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The origins and development of Zuwīla, Libyan Sahara: an archaeological and historical overview of an ancient oasis town and caravan centre

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Zuwīla in southwestern Libya (Fazzān) was one of the most important early Islamic centres in the Central Sahara, but the archaeological correlates of the written sources for it have been little explored. This paper brings together for the first time a detailed consideration of the relevant historical and archaeological data, together with new AMS radiocarbon dates from several key monuments. The origins of the settlement at Zuwīla were pre-Islamic, but the town gained greater prominence in the early centuries of Arab rule of the Maghrib, culminating with the establishment of an Ibādī state ruled by the dynasty of the Banū Khaṭṭāb, with Zuwīla its capital. The historical sources and the accounts of early European travellers are discussed and archaeological work at Zuwīla is described (including the new radiocarbon dates). A short gazetteer of archaeological monuments is provided as an appendix. Comparisons and contrasts are also drawn between Zuwīla and other oases of the ash-Sharqiyāt region of Fazzān. The final section of the paper presents a series of models based on the available evidence, tracing the evolution and decline of this remarkable site.

Keywords: Libya; Sahara; trade; Garamantes; oases; urbanism

Zuwīla, un site du sud-ouest Libyen (Fazzān), était l'un des centres islamiques les plus importants du Sahara central, mais les données archéologiques correspondant aux sources écrites ne sont que peu étudiées. Cet article rassemble pour la première fois une étude détaillée des données historiques et archéologiques ainsi que de nouvelles datations radiocarbones AMS de certains monuments clés. Les origines de l'occupation de Zuwīla remontent à la période pré-islamique, mais la ville gagna en importance dans les siècles suivant la conquête arabe du Maghreb, aboutissant avec l'établissement d'un État ibadite gouverné par la dynastie des Banū Khaṭṭāb, dont Zuwīla était la capitale. Cet article examine les sources historiques et les récits des premiers voyageurs européens de l'époque moderne et décrit le travail archéologique à Zuwīla (y compris les nouvelles datations radiocarbones). Un court index géographique des monuments archéologiques est donné en annexe. Un certain nombre de parallèles et contrastes qui peuvent être observés entre Zuwīla et d'autres oasis de la région de l'ash-Sharqiyāt au Fazzān y sont aussi présentés. Dans une dernière partie sont proposés une série de modèles, fondés sur les données disponibles, qui décrivent l'évolution et le déclin de ce site remarquable.

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Introduction

Research on the Sahara in the early Islamic period remains a chronically under-developed field (Figure 1). Indeed, with a few notable exceptions like Sijilmāsa, Tadmakka, Timbuktu or Tagdaoust/Awdaghust (Robert *et al.* 1970; Vanacker 1979; Devisse 1983; Polet 1985; Robert-Chaleix 1989; Lightfoot and Miller 1996; Insoll 2003; Nixon 2009), the archaeological exploration of the great centres of Islamic Saharan trade has lagged behind historical analysis (Lewicki 1976; Thiry 1995; Devisse 1992; Levtzion and Hopkins 2000; Brett 2006; but see Insoll 2006 for a recent review of Islamic archaeology in the Sahara). In the Libyan Sahara, the state of research is particularly unsatisfactory. Even UNESCO World Heritage Sites like Ghadāmis remain somewhat superficially explored archaeologically (Cuneo 1996; Cuneo *et al.* 1997; cf. Mattingly and Sterry 2010). Ethnographic and anthropological studies of the main Libyan oases have progressed comparatively little since the great Italian and French colonial surveys (Eldblom 1968; Jamal 2008; cf. Scarin 1934, 1937a, 1937b, 1937c, 1937d, 1938; Despois 1946; Lethielleux 1948). Given the unsettled political conditions prevailing since the Libyan Revolution of 2011, which preclude new investigations in a time of increased threat to the region's cultural heritage, the lack of a full evaluation of heritage resources in the Saharan oases is a particular concern. This is highlighted by reports that the monumental Islamic tombs at Zuwīla have been demolished in 2013.

The early Arabic sources emphasised one key Libyan oasis above all others — Zuwīla (see *inter alia* Thiry 1995: 356–373, but note the alternative spelling, Zawīla). However, the archaeological correlates of the sparse primary source references have been little considered. The present paper is part of a body of work reassessing early urbanism in the trans-Saharan zone, with a particular focus on the Central Sahara (see Mattingly and Sterry 2013). Our work developed from a programme of research focused on an early Saharan civilisation known as the Garamantes, located in southwestern Libya (Mattingly 2006, 2011). We have previously identified two Garamantian sites as having urban characteristics, Old Jarma and Qaṣr ash-Sharrāba, and have speculated on the existence of

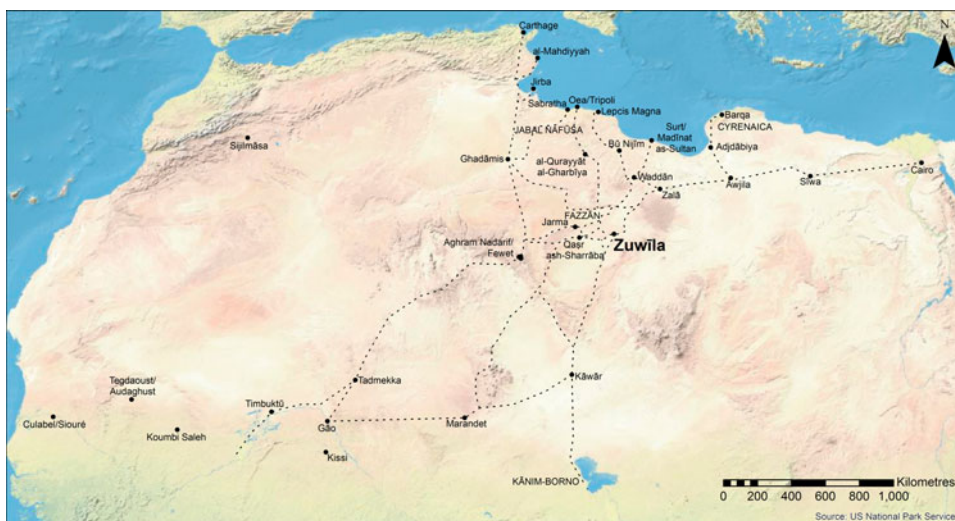


Figure 1. Map of the Libyan Sahara showing the position of Zuwīla in relation to Jarma and the main Saharan routes.

further Saharan towns (Mattingly and Sterry 2013). In the case of Jarma, we have presented a detailed urban biography of the site (Mattingly *et al.* 2013: 505–544). The specific aims of this paper are to provide a fuller evaluation of what is known historically about Zuwīla and to present in detail the available archaeological data and a more precise chronology for the site. In its final section we advance a plausible sequence of development of this important Saharan oasis centre based on all the currently available evidence. A gazetteer of archaeological monuments is provided as [Appendix 1](#) and a summary of the material dating evidence as [Appendix 2](#).

The early medieval period has generally been considered pivotal in the extension and intensification of trans-Saharan trade and this has also been linked with the spread of Islam from the Maghrib across the Sahara (Austen 2010: 19–22). On the southern fringes of the Sahara there is firm evidence of trans-Saharan contacts in the earlier first millennium AD at sites such as Kissi in Burkina Faso and Culabel and Siouré in Senegal (MacDonald 2011; Magnavita 2013). However, sites dating to the seventh to tenth centuries, such as Tadmakka, Gao, Marandet and Kumbi Saleh show a step-change in the volume of importations such as beads and glazed ceramics at this time (Insoll 1996; Magnavita *et al.* 2007; Nixon 2009; MacDonald 2011; Magnavita 2013). Yet, this has always been at odds with the evidence from the Libyan Sahara where sites linked to the Garamantes, whose power flourished in the first to sixth centuries AD, demonstrate plentiful evidence of wide trading contacts (Mattingly 2013a). Some outlying Garamantian centres, like Aghram Nadharif and Fewet near Ghāt (Liverani 2006; Mori 2014), had undergone significant decline (or abandonment) by the sixth century. Archaeological survey elsewhere in the heartlands of the Garamantes, in the Wādī al-Ajāl, the Wādī ash-Shāṭī and the Murzuq Basin, have shown an increasing emphasis on defensive structures at Garamantian settlements; in the Murzuq area at least this was linked to an expansion of settlement (Edwards 2001; Sterry and Mattingly 2011; Merlo *et al.* 2013). Further north in the Libyan pre-desert the gradual withdrawal of Roman forts and of the garrison settlements of al-Qurayyāt al-Gharbīya (Mackensen 2012) and Bū Nijīm (Mattingly 1995: 95–97) was accompanied by a general thinning of increasingly fortified farming settlements in the Libyan valleys (Barker 1996: 166–167). It is hard to avoid the conclusion that there was a reduction in population and cultivated areas, even a wholesale abandonment of some regions, during late antiquity. However, the transformation of the Sahara in late antiquity was not all about decline — indeed, the early Arab sources emphasise the opening up of the Sahara through the spread of Islam and opportunities arising from new trade networks (Thiry 1995; Levtzion and Hopkins 2000).

Zuwīla is of particular importance in this regard, as it was clearly a key location in the transition between a Roman/Garamantian Sahara and an Islam-dominated Sahara. This paper presents a number of separate strands of investigation, summarising observations made more than 50 years ago by Charles Daniels, along with the more recent survey findings of the Fazzān Project (Mattingly 2007: 282–288). As part of a wider remote-sensing and dating programme for the Central Sahara, a small number of AMS samples from Zuwīla have now been dated at the Oxford Radiocarbon Accelerator Unit (ORAU) and we have also carried out mapping and analysis of Zuwīla and its environs, utilising Worldview-2 imagery Zuwīla in conjunction with a run of aerial photographs from 1958. In combination with a reassessment of the historical and archaeological record, this allows us to advance a substantially changed picture of Zuwīla and throws new light on its trans-Saharan role that linked the Islamic Maghrib with Sub-Saharan Africa.

The historical record

First to sixth centuries AD

There are no explicit references to Zuwīla in the Roman sources, though the Garamantes feature as an important people of the Central Sahara (for a summary of the sources see Mattingly 2003: 76–90). By supplementing these sources with the results of archaeological researches of recent decades, we know that the Garamantian civilisation occupied the main oasis bands of southwestern Libyan (Fazzān) and that they were oasis cultivators, living in permanent, sedentary villages and towns. Zuwīla lies towards the eastern extremity of Fazzān at the start of a route leading past the Syrtic oases (Awjila) and on towards Siwa and the oases of the Egyptian Western Desert. It is also astride the most direct north-to-south line of march from the Tripolitanian coastal cities to the Lake Chad area (Figure 1). The Roman sources refer to kings of the Garamantes and to their metropolis at Garama (Old Jarma in the Wādī al-Ajāl, 250 km to the west of Zuwīla), strongly suggesting that Garamantian power was exercised over an extensive area (Figure 2). We have argued that there was in this period a Garamantian state that controlled the various oasis zones of Fazzān (Mattingly 2003: 76–90, 346–351, 2013: 530–534). As we shall see, there is evidence to show that Zuwīla originated as an oasis settlement in this period (*contra* Lewicki 1988: 287 and Levtzion and Hopkins 2000: 460) and that it had arguably grown to be a centre of above average size by the Late Garamantian period.

There have been long-running debates about the realities of trans-Saharan trade in the pre-Islamic era with strong partisans both for (Law 1967; Bovill 1968; Liverani 2006) and against (Brett 2006; Austen 2010). The material evidence from this period is

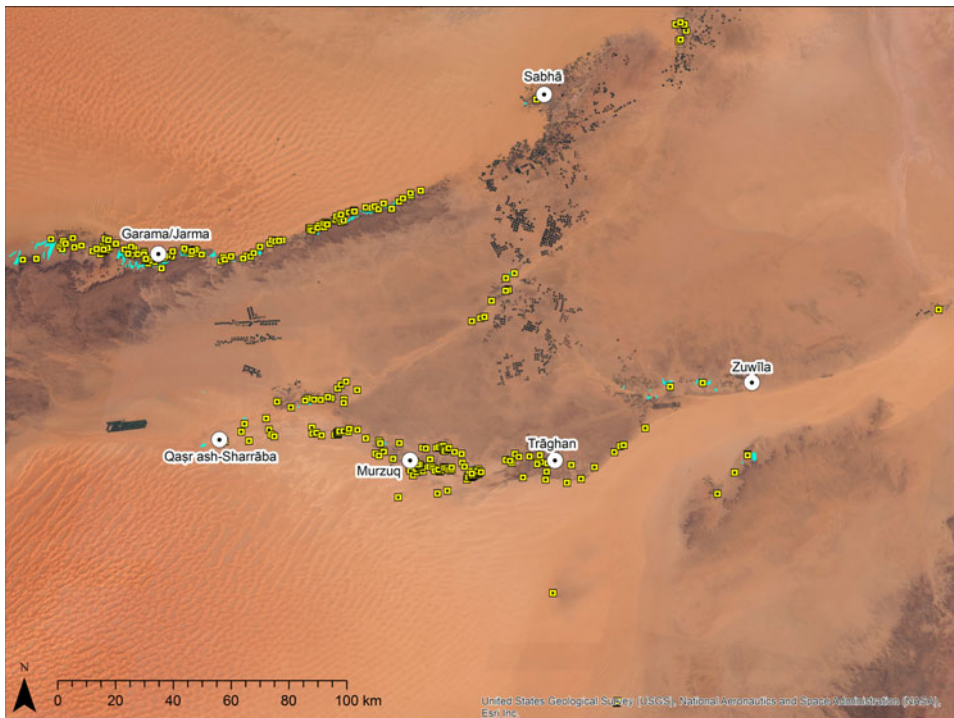


Figure 2. Map of Garamantian settlement in the Libyan Sahara showing the main places named in the text.

growing, both within the Sahara itself (Wilson 2012; Mattingly 2013b) and to its south (Insoll 2003; MacDonald 2011; Magnavita 2013), such that we can attest to examples of contacts and movement of goods, though the scale and nature of trade overall remain difficult to delineate when so many of the probable key commodities are archaeologically invisible or at best severely under-represented in the surviving material record. Between the Garamantes and Rome there were certainly substantial contacts. Excavated Garamantian tombs and settlements have recovered the remains of thousands of amphorae along with numerous other ceramics, examples of glassware and beads. When extrapolated to the hundreds of settlements and cemeteries found in Fazzān, this implies caravan trade numbering in the hundreds of camel loads per year (Mattingly 2013b). However, the transport of amphorae, weighing up to 90 kg each along with other ceramics (all heavy and breakable), should perhaps be considered aberrant, rather than the main indicator of Saharan trade. The evidence now available attests much more clearly than hitherto to there having been substantial contacts between the Garamantes and Rome and between the Garamantes and Sub-Saharan areas (Fenn *et al.* 2009; MacDonald 2011; Wilson 2012; Mattingly 2013b). Gold was an important component of later Saharan trade and is a plausible candidate for the elusive smoking gun to satisfy sceptics concerning pre-Islamic activity (Bovill 1968; Garrard 1982; Wilson 2012). The hunt continues for pre-Islamic gold-working sites that also have materials of Garamantian or Mediterranean provenance (Kissi in Burkina Faso is plausibly close to gold workings, but still lacks the vital proof of processing; Magnavita 2003, 2008, 2009, 2013; cf. MacDonald 2011). Slaves were another key commodity and were a prime driver of the interest of Mediterranean empires and kingdoms in the Sahara (Haour 2007, 2011; Lydon 2009; Fentress 2011). Thus, while contacts between the Garamantes and Sub-Saharan Africa are attested, they are far more difficult to assess in terms of scale. Nonetheless, the default reading of the evidence is once again shifting in favour of there having been some regular trading contacts across the Sahara in the pre-Islamic era. As we shall see, Zuwīla may contribute some proxy evidence to the debate on pre-Islamic trade. The scale of this trade was such that it was fundamentally tied to the power of the state. During the Late Garamantian period, trade at Jarma declined, as is amply attested in its material record (Mattingly 2013a). As the urban centre began an inexorable decline, settlement flourished in the more easterly parts of Fazzān and it is within this context that Zuwīla may have begun to grow. The increased isolation of the central Maghrib in the fifth century following the Vandal conquest of Roman North Africa (AD 429–439) may have stimulated a diversion of trade towards Cyrenaica and the Nile which Zuwīla was better placed to take advantage of.

Seventh to ninth centuries

There are more numerous sources on the Sahara in Islamic times (Mattingly 2003: 90–106, for a summary; Levtzion and Hopkins 2000 is the essential compendium; Rossi 1968 is a good commentary on events relating to Libya). The earliest historical event relating to Zuwīla concerned a raid by ‘Uqba bin Nāfi’ in AD 642 from Barqa in Cyrenaica (Monès 1988: 231; Thiry 1995: 53–56). A second raid in AD 666/667 recorded by both Ibn ‘Abd al-Ḥakam (writing in the mid-ninth century) and al-Bakrī (in the eleventh century) ended with ‘[the person referred to is ‘Uqba (with an accent)] ‘Uqba’s army resting at the site of the present Zuwīla’ (Thiry 1995: 76–109; Levtzion and Hopkins 2000: 12–13 and 63). Although the historicity of this raid has been called into question (Brunschwig 1947), most scholars accept the broad framework of the account. However, the reference to ‘the site of the present Zuwīla’ has sometimes been taken to imply that the

oasis, if it existed at this time, was not yet urban in scale. It is not clear in the sources whether ‘Uqba’s raid permanently created an Arab outpost in the Sahara at Zuwīla (Martin 1969: 17 suggests not, though Thiry 1995: 54, note 6, notes that Barqa and Zuwīla were towns under ‘Uqba’s jurisdiction until he was named governor of Ifrīqiya in AD 670). One possible reading of Ibn ‘Abd al-Ḥakam’s account is that power in this part of the Central Sahara had already become fragmented by the seventh century, rather than being still under the authority of a single Garamantian king (Mattingly 2003: 85–92).

The historical sources make much more sense in fact if the pre-existence of a settlement and oasis at Zuwīla is recognised. As we have noted, the early Arab sources imply that ‘Uqba first became aware of Zuwīla’s existence at the time of the conquest of Barqa in Cyrenaica (Levtzion and Hopkins 2000: 63). This suggests the existence of trade links running from eastern Fazzān to Cyrenaica and Egypt and, as we have already noted, Zuwīla sat at one of the likely junction points between the south-north route and the route running to the northeast. A striking feature of the early Islamic sources, if we accept their historicity, is that the conquest of the Sahara was undertaken in parallel with the conquest of the Mediterranean littoral and the Maghrib. This does not make much sense for those who wish to deny the existence of pre-Islamic trade, but the Sahara will have been a far more attractive territory for the Arab armies if we accept that there was significant pre-Islamic Saharan trade. If some part of that trade was already diverted towards Egypt, it is also easy to understand how and why the Islamic forces will have made the Saharan centres a prime target of their early forays westward. They arguably knew as much or more at this stage about commercial wealth from the Sahara as they did about the prodigious agricultural wealth of the Maghrib. Taken at face value, the raids on Zuwīla and Waddān in the 640s (by ‘Uqba bin Nāfi’ and Busr Ibn Abi Artah respectively) and the subsequent campaigns in the 660s of ‘Uqba bin Nāfi’ against Waddān, Jarma, Kawār and Ghadāmis seem to reflect an awareness of, and a desire to control or extract resources from, a potentially lucrative trade network. The motivation of the campaign in 666 was apparently that the people of Waddān had ceased to honour the agreement that they had made with Busr Ibn Abi Artah.

If Zuwīla had already been visited by an Arab force in the 640s and a treaty agreed, it is understandable why ‘Uqba’s subsequent invasion of Fazzān made it a focal point of both the campaigns and their follow-up. While Waddān had reneged on its agreement, the lack of reference to retribution against Zuwīla perhaps suggests that that settlement had remained true to its treaty with ‘Uqba. When Ibn ‘Abd al-Ḥakam says that after taking Jarma, ‘Uqba sent his baggage train off towards the east’ (Levtzion and Hopkins 2000: 12), it is pertinent to ask where was this going and why? This was the moment that ‘Uqba launched a lightning raid with his cavalry forces through southern Fazzān and towards Kawār. The slow-moving baggage train, no doubt retaining some troops to guard it, was surely not left to camp out in potentially hostile territory. A probable scenario is that Zuwīla was already considered a ‘friendly’ centre and that ‘Uqba was sending his baggage train there to await his return. At any rate, it was Zuwīla for which he made on his return from Kawār and something of significance evidently happened there as Ibn ‘Abd al-Ḥakam described how he ‘marched until he reached the site of the present Zuwīla. Then he travelled again until he came back to his army [near Surt]’ (Levtzion and Hopkins 2000: 13). Why not simply say he marched back to his army? The obvious explanation is that he was reunited with his baggage train at Zuwīla and potentially made further dispositions to cement the relationship between the Arabs and the settlement there. From that time on, Zuwīla was the key Libyan site through which the Arab authorities

sought to access Sub-Saharan goods and slaves, along with, but to a lesser extent than, Waddān and Ghadāmis.

