanzibar (Horton 1986), and excavations at Unguja Ukuu (Juma 2004), Ungwana (Abungu 1988), and Pate (Wilson & Omar 1997) were providing evidence that the foundation of many sites was in the first millennium AD, associated with a common ceramic tradition. Research by Felix Chami on first millennium sites in central Tanzania and the Rufiji area sought to re-examine the earliest chronology of Kilwa and ETT/TIW sites. His study of first millennium ceramics from central Tanzania (1994, 1998) was based on a detailed ceramic typology, establishing an early and late period of TIW pottery: early TIW, he argued, dated from the fourth to seventh centuries while later TIW dated to the eighth to tenth centuries (1994, p. 93). Based on comparisons with published accounts, he argued the earliest levels of Chittick’s excavations at Kilwa were part of the ‘early TIW’ phase, pushing back Chittick’s chronology at least 200 years and giving a radically earlier date for the foundation of the town. Chami had recorded sixth- to seventh-century dates at sites in the Rufiji with ‘early TIW’ and took similarities between these and the material from Kilwa as grounds for redating of that latter material. Following ‘later TIW’, Chami defined a ceramic tradition called ‘Plain Ware’ in the Kilwa assemblage, a ceramic tradition of mostly undecorated pottery, which he associated with the tenth to thirteenth centuries AD (see also Pawlowicz 2013).

 When Chami carried out survey and excavations on Kilwa Kisiwani a decade later, he documented a set of ceramic materials that he argued pushed the chronology back even further into the past. Along with TIW pottery, he describes ceramic motifs that resemble Neolithic ceramics from the Rift Valley, called Narosura, as well as material that resembles types from the Nile Valley; this material, he argues, suggests dates back to the third millennium BC or earlier (Chami 2006, p. 126). These have not yet been recovered from dated contexts. Excavations in an area near Husuni Kubwa, called Nguruni, revealed evidence of intensive iron working, a full range of his ceramic types (EIW, TIW, ‘Neolithic’) alongside materials regularly found by Chittick in the town (copper coins, imported Persian ceramics, glass beads). Radiocarbon dates from these excavations, however, are from the tenth to thirteenth centuries AD. Chami argued that the deposits were mixed and disturbed, which may well be the case, as this area seems to have been an industrial-scale smelting location used over several centuries (Baužyté et al. 2021).

 Subsequent archaeological surveys investigated the broader Kilwa region (Wynne-Jones 2005) and the maritime landscape (Pollard 2008). Regional survey found settlement patterns unlike those from the Zanzibar and Lamu archipelagos, where the emergence of towns led to distinct changes in the surrounding countryside (Wynne-Jones 2005). Wynne-Jones (2007, p. 374) found that ‘the numbers of sites across all periods were fairly similar, with no obvious changes accompanying the growth of the town….the process of urbanization in the Kilwa hinterland did not entail a dramatic change in the settlement of the region’. In examining the maritime landscape, Pollard found that most of the maritime features associated with Kilwa dated from the eleventh century and later.

## Kilwa and coastal historiography

The most significant reorientation of coastal historiography since the time of Chittick’s excavations has been a major shift in the way that oral traditions of the coast have been interpreted. Comparative analysis of traditions associated with towns along the coast has resulted in a much more critical perspective on those origin stories (Tolmacheva 1993). In particular, the Shirazi traditions recorded at Kilwa must be seen as part of a corpus of similar stories relating to towns along the coast. Rather than a literal migration of people from Shiraz these have been recast as figurative narratives relating to internal migrations from Shungwaya (Nurse & Spear 1985; Allen 1993) or the spread of Islam (Freeman-Grenville 1962b; Horton & Middleton 2000; Pouwels 1987). Overall, references to Shirazi origins and specific dynastic roots in the Persian Gulf have been seen as part of local power dynamics and statements about identity (Spear 1984; Saad 1979). Similar conclusions might be drawn for the Mahdali dynasty featured in the Kilwa chronicles, as no such name is recorded in the Rasulid archives (Vallet 2010). This has ramifications for Kilwa, where the Shirazi narrative is more than a statement about ultimate origins and is instead related to a sequence of named individuals, their names confirmed by the coins they minted. Thus, we can view a moment in the sequence at Kilwa when rulers began to use the name ‘Shirazi’: a period associated with the beginnings of coral architecture and the minting of coinage. It is unlikely that these rulers actually travelled from Shiraz, and yet it is also from this moment that we might view the beginnings of the cultural connections with the Persian Gulf that became such important identity statements across subsequent centuries.