The subsequent story of Zuwīla and the Ibādī Muslims is very much bound up with the strong nonconformist tendencies manifested by a series of related religious groups within Africa — for instance, the Khārajites and Rustumids — a phenomenon that is in part connected to the specificities of incorporating Berber converts to Islam. A key theme in the early Islamic history of the Maghrib and the Sahara concerns the oscillating relations between orthodox and nonconformist powers, moving repeatedly from symbiotic trading to warfare and revolt. Because of their remote location and wealth, Saharan oases like Zuwīla were periodically centres of the religious and political resistance of Berber Muslims against overlordship by the main Islamic dynasties in the Maghrib. Ibādīsm has thus been depicted as part of a revolutionary doctrine in North Africa (Talbi 1988) and, as well as subverting the orthodoxy of Islam in Ifrīqiya, we may consider that it was an important element in the spread of Islam in the Saharan frontier zone of the Islamic empire. However, Moraes Farias (2003) has demonstrated in the Arabic inscriptions from Mali that there were also groups of mixed religious affiliation participating in trans-Saharan trade.

It was in the mid-eighth century that Zuwīla started to become regularly mentioned in Arabic sources and Lewicki (1957: 339–343; cf. el-Hesnawi 1990: 29) has argued that it was around this time that a large number of Ibādīs settled in Fazzān. By AD 761 Zuwīla was established as an important city on the trans-Saharan route from Tripoli to Lake Chad and it was attacked by Ibn al-Ash'ath who massacred many of Zuwīla's Ibādī population, including their leader (Lewicki 1988: 287). The Ibādī population in Zuwīla nevertheless seems to have recovered and it is mentioned by al-Ya'qūbī in AD 889–890. Al-Ya'qūbī also provides the first detailed account of Zuwīla, describing its exportation of slaves from the kings of the Sūdān and of skins known as *al-zawīliyya*, its agriculture of dates, sorghum and other grains and the varied make-up of the town, the inhabitants of which came from as far away as Khurāsān, al-Baṣra and al-Kūfa (Levtzion and Hopkins 2000: 22). Whilst based in Egypt he noted that at least some Zuwīlan pilgrims turned up each year and el-Hesnawi (1990: 259) has interpreted this to mean that Zuwīla was used as a staging post for pilgrims coming from all across the Sahara and the western Sūdān. Zuwīla also became a centre for a growing number of Ibādī scholars (el-Hesnawi 1990: 30–31), including the poet Di'bil b. 'Alī al-Khuzā', who died and was entombed in Zuwīla (Levtzion and Hopkins 2000: 63).

With strong ties to the Ibādī communities in Tripolitania (notably those in the Jabal Nafūsa) and elsewhere in the Sahara and being located more directly on the trans-Saharan trade routes, Zuwīla was able to cement its position as the most important trading centre in Fazzān. The importance of Ibādī Muslims at Zuwīla was no doubt a consequence of the significant role played in the caravan trade by people based in Tripolitania where Ibādīsm became first established. Refugees from periodic conflict between Ibādīte Muslims in Tripolitania and the mainstream Arab rulers of the Maghrib in the 750s–760s, 811–812 and 921–922 will no doubt have contributed to the reinforcement of Saharan Ibādīte communities. The Banū Khaṭṭāb dynasty at Zuwīla was born out of this Ibādī dominance at the oasis.

Tenth to twelfth centuries — the Banū Khaṭṭāb dynasty

In 918 a new kingdom emerged at Zuwīla under 'Abd Allāh ibn al-Khaṭṭāb al-Hawwārī (Levtzion and Hopkins 2000: 122). This state held considerable influence in the Maghrib

and was the dominant power in Fazzān until the death of its final ruler in 1172–1173. Writing in 1068, al-Bakrī described Zuwīla as a town at the centre of a web of trading routes:

‘Zuwīla... is a town without walls and situated in the midst of the desert. It is the first point of the land of the Sūdān. It has a congregational mosque, a bath and markets. Caravans meet there from all directions and from there the ways of setting out radiate. There are palm groves and cultivated areas which are irrigated by means of camels ... Between Zuwīla and the town of Ajdābiya there are fourteen stages ... From there slaves are exported to Ifrīqiya and other neighbouring regions. They are bought for short pieces of red cloth. Between Zuwīla and the region of Kānim is 40 stages. The Kānimīs live beyond the desert of Zuwīla and scarcely anyone reaches them. They are pagan Sūdān’ (Levtzion and Hopkins 2000: 63–64).

The account of al-Idrīsī, written about a century after al-Bakrī, identifies the town as the southwestern terminus of a route running west from Awjila, via Zāla, also connecting with the coast at Surt via Waddān:

‘The town of Zuwīlat Ibn Khaṭṭāb is in the desert. It is a small town with markets. From there one may go to the regions of Sūdān. The inhabitants drink from wells of sweet water. There are many palms with good fruit. Travellers bring there merchandise for its supply and all things that are needed. Arabs roam the country causing as much trouble for the people [of Zuwīla] as they can. All these areas... are in the hands of the [nomad] Arabs’ (Levtzion and Hopkins 2000: 129–130).

Another anonymous account of *c.* 1191, the *Kitab al-Istibsar*, also includes a short mention of Zuwīla:

‘Zuwīla is a great and very ancient city in the desert. It is near the land of Kānim, who are of the Sūdān. They [the Kānīmī] had embraced Islam some time after 500 [AD 1106–1107]. It is the place of assembly for caravans and slaves are brought to it. It is the point of departure for Ifrīqiya and other countries’ (Levtzion and Hopkins 2000: 138).

The trading of slaves from the Sūdān to Ifrīqiya remained of crucial importance and, as we saw above, al-Bakrī describes how they were bought for pieces of cloth (hinting that textiles were an important good heading south). The rulers of Zuwīla were careful to negotiate the politics of the Fatimids, who dominated Tunisia and the Libyan coast for most of the tenth century before conquering Egypt in 969. In 992 they sent a mission with gifts of slaves, a giraffe and other goods from the Sūdān to the Zirid governor of al-Mahdiyyah in modern Tunisia (Martin 1985: 78–79). The Mai of Kānim (in the Lake Chad Basin) must also have passed through Zuwīla on his two visits to Egypt between 1098 and 1150 (Martin 1985). Benjamin of Tudela, who died in 1173, mentions Zuwīla as one of the nations the merchants of which had established themselves at Alexandria (Adler 1907: 106) and also describes merchants from Helwan, near Cairo, leaving with copper, grain, salt, fruits and legumes and returning with gold and precious stones (Adler 1907: 96; although surely many of these were exchanged at the oases along the journey, this is the same route that was taken by the German explorer Friedrich Hornemann in 1798). The Bāb az-Zuwīla, one of the gates of Fatimid Cairo, was built in the late eleventh century (1087–1091) and its name has been attributed to the warrior-slaves from the south who garrisoned it and were known as the Zuwīlayin (Lyon 1821: 217; Edwards 2011: 90).

Trade in slaves seems to have been a key element in the importance of Zuwīla from the very start of contact with the Arab world (Levtzion and Hopkins 2000: 1–131). While some have argued that slave trading was a development of the eighth or ninth centuries

(on the different commodities of trade, see Bovill 1968; Vanacker 1973; Haour 2007, 2011; though mainly focused on later periods Savage 1992 is also useful), it seems equally plausible that it was part of the *raison d'être* of a site like Zuwīla in the first place. We might note that the raid of 'Uqba bin Nāfi' in AD 666/667 — attacking the main oasis locations in Fazzān and following the route south to Kāwār — involved the taking of slaves from every point on the route (with the levy from Waddān evidently being a reimposition of a tribute levied in slaves reportedly first instituted in the 640s; Levtzion and Hopkins 2000: 12).

During the rule of the Banū Khaṭṭāb dynasty, Zuwīla also appears to have developed a significant role in the trans-Saharan gold trade. The Persian geography *Hudud al-'Alam* mentions the gold riches of Zuwīla's Berber inhabitants (Baadj 2013: 286) and we have already seen Benjamin of Tudela's description of merchants returning from it with gold (Adler 1907: 96). In 1023/24 Zuwīla even issued its own dinars as is firmly attested by the publication of two coins, one of unknown provenance and the other from Zuwīla itself (Lavoix 1896: 86–87; Mostafa 1965: 126–127). These bear the name of the Fatimid caliph az-Zahar le-l'zaz Din Allah (reigned 1021–1036). It is possible, given the discovery of coin moulds at Tadmakka in northern Mali (Nixon *et al.* 2011), and the descriptions of blank dinars in al-Bakrī (Levtzion and Hopkins 2000: 85) that the people of Zuwīla were stamping coins that had been produced from West African gold on the southern fringes of the Sahara.

In the eleventh century there is evidence that the Banū Khaṭṭāb dynasty was able to establish control over the whole of Fazzān and this coincides with the evidence from Jarma and Tsāwa for the adoption of Islam. At Jarma and Qaṣr ash-Sharrāba we also see renewed construction of walls and fortifications that may indicate a revitalisation of these sites as regional centres under Banū Khaṭṭāb suzerainty.

Although outlasting the Fatimids, the Banū Khaṭṭāb dynasty was finally overthrown in 1172/1173 by Qarāqūsh, a general of the Egyptian sultan Saladin, who conquered Fazzān and many other parts of the Maghrib. Qarāqūsh was himself besieged at Waddān, where he was eventually executed by Yaḥyā of the Banū Ghaniya in 1212. Baadj (2013: 287–288) has argued that this period corresponded with a more than 80% reduction of the annual gold minted by the Almohad rulers of the Maghrib and that this was evidence of a major disruption in the gold trade. Hence the instability may be the result of the Almohads, the Ayyubids (the dynasty established by Saladin) and the Banū Ghaniya vying for the valuable trade routes of which Zuwīla was the key nodal point.

It is possible that the Qarāqūsh dynasty set up its own state based on Zuwīla and Waddān, but if so this came to an end in 1258. A year earlier, a delegation had been sent from the king of Kānim to the court of the Hafsid caliph of Tunisia al-Muntasir to present him with the gift of a giraffe (Ibn Khaldūn, cited in Martin 1969: 19–20). Martin (1969) suggests that this is evidence of an alliance between the two states. The next year the army of Kānim invaded Fazzān and defeated and killed the last son of Qarāqūsh.

Thirteenth to eighteenth centuries

The invasion by Kānim marked the beginning of Zuwīla's political and economic decline. The representatives of the Kānīmī rulers, known as the Banū Naṣr, constructed a new capital at a site just to the southwest of modern Trāghan. The Kānīmī capital may well be identifiable with a large oval walled site (2.2 ha) located by Lange and Berthoud (1977), approximately 5 km southwest of the modern centre. This site is still clearly visible today in satellite imagery and we have located another walled structure of very similar

morphology close to Tsāwa — both these fortifications are very different from the fortified villages of Garamantian and early Islamic towns and seem to have parallels in Kānim.

There are no significant mentions of Zuwīla in the Arabic sources after this time, although sources are scarce for Fazzān in general. Both Duveyrier (1864: 277) and Nachtigal (1974: 151) recorded a tradition that the Banū Naṣr were succeeded by the Khurmān, a Fazzāni group from the Wādī al-Ajāl (probably the descendants of the Garamantes), who made Zuwīla the capital of Fazzān once again for some period between the fourteenth and fifteenth centuries. In any event, Zuwīla seems to have maintained a role in trans-Saharan trade for some time.

In the sixteenth century, when Muḥammad al-Fāsī was establishing his rule over Fazzān as the first of the Awlād Muḥammad, Zuwīla was one of the towns that were subdued and its chief eliminated (el-Hesnawi 1990; cf. Duveyrier 1864; Lethielleux 1948; Ayoub 1968). The foundation of Murzuq, possibly in the fifteenth or sixteenth centuries (Sterry and Mattingly 2013), appears to have reduced Zuwīla's importance still further as it lost its role as a terminus of trans-Saharan trade.

European travellers of the eighteenth and nineteenth centuries

There are a number of accounts of Zuwīla by European travellers in the eighteenth and nineteenth centuries and because these contain both important details and some enigmatic aspects, we have chosen to cite them in extensive passages. When Frederick Hornemann (1802) visited in 1798 he described Zuwīla as a town a third of its former size with its congregational mosque in ruins. His reference to the ruins of a large building with very thick walls within the walled area is a clear reference to the existence of the castle or *qaṣabah*:

‘Zuila has received the name of Belled-el-Shereef, or town of the Shereefs: in former times it was an important place, and its circumference appears to have been thrice the extent of what it is now. Some of the Shereef's family told me that some centuries past Zuila has been the residence of the sultans, and the general rendezvous of the caravans: and even yet the voyage to Fezzan is termed, the voyage to Seela, by the caravan from Bornou.

This little city stands on a space about one mile in circuit; as in Augila, the houses have only a ground floor, and the rooms are lighted from the door. Near the centre of the town, are the ruins of a building several stories high, and of which the walls are very thick; and report says this was formerly a palace. Without the town near the southern wall, stands an old mosque, little destroyed by time, serving as a sample of the ancient magnificence of Zuila; it contains in the middle a spacious hall or saloon, encompassed by a lofty colonnade, behind which runs a broad passage, with entrances to various apartments belonging to the establishment of the mosque. At some little distance further from the city, appear very lofty edifices, which are the tombs of shereefs who fell in battle, at the time the country was attacked by infidels' (Hornemann 1802: 56–57).

Despite its dilapidated state, many leading and wealthy men and relations of the Sultan of Fazzān were said to live in Zuwīla (Hornemann 1802: 56) such that it was known as the ‘town of *sharifs*’ and it was customary for the wife of the sultan to be a sharif from Zuwīla or Waddān. There was also evidently enough wealth for Hornemann's caravan to be met by Sharif Hindy with 20 horsemen on white horses (Hornemann 1802: 56).

George Francis Lyon, visiting in 1819, similarly drew attention to the ruins of the castle, the mosque and the tombs of the Banū Khaṭṭāb, along with the town's continuing prestige. Lyon's description is worth citing extensively:

‘We rode out of town to see the extraordinary ruins... The one most esteemed by the Shreefs is an old Mosque, standing at about half a mile to the westward of the town. It is a large oblong building of evidently an early date, though certainly of Arab origin. The walls are built with a neatness now unpractised and unknown, of unbaked rough bricks and strong binding clay. At the north-west corner is the Mouaden (or minaret), much dilapidated, but still of a height sufficient to command an extensive view of the surrounding country. The length of the Meseed inside is 135 feet and its breadth is 90, immense dimensions for an Arab building, which has no cross walls to support the roof. It is quite open overhead and nothing remains to give an idea of what it once was covered with. There are two niches for the Imaum; one is in a partition built partly across and near one end, for that purpose; the other is in the wall, and in the form of a pulpit ... From this mosque we went to a spot half a mile east to examine five buildings, the appearance of which was much more interesting. These are in a line with one another, and have a passage between them of three or four feet in breadth. They are square; their diameters are about twenty feet, and their height about thirty. They have dome tops, and two windows; one low near the ground, the other high and narrow and situated about ten feet above it. The rough skeleton of the building is of sun-dried bricks and clay, which has hardened to nearly the consistency of stone; over this, to about half the height of the building are laid large flat stones of reddish colour, and unhewn, as found in the neighbouring mountains. Few of these still adhere.

‘The interior of the buildings are perfectly void, and appear never to have had any floors or partitions. From the smallness of the lower windows, it strikes me that these places were the tombs of the Shreefs, who first settled here about five or six hundred years ago ... each contains a Shreef, whose grave is ornamented in the usual complement of broken pots, shreds of cloth, and ostrich eggs. The people here look with much reverence on these edifices, and tell many wonderful stories of the dead now enshrined within them.

‘On these tombs are the inscriptions about which so many ridiculous tales are told; but only two at present retain them, and these are on the point of falling. The Zuela people ... attribute strange buildings and writings to the Christians ... The inscriptions are on the upper parts of the walls, and on the sides instead of the front, which makes it very difficult to see them, owing to the neighbouring buildings not allowing sufficient space to walk back in order to distinguish them more clearly. The least perfect has only one or two lines, resembling the tops of letters, on a white cement of about a foot square; the other has about two feet of plaster, and some long letters are sunk in, apparently Arabic, and much broken... The letters I drew were these, which I conceive clearly prove the Arabic origin of these buildings [Figure 3]. Under these characters is a small piece of very neat cornice, of the size of a cocoa nut, having little flourishes on it.

‘On my return I went to see the Castle, or rather the ruins of one, which occupies a large space in the centre of the town. Its walls must once have been of great strength, as in some

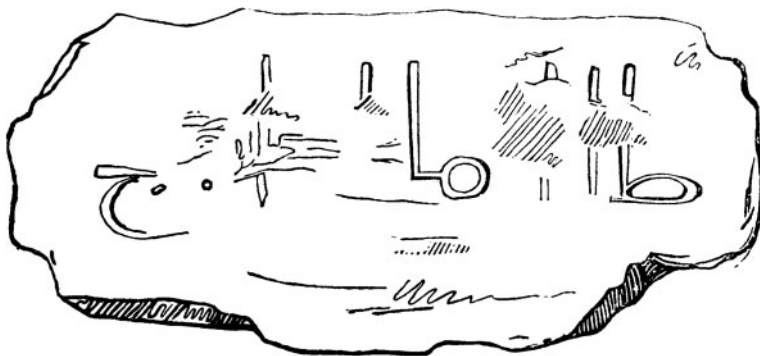


Figure 3. The Arabic letters identified by Lyon (1821) on one of the tombs at Zuwila.

places I observed them to be about thirty feet in thickness ... the Castle had nothing to boast of but the solidity of its materials ... the present walls of Zuela are of the same materials as the Castle. The town has but few good houses; but, judging from the ruins I saw, I should conceive it must once have been of much consequence and built in a manner rather superior to Arab towns in general ... The town has three good mosques, and three gates of entrance' (Lyon 1821: 214–217).

He also mentioned an 'archaeological' discovery he made by accident:

'Near the town, my horse stumbled and fell into a grave, which, from its being hollow, led me to examine it ... From the side of the first pit a chamber of the same length is excavated in the gravel, which lies under the surface of the sand, and the body is placed in the vault, the pit alone is filled with earth' (Lyon 1821: 217).

Hugh Clapperton also left a diary record of a visit in May 1822, but note that when he refers to the Castle, he is referring to the walled town, rather than the *qaṣabah* (Bruce Lockhart and Wright 2000: 59–60; the punctuation and spelling are as in the original):

'We were waited upon by Shereef Hamed before we got out of bed & in about an hour afterwards he returned & we went with him to visit the remains of the castle which has been the largest in this country that we have seen but is now in ruins it is built of clay & gravel being placed in large wooden frames & beat down with ramers at first sight they look like immense stones and are mostly as hard it has flanking towers of a square form about 20 paces distant from one another - the north end which is complete & joins part of the Town wall is 200 paces in length & the height of what remains may be about 35 feet & is nearly 25 feet thick at the base decreasing in thickness as it goes up - the greater part of the town is built within the square of the castle the houses are the best I have seen in Fezan & the streets are much broader than in Moorish towns in general - 'From the Castle we went to the ruins of a Mosque about a 1/4 of a mile to the East of the town the walled part of the Mouadan & most of the Arches that supported the domed roof yet remain they are formed much like the gothic arch but the pillars are very rude - the whole is built of sun dried bricks & mortar it has been white washed & plastered inside from the church we went to their tombs which they say were built by the Romes but they were Mislem each tomb may be about 30 feet high having [a] small window near the top covered with [a] dome at top containing one grave each the bodies lying north & south like all true believers who are buried with their right arm under their head & their faces looking towards Mecca they are built of sun dried bricks faced over with flags of sand stone & round the tops below the dome has been a cornice with ornaments & arabic inscriptions only two or three of which now remain - There are two windows at the [top] & one at the bottom of each of the buildings those at the top being longer & broader & arched over'

Most of the other nineteenth-century Saharan travellers by-passed Zuwīla and did not add significant information about the site.