 There have in addition been important historical and numismatic discoveries since the publication of Kilwa, which have thrown some doubt on the published reconstruction of Kilwa’s chronology (Horton 2018). The first, from the Fatimid *Book of Curiosities* (c. 1050; Rapoport & Savage-Smith 2014, p. 444-5), mentions Kilwa on the sailing route to southern Africa, significantly earlier than the earliest mention known to Chittick, from Yakut’s Geographical Dictionary (c. 1224). While only the place name is provided, it does suggest that Kilwa was rather more than a minor encampment for fishermen and was instead a stopping-off point for ships venturing south to the Mozambique coast. This further suggests a much earlier connection with the ivory and gold trade.

 The second discovery concerns the religious affiliation of the Kilwa residents. Documents in the Omani archives describe an active Ibadi (Kharijite) community resident in Kilwa (Horton 2013; Wilkinson 1981). A polemic letter was written about AD 1116, by a prominent Ibadi, al-Awatabi, to two brothers at Kilwa, Ali bin Ali and Hasan bin Ali, who were propagating Ibadi Islam in the Kilwa area, but gives little further information. However, a poem, dating to around 1200, gives more details of a mission, led by Muhammed bin Umar al-Bahri, to reconvert Kilwa to Ibadism, from the extremist Shi Ghurabiyya sect that was widespread in southern Iraq at the time. It recounts that the people of Kilwa were Ibadi, and their ruler was from the line of Sulayman b. Walid b. Sulayman b. Yarak. With the death of Walid b. Sulayman there was a reputed dispute between two sons, Yarak and Mughirah. Mughirah converted to a rival Shi creed of a certain Abu Aliyan who had come from southern Iraq, and who was able to convert the inhabitants to Shi’ism. Yarak called on help of Ibadis, who sent a missionary, and the inhabitants were eventually brought back to Ibadism, although Mughirah himself remained obdurate. The only other information there is about the religious alignment of Kilwa at this time comes from Ibn al-Mujawir, (c. 1232) who stated that ‘Kilwa reverted from the Shafiiyya to the Kharijiyya and remained attached to this legal school until the present day’ (Trimingham 1975). These show that there was an Ibadi community resident in Kilwa in the early twelfth and early thirteenth centuries, but also considerable dispute between different religious factions that we might expect to be reflected in the *History* and *Chronicle* as well as possibly the archaeology.

 In 1990, five gold coins were brought into the British Museum for identification (Brown 1991). They had reputedly been discovered on Tumbatu Island (Zanzibar), but had been minted by Hasan bin Sulaiman, in which he takes the titles al-Malik al-Mansur, ‘the conquering king’, with one dated to 72[…]H (1320-29), which while confirming his existence, does little to resolve the disputed regnal dates of 1310-1333 (Freeman-Grenville) or 1320-1340 (Chittick). The minting of gold coins by this ruler does suggest ready access to gold and confirms the presence of a gold trade with southern Africa and most likely Great Zimbabwe.