Accounts of colonial authorities in the twentieth century

By the time of the Italian census of 1931 it is clear that Zuwīla, like much of Fazzān, had shrunk to a fraction of its former size. Only around 80 houses were habitable and Gigliarelli (1932: 139–141, 146) records the population as just 363, with six camels, one horse, 70 donkeys, 40 sheep, 21 gardens, 8000 palms and 15 active wells. According to Scarin (1934: 336–340, 1937b: 629, 637–638) there was some modest recovery in numbers a few years later, but the population was still just 525 strong, supported by only 5500 palms in the entire region round Zuwīla; he also recorded 125 operational wells, but around 700 that were abandoned (Scarin 1937b: 638). By comparison the nearby village of Umm al-Arānib had overtaken Zuwīla in almost every one of these measures.

Gigliarelli (1931: 141) had the following to say about Zuwīla (for original text see [Appendix 3](#)):

‘It is one of the oldest inhabited centres of Fazzān, and reached its maximum population and commercial development under the Banū Khaṭṭāb dynasty, who chose it as the capital of the region... The village, quasi-rectangular in shape, is constructed in a depression that is completely detached from the oasis [of ash-Sharqiyat?]. To the north and south the depression is limited by two chains of hills about 6 kilometres from Zuwīla. In the middle of the village are the ruins of an ancient castle with massive walls, which could be traced back to Roman times: in fact, the quadrangular plan is reminiscent of a Roman *castrum* [fort; italics added], but the stones of which it is built do not have the quality of workmanship and regularity usually used by the Romans for buildings of such importance. Currently, these remains have almost disappeared under a new building that is used as a barracks by the CC. RR [Italian colonial force]. The construction of the circuit wall is more probably Roman, of which some stretches are still standing. The era of the Banū Khaṭṭāb is widely remembered, more from the ruins of the Great Mosque than from the tombs of the sultans of that dynasty. These constitute a line of seven structures each with the form of a low tower surmounted by a dome. They have rectangular windows on their east and west sides and the blocks of sandstone of which they are built are perfectly aligned’ (translated by Martin Sterry).

Scarin (1937b: 637–638) largely reprised the account of Gigliarelli, but did not comment on the larger enceinte around the *qaṣabah*.

In the 1940s the French mission to Fazzān identified Zuwīla as one of two centres (the other being Tmissa) where occupation had been continuous for more than 1000 years (Despois 1946: 103–104). From an original open and extensive settlement, the site had eventually withdrawn within a strong enceinte of *pisé* construction, pierced by four gates. In the northwestern angle of the fortified town, Despois credited the Turks with the construction of a small fort (the *qaṣabah*) that was subsequently further adapted by the Italians. The growth of the town beyond the northern and eastern defences seems to have followed the reorientation of the settlement following the creation of this fort, with a wide area of ground around it cleared of buildings and a new main mosque constructed facing it to the east. Despois (1946: 214–215) was also the first modern visitor to comment on the ‘assez nombreux’ remains of *foggaras* in the Zuwīla area, but his account otherwise adds little to the earlier reports on the old walls, the ruins of the ‘white mosque’ and the tombs of the Banū Khaṭṭāb. He reported the population of the ash-Sharqiyāt region as numbering 2530 people, with Zuwīla, Umm al-Arānib and Tmissa being the largest villages, and with just 50,700 palms and 188 gardens, by then entirely fed by wells.

Archaeological fieldwork at Zuwīla

The earliest archaeological fieldwork in and around Zuwīla was conducted by Caputo (Pace *et al.* 1951: 416–419) in October 1933. Although only a note, this provides the earliest plan of the walls of Zuwīla and the monumental tombs that have been commonly ascribed to the Banū Khaṭṭāb (Figures 4a and 5a). The largest campaigns of survey and the only excavation were undertaken in the 1960s and 1970s. The controller of antiquities for Fazzān, Muḥammad Ayoub, evidently undertook some fieldwork around Zuwīla, although the nature of this was not reported (Ayoub 1968).

Charles M. Daniels first visited Zuwīla in 1968 as part of a Middle East Land Army expedition (Boxhall 1968: 26–27, 50; Daniels 1968), undertaking a systematic survey of sites around Zuwīla, making a detailed plan of the town walls (Figure 4b) and the Banū Khaṭṭāb tombs (Figure 5.c), collecting ceramic material and producing an invaluable

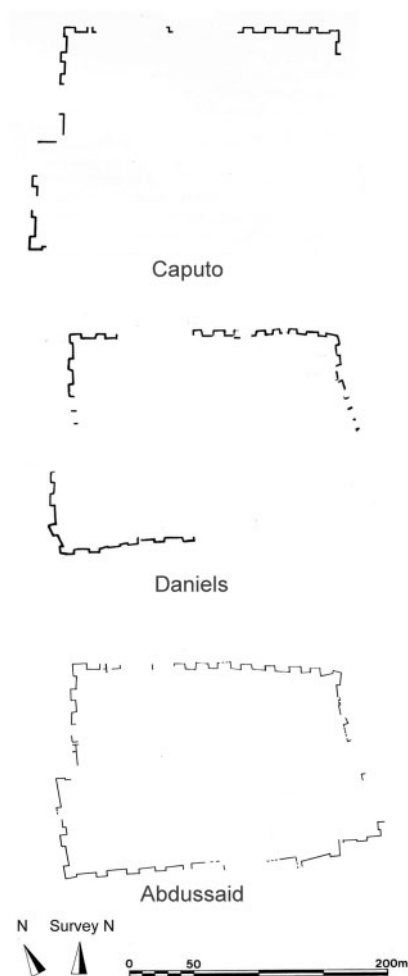


Figure 4. The town walls at Zuwīla (after Pace *et al.* 1951; Daniels; Abdussaid 1979).

photographic record (Daniels 1968, 1989; Mattingly 2010: 10–11). The photographs, along with some of the ceramic material collected in 1968, are held in the Archive of the Society for Libyan Studies in Leicester. The Daniels photographs provide the most important record of the state of the mosque prior to excavation (Figure 6), of the town walls before late twentieth-century redevelopment and further demolition (Figure 7) and of the tombs prior to their being restored with alterations (Figure 8). He appears to have made a brief second visit accompanied by John Hayes in April 1972, when he observed that the Department of Antiquities had carried out considerable reconstruction work on the tombs of the Banū Khaṭṭāb. His notes record that the Department's workmen had found a fragment of mortar cornice and traces of three or four Kufic letters on the side of a tomb — this seems to be the same fragment spotted by Lyon (see above). This evidence suggests that the tops of the tombs were originally ornamented in plaster externally.

The German archaeologist Helmut Ziegert (1969: 49–52) published some brief notes on the archaeology of Zuwīla, focused on the town walls, the main mosque, the tombs, the hydraulic features and various cemetery areas, including a shaft burial (Figure 9b) that

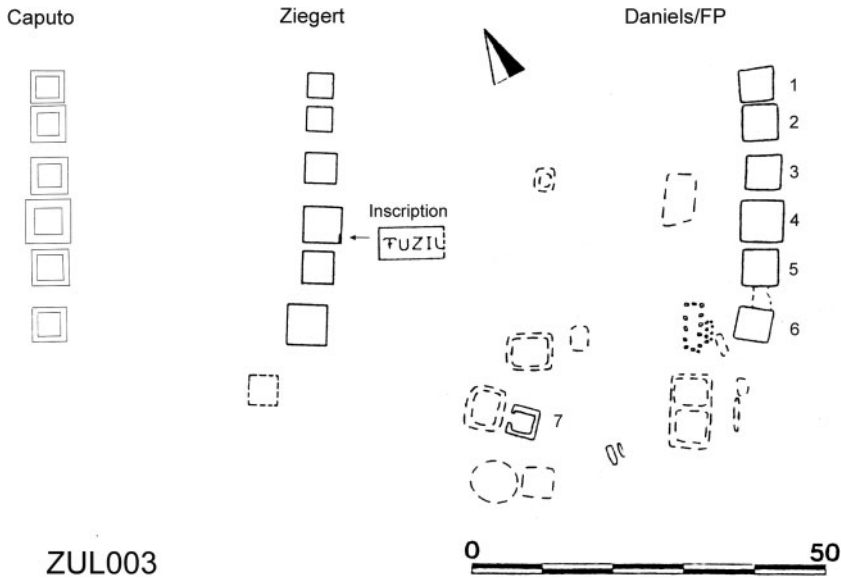


Figure 5. Plans of the tombs of the Banū Khaṭṭāb at Zuwīla (after Pace *et al.* 1951; Ziegert 1969; Daniels).

was evidently similar to that described by Lyon. He was the first to identify the extensive area of undefended settlement to the south of the great mosque (Figure 9a, though many details of his sketch plan are erroneous or oversimplified). Ziegert also claimed to have identified an inscription in Latin letters ('FUZIU') on the southeastern corner of mausoleum 5 (see Figure 5b for his plan), but this is contradicted by Lyon 1821) and Charles Daniels, who both identified the script of the inscriptions as being Arabic/Kufic.

The congregational mosque was subsequently partially excavated by Ziegert and Abdussalam (1969, 1973) and more substantially by Abdussaid (1979; see also the summary by el-Mahmoudi 1997). It is one of the largest mosques known in the Central Sahara, especially significant given its presumed early date (Figures 10 and 11). Abdussaid's short English account (1979: 327–329) was accompanied by a slightly longer Arabic text, 65 photographs and six fold-out plans and sections. His account of the mosque (Abdussaid 1979: 327–328) suggests that there was some damage as a result of an earthquake. He also has brief comments on the tombs (Abdussaid 1979: 328), noting that they were made of white mud-bricks and coated with stone slabs and that they were decorated around the topmost part of the walls with plaster painted with Kufic inscriptions. The size of the white mud-bricks used for mosque and tombs was similar, leading him to suggest that the two were contemporary with one another, although as we shall see there are now reasons to doubt that. Abdussaid recognised that the main settlement associated with the mosque was unfortified, but his comments on the walled enceinte to its north are very brief, notwithstanding the fact that a survey and plan of the walls appears to have been done at this time:

'The fortifications that still stand prominently (*sic*) were built nearly at the north-west corner of the early city. It is difficult to date these late fortifications, but it is clear that they were built without care to conform to geometrical precise alignments. Probably it was done in a hurry to face an urgent circumstance' (Abdussaid 1979: 329).

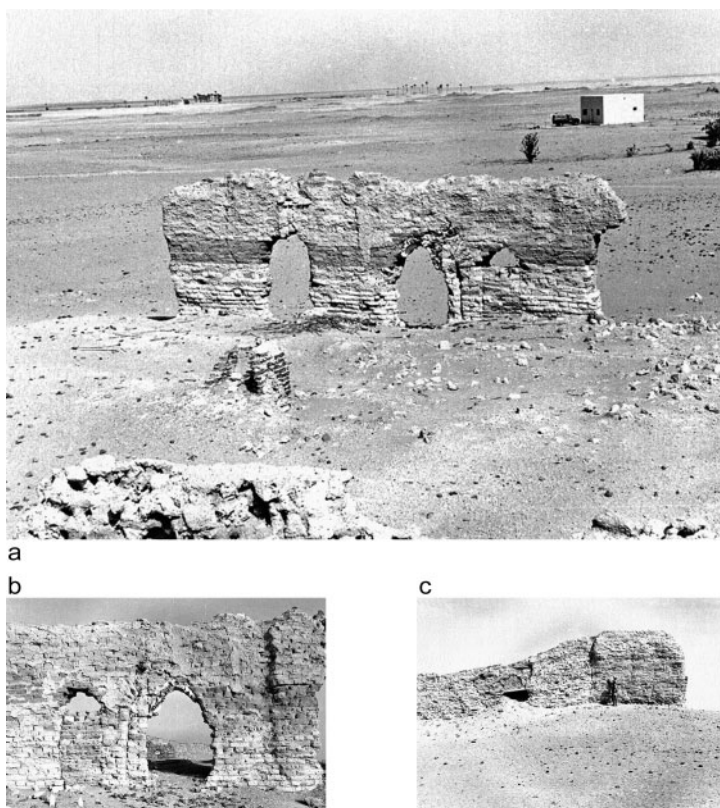


Figure 6. Photographs from the C.M. Daniels archive of the white mosque at Zuwāla (ZUL002) in 1968 prior to excavation: a) east wall of the mosque, looking east from the top of the minaret platform; b) the eastern exterior wall of the mosque looking west, showing several phases of construction and repair; c) the minaret platform and ramp, looking east.

His verdict as regards the date and relative care and timescale of construction can both be questioned, though the plan is certainly not a regular rectangle.

John W. Hayes was sent a small amount of ceramics from Ziegert's excavations in 1972 and the full details of his report are described below ([Appendix 2](#)). Importantly, the material included a number of Roman imports, providing the first evidence for the Garamantian origins of the site.

The most recent fieldwork at Zuwāla was undertaken in 1998 and 2001 by the Fazzān Project directed by one of us (DM). The Project revisited many of the sites originally located by Daniels, establishing for the first time a systematic list and map and collecting further ceramic material (stored at the Jarma Museum), as well as obtaining a number of samples for radiocarbon dating from key standing structures. The initial results were published as part of the gazetteer of the Fazzān Project (Mattingly 2007: 282–288). The Fazzān Project's baseline account of the archaeology of Zuwāla is recapitulated and expanded here, in particular drawing on the AMS dates that have now become available from the Oxford Radiocarbon Accelerator Unit. Finally, in the preparation of this paper we purchased a 25 km² Worldview-2 scene centred on the Zuwāla old town and integrated this along with a sequence of vertical air photographs from 1958 to create a comprehensive plan of all features in the Zuwāla environs ([Figure 12](#)). Despite the lack

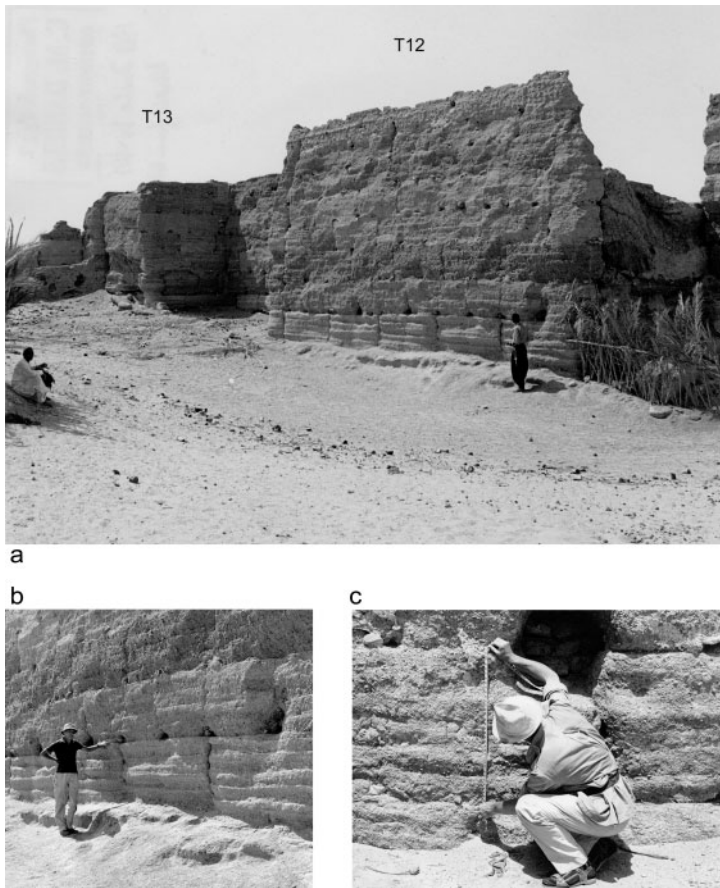


Figure 7. Photographs from the C.M. Daniels archive of the town walls of Zuwīla (ZUL001) showing details of *pisé* construction: a) north wall near the northwestern corner of Tower 12, showing courses of *pisé* blocks (note the different colour of the foundation layers); b) close-up of *pisé* blocks showing put-log holes with stone lining; c) close-up of the internal layering of rammed earth construction for each block.

of recent excavations at Zuwīla, there is therefore a substantial amount of new data to present that clarifies in important ways the literary accounts.

The archaeology of Zuwīla

The main archaeological features identified at Zuwīla are mapped on [Figure 12](#) and described briefly in this section, with slightly more detail provided for each structure as [Appendix 1](#) at the end of the paper. We have continued the naming convention for archaeological sites used previously by the Fazzān Project (Mattingly 2007: 3–6). ZUL001 is the walled circuit of the medieval town, which covers an area of about 3.5 ha, and is built up of massive *pisé* (rammed earth) blocks with a total height in excess of 6 m and a regular pattern of projecting external rectangular towers ([Figures 4, 7, 12 and 13](#)). The southern and eastern sides are partly obscured by later developments in those directions (ZUL018), but the western and northern sides are substantially preserved. At some point in time, the northeastern corner of the walled enceinte was converted into a

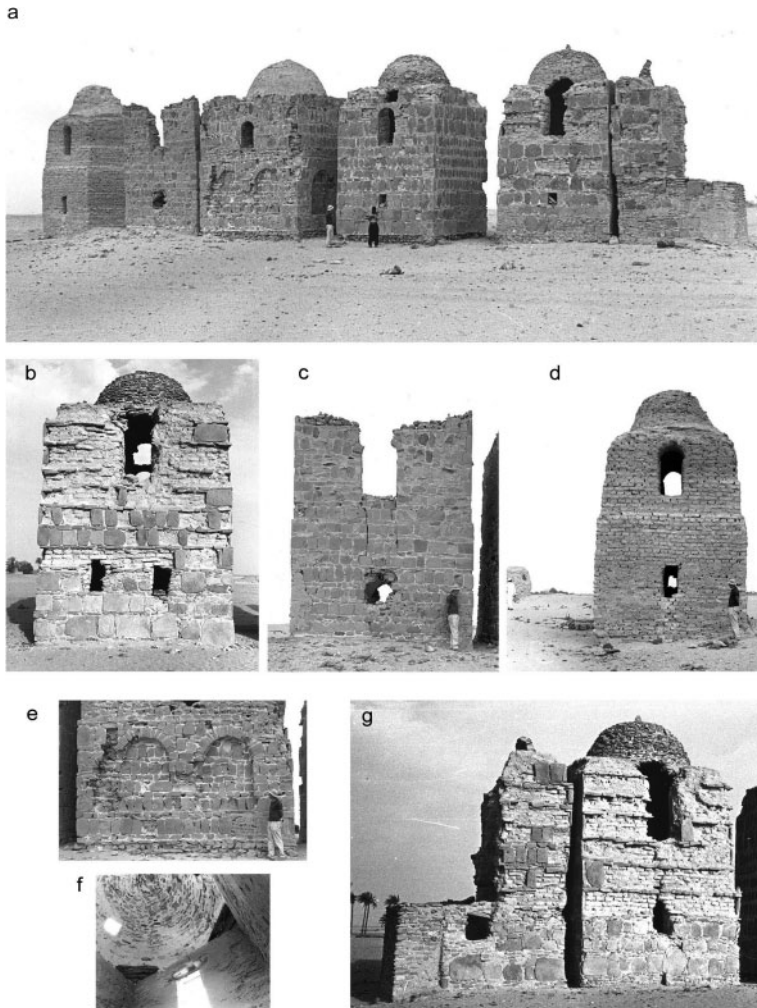


Figure 8. Photographs from the C.M. Daniels archive of the tombs of the Banū Khaṭṭāb at Zuwīla (ZUL003) in 1968 prior to restoration: a) general view, facing west (Tomb 1 to the right); b) Tomb 6 to the left); b) Tomb 2, facing east; c) Tomb 5, facing west; d) Tomb 6, facing west; e) niches on the east wall of Tomb 4, looking west; f) interior of the dome of Tomb 4 (note the timbers across the angles of walls to support the dome); g) Tombs 1 and 2, looking east (note the small gap between them).

citadel or *qaṣabah* with thick walls (ZUL016). As the walls stood over 7 m tall in this sector and the towers were more closely spaced, it is possible that the early modern *qaṣabah* replaced an original citadel in this area, dating back to the initial construction of the walled enceinte. It is mentioned as being already ruinous by Hornemann (1802: 56–57), but was evidently later refurbished by the Ottoman and Italian authorities.

ZUL002 is the ‘white mosque’, so named because of the employment of distinctive white mud-bricks. It is identified with the congregational mosque mentioned by al-Bakrī (Figures 6, 10–12). The position of the mosque is interesting as it lies outside and south of the walled ‘town’ and on the northern edge of an unwalled area of settlement (ZUL012) that is visible on the air photographs from the 1950s (Figure 14), but is now

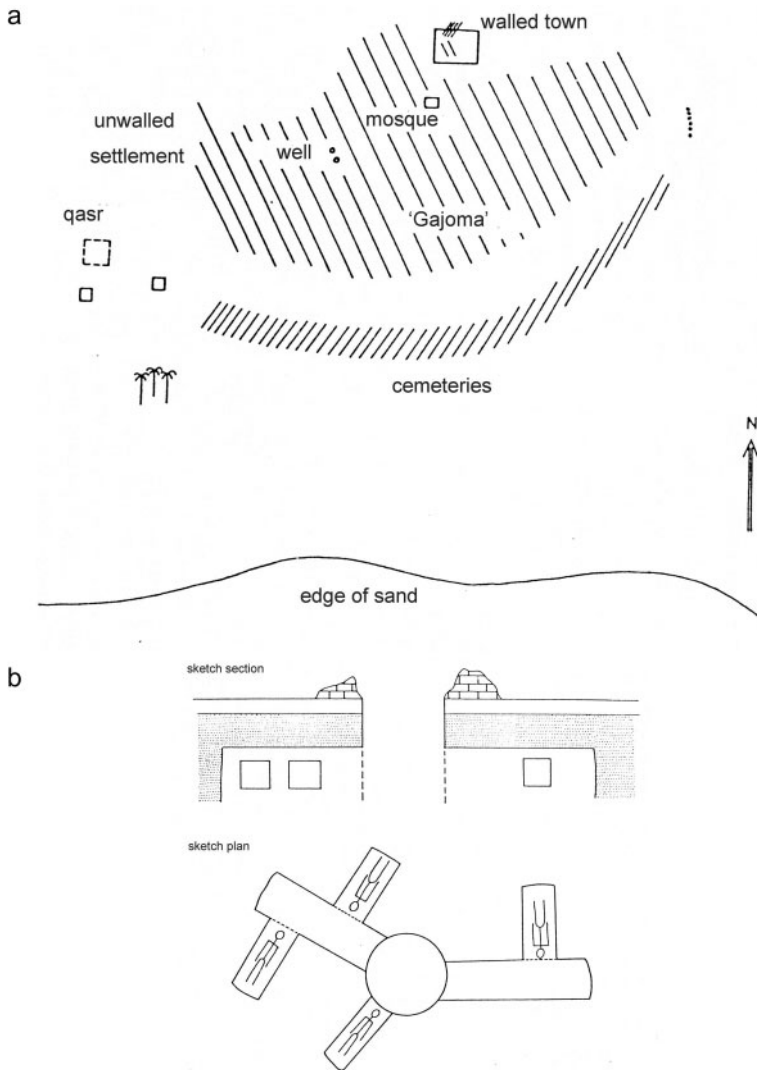


Figure 9. Ziegert's (1969) sketches of Zuwīla: a) a rough plan showing the undefended settlement to the south of the walled town; b) a schematic sketch of a chamber tomb with access shaft.

largely built over. Towards the eastern end of this approximately 20 ha-sized nucleated settlement there was a fortified building or *qasr* (ZUL004).

ZUL003 is the number given to the so-called tombs of the Banū Khaṭṭāb, monumental tower mausolea built in a north-south line adjacent to the main route leading east away from Zuwīla across the desert in the direction of Cairo (Figures 3, 5, 8, 12 and 15). The position from which the AMS samples were taken is shown on Figure 15, which also indicates the presence of a number of less substantial funerary monuments to the west of the main line of tombs. This is, in fact, one element of a larger Islamic cemetery area (ZUL020-ZUL021) that continues beyond the large well marked at the top of Figure 15. There is a further Islamic cemetery area on the south side of Zuwīla (ZUL022).

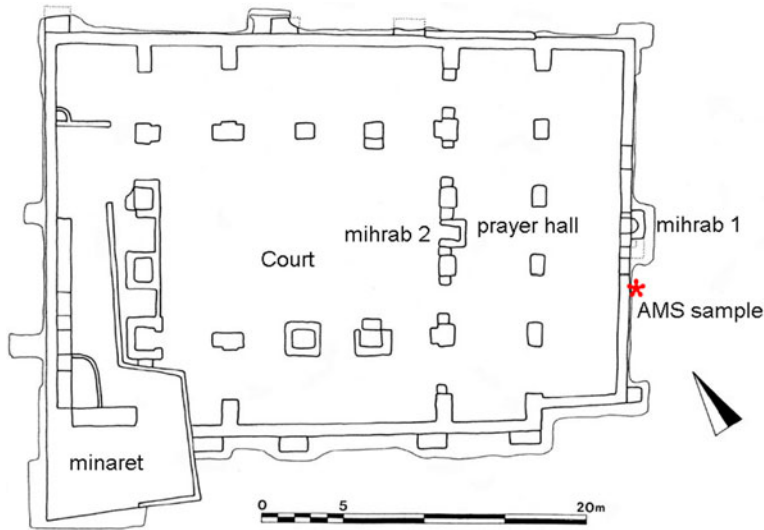


Figure 10. Plan of the congregational mosque (ZUL002), after Abdussaid (1979) with the position of the AMS sample (OxA-26744) marked.

A number of earlier cemetery areas have been identified on the south side of the undefended settlement (ZUL005, ZUL006, ZUL008, ZUL009) and these are associated with Roman-era pottery and other finds.

Curving around the western, northern and eastern sides of the walled site (ZUL001) there are traces of an extensive field system (ZUL007) covering at least 630 ha, divided into roughly square plots measuring approximately 75–150 m a side, many of them with traces of a centrally positioned well (Figures 12 and 14). A different form of irrigation work has also been identified in the landscape to the south of the unwalled settlement area, comprising two main clusters of the distinctive underground channels (*foggara*) that are characteristic elsewhere in Fazzān of Garamantian-era oasis cultivation (ZUL013, ZUL014). These evidently fed water into a broad shallow depression about 2 km southwest of the town (ZUL015).

There are probably additional smaller settlements in the close vicinity of Zuwīla; one example of a small tower-like *qasr* was visited by the Fazzān Project team (ZUL010; Figure 12).

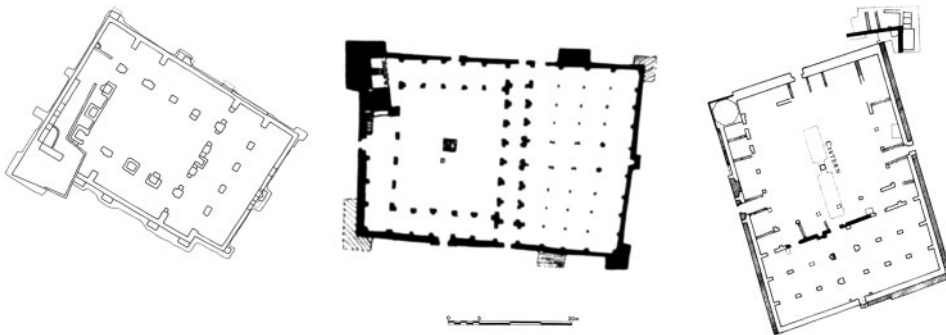


Figure 11. Comparative plans of early courtyard mosques at Zuwīla, Madinat Sultan and Ajdabiya.

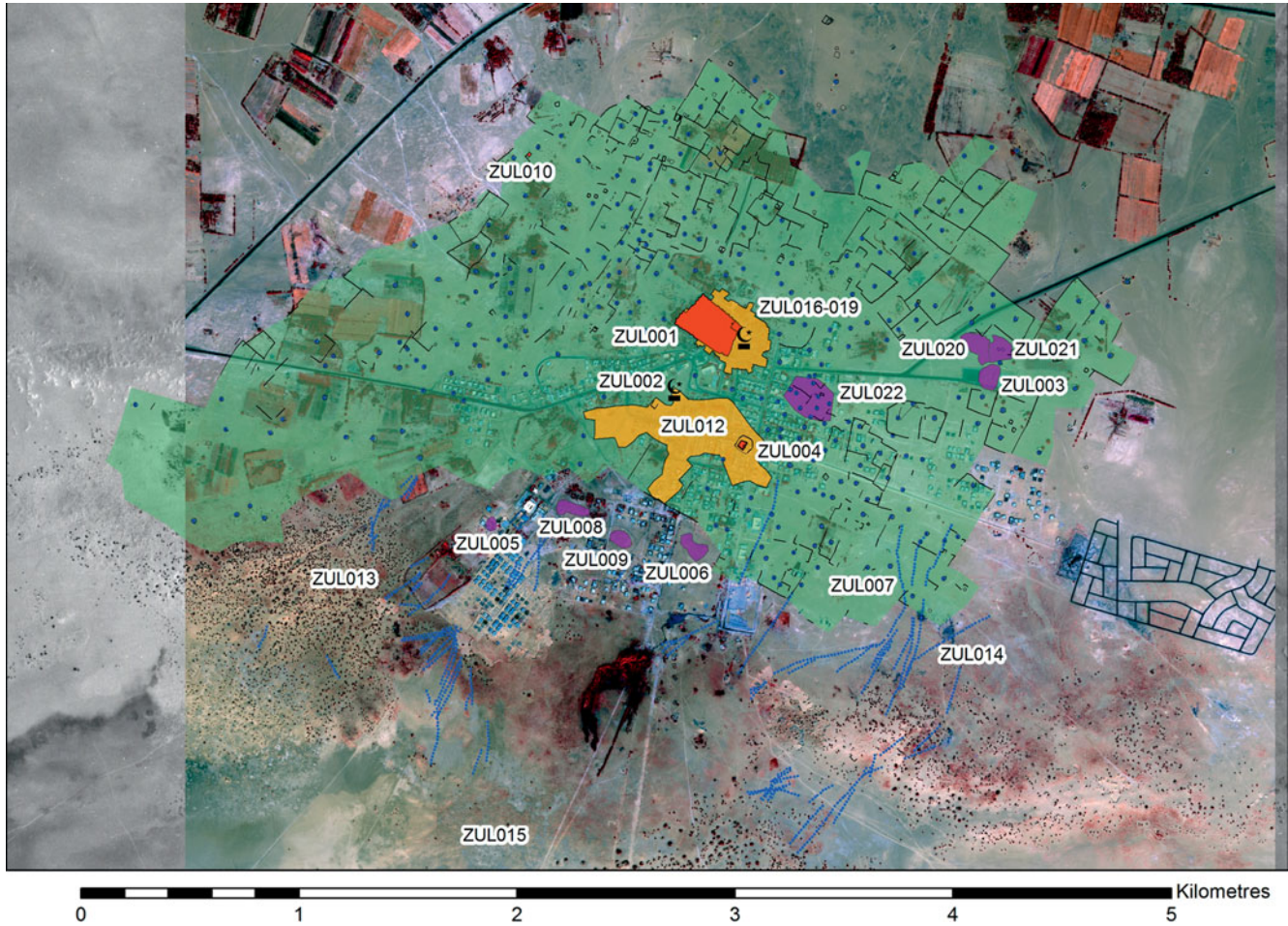


Figure 12. Overall map of the archaeological structures at Zuwila.

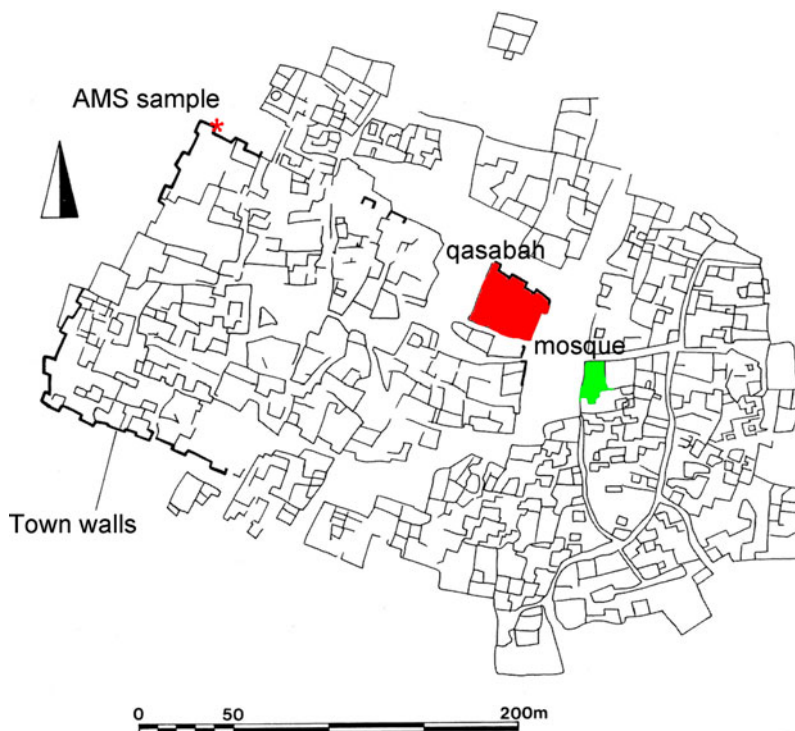


Figure 13. The C.M. Daniels plan of the walls of Zuwīla (ZUL) showing the later buildings inside and overlying the enceinte, with the position of AMS sample OxA-26743, the *qasabah* ZUL017 and the early modern main mosque (ZUL018) marked.

It is clear from the different character of the settlement features, cemeteries and irrigation works that we have a palimpsest landscape here. Without more substantial field investigation and excavation picking this apart is not easy, although some surface collections have been made (see [Appendix 2](#)) and these can now be supplemented by AMS radiocarbon dates on some of the key structures. The origins of the oasis settlement at Zuwīla can confidently be placed in the Classic Garamantian era, in light of numerous finds of imported Roman pottery dating to the first few centuries AD. There are no certain ceramics of the Proto-Urban Garamantian period (500-1 BC), something that is also characteristic of the Murzuq area, where the main development of oases appears to fall in the Classic and Late Garamantian eras (Sterry *et al.* 2012; Sterry and Mattingly 2013). A small fragment of a Hellenistic eye-bead reported by Daniels in his unpublished notes on the site could have been long curated before its deposition at the site. The presence of *foggara* irrigation systems is another probable indication of the initial Garamantian development of the oasis, since the introduction of this technology to the Central Saharan region can now be firmly dated to Garamantian times, while the Islamic sources specify the use of wells for irrigation at Zuwīla and elsewhere in Fazzān.

AMS samples from Zuwīla

With the agreement of the Libyan Department of Antiquities, a total of four samples were taken from the key standing monuments of Zuwīla ([Table 1](#) and [Figure 16](#)) during the survey work undertaken by the Fazzān Project in 2001. In each case botanical remains

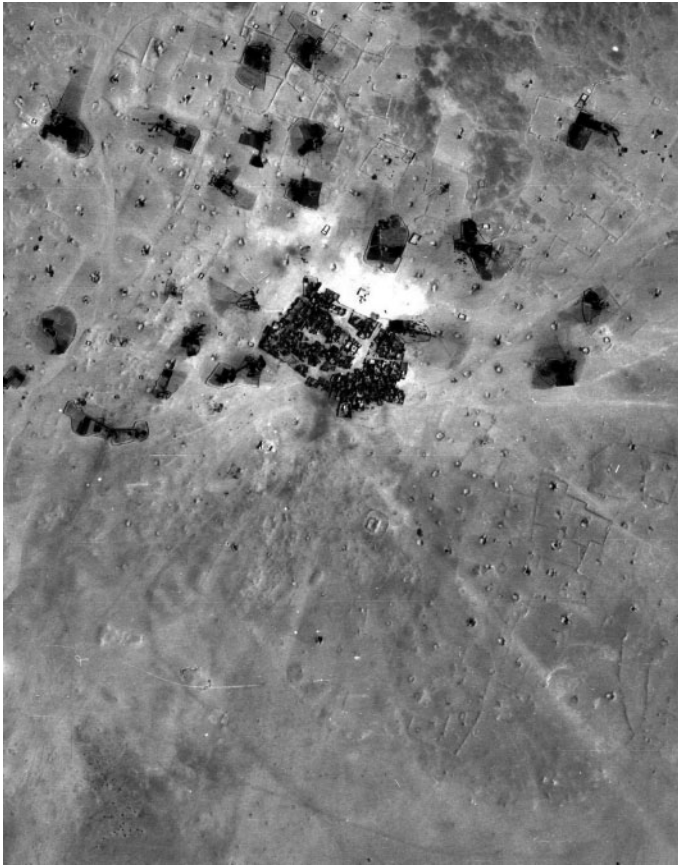


Figure 14. A 1950s air photograph of Zuwila showing the central features of the site.

relating to an annual growth cycle (date stone, chaff) were extracted directly from the wall fabric. The sample from the urban wall circuit came from the northwestern corner bastion and comprised a date stone thoroughly embedded in the rammed earth wall about 1.5 m above ground level. Another date stone was extracted from a mud-brick of the external face of the eastern wall of the white mosque, just to the south of the *mihrab*, again at about 1.5 m above ground level. Both of these contexts were judged to be primary in constructional terms, with no obvious evidence for rebuilding or repair. The two samples from the so-called Banū Khaṭṭāb tombs were taken from the mud bonding mortar of the interior mud-brick walls. While the external faces of the monuments had been extensively renovated in recent times, the interior walls appeared untouched in modern times. The sampled material consisted of thin plant fibres (chaff?) within the mud mortar. The most northerly and most southerly tombs were sampled in case there was a significant time lag between the construction of the first and last tombs in the line. All the samples were sent for analysis at the Oxford Radiocarbon Accelerator Unit.

Discussion points

The date on the mosque, cal. AD 670-857 (OxA-26744 calibrated at 95.4%), is perhaps the most surprising result of these analyses. This would make it one of the earliest

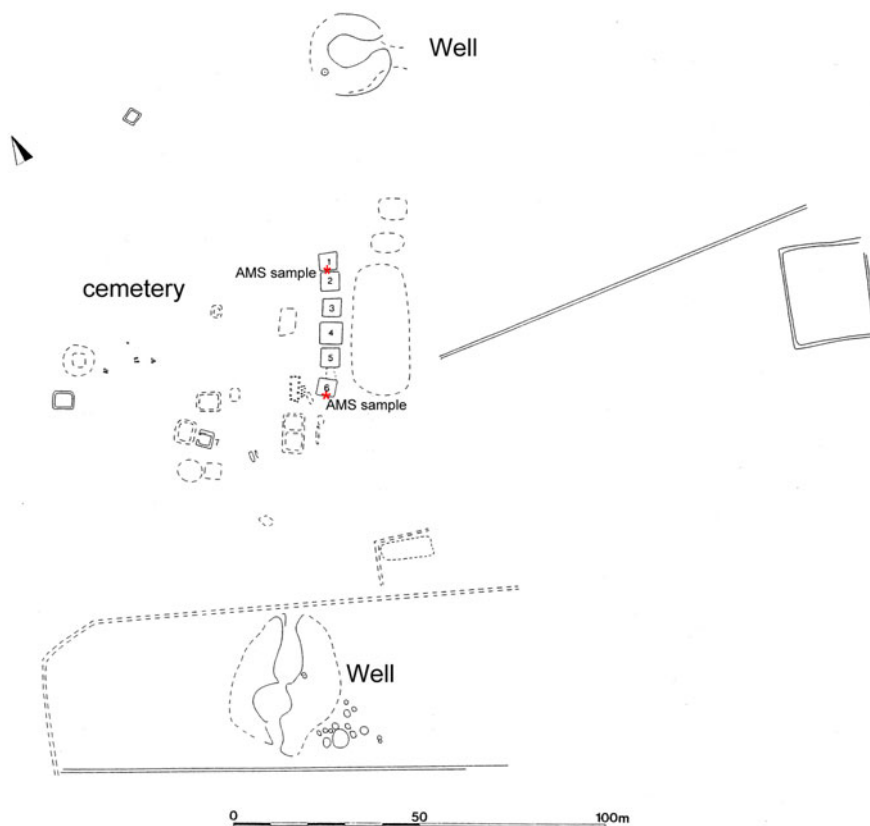


Figure 15. Plan of cemetery ZUL003, showing the tombs of the Banū Khaṭṭāb and related features.

Table 1. AMS dates from Zuwīla. The calibrated ranges in this paper were generated using OxCal 4.2 and IntCal13 (<https://c14.arch.ox.ac.uk/oxcal/OxCal.html>; Bronk Ramsey 2009). All the calibrated age ranges presented here are 2-sigma values, incorporating 95.4% of the probability distributions.