 Finally, recent re-examination of the Lisbon archives has thrown into question some of the legitimacy of the Portuguese sources and their translations for Kilwa’s early history. Although the Portuguese period at Kilwa, from 1498 onwards, is quite securely dated and thus beyond the scope of this paper, it perhaps worth noting that a ‘handful’ of Swahili letters from Kilwa in the early sixteenth century have given new insights into Kilwa society during the time of Portuguese aggression (Subrahmanyam & Alam 2019). Of relevance to this consideration of the development of an urban setting at Kilwa, it might be noted that the letters illustrate a porosity between town and countryside for the inhabitants of Kilwa. At several moments of conflict in the government of the town, the inhabitants simply leave, moving to their ‘palm groves’ beyond the town limits. We return to this mobility in the discussion section, below.

## Revisiting the stratigraphy of Kilwa Kisiwani

 The majority of earlier excavations focused on revealing the plans of stone buildings – houses, mosques, and especially the Husuni palace complexes on the edge of the town, dating from the fourteenth century onwards (Chittick 1974; see also Sutton 1998). These buildings now form a key part of the current UNESCO World Heritage Site (Ichumbaki & Mapunda 2017). In contrast, relatively little attention was directed to the earlier deposits on the site, from its foundation to its rise as one of the largest port-cities on the East Africa coast. In total there were nine small sondages and six test pits that examined these earlier levels, less than 0.01% of the site (Chittick 1974, p. 27-60). Our excavations targeted one of the test pits (ZLL) to the south of the Great Mosque and the Great House (Figure 2). Here, Chittick had recovered plentiful evidence for the earliest levels of occupation, seen in layers characterised by wattle and daub architecture and local earthenwares. Our excavation unit (KK01) was positioned directly adjacent to this trench so as to be sure of recovering a comparable sequence.[[1]](#endnote-1)

### Trench ZLL

 A central plank of Chittick’s periodisation at Kilwa was trench ZLL, the largest of the sondages, at 6x6m and 3.90 deep, carefully excavated under the supervision of Robert Soper (Chittick 1974, p. 36-43). Located on the south side of the Great House and 27m metres south of the Great Mosque (Figure 3), it was close to the geographic centre of the site. The detailed sequence was employed to elucidate the historical narratives surrounding the ‘Shirazi’ colonisation of East Africa (Chittick 1965, p. 288-92).

 The stratigraphic sequence excavated by Soper is as follows (Figure 4; see Table 1 for summary). Cut through the basal sand was a circular pit that may have been a form of well, similar to one located at Shanga (Horton 1996). A disturbed burial was also found. Three layers were recorded, (8a, 8b and 9), with a basal midden and upper layers of reddish-brown daub from destroyed daub houses. These layers were assigned to Period Ia. Period Ib was above and divided into strata 5, 6 and 7. In reality this was approximately 1m of fill containing multiple horizontal layers of daub with ash and sand lenses, and the subdivisions were fairly arbitrarily marked. Remains of daub wall trenches, and post holes from two rectangular buildings were attributed to Period Ib on the basis of three sherds of Islamic sgraffiato pottery. Although no details of the distribution of these sherds was given, they form the basis of Chittick’s dating of these layers after AD 1000.

Period II was marked by three superimposed lime kilns that were assigned to around 1200 on the basis of the later style of sgraffiato found within them. A 14C sample obtained from one kiln yielded a date of 790 +/- 110 (calibrated using SHCal13 to 1045 – 1405 cal AD). When abandoned the kilns were filled with rubbish and capped by a plaster floor (layers 2, 3a). The lime kilns were believed to be associated with the first stone buildings at Kilwa, and by inference stage one of the Great Mosque, by the first ‘Shirazi’ rulers. These levels were also the earliest to produce coins, all Ali bin al-Hasan, with miniature coins in copper being replaced by larger versions.[[2]](#endnote-2)

Period 3 was located at the top of the sequence, marked by a plaster floor, around 1300. Above this, the deposits were highly disturbed.

### Trench KK01

 KK01 lay to the immediate south and alongside Trench ZLL; some sediment was lost between the two as the upper sides had slumped in the intervening 50 years, but it was possible to link the two sequences (Figure 4).