Site code	Site description	Laboratory number	DMP Code	Material dated	¹⁴ C age BP	Calibrated date range AD (95.4% confidence)
ZUL001	Town walls	OxA-26743	AMS Sample 97	Date stone	1065 ± 23	900–922 12.3% 948–1020 83.1%
ZUL002	Zuwīla Mosque	OxA-26744	AMS Sample 98	Date stone	1260 ± 24	670–778 92.8% 792–803 1.2% 843–857 1.4%
ZUL003	Banū Khaṭṭāb Tombs	OxA-26745	AMS Sample 99	Plant fibres, not identified	1029 ± 24	976–1031 95.4%
ZUL003	Banū Khaṭṭāb Tombs	OxA-26495	AMS Sample 100	Plant fibres, not identified	1038 ± 27	904–917 2.5% 966–1032 92.9%

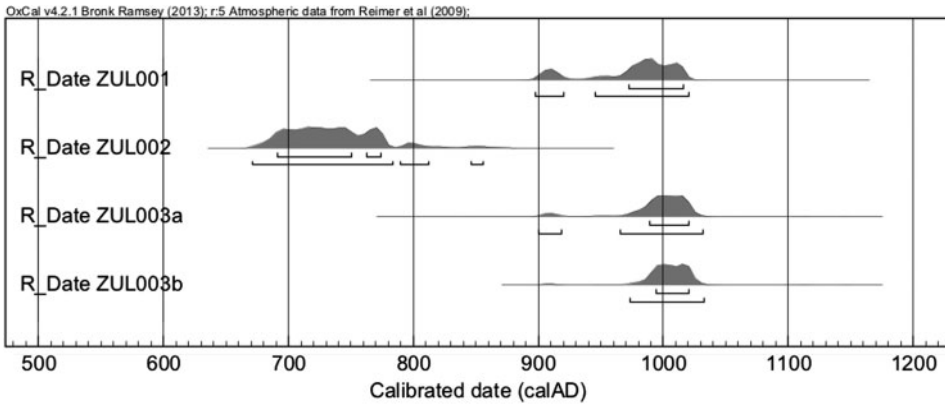


Figure 16. AMS dates from Zuwīla.

mosques known in Libya and one of only a handful of seventh- to ninth-century mosques identified in North Africa (cf. Fenwick 2013). It also places its construction somewhat earlier than the presumed Fatimid date of the tenth century, an attribution based on its similarity in plan to the mosques at Ajdābiya and Madīnat as-Sultan although neither of these has been firmly dated (Figure 11; Abdussaid 1967; Blake *et al.* 1971). The construction of a mosque at this early date at Zuwīla is not improbable. As already mentioned, there is good evidence that there was a large Ibādī population in Zuwīla in the eighth century and it is therefore likely that they had a mosque, even if Islam was not widely accepted in Fazzān at this early date. In al-Bakrī's account of the Saharan towns, the chief entrepôts were regularly described as having congregational mosques, baths and markets. In the case of Sijilmāsa, he attributes the construction of the mosque to the early ninth century (Levtzion and Hopkins 2000: 64–65), while by the eleventh century Awdaghust evidently possessed a congregational mosque, as well as many smaller ones (Levtzion and Hopkins 2000: 68).

However, the earliest parallels for a courtyard mosque of this type are from the mid-ninth century (see, for example, the grand mosques of Sousse, Sfax and even al-Qayrawn, all in Tunisia, although they are much larger than that of Zuwīla). This would favour an early ninth-century date over a late seventh- or eighth-century one. While it is not impossible that the sampled mud-brick was reused from an earlier substantial building, the fact that distinctive white bricks were used for the mosque construction would seem to preclude any substantial reuse of materials. Close examination of the plan does suggest that the prayer hall may have lacked an associated courtyard in its initial phase — the offset between the south wall of the prayer hall and courtyard hints that the latter may be a secondary addition). Though Abdussaid's excavations produced evidence of multiple floors and reinforcement within the mosque, the location from which the sample was taken looked like part of the primary phase of the building (Figure 10). The simplest interpretation of the date is that it therefore relates to the initial construction of the mosque. The fact that the white mosque was outside the walled citadel at Zuwīla is a further argument in favour of the early date, since the walls can now also be firmly dated (see below).

The two samples from the Banū Khaṭṭāb tombs have produced similar dates of cal. AD 976–1031 and cal. AD 966–1032 (OxA-26745 and OxA-26495 at 95.4% and 92.9% respectively; the latter has a much smaller (2.5%) probability of dating to cal. AD 904–

917; Table 1). This would seem to confirm that they have been correctly associated with the Banū Khaṭṭāb dynasty (AD 918–1172) and we can further link them to the earlier part of that dynasty. As the samples came from Tombs 1 and 6 at either end of the line, that would suggest that all six tombs date to the first century of Banū Khaṭṭāb rule at Zuwīla (Figure 15).

Al-Bakrī's statement that Zuwīla was a town without walls has led subsequent scholars (with the notable exceptions of Caputo and Gigliarelli, who suggested they were of Roman/Byzantine origin) to conclude that the *pisé* walls were a later addition and likely post-dated Zuwīla's primacy during the Banū Khaṭṭāb dynasty. The context of the date stone sampled for AMS dating within the rammed earth matrix of the *pisé* walls is most readily interpreted as dating their primary construction, rather than a secondary repair (Figure 13). Our AMS sample would thus appear to place the construction of the walls at cal. AD 900–1020 (OxA-26743, again calibrated at 95.4%) — once again in the first century of the Banū Khaṭṭāb dynasty and in the same general period as the erection of the monumental tombs and the issuing of the Fatimid coinage of AD 1024. When al-Idrīsī attributed Zuwīla's foundation to 'Abd Allāh ibn al-Khaṭṭāb al-Hawwārī, it is highly plausible he was referring to the erection of this fortress in the early tenth century (Levtzion and Hopkins 2000: 122). Rammed earth fortifications are uncommon in North Africa, apart from the largely undated *ksar* of southern Morocco, with which Zuwīla's walls have significant structural similarities (Nami *et al.* 2014: 69–83). There are also several similar constructions in the Iberian Peninsula that date to the ninth and tenth centuries (Jaquin *et al.* 2008).

Although the construction style and plan of Zuwīla is unique to Fazzān, the other urban site in the southern oases, Qaṣr ash-Sharrāba, also had an enclosed citadel on the northern edge of the town. At 0.7 ha, however, this was much smaller than Zuwīla's 4.5 ha. The Garamantian villages HHG001 and GBD001 stand out for the size of their wall-circuits, both encompassing some 3–4 ha. In particular, HHG001 is of a similar rectilinear, multi-towered arrangement (see Mattingly and Sterry 2013: figures 4 and 5). All three of these sites have been securely dated to the Late Garamantian period (AD 400–700). Although the plan of the fortified complex at Zuwīla follows in this Garamantian tradition, there is no reason to doubt the logic of the AMS dating of the walls to the Banū Khaṭṭāb dynasty. This is an important conclusion. It looks rather as though the walled citadel was a new addition to the north of the main settlement. Only much later did these walls define the urban site, with houses now congregated inside and the area of the undefended settlement and the 'white mosque' now abandoned.

The ash-Sharqiyāt Depression

The ash-Sharqiyāt area forms the eastern end of a long linear set of oasis depressions, with Zuwīla for long its *chef lieu*, but with Umm al-Arānīb emerging in this role by the twentieth century. There has been no archaeological survey of the oases that are part of the same depression as Zuwīla (Umm al-Arānīb, al-Bdayir and Misqawīn), but aerial photographs and recent satellite imagery allow some preliminary assessment of the remains (Figure 17). There is a further important outlying oasis at Tmissa, about 75 km to the east of the ash-Sharqiyāt, while to the south of Zuwīla, but separated from it by about 40 km of sand sea, is the small oasis of Tīrbū, which is not normally viewed as part of the ash-Sharqiyāt area, but associated instead with the Wādī Ḥikma oases to the south (where the major sites are al-Qaṭrūn and Tajirhī. Here we provide brief details of the west-to-east

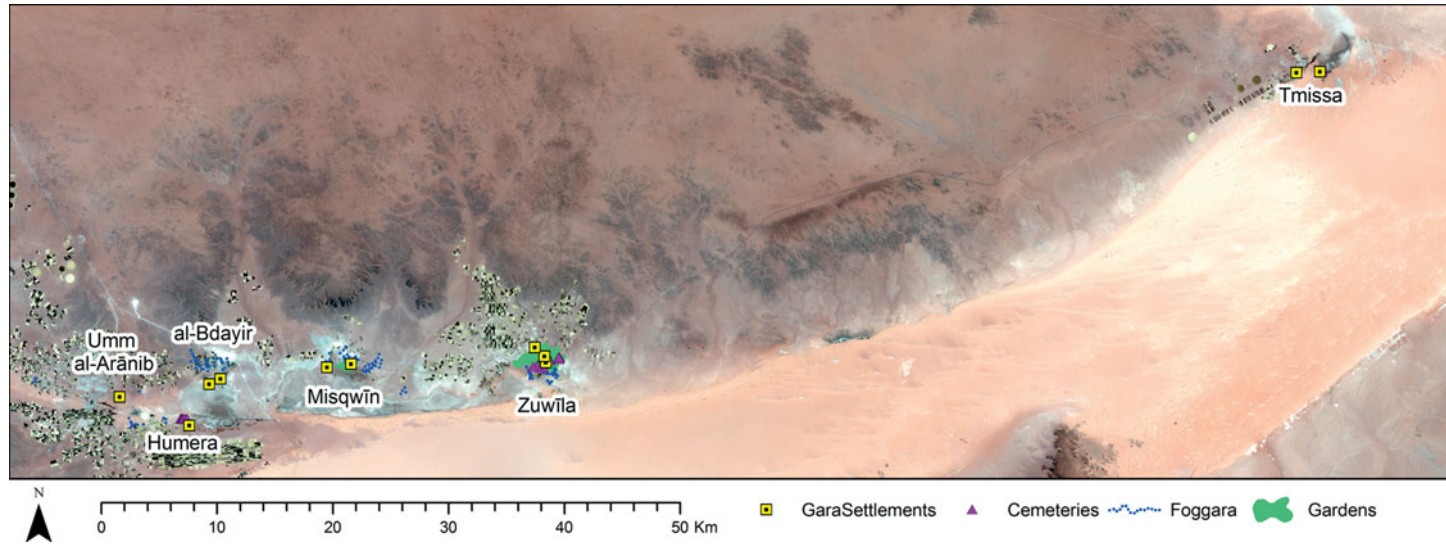


Figure 17. Map of archaeological evidence for Zuwila settlements and irrigation works in the ash-Sharqiyāt area.

line of oases of ash-Sharqiyāt as a basis for comparison with the visible archaeology of Zuwīla.

Umm al-Arānib

The most remarkable remains at Umm al-Arānib are those of a walled village some 3 ha in area. The buildings are largely upstanding, apart from some modern bulldozing in the northwestern and southwestern corners, allowing the full plan to be seen with around 100 houses. The village walls are sub-rectangular in plan with corner towers and two intermediate towers on each side. The internal buildings do not abut the village walls on the east side so that either the walls are a later addition to the village or there has been an extension of village and walls to the east at some point. No building can be identified as a mosque from the satellite imagery, but there is an Islamic cemetery on the northern side with more than 1000 visible tombs. The closest parallel for the settlements is the abandoned southern sector of Murzuq, which has structures of similar size and plan and dates to the sixteenth to eighteenth centuries (Sterry and Mattingly 2013). To the east of this settlement a group of approximately ten *foggaras* runs south-north into a small depression. There is no clear evidence of further settlements or cemeteries, but several mounds are likely to be the remains of field-systems and wells of unknown date.

al-Bdayir

At least 15 *foggaras* run north to south at al-Bdayir and feed into an extensive area of field-systems on the edge of a playa. Although there are stretches of mud-brick wall, settlement is elusive in this area, though the overall level of preservation is poor. On the western edge of these fields is an unusual 0.8 ha fortification that is sub-circular with ten evenly spaced towers and a number of buildings in its centre. The closest parallel is the supposed Kānimi fortification at Trāghan, which is also sub-circular, but three times larger with 23 towers (Lange and Berthoud 1977: 31–32). This would date it to the thirteenth to fifteenth centuries, although there are several irregular shaped *qsur* in Fazzān that are of likely post-medieval date. Several thin scatters of cairns and possible hut clearings on the plateaux to the north are most reminiscent of those on the Hamada al-Hamra and are probably of Pastoral date (i.e. of Neolithic origin).

Humera

South of al-Bdayir another *foggara* group (about five in number) runs south-to-north into the same depression. At its southern end a badly preserved mud-brick settlement covering an area of about 0.5 ha may contain a fortification. This cannot be directly dated, but the preservation of the mud-brick is consistent with that of Garamantian settlements in the Murzuq region. There are several abandoned wells in this area and to the east of the settlement an area of disturbed gypsum that is similar to the cemeteries south of Zuwīla. Some 500 m to the northwest of the settlement is a rocky outcrop, which is almost entirely covered with a nucleated shaft cemetery covering about 6 ha that is almost certainly of Classic Garamantian date.

Misqwīn

Once again a *foggara* group of about 20 channels runs into this oasis. A field-system on the edge of the playa is well preserved and covers at least 300 ha. There are some

possible buildings scattered throughout, but they need ground confirmation. The early modern village is still standing, but is largely abandoned on the northern edge of the field-system. Two square *q̣sur* with corner towers are visible, the first on the western edge measures about 15×15 m with some upstanding walls, the second is to the northeast and is approximately 28×28 m in size, with a building in the centre and a clearly defined ditch. Both *q̣sur* are of very similar morphology to examples elsewhere in Fazzān that date predominantly to the third to sixth centuries AD, i.e. the Late Garamantian era.

Tmissa

The best-preserved remains at Tmissa belong to a large multi-phase settlement on the edge of a large playa (Figure 18). Parts of this settlement are still occupied and have a character that is reminiscent of the houses at Zuwīla. The centre of the settlement appears to have been a square *qaṣabah* that has been heavily modified and incorporated into the fabric of the town's housing. An earlier (medieval?) phase consisted of a sub-oval settlement covering about 5.5 ha with the *qaṣabah* built into the southeastern side. This was in disrepair by the time the site was visited by Hornemann (1802: 53–55), but the eastern side is still visible and seems to have had several intermediary towers and gates. On the interior of the eastern side there are traces of a few buildings and compounds and a small Islamic cemetery is located on the exterior, although this looks to be fairly recent and is not on the plan given by Despois (1946). Despois (1946: 95) did mention three mosques, a *souk* and a *zawiya* within the town, but these buildings are no longer visible. However, several mounds are likely to be the remains of further mud-brick buildings. Around 1.8 km to the west are the remains of a large field system with numerous wells,

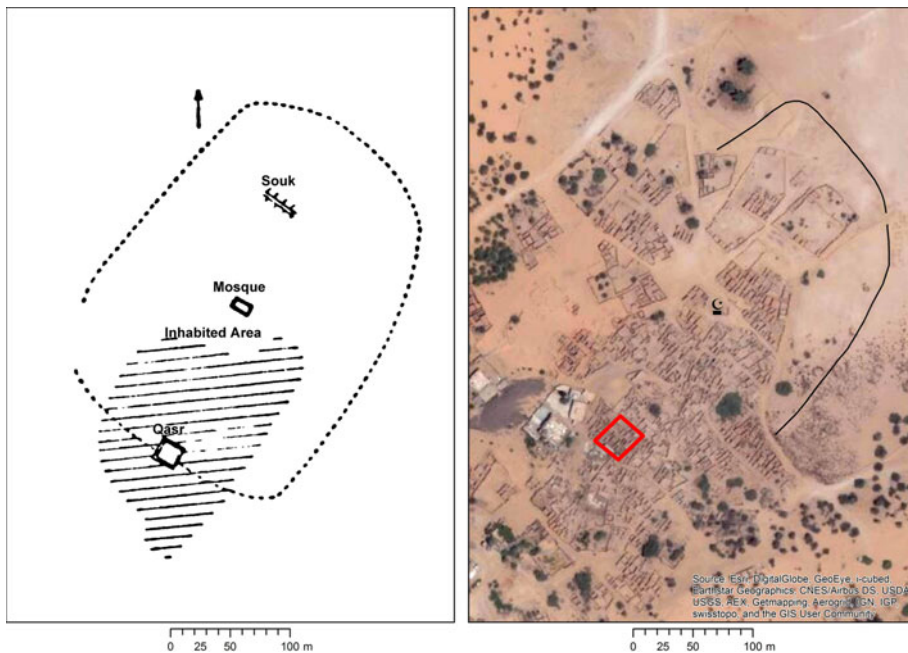


Figure 18. The urban settlement at Tmissa (after Despois 1946 and from modern satellite image analysis).

on the western side of which is a possible Late Garamantian *qaṣr* measuring approximately 16×16 m within a 0.2 ha enclosure.

Summary

The distribution of the visible archaeology in the ash-Sharqiyāt region closely mirrors that of the oasis villages in existence today. This has led to a certain degree of clustering rather than the linear spreads of settlement that are found in many of the other depressions of Fazzān. Each oasis has a group of 10–20 *foggaras* and substantial areas of relict field systems and/or wells. Given that the total population in 1931 was only 1495, we can assume that, as with other parts of Fazzān (Mattingly 2013a: 537–544), the population in the past could easily have been two or three times larger than this. Apart from Zuwīla there is no evidence for urban settlements and we may consider that, as with the Murzuq region, the dominant settlement forms were the nucleated village and the *qaṣr*. We almost certainly have examples from the Garamantian, medieval and post-medieval periods. There are very few settlements visible and in part this must be due to the substantial development at each of the oases, but it is also possible that there were relatively few fortifications in this region. The lack of upstanding remains (and here fortifications are particularly useful) prevents application of the landscape phasing possible elsewhere in Fazzān and we are therefore not in a position to describe how the region changed over time. The numbers of *foggaras*, the scale of gardens with wells and the settlement evidence all make Zuwīla stand out in comparison to the other sites in the region (Figure 17). There is thus no reason to doubt the primacy of Zuwīla for much of its history, despite its modern eclipse by Umm al-Arānib.

The urban biography of Zuwīla

In this final section, we present a series of models tracing the hypothetical evolution and decline of the oasis of Zuwīla. Without further fieldwork certainty on many points is impossible, but we think our reconstruction is plausible and coherent given the evidence currently available. It will certainly provide a basis for future work to build on (Figure 19).

The Garamantian era

We suspect the establishment of the oasis to have been in the late first or second centuries AD. The presence of substantial Garamantian activity in the Zuwīla region is indisputable as is evident from the numerous cemeteries and the presence of ceramics from the first to fourth centuries AD.