We have 21 radiocarbon dates from the sequence, spread over 82 archaeological contexts, and these are grouped into seven phases (Table 1, Table 2). It should be noted here that these phases are recognisable elements of the sequence; they are not time periods. They vary enormously from phases which cover a century and represent multiple activities to moments of construction or destruction which may have happened within a single year. Here we present the phases with a description of their archaeology; below we discuss the ways the phases line up with and transform ‘periods’ in the history of the town.

#### Phase 1. c.800-900CE

The basal layers contained the same ashy layers reported by Chittick. There is no evidence for structures here, although small pits were dug into the sand. It is unclear if this might be related to water collection as postulated for trench ZLL; cooking/burning seems more likely. Ceramics and fish bones are plentiful in these layers, with ceramics of the Early Tana Tradition including incised necked jars and red burnished wares (Figure 5).

Phase 1 is relatively thin (c.40cm), especially when compared to the multiple layers of occupation seen in Phase 2. This suggests a relatively short chronological duration of activity, as well as the fact that any significant building must have been elsewhere on the site at this time.

The modelled dates (Table 2; Figure 6) establish the boundaries of this phase. Context 76 (AAR-28125) was sampled at the lower boundary of this phase and returned a result of 770 – 894 cal-AD (95.4% confidence), suggesting the first occupation was early ninth century. The upper boundary of this phase is marked by context 73 (AAR-28124) which gives a late ninth-tenth century date. Importantly, the date from context 73 lines up perfectly with those from Phase 2 above, confirming the dating of that period and providing a *terminus ante quem* for Phase 1 rather than an exact endpoint. One sherd of Opaque Glazed Ware imported ceramic in Phase 1 conforms with the ninth-century determination.

#### Phase 2. c.900-1000CE

 As in the adjacent ZLL trench, this phase comprised multiple daub buildings, with numerous postholes and ash lenses. It is a thick layer of nearly a metre, testifying to a dense and busy century. At least six separate buildings were identified via postholes and associated floors. The ceramics in this layer are markedly different from those in Phase 1, dominated by jars with no decoration. This corresponds with the Plain Ware horizon noted by Chami in the published ceramics and subsequently identified elsewhere in southern Tanzania (Chami 1998, p. 199-218). Imported ceramics included Turquoise Alkaline Glazed Ware, blue-splashed and white Opaque Glazed Wares, and Eggshell Wares (Priestman 2021). The number of imported goods was low overall.

Five 14C dates relate to this phase (including context 73, discussed above). Four of these delimit it closely within the tenth century (AAR-28124; AAR-28120; AAR-30396; AAR-28119; Table 2; Figure 6). This coincidence of dates from four of the samples (one sheep/goat bone and three charcoal) strongly suggests that an eleventh-century date from the fifth sample (AAR-28114; charcoal) is intrusive. As noted above the phase of wattle and daub building was dated by Chittick based on 3 sherds of sgraffiato; no sgraffiato was recovered from these levels in KK01. We therefore suggest that this phase, and by extension Chittick’s Period Ib, should be revised into the tenth century.

#### Phase 3. c. 980s

Phase 3 represents a dramatic change in the stratigraphic sequence. In the trench this is marked by a single event, the construction of the first substantial stone building, of *Porites* coral. It is an enigmatic structure; although substantially robbed, what remained was a circular building with an external diameter of 4.8m, and internally octagonal-sided walls (Figure 7). There was no trace of any internal floor. The edge of the building missed the edge of ZLL by only a few centimetres, so the original excavators were unaware of it. Three dates from this phase (two charcoal, one burnt seed) define it very tightly to the end of the tenth century.