Figure 19a presents the possible appearance of the site around AD 300. The size of the Garamantian settlement cannot be determined with any precision, but we would expect that it was located next to the fortified building (*qaṣr*) ZUL004, which is probably Garamantian. Such fortified structures within settlements are characteristic of the Late Garamantian era (Mattingly and Sterry 2013; Sterry and Mattingly 2013). We cannot distinguish at present whether Zuwīla was a large village or a town in its own right (as we suspect). The modern destruction of most of this urban area may hinder any attempt to resolve this question, but a key aspect to look for in any future work will be evidence of craft working. The spread of cemeteries on the southern side of the site and also perhaps to the east certainly implies a substantial site and the apparent scale of the

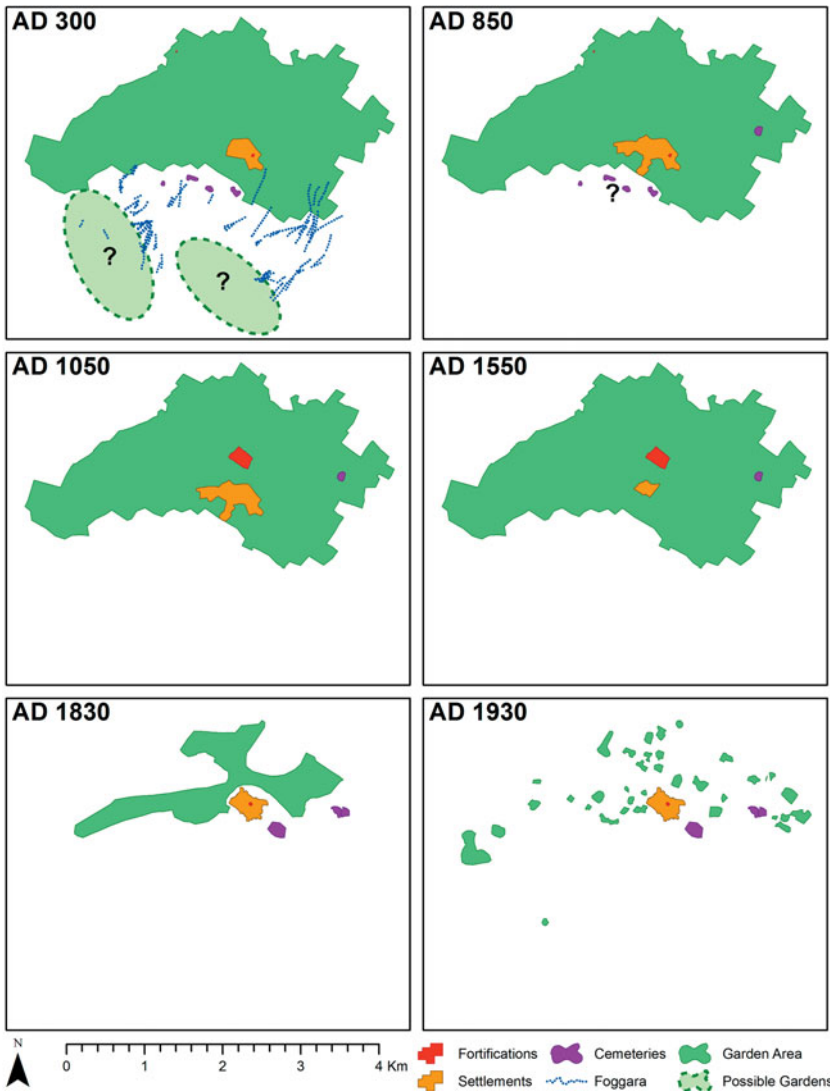


Figure 19. Models of the Zuwila townscape over time: a) Garamantian AD 300; b) Early Islamic 850; c) Banū Khaṭṭāb 1050; d) Awlād Muḥammad 1550; e) Ottoman 1830; f) Italian colonial 1930.

cultivated area (if our reconstruction below is correct) would also imply a large population. The quality of imports with finewares and glass at Zuwila indicates that the oasis was well connected and these finds came from both the urban area and its cemeteries. Comparison with other oases in the southern belt where we have carried out field investigations again suggests that there was an atypical scale of trade activity at the site. We speculate that it may have grown in Late Garamantian times, at some point asserting its autonomy from the Garamantian capital at Jarma and increasingly emerging as a rival entrepôt for trade.

The two *foggara* groups (comprising up to 30 channels) flowed from north to south, irrigating low-lying ground about 2 km to the south of the settlement. It is probable that

part of the extensive garden area irrigated by wells to its north should also be dated to this period. This is supported by finds of imported Roman pottery from the surface of some of the gardens and by parallels with other sectors of the southern oasis belt of the Garamantes, where wells and *foggaras* appear to have been used in combination (Sterry and Mattingly 2011). The position of the main Garamantian settlement close to these northern gardens, rather than right alongside the *foggara*-fed southern gardens is another indication that the Garamantian settlement employed both types of irrigation works. *Foggaras* can be seen in the other oases of the ash-Sharqiyāt Depression.

The Early Islamic period: the first Ibādīs

Figure 19b presents the possible configuration of the site around AD 850. The reconstruction envisages the undefended settlement approaching its maximum size, with the congregational mosque constructed on its northern periphery and the *qaṣr* still in active use at the heart of the settlement. It is unclear if the *foggara* irrigation and gardens in the depressions south of the town were already abandoned, but the garden zone with numerous wells to the north of the town was probably fully developed, though arguably at this stage irrigated by simple water-lifting *shaduf* wells. The location of cemeteries in this period is uncertain, although an extensive funerary zone (ZUL020) with possible transitional forms on the eastern side of the oasis is a candidate.

The Banū Khaṭṭāb dynasty

In contrast to the rest of Fazzān, Zuwīla seems to have thrived, with many of the major constructions in the city dating to this period. Although they were certainly intimately connected to the various Arabic and Berber states of the Maghrib, we cannot view Zuwīla or Fazzān as simply an extension of the Arab rule created by ‘Uqba bin Nāfi’s mid-seventh-century conquest. The historical sources are clear that the region was largely independent, never being directly ruled from afar for more than a few years at a time (this is a theme that is common to the later Ottoman period too). Despite the small number of archaeological finds that can be linked to trans-Saharan or Saharan trade, it is clear that this was what underpinned the growth and decline of Zuwīla’s wealth and influence. We have elsewhere argued that urban-sized centres in the Central Sahara are unsustainable without some form of outside investment due to the increased stress of feeding a nucleated population in an environment in which all water (for drinking and irrigation) had to be lifted from wells or *foggaras* (Mattingly and Sterry 2013: 515). Trade and political authority (perhaps in tandem with religious authority) are the most likely reasons for this sort of investment. However, the process was not unidirectional, settlements were not imposed in some form of Saharan colonisation. Edwards (2004: 20) and Stahl (2014: 20–22) have drawn attention to the importance of Bayart’s (2000) model of extraversion in understanding how societies produced power through mediating access to external resources and environments. In this sense, Zuwīla can be considered to both mediate Maghribian access to the trans-Saharan staples of slaves and gold and also control the access of caravans to water, food and camels.

The strength of this model in Fazzān is that although the extraversion would create social distinctions (we may see the rise of Ibādīsm and Islam at Zuwīla in this light) it did not initially encourage the exploitation of others within that polity (Bayart 2000: 231). Hence we see little evidence of a Fazzāni state during the seventh to tenth centuries, only the decline of centres that had previously relied upon trade, such as Jarma (Mattingly

2013a). However, things seem to have changed when the Banū Khaṭṭāb established themselves as rulers of all of Fazzān. We do not know if Zuwīla had a central ruler prior to the tenth century, but it is certainly a possibility that the Banū Khaṭṭāb actively pursued a policy of state-building. Certainly they seem to have been keen to monumentalise their dynasty through the creation of a substantial fortress, dynastic tomb building and the minting of their own coinage at Zuwīla. They may also have been responsible for the contemporary building and repair of walls at Qaṣr ash-Sharrāba and Jarma. A possible reference to the king of Zuwīla also being king of the Mazāta Berbers may indicate imperial ambitions over a much greater swathe of the Central Sahara. This must also have included a proselytising component, as it is during this period that we see the final examples of the Garamantian burial tradition in the Wādī al-Ajāl to the northwest of Zuwīla (Mattingly *et al.* in press) and the adoption of Islam across the whole of Fazzān (Mattingly 2003).

The period of Banū Khaṭṭāb suzerainty also coincided with the adoption of Islam in Kānim-Borno by the early twelfth century (Levtzion and Hopkins 2000: 138). Islam has long been seen as a key part of what made trans-Saharan trade possible, but the issue is obviously more complex (Haour 2007). Trans-Saharan trade and Zuwīla both existed prior to Islam, although the Ibādī network certainly appears to have benefitted both Zuwīla and traders. The reasons for and the impact of the widespread adoption of Islam are even less clear, although it is likely that Fazzān needs to be seen in the context of the increased prominence of Islam in North Africa in the ninth and tenth centuries (Fenwick 2013). Certainly, this is a fertile area for future research.

Figure 19c shows the possible appearance of the town *c.* AD 1050. The construction of the fortified citadel is the most striking change. Henceforth, the trading, herding and farming communities that came together in the markets at Zuwīla were very visibly dominated by the imposing 6-m-high walls of the fortress palace. The undefended settlement area (with the congregational mosque) to the south remained occupied, although the old *qaṣr* may have passed out of use. The major cemetery was now certainly on the east side, round the monumental mausolea of the dynasty. The garden area was probably of similar extent to before, though it is highly probable that wells were now being widened and deepened to combat a falling water table that threatened the efficacy of *shaduf* wells. Al-Bakrī's account of Zuwīla specifically mentions wells powered by camels, a clear reference to the *dalw* (self-dumping bucket) (Levtzion and Hopkins 2000: 63; Wilson and Mattingly 2003: 266–270 on the different well types). Surface inspection of many wells at Zuwīla shows that they were modified and deepened, with the addition of animal walkways and A-frame structures of the *dalw* type well.

Under the Awlād Muḥammad

Zuwīla's decline from urban centre to village mirrors those of other former capitals of Fazzān (Jarma and Trāghan). When the Kānīmi sought to establish themselves as the major regional power, controlling Saharan trade would have been of paramount importance. Given the silence of the historical sources, the exact sequence of events and speed of transformation are uncertain, but the diverting of caravans into the new capital of Trāghan probably had a rapid impact. Without these external resources to mediate, Zuwīla would have quickly become unsustainable in its expanded urban form. In the political anarchy that followed the successive overthrows of the rule of Qarāqūsh in the late twelfth century, Kānīmi power (second half of the thirteenth century) and the Khurmān (fourteenth and fifteenth centuries), Zuwīla may have been briefly revived as

capital, but the ascendancy of the Awlād Muḥammad with a new capital at Murzuq from c. 1500 marked a new era.

While the settlement shrank in size and importance, in keeping with the model of extraversion discussed above it is notable that much of the social hierarchy was still intact and that, even in the Ottoman period, the few inhabitants still had a high social standing within Fazzān because of their *sharif* status.

In [Figure 19d](#) we present a model for the mid-sixteenth century state of Zuwīla. It is possible that the Awlād Muḥammad made use of the fortress initially as a garrison point from which to oversee the oasis, with some habitation still present in the open settlement area and the congregational mosque continuing. The loss of status as a trade entrepôt and political centre could well have rapidly reduced the population base and our model assumes that by 1550 the settlement was reoriented entirely within the protective walls of the citadel, with a new *qaṣabah* created in the northeastern corner, and the open settlement and mosque to the south entirely abandoned. This was certainly the situation first encountered by European travellers to Zuwīla in the late eighteenth and early nineteenth centuries. Lyon (1821), for instance, makes it clear that there was a dilapidated police post set into the northeastern corner of the walled settlement. While we cannot be certain when this was established, it is quite likely that Zuwīla was a location that recurrently required supervision because of its liminal position on the eastern and southeastern fringes of Fazzān.

Ottoman outpost: the nineteenth century

By the early nineteenth century there are some slight indications of Zuwīla undergoing a slight revival in population. This is shown in [Figure 19e](#). By this date, if not earlier, the settlement had expanded beyond the north, east and south walls, leading to the partial demolition of the walls and the creation of new breaches in them. There are traces of an additional wall built further out on the northern side and the walls of new buildings on the east and south limited access to a few gates and entry roads. The motivation for the remodelling may have been a desire to create a wider open area around the *qaṣabah*, with buildings being demolished to achieve this effect. New quarters were at the same time laid out in such a way as to make the *qaṣabah* the heart of the settlement, rather than an isolated structure in the corner of the old enceinte. A new main mosque was constructed on the east side of the square that the *qaṣabah* now opened onto, i.e. outside the original walled area. It is hard to know how extensive the cultivated area was at this date. There may have been some slight revival in population from the sixteenth-century position, as the nineteenth century settlement appears to have been about a third larger. As the European powers came to exert more pressure on the Barbary states of the North African coast regarding slave trading through the nineteenth century, there is some evidence that caravans once again were diverted towards Egypt, which may have befitted villages like Zuwīla on the eastern margins of Fazzān.

The Italian-era village

The final stages of the site's history were somewhat similar to the pattern established by the nineteenth century ([Figure 19f](#)). The final decline of trans-Saharan trade, after the abolition of the slave trade and the collapse of the European market in ostrich feathers, in all probability led to further decline at villages like Zuwīla (Martin 1985; Haarmann 1998; Wright 1998). The *qaṣabah* continued to be used as a police post by the Italians,

but this was a population reduced to extremis by the loss of trade and by 20 years of resistance to and warfare with the Italian colonial regime. Air photographs taken in the 1950s reveal a massively shrunken area of oasis cultivation, now reduced to a few scattered pocket-handkerchief gardens, rather than a consolidated area of gardens. The Italian census bears this out, with a very low established population and comparatively few wells and gardens compared to the numbers that were visibly derelict on the air photographs.

Conclusion

The urban biography of Zuwīla has some similarities with the story of the Garamantian capital at Jarma (Mattingly 2013a: 505–544), but there are also important differences. Jarma was founded *c.* 400 BC and peaked much earlier than Zuwīla in the first few centuries AD. In its late period, it was probably a walled site, with a citadel structure (*qaṣr*) at its heart. As Jarma lost its trade and political influence in the second half of the first millennium AD, the material culture, the architecture and even the diet at the site changed. Although Jarma remained a large site (by Central Saharan standards) into the twentieth century, long before the end it was a village masquerading as a town. There are hints of the same sort of process at Zuwīla, once political and economic supremacy passed to other centres, first Trāghān, then Murzuq and Sabhā. Zuwīla appears to have been a moderately successful and quite important settlement for some time under Garamantian and Ibādī suzerainty, without being anything out of the ordinary. The change appears to coincide with the creation of the Ibādī state of the Banū Khaṭṭāb. The most dramatic development was the erection of the urban defences in the late tenth or early eleventh centuries. This fortress expressed the larger territorial ambitions of the Banū Khaṭṭāb dynasty and sent a message well beyond the adjacent oasis settlement, to the rest of Fazzān, to Tripoli at the Mediterranean end of the trade route and to Kānim in the south. The line of monumental tombs no doubt served a similar purpose in announcing Zuwīla as the centre of a powerful state, with prestigious and holy rulers.

After the fall of the Banū Khaṭṭāb dynasty, the settlement at Zuwīla appears to have been carefully supervised by the successor states (Awlād Muḥammad) or external powers seeking to control Saharan trade (Kānīmi, Qaramānli, Ottoman, Italian), as demonstrated by the erection of the *qaṣabah* in the corner of the walled enceinte (possibly linked with the partial demolition of the walls to weaken the site's defensibility for the inhabitants).

However, we cannot consider Zuwīla solely in terms of its political position. A correlation can be seen with Marandet, Tadmakka and probably also Timbuktu on the fringes of the Sahara, all of which have similar booms in activity in both the archaeological and historical sources related to trade (Bernus and Cressier 1991; Insoll 2000; Haour 2007: 93–95; Magnavita *et al.* 2007; Nixon 2013). We cannot necessarily link Zuwīla to these centres, but this highlights that a break in part of a trading network would have implications for all the traders that were part of it. Haour (2007: 101) has argued that these sorts of settlement — dependent upon the patronage of traders and rulers — were vulnerable to geopolitical considerations and therefore far more prone to decline and abandonment than say the towns of the Maghrib. The start-up costs of oasis farming were high, sometimes prohibitively so, making trade a crucial catalyst (Scheele 2010). Oasis settlements, especially large ones, were peculiarly dependent on the ability to supplement the farming economy with the profits of trade. The population of such sites

was very susceptible if the cross-subsidy of trade was removed, as we can also see in the case of Jarma.

Other factors affected the sustainability of the site. Water is a pressing concern in the Central Sahara and the fossil water aquifers that are tapped by wells and *foggaras* recharge very slowly and have been in a continual state of decline since the last Saharan pluvial phase ended *c.* 5000 years ago (Wilson and Mattingly 2003). This has two effects: firstly, individual irrigation components can be exhausted which, in combination with land salinisation, can lead to patches of unproductive land; and secondly, new wells have to be dug increasingly deeper, reducing their overall efficiency. The combination of these factors means that over the *longue durée* an urban settlement will become increasingly difficult to feed, especially if it is also a stop-over point for caravans that could number thousands of slaves and camels. It is notable in this context that many oases have had a pattern of shifting settlement (e.g. Kawār and Djado—Lange and Berthoud 1977; Fazzān—Mattingly 2007; Sterry and Mattingly 2011; Merlo *et al.* 2013; Ghāt—Liverani 2006 and al-Jufra).

The evidence from Fazzān leads us to question the dominant development narratives of other oasis chains in the Central Sahara, especially those of Wadi Righ, Suf, Mzab, Tuwat and Kawār. In all of these areas Ibādīte and other Berber groups have been given a prominent role in the establishment of these centres, as they were at Zuwīla. The recent archaeological results from Fazzān should give pause for thought about whether pre-Islamic oasis development took place more widely in the Sahara. We should question to what extent this is absence of evidence rather than evidence of absence. Our new evidence demonstrates that Zuwīla was not an Ibādīte foundation nor inconsequential in the pre-Islamic period. The same is also true of Ghadāmis, which appears to have been a major centre in the Roman period (Mattingly 1995; Mattingly and Sterry 2010).

The spread of Islam in the Sahara capitalised on prior developments, no doubt adding new networks (Haour 2007), but apparently also giving opportunity to newcomers or the early local adopters of the new dominant religion. The pattern observed at Zuwīla and Ghadāmis may also be true of other oasis belts and it likely that the seventh to tenth centuries were characterised as much by a reorganisation of existing networks of settlements as by new foundations (although the latter may well have been important). We now know that trans-Saharan trade existed before the coming of Islam and the Arab dynasties established in the Maghrib were from very early on particularly interested in its potential. The supply of slaves for the slave markets in Egypt and Ifrīqiya, and perhaps also of West African gold, was a matter of huge interest and profit and the intervention of the generals, governors and merchants of Muslim Africa and transformed the nature, loci and political underpinnings of pre-Islamic trade. The rise of sites like Zuwīla to far greater prominence and the final decline of Garamantian power were symptoms of these new relationships.

Appendix 1: Archaeological sites in and around Zuwīla

The Fazzān project identified ten sites of significance (labelled ZUL001-010; ZUL011 relates to a *foggara* group at al-Bdayir, 14 km to the west). Our satellite remote-sensing and re-analysis of the aerial photographs has identified a further two *foggara* groups and allocated numbers to several Early Modern structures and a number of Islamic cemeteries (ZUL012–ZUL023). We have also clarified the plans and descriptions of a number of sites (some of the descriptions below were originally published in Mattingly 2007: 282–88, but the expanded and improved gazetteer seems worthy of inclusion here).

ZUL001 Urban settlement, wall 26°10'05"N, 15°07'43"E

The sub-rectangular town walls of Zuwīla, enclosing an area of 4.5 ha, are of unusual construction in comparison with other walled towns in Fazzān (see Mattingly *et al.* [in press](#) for a detailed presentation of this walled enceinte). The wall line was presumed to have been roughly rectangular, but closer study suggests a more trapezoidal layout (for published plans see Pace *et al.* 1951; Abdussaid 1979; Mattingly 2007). The southeastern quadrant has been lost beneath later buildings. Regular external rectangular towers were incorporated in the original design and probably originally numbered about 40. The wall is built in *pisé* style, with sections that are approximately 2 m long by 1 m high by up to 1 m thick having been formed within wooden shuttering. The material used is a very gravely sand/mud mix, which has apparently been rammed solid. The walls survive to a maximum height of about 6–7 m. The wall circuit appears to have been erected in the tenth or early eleventh centuries (as determined from an AMS sample), despite al-Bakrī's description of Zuwīla as being unwallled.

The 'Turkish' fort (ZUL016) survives in the northeastern corner of old Zuwīla. The domestic buildings of the old town are now very dilapidated, with some occupied by Tubu migrants and others in ruins.

ZUL002 Mosque 26°09'55"N, 15°07'31"E

Elements of the walls of a large ruined mosque lie outside the south side of the walled town, measuring approximately 32 × 34 m. This is the site mentioned by early travellers and often referred to as the 'white mosque' and it is almost certainly the 'congregational mosque' mentioned by al-Bakrī. Daniels roughly planned the standing remains in 1968 and some further observations were made in 1972, following trial excavations by H. Ziegert and Ali Abdussalam (1973) and before the full exposure of the complex by Abdussaid (1979). Much of the large tower in the southwestern corner was thought to be of relatively recent (nineteenth-century?) date, although it seems plausible that this was the basis of the minaret. The AMS sample we have dated suggests a late seventh- to mid-ninth-century date for the initial construction of the mosque although the visible courtyard layout may be partly due to later additions (of tenth-century date?) due to its similarity to similar the Ajdabiya and Madinat Sultan mosques in Libya (Abdussaid 1979).

Daniels' comments on the visible architecture are superseded by the data from the excavation (Ziegert and Abdussalam 1973; Abdussaid 1979; el-Mahmudi 1997). The mosque is large by the standards of Fazzān and measures 34.5 m east-west and 24 m north-south (30 m including the minaret projecting at the southwestern corner). The prayer hall is 11.5 × 24 m, but the structure shows signs of several phases of modifications. Since the excavation some conservation work appears to have been carried out on the mosque.