At this transformative moment in the stratigraphy of the trench, we also see two changes in material culture. Both have implications for dating elsewhere on the site. First, we observe the earliest sgraffiato pottery, normally assumed to post-date 1000CE but here positioned at the end of the tenth century. In addition, this is the first direct date for coins of Ali bin al-Hasan. A small silver coin of Ali bin al-Hasan of the Mtambwe series (Figure 8) was found in context 56 (AAR-28111) which dates firmly to the tenth century. We assume it to be identical to the ‘miniature’ coins found by Chittick (1974, p. 40-2) around the lime kilns.

This phase in the sequence is thus a short but dramatic moment at the end of the tenth century. Apart from the changes noted, the phase contains remains equivalent to ZLL stratum 5a (the upper layer of Period Ib), with its red loam and daub spreads.

#### Phase 4. c. 1020

 The building lasted only a few years before it was demolished in a comprehensive and deliberate fashion. The excavations revealed large dumps of broken *porites* stone blocks, plaster, and a flue from the lime kilns that were uncovered in Trench ZLL. The stratigraphic interrelationship between the dumps and the flue suggested that the lime-burning and demolition were taking place at the same time, with the kilns immediately to the north.[[3]](#endnote-3) It seems that the Phase 3 circular building was being broken up and burnt for lime.

In the stratigraphic sequence, this demolition layer is messy, represented by rubble, ash and debris. Two dates from contexts recorded within these layers (AAR-28107; AAR-30400) model neatly together with an early eleventh century date. One context (context 42; AAR-30402) returned a date coincident with those in Phase 3; this might represent the burning of wood from Phase 3.

The associated finds included a range of imported sgraffiato pottery. Our evidence thus shows that the first stone buildings predate the lime kilns, which coincide with a moment of destruction rather than a phase of construction as assumed by Chittick.

#### Phase 5. c.1020 - 1110

Dumping of midden and other debris took place over the abandoned kiln and what was left of the walls, with little evidence for structures in this phase. However, two radiocarbon dates (AAR-28102; AAR-28101) from seeds produced very similar results of 1070-1159 cal-AD (95.4% confidence), confirming that the lime kilns (which Chittick associated with the ‘Shirazi’, so therefore c. 1200) are earlier in date. The number of samples analysed for this context also make it easy to identify outlier dates. A bone dated from this context (AAR-28099) returned earlier dates from the tenth century, but was clearly intrusive.

#### Chronological break. c.1110-1220

 The data suggest a roughly one hundred-year break in the sequence between Phases 5 and 6. While activity may have continued elsewhere on the site, there was no significant activity in this important location near the mosque.

#### Phase 6. c. 1220 - 1350

 After the destruction seen during Phase 5, there is a break before reuse of this area. It becomes enclosed as a courtyard, with a substantial stone wall on the south side of the excavation. This wall was visible on the surface and later seems to be part of the Great House complex (where it was marked as SK). However, its origin seems to have been in the early thirteenth century overlying the Phase 5 midden dumps. Considerable evidence for ash spreads suggests domestic occupation, punctuated by midden dumps and pit digging episodes. Three radiocarbon dates within these dumps (AAR-30404; AAR-28098; AAR-30406) produces dates spanning the mid-thirteenth to mid-fourteenth centuries. The equivalent level in Trench ZLL was described as ‘red-brown house debris’

#### Chronological break. c. 1350-1420

 The data suggest a roughly seventy-year break in the sequence between Phases 6 and 7. As before, this may have been a time of activity elsewhere on the site, but not in the vicinity of this trench. See discussion below.

#### Phase 7. c. 1420 - 1480

 During a final moment of change a plaster floor was created across this area: tiny patches of the actual plaster survive over the sub-floor fill. At this point the area was used as a cooking area; a ceramic *mofa* oven was found cut into the floor surface, with further ash filled pits and spreads and floor surfaces. Three 14C dates from this floor and associated deposits (AAR-28092; AAR-30409; AAR-30408) cluster tightly in the mid-fifteenth century, suggesting a circumscribed period of use coinciding with the occupation of the Great House.