ZUL003 Cemetery, mausolea 26°09'58"N, 15°08'22"E

This is a large cemetery area with the tombs of the Banū Khaṭṭāb dynasty, about 1.2 km to the east of the town. The tombs were restored *c.* 1970, but substantially demolished, apparently by Islamic extremists, in September 2013 (pictures have been posted in the blogpost http://alensarlibya.blogspot.co.uk/2013/10/blog-post_1919.html, accessed 19th November 2014). The two AMS dates we obtained (Table 1) now give a firm association of the monumental tombs with the Banū Khaṭṭāb dynasty, dating them to the tenth to

eleventh centuries. The monumental tombs took the form of tower-like structures, covering an area of approximately 6 m² at their base and were around 8 m tall, capped by a dome that added another 1.5 m to give a total height of some 9–10 m. There were no doors into the structures, but a pair of tall windows was present just below the dome, with smaller observation windows about 1.5 m above ground level on the eastern and western sides. The walls are of mud-brick, but with an outer facing of vertically mounted thin stone slabs. When Lyon visited the site in the 1820s, he observed burials intact within the lower chambers, still adorned with the sort of offerings (pots, ribbons, ostrich eggs) accorded to the graves of *murābiṭūn* (marabouts) in the Sahara (Lyon 1821: 215). Even as late as 1968, Major Boxhall (1968: 27) observed a ritual procession to the tombs by young boys from the town, which passed three times around the monuments. Traces of stucco decoration with Arabic/Kufic lettering suggest that originally the top part of the external walls above the vertical slab-work and below the domes was plastered and adorned with dedications to the deceased. There are no obvious architectural parallels for the form of the tombs, although the ‘north-to-south’ alignment and ‘easterly’ orientation of the series of monuments coincidentally recalls the layout of the royal cemetery of the Garamantes (Mattingly *et al.* 2011). The line is actually south-southwest to north-northeast, with the tombs facing 113°. This may have been intended to recall the direction of Mecca, as the mosque ZUL002, for instance, faces 124°, but it seems just as likely that the tombs were constructed in a line to the north of the main route leading eastwards from the fortress.

The CMD survey made an extensive photographic record of the main tombs, providing an invaluable record of their condition prior to restoration. At that time, much of the stone cladding of the structures had been robbed on their western sides, but they appeared much better preserved on their eastern sides. These photographs are important as they show the state of preservation of the monuments prior to the restoration work undertaken by the Libyan Department of Antiquities.

Tomb 1 had lost much of its northern side before 1968, and much of the surviving north wall may have been a rebuild, lacking large blocks of type used in the south side of the structure (and Tombs 2–5). **Tomb 2** was constructed to the south of and very closely abutting Tomb 1. The dome was still intact in 1968, although much of the stone cladding had been lost from the west side. The structure was primarily of mud-brick with six courses of horizontally laid stone slabs framing an external stone cladding. The dome is an example of ‘false corbelling’. **Tomb 3** was very similar to Tomb 2 using the same technique of stone cladding. Two windows are preserved in the lower west face and one on the east side. **Tomb 4** differs from the other tombs with the presence of two arched niches in the north and east sides. There was also a narrow offset in the walls about 3.2 m above ground level. The niche on the north side indicates that this tomb predated Tomb 3, which otherwise blocks it. Fragments of wooden sill beams survived across the windows, as well as across the angles on which the dome sat. The interior walls were plastered. Its slightly larger size and different elaboration might suggest that it was, in fact, the first tomb to be built (and must have some claim to be that of the founder of the dynasty, ‘Abd Allāh ibn al-Khaṭṭāb al-Hawwāri). **Tomb 5** was much decayed and had lost its dome and much of its superstructure by 1968. The lower exterior walls were largely of rough stone, the interior mainly of mud-brick. **Tomb 6** at the south end of the row was built entirely of mud-brick and was relatively intact in 1968. The arched heads of the two windows on the eastern and western sides were higher than the springing of the pendentive. Tomb 6 lacked the exterior stone cladding, but was otherwise identical in form to Tombs 1–5. It was thought to perhaps have been the latest in the group and have been awaiting its outer

facing when the dynasty of the Banū Khaṭṭāb came to an end. However, the AMS date we obtained indicates a similar *terminus post quem* for this tomb as for Tomb 1 and thus suggests that both monuments were probably erected in the first century of Banū Khaṭṭāb rule, i.e. by the early eleventh century. A plausible sequence of construction based on the physical proximity of the tombs to each other and the AMS dates is as follows: Tombs 4, then 3 and 5, then 2, then 1, then 6, with development starting in the centre of the line and working out to the north and south and with all tombs being built by the early eleventh century (though not necessarily all being occupied by burials at that date?).

Tomb 7 lies to the southwest of the main group of tombs. It was constructed in mud-bricks that are larger than those used in the other tombs and stood much lower than Tombs 1–6. It is preserved to the level of the base of dome some 3 m high. There is an arched door on the west side and small windows in the north, east and west sides. Several other mounds in this area probably mark other mud-brick tomb superstructures.

Recent excavations under the auspices of the Department of Antiquities have shown that the standing tombs are surrounded by an extensive cemetery of less monumental burials with superficial surface structures.

ZUL004 *Qaşr*, enclosure 26°09'47"N, 15°07'43"E

Identified on air photographs, this is a fortified building (*qaşr*) 300 m east of ZUL002 on the eastern edge of the open settlement (ZUL012). Despite its prominent remains neither Daniels nor Ziegert made any comment on it and it is possible that it had been levelled by the late 1960s. Hayes' record that a bag of wall sherds of Roman date came from the 'old *qaşr*' may relate to this site. The building had a rectangular core structure approximately 32 × 37 m across with towers at the corners and centre of walls; the entrance is likely to have been on the southeastern side. There is also an outer enclosure wall some 60–70 m across, giving a total area of about 0.47 ha. All the standing remains of the site have been destroyed by the expansion of modern Zuwīla. The majority of rectangular *qaşr* of this type in southern Fazzān date to the Garamantian period (Sterry and Mattingly 2013).

ZUL005 Cemetery 26°09'36"N, 15°07'02"E

This is a cemetery area about 2 km south of the town. The location of this cemetery is not clear from Daniels' notes and it may be confused with another cemetery. It had been previously robbed and perhaps part excavated. Sherds of imported pottery were found on the heavily disturbed surface (see below). These are probably the graves described by Ziegert (1969: Table IB).

ZUL006 Cemetery 26°09'31"N, 15°07'35"E

This is an area of a cemetery (numbered as ZUL 1 or 'eastern cemetery' by Daniels), where Ziegert apparently also excavated. A number of excavated hollows have evidently pierced a gypsum substratum and local informants mention underground funerary chambers. Finds of Garamantian pottery suggest a pre-Islamic date. The area of gypsum crust is visible on the satellite imagery, but no funerary chambers can be identified.

ZUL007 Field system 26°09'49"N, 15°08'16"E

This area of roughly 630 ha is covered by field/garden boundaries and wells that are visible on both aerial photographs and satellite imagery. The expansion of the town and

of agriculture at Zuwīla since 1958 has destroyed many of the remains. A small area of possible field/garden boundaries that is visible on the air photographs was inspected on the ground in 2001. These comprise low banks of heaped up earth and stones. Many of the enclosures have large well cuts in their centre that are now all dry. There are few traces of associated buildings (though see ZUL010) and pottery is generally sparse (a few sherds of Garamantian and possibly Islamic pottery were recovered). The interpretation of these traces as marking the limits of abandoned gardens/fields appears to be confirmed.

ZUL008 Cemetery 26°09'43"N, 15°07'28"E

This is another cemetery area on a low mound to the south of Zuwīla reported by a local informant in 2001. It is possible that Ziegert excavated here. The site is now on the fringe of the built up area and is at critical risk from future development. No tombs are identifiable on either aerial photographs or satellite imagery.

ZUL009 Cemetery 26°09'34"N, 15°07'22"E

This is a further cemetery area reported by a local informant on the south side of Zuwīla (Daniels numbering ZUL 2 or western cemetery). What appears to be a slightly raised mound with a subterranean chamber is cut into a thick gypsum stratum here. Daniels recorded Roman fineware (African Red Slipped ware), glass and beads here, indicating a pre-Islamic date. The site is surrounded by the expansion of Zuwīla and is at critical risk from future housing development. No tombs are identifiable on either aerial photographs or satellite imagery.

ZUL010 *Qasr*, settlement, wall 26°10'31"N, 15°07'08"E

Situated about 2 km to the northwest of Zuwīla old town on the edge of the zone of gardens ZUL007, this site comprises the remains of a small tower-like *qasr* on the north corner and an enclosed settlement (in total covering at least 1 ha). The tower, in yellow mud-brick, stands about 8 m high and is approximately 10 m square. There is a very deep well alongside the *qasr*. A large volume of Garamantian pottery (including both handmade vessels and amphorae) and Islamic glazed wares was noted on the surface and a sample of it collected. The site now sits between two modern fields, which have truncated its extent, and is at severe risk from modern development.

ZUL012 Open settlement, town 26°09'50"N, 15°07'34"E

On the 1958 aerial photographs an area of disturbance measuring approximately 20 ha in area stretches from the mosque (ZUL002) to the enclosed *qasr* (ZUL004). Within this area there are no field boundaries and only a few features that could be wells. The most southerly part of the area has several upstanding walls and, just to the south of the mosque, there are the walls of a large, rectangular structure. We can be confident that this is an area of mud-brick buildings and it is likely to be the same area described by Hornemann (1802) as the abandoned part of the town; it may also be the unwalled area described by al-Bakrī. Unfortunately, this is the area into which modern Zuwīla has expanded and the only remaining part is the area directly south of the mosque. The remains of some mud-brick structures, including part of the rectangular building, are still visible in this area, although they are likely to be badly damaged from construction and waste dumping and are under critical threat from further expansion. A selection of Roman

finewares and glass analysed by Hayes came from this area, indicating the Garamantian origin of the settlement, although they do not provide resolution on its size. The settlement may have reached its maximum extent in the ninth to eleventh centuries.

ZUL013 *Foggara* group 26°09'25"N, 15°06'49"E

This is a group of around 10–15 *foggara* systems up to 1.3 km in length that flow from north to south, feeding into a slight depression some 2 km southwest of the town, by a playa. The available DEM data indicate that these *foggara* channels could not have irrigated part of the field system (ZUL007). The channels are generally narrow with little spoil, suggesting that they are not very deep. A Garamantian date is assumed on the basis of the predominant use of this form of irrigation technology at that period in Fazzān.

ZUL014 *Foggara* group 26°09'14"N, 15°08'06"E

This constitutes a second group of about 10–15 *foggara* systems up to 1.7 km in length that flow from north to south, feeding into a slight depression around 2 km southeast of the town. The channels are generally narrow with little spoil, suggesting that they are not very deep. A Garamantian date is again assumed on the basis of the predominant use of this form of irrigation technology at that period in Fazzān.

ZUL015 Depression linked with *foggaras* 26°08'48"N, 15°06'48"E

The *foggara* groups ZUL013 and ZUL014 flow towards a large playa on the southeastern edge of the Zuwīla oasis. Potentially this could have been a cultivated area of 100 ha or more, but no field boundaries are now visible.

ZUL016 *Qasabah* within ZUL001 26°10'05"N, 15°07'43"E

The northeastern corner of the walled enceinte at Zuwīla (ZUL001) is occupied by a fortified citadel (*qaṣabah*) of late medieval to Early Modern date. It reused and built on the original *pisé* walls and towers in this quarter, which were higher here than elsewhere around the enceinte, suggesting the presence from the start of an inner citadel or palace complex in this corner. The visible structure of the *qaṣabah* is probably a mixture of rebuilding and modification that spans its use as a garrison post by the Awlād Muḥammad, Ottoman and Italian rulers of Fazzān between the fifteenth and twentieth centuries. At some point, parts of the original enceinte to the west and south of the *qaṣabah* were demolished to create an open area around the fort with new areas of domestic housing laid out to the north and east (ZUL018).

ZUL017 Early Modern main mosque 26°10'04"N, 15°07'44"E

The main Early Modern mosque of Zuwīla lies just to the east of the original fortified area ZUL001 and directly opposite the *qaṣabah* ZUL016. This was the Friday mosque by the time of the earliest European accounts of Zuwīla. In the 1960s local reports suggested that it was around 250 years old (Boxhall 1968: 27).

ZUL018 Early Modern suburbs of ZUL001 26°10'03"N, 15°07'45"E

By 1958, and presumably sometime in the Ottoman period, the main urban centre had spilled over the *pisé* walls of ZUL001 to form six groups of mud-brick houses. It is not clear if these were ever occupied simultaneously as several observers commented on the numbers of abandoned dwellings and the small population recorded in the Italian censuses implies that much of the town was unoccupied. The main areas of housing remain largely visible today.

ZUL019 Enclosure wall on the north side of ZUL018 26°10'08"N, 15°07'43"E

Along the northern edge of the suburbs ZUL018 this is a small wall that runs between two groups of housing and restricts access into the town. It is unlikely to have served any serious defensive function.

ZUL020 Islamic cemetery 26°10'02"N, 15°08'23"E

Located just to the northwest of ZUL003, this is a cemetery of several thousand tombs that appears to have been initially located within an enclosure of the field system ZUL007. The tombs are mostly supine burials laid out north to south in the Islamic tradition. However, the centre of the cemetery consists of several oval cairns and enclosures that appear to be the oldest funerary structures present. Their precise nature is unclear, but they may represent a transitional funerary form from the Garamantian drum tomb or some kind of funerary shrine. In the southeastern corner of the cemetery a small square structure is probably a marabout tomb, a type common in Fazzān.

ZUL021 Islamic cemetery 26°10'01"N, 15°08'26"E

Located directly north of ZUL003 and to the east of ZUL020, this is an extension of ZUL020 and clearly postdates the construction of the field system ZUL007 as there are two abandoned wells in the centre of the cemetery. There are several thousand tombs. All are supine burials laid out on a north-to-south orientation and some are quite new, indicating that the cemetery is probably still in use. On the southern edge a small square structure is probably a marabout tomb.

ZUL022 Islamic cemetery 26°09'53"N, 15°07'54"E

Located 500 m to the southeast of ZUL001, this is a large cemetery of several thousand tombs. The cemetery is laid out over the top of the field system ZUL007 and the remains of wells and mud-brick walls are clearly visible. It is probably of relatively recent date.

Appendix 2. Finds from Zuwīla

Only a small amount of ceramics has been studied from Zuwīla. John Hayes inspected a small assemblage collected in 1972. Two bags of surface finds included a mixture of imported Roman pottery, including fineware (African Red slipware), coarsewares, a lamp, glass and glass beads. Charles Daniels collected ceramics from two cemeteries — ZUL006 and ZUL009 — that were mostly a mixture of body sherds from handmade vessels, but again with some imported wheel-made vessels (both coarsewares and amphorae). Finally, the Fazzān Project collected a small amount of surface ceramics from cemeteries ZUL006 and ZUL007 and from the *qaṣr* ZUL010. Handmade pottery,

amphorae and coarsewares were present at all three of these sites, with African Cooking Ware noted at ZUL006 and Glazed Ware at ZUL010. Together these finds demonstrate the presence of a community at Zuwīla with links to the Mediterranean from the first century onwards (Table 2).

In general, these unsystematic collections focused on the Roman era finds because of the lack of historical attestation of the site at that time. Though it is regrettable that a larger collection of Islamic pottery was not made, notes on these visits indicate that Islamic glazed pottery was relatively common among surface material, certainly more so than at Jarma, where they made up only 0.03% of the ceramic assemblage (Mattingly 2013a: 326–333, 406–408). The five seasons of survey by the Fazzān Project only located 25 Islamic sherds and the reconnaissance survey in the Murzuq region also located only a few sherds from the medieval villages MZQ021 and HHG012, though again the urban centre of Murzuq has much larger quantities visible on the surface, possibly mainly of the Ottoman period (Sterry and Mattingly 2011). Islamic imports are rare finds at sites on the south side of the Sahara, as at Tadmakka (Nixon 2009) and Gāo Saney (Cissé 2011: 178–179). As Nixon (2009) has demonstrated with the evidence for

Table 2. Diagnostic pottery and other finds reported from Zuwīla.

Reference	Ware	Form	Date
ZUL006 (FP)	African Cooking Ware	Hayes 27	First to early third centuries AD
ZUL006 (FP)	Amphora	Not described	Roman
ZUL006 (FP)	Coarseware	Not described	Roman
ZUL007 (FP)	Coarseware	Not described	Roman
ZUL007 (FP)	Glazed Ware	Tunisian: yellow surface	Modern?
ZUL010 (FP)	Amphora	Not described	Roman
ZUL010 (FP)	Glazed Ware	Sicilian – pale green	Islamic-Modern
ZUL012 (By the old <i>qasr</i> - Hayes)	Imported wheel-made	Wall sherds	Roman
ZUL012 (Zuwīla area - Hayes)	African Red Slip	Hayes 6	Late first to second centuries AD
ZUL012 (Zuwīla area - Hayes)	African Red Slip	Possibly Hayes 91	AD 450–530
ZUL012 (Zuwīla area - Hayes)	African Red Slip	Base	Late third to fourth centuries AD
ZUL012 (Zuwīla area - Hayes)	Coarseware	Flagon	Unknown, but probably Roman
ZUL012 (Zuwīla area - Hayes)	Fine Red	Not described	Roman
ZUL012 (Zuwīla area - Hayes)	Glass	Not described	Likely Roman
ZUL012 (Zuwīla area - Hayes)	Glass	Beads	Unknown
ZUL012 (Zuwīla area - Hayes)	Glass beads	Green coloured?	Unknown
ZUL012 (Zuwīla area - Hayes)	Lamp	Lamp	Second or third centuries AD
ZUL012 (Zuwīla area - Hayes)	Red walled (African Red Slip?)	Not described	Unknown

trans-Saharan gold trading at Tadmakka, the lack of imported ceramics does not preclude major activity and trade at these medieval sites.

Appendix 3. Original text of Gigliarelli (1931: 141)

‘È uno dei più antichi paesi del Fezzàn, ed ebbe il suo massimo sviluppo demografico e commerciale sotto la dinastia dei Bèni el-Chattàb, che la elessero capitale della regione... Il paese, a forma quasi rettangolare, è costruito in un avvallamento del terreno completamente staccato dall’oasi. A nord ed a sud due catene di alture limitano la depressione a circa 6 chilometri da Zuila. In mezzo all’abitato si ergono i ruderi di un antico castello, di mura massicce, che vuolsi far risalire all’epoca romana; in realtà la sua pianta quadrangolare ricorda il castrum romano ma le pietre di cui è costruito non hanno la squadratura e la regolarità usata di solito dai romani per edifici di tale importanza. Attualmente anche questi resti sono pressochè scomparsi sotto una nuova costruzione adibita a caserma dei CC. RR. Più probabilmente romana è la costruzione del muro di cinta, di cui rimangono in piedi ancora alcuni tratti. L’epoca dei Bèni el-Chattàb è largamente ricordata, oltre che dalle rovine della grande moschea, dalle tombe di sultani di quella dinastia. Sono sette costruzioni allineate a forma di basse torri sormontate ciascuna da una cupola. Hanno aperture rettangolari disposte ad oriente e ad occidente, ed i blocchi di arenaria di cui sono formati si mostrano esattamente squadrati.’