## Interpreting the sequence

This new sequence of dates from Kilwa allows us for the first time to anchor some of the key changes in the town to a secure chronology (see Table 3). Many of the key transitions at Kilwa are represented in this stratigraphy. The earliest activity so far identified at Kilwa is represented by the ashy pits and fish bones found at the bottom of this sequence and now securely dated to the ninth century AD. This makes Kilwa a relative latecomer to the coastal world compared to other sites associated with ETT ceramics, which date from the seventh century onwards. This phase was also short-lived, followed by a much denser succession of earthen structures built at the site over the next two centuries, associated with a firmly dated assemblage of Plain Ware from the tenth century AD.

The biggest change to the previous Kilwa chronology is a solid attribution of the first stone buildings to a moment c. 980 AD. This phase of *Porites* coral building could be seen as the start of Period II, which Chittick dated via the beginnings of stone architecture and linked to the ‘Shirazi dynasty’. If so, the start of this period and the advent of the rulers known as Shirazi need to be pushed back into the late tenth century. This has ramifications across the site and beyond. Sgraffiato is found in this layer, pushing the chronology for this import back into the late tenth century rather than the eleventh, as assumed elsewhere. The first Kilwa-type coins must also now be attributed to the end of the tenth century; as these have been used for dating structures across the site, there are knock-on effects elsewhere.

In particular, Trench KK01 provides a glimpse into a previously unknown moment of building in coral, with a circular structure (tower or tower-tomb?) of the late tenth century, demolished swiftly in the eleventh century and the area turned into a construction site containing lime kilns where the demolished structures were burnt. Chittick linked those lime kilns to the construction of the Great Mosque, but they can now be seen to pre-date that structure. Instead, we can draw a parallel with some earlier structures beneath the floor of the mosque, to which Chittick gave little attention. He describes ‘Stage One’ in the construction of the northern Great Mosque, which contains walls of roughly squared coral blocks (Chittick 1974, p. 72). These align roughly with the later walls, were accompanied by a plaster floor and were set in a foundation of red earth. Two coins of Ali bin al-Hasan, including one of miniature type, were found in the packing of this floor (Chittick 1974, p. 73). This early structure can thus be considered contemporary with Phase 3 in our trench, dating to the end of the tenth century. Perhaps most significantly, the building that made up stage 1 in the construction of the mosque was demolished by fire, resulting in burnt coral and lime ash (Chittick 1974, p. 72). A second structure was later built on the same spot, with walls cutting down through the first floor.

The imported pottery from KK01 indicates that they were at all times a small percentage of the overall ceramic assemblage. The earliest phases contained very few imports, with 0.5% of the assemblage. The number increases steadily in Phases 3 and 4, with the greatest amount in Phase 4, 3.5%. After c. 1020, imported pottery was only 2% of the pottery assemblage. While these numbers do not differ greatly from assemblages from other stonetowns, they do indicate that despite Kilwa’s significance in Indian Ocean trade, the numbers of imported pottery remain rather modest over time.

Another significant finding in the chronology as revealed here is that it is possible to see significant discontinuities in the Kilwa sequence. The moment of rapid construction and then destruction in the late tenth century and early eleventh is the most obvious of these. Yet the development of the town after this was not completely continuous. Two breaks in the sequence can be seen – throughout much of the twelfth century, and then again in the late fourteenth century. This latter break coincides with a period of disruption described in the histories, with the breakdown of the ruling family’s authority and a period of economic stagnation. The rebuilding that can be seen from the early fifteenth century likewise coincides with the expansion of coral building at Kilwa, and the construction of the town on neighbouring Songo Mnara. It may of course be that activity at Kilwa had simply shifted away from the mosque area, and so is not seen in this small trench, yet the mosque and the adjacent space is at the centre of the town as it has existed through the centuries, and so we might expect to see periods of activity represented here.

## Discussion

There is much at stake in the reinterpretation of chronology at Kilwa. As we have discussed, the chronology of urban development at the site provided a structure on which many subsequent interpretations were hung. This is one of the working assumptions of Nurse & Spear (1985), and other more general overviews of the coast (Horton & Middleton 2000; Kusimba 1999). Chami carried this assumption forward in his reassessment of local ceramic typologies. Based on his regional work in the Rufiji, he assumed that any changes would be present in the sequences at Kilwa since it represented a chronological backbone for the whole Swahili coast. All of these assumptions are based on the idea that town development at Kilwa Kisiwani was one of continuous, incremental evolution and growth (cf. Fleisher & LaViolette 2013, p. 1153). Beyond Chittick’s original chronological estimates, there has been no additional research that revisited the actual stratigraphic sequence and chronology of Kilwa itself—all suggested changes have assumed that data from other parts of the coast should apply to Kilwa as well.

 The current work therefore pins down that somewhat floating sequence via a set of absolute dates, providing a definitive timeline for moments of transition at Kilwa. It is not among the earliest urban sites on the coast, a fact that aligns with its low rates of imported goods in the earliest centuries; Kilwa was simply not prominent in the world of the first millennium Indian Ocean. This gives a new perspective on the town, working against a model of incremental urban growth as seen at sites like Shanga and encouraging a consideration of the factors that might have driven its emergence as a prominent centre (see Baužyté et al 2021 for a suggestion that this was linked to metalworking, including iron and connections inland to the Zimbabwe plateau). It also means that we cannot assume a common developmental trajectory for sites along the coast. Although it is now possible to sketch out a *general* picture of urban development for the Swahili coast, with sites from the seventh century that were integrated into maritime networks with each other and with trading partners further afield, different sites will have been part of that picture at different times (see also Pawlowicz 2012).

 Another interesting feature of this excavation has been the tight dating of horizons in which we see the first significant, overlaid, houses of wattle and daub within the tenth century. The long tenth century takes up a significant part of the stratigraphic sequence, with a single century resulting in a metre of deposits. This is due to the nature of the occupation here, with often-renewed buildings of wattle and daub. It also speaks to a dense and nucleated settlement during this time, compared with a more dispersed pattern before and afterwards. Further, this period is definitively associated with Plain Ware ceramics as identified elsewhere across southern Tanzania by Chami (1998) and Pawlowicz (2013). As well as tying that period of time down chronologically, we thus also glimpse a southern network of sites of which Kilwa was part, with a distinct suite of material culture. Again, this suggests a regionality to coastal urbanism that should not be flattened into a common developmental trajectory.

 The sequence in KK01 also allows us to position the advent of building in coral at Kilwa in time, first with an enigmatic structure of the late tenth century with a distinctive circular footprint and an octagonal interior. At this time most coral architecture was in the realm of public structures – mosques and tombs – and we might speculate this structure was a religious building of some kind. Perhaps a unique example of a minaret, or the footprint of the tomb of an important figure. Either of these possibilities are suggestive of links to Shi’ite Islam, with traditions of tower tombs and minarets found at this time in Iran and central Asia (Rogers 1976, p. 131). Whatever it was, it was rapidly destroyed in the eleventh century, amid a moment of destruction and enormous building activity. The earliest mosque structure at the site seems also to have been built in the late tenth century and to have been demolished at this moment, burnt to the ground, its stone burnt for lime.

 How are we to interpret this episode of destruction? There are local explanations that might perhaps be relevant. First is the ‘Matamandalin interregnum.’ According to the Chronicle, the Shirazi ruled for only three generations before being defeated by a group from neighbouring Shanga, which Chittick (1974, p. 15) identified with Sanje ya Kati, another island in the archipelago. Excavations there have produced sgraffiato ceramics, dated by the excavator to the eleventh century (Pradines 2009) but conceivably tenth on the basis of the data presented here. Chittick put this interregnum in the thirteenth century, but in fact a date in the early twelfth would coincide precisely with Freeman-Grenville’s previous historical calculations based on regnal lengths. He postulated a date of 1131 for the arrival of a ruler of ‘dubious origin’ from Sofala (Freeman-Grenville 1962b). Chittick dismissed these early dates along with a block of nine sultans, mentioned in the Portuguese but not the Arabic chronicle (Chittick 1965, p. 278). With the new definitive attribution to the tenth century for the reign of Ali bin al-Hasan, we might also reinstate those sultans, whose southern connections brought with the gold trade to Kilwa.