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References

- Abdussaid, A. 1967. "An early mosque at Medina Sultan. A preliminary report." *Libya Antiqua* 3/4: 155–160.
- Abdussaid, A. 1979. "The excavations of Zwela mosque." *Libya Antiqua* 15/16: 327–329.
- Adler, M.N. 1907. *The Itinerary of Benjamin of Tudela: Critical Text, Translation and Commentary*. Oxford: Oxford University Press.
- Austen, R.A. 2010. *Trans-Saharan Africa in World History*. Oxford: Oxford University Press.
- Ayoub, M.S. 1968. *Fezzan, A Short History*. Tripoli: Ministry of Tourism and Antiquities.
- Baadj, A. 2013. "Saladin and the Ayyubid campaigns in the Maghrib." *Al-Qantara: Revista de Estudios Arabes* 34: 267–295.
- Barker, G. (ed.). 1996. *Farming the Desert: The UNESCO Libyan Valleys Archaeological Survey, Volume 1: Synthesis*. London: Society for Libyan Studies.
- Bayart, J.F. 2000. "Africa in the world: a history of extraversion." *African Affairs* 99: 217–267.
- Bernus, S. and Cressier, P. 1991. *La Région d'In Gall-Tegidda n Tesemy (Niger): Programme Archéologique d'Urgence 1977–1981, Tome IV: Azelik-Takadda et l'Implantation Sédentaire Médiévale*. Niamey: Institut de Recherche en Sciences Humaines.
- Blake, H., Hutt, A. and Whitehouse, D. 1971. "Ajdabiya and the earliest Fatimid architecture." *Libya Antiqua* 8: 105–123.
- Bovill, E.W. 1968. *The Golden Trade of the Moors*. Oxford: Oxford University Press.
- Boxhall, P. 1968. *Near East Land Forces Expedition to Murzuk, Libya. Expedition Report*. Nicosia.
- Brett, M. 2006. "Libya and the Sahara in the history of Africa." In *The Libyan Desert. Natural Resources and Cultural Heritage*, edited by D.J. Mattingly, S. McLaren, E. Savage, Y. al-Fasatwi and K. Gadgood, 271–285. London: Society for Libyan Studies.
- Bronk Ramsey, C. 2009. "Bayesian analysis of radiocarbon dates." *Radiocarbon* 51: 337–360.
- Bruce-Lockhart, J. and Wright, J. (eds). 2000. *Difficult and Dangerous Roads: Hugh Clapperton's Travels in Sahara and Fezzan 1822–1825*. London: Sickle Moon Books.
- Brunschwig, R. 1947. "Ibn 'Abd al-Hakam et la conquête de l'Afrique du nord par les Arabes. Etude critique." *Annales de l'Institut d'Etudes Orientales* 6: 108–155.
- Cisse, M. 2011. "Archaeological Investigations of Early Trade and Urbanism at Gao Saney (Mali)." PhD diss., Rice University.
- Cuneo, P. 1996. "The Italian Architectural Mission for the Islamic Period (1989–1994)." *Libya Antiqua (New Series)* 1: 170–174.
- Cuneo, P., Abdelhadi, K., Barucco, P., Benedetti, E. and Pinna Caboni, B. 1997. "The Italian Architectural Mission for the Islamic Period: 1995 report." *Libya Antiqua (New Series)* 2: 204–210.
- Daniels, C.M. 1968. *The Garamantes of Fezzan. An Interim Report of Work Carried out by the 1968 Expedition to Fezzan, Libya*. Unpublished manuscript.
- Daniels, C.M. 1989. "Excavation and fieldwork amongst the Garamantes." *Libyan Studies* 20: 45–61.
- Despois, J. 1946. *Mission Scientifique du Fezzan (1944–1945) III Géographie Humaine*. Algiers: Omp. Imbert.
- Devisse, J. (ed.). 1983. *Tegdaoust III: Recherches sur Aoudaghost. Campagnes 1960/65, Enquête Générale*. Paris: Editions Recherche sur les Civilisations.
- Devisse, J. 1992. "Trade and trade routes in West Africa." In *UNESCO General History of Africa Volume III: Africa from the Seventh to the Eleventh Century*, edited by I. Hrbek, abridged edition, 190–215. London: James Currey.
- Duveyrer, H. 1864. *Les Touareg du Nord. Exploration du Sahara*. Paris: Challamel Aîné, Libraire-Éditeur.
- Edwards, D.N. 2001. "Archaeology in the southern Fazzan and prospects for future research." *Libyan Studies* 32: 49–66.
- Edwards, D.N. 2004. *The Nubian Past: An Archaeology of the Sudan*. London: Routledge.
- Edwards, D.N. 2011. 'Slavery and slaving in the medieval and post-medieval kingdoms of the Middle Nile.' In *Slavery in Africa: Archaeology and Memory*, edited by P.J. Lane and K.C. MacDonald, 79–108. London: British Academy.

- el-Hesnawi, H.W. 1990. *Fazzan under the Rule of the Awlad Muhammad. A Study in Political, Economic, Social and Intellectual History*. Sabhā.
- Elmahmudi, A.A.A. 1997. *The Islamic Cities in Libya: Planning and Architecture*. Frankfurt: Peter Lang GmbH.
- Eldblom, L. 1968. *Structure Foncière. Organisation et Structure Sociale. Une Etude Comparative sur la Vie Socio-Economique dans les Trois Oasis Libyennes de Ghat, Mourzouk et Particulièrement Ghadamès*. Lund: Uniksol.
- Fenn, T.R., Killick, D.J., Chesley, J., Magnavita, S. and Ruiz, J. 2009. "Contacts between West Africa and Roman North Africa: archaeometallurgical results from Kissi, northeastern Burkina Faso." In *Crossroads/Carrrefour Sahel. Cultural and Technological Developments in the First Millennium BC/AD West Africa*, edited by S. Magnavita, L. Kolé, P. Breunig and O.A. Idé, 119–146. Frankfurt: Africa Magna Verlag.
- Fentress, E. 2011. "Slavers on chariots." In *Money, Trade and Trade Routes in Pre-Islamic North Africa*, edited by A. Dowler and E.R. Galvin, 64–71. London: British Museum Press.
- Fenwick, C. 2013. "From Africa to Ifriqiya: settlement and society in early medieval North Africa (650–800)." *Al-Masaq* 25: 9–33.
- Garrard, T.F. 1982. "Myth and metrology: the early trans-Saharan gold trade." *Journal of African History* 23: 443–461.
- Gigliarelli, U. 1932. *Il Fezzan*. Tripoli: Governo della Tripolitania.
- Haour, A. 2007. *Rulers, Warriors, Traders, Clerics. The Central Sahel and the North Sea, 800–1500*. Oxford: Oxford University Press.
- Haour, A. 2011. "The early medieval slave trade of the central Sahel: archaeological and historical considerations." In *Slavery in Africa: Archaeology and Memory*, edited by P.J. Lane and K.C. Macdonald, 61–78. Oxford: Oxford University Press.
- Haarmann, U. 1998. "The dead ostrich. Life and trade in Ghadames (Libya) in the nineteenth century." *Die Welt des Islams* 38: 9–94.
- Hornemann, F. 1802. *The Journal of Frederick Hornemann's Travels from Cairo to Mourzouk the Capital of the Kingdom of Fezzan in Africa in the Years 1797–9*. 1985 reprint. London: Darf Publishers.
- Insoll, T. 1996. *Islam, Archaeology and History. Gao Region (Mali) ca. AD 900–1250*. Oxford: Tempus Reparatum.
- Insoll, T. 2000. "The origins of Timbuktu." *Antiquity* 74: 495–496.
- Insoll, T. 2003. *The Archaeology of Islam in Sub-Saharan Africa*. Cambridge: Cambridge University Press.
- Insoll, T. 2006. Islamic archaeology and the Sahara. In *The Libyan Desert: Natural Resources and Cultural Heritage*, edited by D.J. Mattingly, S. McLaren, E. Savage, Y. al-Fasatwi and K. Gadgood, 223–238. London: Society for Libyan Studies.
- Jamal, A.M.H. 2008. "The Kel Zjer Tuareg Culture: Public and Private Space in Ghat." PhD diss., McGill University.
- Jaquin, P.A., Augarde, C.E. and Gerrard, C.M. 2008. "Chronological description of the spatial development of rammed earth techniques." *International Journal of Architectural Heritage* 2: 377–400.
- Lange, D. and Berthoud, S. 1977. "Al-Qasaba et d'autres villes de la route centrale du Sahara." *Paideuma* 23: 19–40.
- Lavoix, H. 1896. *Catalogue de Monnaies Musilmanes de la Bibliothèque Nationale, Egypte et Syrie*. Paris: Imprimerie Nationale.
- Law, R.C.C. 1967. "The Garamantes and Trans-Saharan enterprise in Classical times." *Journal of African History* 8: 181–200.
- Lethielleux, J. 1948. *Le Fezzan. Ses Jardins, Ses Palmiers. Notes d'Ethnologie et d'Histoire*. Tunis: Bascone and Muscat.
- Levtzion, N. and Hopkins, J.F.P. 2000. *Corpus of Early Arab Sources for West African History*. Princeton: Princeton University Press.
- Lewicki, T. 1957. "La répartition géographique des groupes ibadites dans l'Afrique du nord au Moyen Age." *Rocznik Orientalistyczny* 21: 301–343.
- Lewicki, T. 1976. *Etudes Maghébiennes et Soudanaises*. Warsaw: Editions Scientifiques de Pologne.
- Lewicki, T. 1988. "The role of the Sahara and Saharans in relationships between north and south." In *Africa from the Seventh to the Eleventh Century*, edited by M. el-Fasi, 276–313. Paris: UNESCO.

- Lightfoot, D.R. and Miller, J.A. 1996. "Sijilmasa: the rise and fall of a walled oasis in medieval Morocco." *Annals of the Association of American Geographers* 86: 78–101.
- Liverani, M. (ed.). 2006. *Aghram Nadarif. A Garamantian citadel in the Wadi Tannezzuft*. Firenze: All'Insegna del Giglio.
- Lydon, G. 2009. *On Trans-Saharan Trails: Islamic Law, Trade Networks and Cross-Cultural Exchange in Nineteenth-century Western Africa*. Cambridge: Cambridge University Press.
- Lyon, G.F. 1821. *A Narrative of Travels in Northern Africa in the Years 1818–1819 and 1820*. (1966 reprint). London: Frank Cass.
- MacDonald, K.C. 2011. "A view from the south. Sub-Saharan evidence for contacts between North Africa, Mauritania and the Niger 1000 BC – AD 700." In *Money, Trade and Trade Routes in Pre-Islamic North Africa*, edited by A. Dowler and E.R. Galvin, 72–82. London: British Museum.
- Mackensen, M. 2012. "New fieldwork at the Severan fort of Myd(...)/heriat el-Garbia on the limes Tripolitanus." *Libyan Studies* 43: 41–60.
- Magnavita, C. 2003. "The beads of Kissi, Burkina Faso." *Journal of African Archaeology* 1: 127–138.
- Magnavita, S. 2008. "The oldest textiles from sub-Saharan West Africa: woollen facts from Kissi, Burkina Faso." *Journal of African Archaeology* 6: 243–254.
- Magnavita, S. 2009. "Sahelian crossroads: some aspects on the Iron Age sites of Kissi, Burkina Faso." In *Crossroads/Carrrefour Sahel. Cultural and Technological Developments in the First Millennium BC/AD West Africa*, edited by S. Magnavita, L. Kolé, P. Breunig and O.A. Idé, 79–104. Frankfurt: Africa Magna Verlag.
- Magnavita, S. 2013. "Initial encounters: seeking traces of ancient trade connections between West Africa and the wider world." *Afriques* 4 <http://afriques.revues.org/1145> Site accessed 16 September 2014.
- Magnavita, S., Maga, A., Magnavita, C. and Idé, O.A. 2007. "New studies on Marandet, central Niger." *Nyame Akuma*, 68: 47–51.
- Martin, B.G. 1969. "Kanem, Bornu and the Fezzan. Notes on the political history of a trade route." *Journal of African History* 10: 15–26.
- Martin, B.G. 1985. "Ahmad Rasim Pasha and the suppression of the Fazzan slave trade, 1881–1896." In *Slaves and Slavery in Africa: Volume Two: The Servile Estate* edited by J.R. Willis, 50–81. London: Frank Cass and Co
- Mattingly, D.J. 1995. *Tripolitania*. London: Batsford.
- Mattingly, D.J. (ed.). 2003. *The Archaeology of Fazzān. Volume 1, Synthesis*. London: Society for Libyan Studies.
- Mattingly, D.J. 2006. "The Garamantes: the first Libyan state." In *The Libyan Desert: Natural Resources and Cultural Heritage*, edited by D.J. Mattingly, S. McLaren, E. Savage, Y. al-Fasatwi and K. Gadgood, 189–204. London: Society for Libyan Studies.
- Mattingly, D.J. (ed.). 2007. *The Archaeology of Fazzān. Volume 2, Site Gazetteer, Pottery and Other Survey Finds*. London: Society for Libyan Studies.
- Mattingly, D.J. (ed.). 2010. *The Archaeology of Fazzān. Volume 3, Excavations Carried Out by C.M. Daniels*. London: Society for Libyan Studies.
- Mattingly, D.J. 2011. "The Garamantes of Fazzān: an early Libyan state with Trans-Saharan connections." In *Money, Trade and Trade Routes in Pre-Islamic North Africa*, edited by A. Dowler and E.R. Galvin, 49–60. London: British Museum.
- Mattingly, D.J. (ed.). 2013a. *The Archaeology of Fazzān. Volume 4, Survey and Excavations at Old Jarma (Ancient Garama) carried out by C.M. Daniels (1962–69) and the Fazzān Project (1997–2001)*. London: Society for Libyan Studies.
- Mattingly, D.J. 2013b. "To south and north: Saharan trade in antiquity." In *Living and Working in the Roman World*, edited by H. Eckardt and S. Rippon, 169–190. Portsmouth: Journal of Roman Archaeology Supplement.
- Mattingly, D.J., Abdul, H., Ahmed, M., Cole, F., Fenwick, C., Fothergill, B.T., Gonzalez Rodriguez, M., Hobson, M., Khalaf, N., Lahr, M., Moussa, F., Nikita, E., Nikolaus, J., Radini, A., Ray, N., Savage, T., Sterry, M. and Wilson, A.I. 2011. "DMP XII: excavations and survey of the so-called Garamantian Royal Cemetery (GSC030–031)." *Libyan Studies* 42: 89–102.
- Mattingly, D.J., Daniels, C.M., Sterry, M.J. and Edwards, D.N. in press. "The walls of medieval Zuwila." *Libyan Studies*.

- Mattingly, D.J. and Sterry, M.J. 2010. *Ghadames Archaeological Survey. Phase 1 Desk-top Report*. Unpublished consultancy report produced for the Libyan Department of Antiquities, the Ghadames Development Authority and BP.
- Mattingly, D.J. and Sterry, M.J. 2013. "The first towns in the Central Sahara." *Antiquity* 87: 503–518.
- Mattingly, D.J., Sterry, M.J. and Thomas, D.C. 2013. "Jarma in its Saharan context: an urban biography," In *The Archaeology of Fazzān. Volume 4, Survey and Excavations at Old Jarma (Ancient Garama) carried out by C.M. Daniels (1962–69) and the Fazzān Project (1997–2001)*, edited by D.J. Mattingly, 503–544. London: Society for Libyan Studies.
- Merlo, S., Hackenbeck, S. and Balbo, A.L. 2013. "The archaeology of the northern Fazzan: a preliminary report." *Libyan Studies* 44: 141–161.
- Monès, H. 1988. "The conquest of North Africa and Berber resistance." In *Africa from the Seventh to the Eleventh Century*, edited by M. el-Fasi, 224–245. Paris: UNESCO.
- Moraes Farias, P. de 2003. *Arabic Medieval Inscriptions from the Republic of Mali: Epigraphy, Chronicles, and Songhay-Tuareg History*. Oxford: Oxford University Press.
- Mori, L. (ed.). 2014. *The Archaeological Investigation in the Oasis of Fewet. Life and Death of a Rural Village in Garamantian Times*. Firenze: All'Insegna del Giglio.
- Mostafa, M. 1965. "Islamic object of art." *Libya Antiqua* 2: 123–128.
- Nachtigal G. 1974. *Sahara and Sūdān, Volume I, Tripoli and Fezzan, Tibesti or Tu*. London: C. Hunt and Co.
- Nami, M., Belatik, M. and Atki, M. 2014. *De Foum Zguid à Foum el Hisa. Inventaire du Patrimoine Culturel de Tala*. Bilnet.
- Nixon, S. 2009. "Excavating Essouk-Tadmakka (Mali): new archaeological investigations of early Islamic trans-Saharan trade." *Azania: Archaeological Research in Africa* 44: 217–255.
- Nixon, S. 2013. "Tadmekka: archéologie d'une ville caravanière des premiers temps du commerce transsaharien." *Afriques* 4 <http://afriques.revues.org/1237> Site accessed 13 September 2014.
- Nixon, S., Filomena Guerra, M. and Rehren, T. 2011. "New light on the early Islamic West African gold trade: coin moulds from Tadmekka, Mali." *Antiquity* 85: 1353–1368.
- Pace, B., Sergi, S. and Caputo, G. 1951. "Scavi sahariani." *Monumenti Antichi* 41: 150–549.
- Polet, J. 1985. *Tegdaoust IV: Fouille d'un Quartier de Tegdaoust*. Paris: Editions Recherche sur les Civilisations.
- Robert, D., Robert, S. and Devisse, J. 1970. *Tegdaoust I: Recherches sur Aoudaghost*. Paris: Arts et Métiers Graphiques.
- Robert-Chaleix, D. 1989. *Tegdaoust V: Une Concession Médiévale à Tegdaoust: Implantation, Evolution d'une Unité d'Habitation*. Paris: Editions Recherche sur les Civilisations.
- Rossi, E. 1968. *Storia di Tripoli e della Tripolitania dalla Conquista Araba al 1911*. Rome: Istituto per l'Oriente.
- Savage, E. (ed.). 1992. *The Human Commodity. Perspectives on the Trans-Saharan Slave Trade*. London: Cass.
- Scarin, E. 1934. *Le Oasi del Fezzan*. Bologna: Zanichelli.
- Scarin, E. 1937a. "Insediamenti e tipi di dimore." *Sahara Italiano* 1937: 515–560.
- Scarin, E. 1937b. "Descrizione delle oasi e gruppi di oasi." In *Il Sahara Italiano, I. Fezzan e oasi di Gat*. Rome: Società Italiana Arto Grafiche: 603–664.
- Scarin, E. 1937c. *Le Oasi Cirenaiche del 29° Parallelo*. Firenze: Sansoni.
- Scarin, E. 1937d. *L'Insediamento Umano della Zona Fezzanese di Gat*. Firenze: Centro di Studi Coloniali.
- Scarin, E. 1938. *La Giofra e Zella (Le Oasi del 29 Parallelo della Libia Occidentale)*. Firenze: Sansoni.
- Scheele, J., 2010. "Traders, saints and irrigation: reflections on Saharan connectivity." *Journal of African History* 51: 281–300.
- Stahl, A.B. 2014. "Africa in the world: (re)centering African history through archaeology." *Journal of Anthropological Research* 70: 5–33.
- Sterry, M.J., and Mattingly, D.J. 2013. "Desert Migrations Project XVII: further AMS dates for historic settlements from Fazzān, South-West Libya." *Libyan Studies* 44: 127–140.
- Sterry, M.J., Mattingly, D.J. and Higham, T. 2012. "Desert Migrations Project XVI: radiocarbon dates from the Murzuq region, Southern Libya." *Libyan Studies* 43: 137–147.
- Sterry, M. and Mattingly, D.J. (with contributions by Muftah Ahmed, Toby Savage, Kevin White and Andrew Wilson). 2011. "DMP XIII: reconnaissance survey of archaeological sites in the Murzuq area." *Libyan Studies* 42: 103–116.

- Talbi, M. 1988. "The independence of the Maghrib." In *Africa from the Seventh to the Eleventh Century*, edited by M. el-Fasi, 246–275. Paris: UNESCO.
- Thiry, J. 1995. *Le Sahara Libyen dans l'Afrique du Nord Médiévale*. Leuven: Orientalia Lovaniensia Analecta 72.
- Vanacker C. 1973. "Géographie économique de l'Afrique du Nord selon les auteurs arabes du IXe siècle au milieu du XIIe siècle." *Annales ESC* 28: 659–680.
- Vanacker, C. 1979. *Tegdaoust II: Recherches sur Aoudaghost. Fouille d'un Quartier Artisanal*. Paris: Arts et Métiers Graphiques.
- Wilson, A.I. 2012. "Saharan trade: short-, medium- and long-distance trade networks in the Roman period." *Azania: Archaeological Research in Africa* 47: 409–449.
- Wilson, A.I. and Mattingly, D.J. 2003. "Irrigation technologies: *foggaras*, wells and field systems." In *The Archaeology of Fazzān. Volume 1, Synthesis*, edited by D.J. Mattingly, 234–278. London: Society for Libyan Studies.
- Wright, J. 1998. "Murzuk and the Saharan slave trade in the 19th century." *Libyan Studies* 29: 89–96.
- Ziegert, H. 1969. "Überblick zur jüngeren Besiedlungsgechichte des Fezzan." *Berliner Geographischen Abhandlungen* 8: 49–58.
- Ziegert, H. and Abdussalam A. 1973. "The White Mosque of Old Zuila." *Libya Antiqua* 9/10: 221–222.