 Another local reason for the destruction might be found in the sectarian divisions glimpsed in the Kilwa letters. The documents indicate an Ibadi presence, which might have been accompanied by the destruction of earlier monuments, but also significant dispute between groups. This could have been played out in Kilwa’s townscape.

 Yet the destruction horizon at Kilwa should also be seen in the context of the wider coast at this time. It coincides almost exactly with a moment of disjuncture at Shanga, on the northern Kenya coast, where many houses were dismantled and robbed of stone during the eleventh century. Sites along the coast that had flourished in earlier centuries were abandoned or declined sharply at this time: notably Tumbe and Unguja Ukuu on the Zanzibar archipelago, Kaole in Tanzania, and Chibuene on the Mozambique coast. A revival in the late eleventh – twelfth century is seen at some of these sites, others never recovered. This was a moment of disjuncture in the western Indian Ocean more generally, with shifts in trade patterns, new opportunities and also new competitions for power. The earthquake at Siraf in the Persian Gulf in the tenth century broke some of that port’s dominance in Indian Ocean trade. The site of Sharma on the Yemeni coast perhaps epitomises the eleventh century moment best: a fortified entrepot, to which travellers from many places seem to have travelled to trade with each other rather than relying on established routes (Rougeulle 2004). Seen in this light, the destruction horizon at Kilwa in the early eleventh century might not simply have been a local matter, but part of a wider moment of shifting authority and changing religious and cultural influences.

Both this eleventh-century moment, and the burst of construction we see in the fourteenth century, lend themselves to an episodic model of urban development. This fits with the sense of fluidity indicated in the Kilwa letters, above, in which the inhabitants of the town can be brought together or can scatter into the countryside, depending on socio-political circumstances in the town. It throws into focus Kilwa as a somewhat fragile urban phenomenon, with inhabitants coming together to participate in the life of the town during particular periods, and significant moments of decline and neglect. Sutton has written about these moments of boom and decline as a way of addressing Kilwa as an idea, an urban narrative that bound people to a place and a way of life despite periods of rural existence and economic poverty. Here we see that narrative as a powerful force, drawing people back towards the town and rebuilding time and again in the same places.

 The Kilwa chronology has always been more than simply a model of development for a single site on the East African coast. Its history of research, its wealth of historical detail, the breadth and depth of its material record, has meant that this town has set the agenda for Swahili urban understandings. In this paper, we argue that a new, absolute, chronology for the site continues this tradition, providing a new way of thinking about Swahili culture as regional, discontinuous and endlessly varied.

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1. ZLL was in fact never backfilled and still existed as a large hole in the landscape; it was therefore easy to connect our stratigraphy directly to that recovered by Chittick in this area. [↑](#endnote-ref-1)
2. There is a strong likelihood that these were actually a debased silver coinage. The miniature coin that we found in KK01 (Phase 3) appeared to be made of copper, but when analysed, was of silver. [↑](#endnote-ref-2)
3. Three kilns were excavated in trench ZLL, with an average radius of 2.2m. If the coral was piled to a height of 1.5 m with would give volume of 7.6 m3 or a total volume of 22.8m3. The circular building with a diameter of 4.8m wall thickness of 0.5m and an assumed height of 3m would use 22.6m3 of stone. This suggests that the lime kilns were built specifically to demolish the circular building. [↑](#endnote-ref-3)