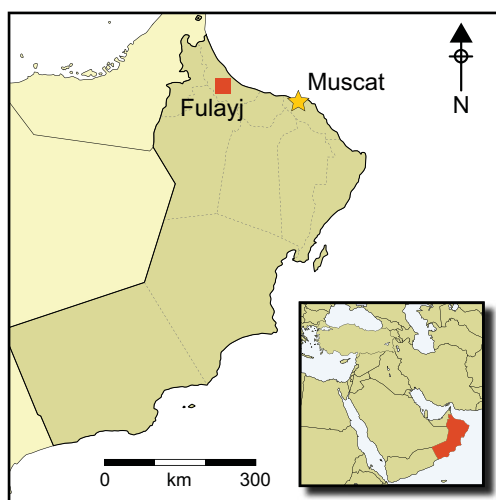


Fulayj: a Late Sasanian fort on the Arabian coast

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Archaeological evidence for a Sasanian presence in the ‘Uman region of Eastern Arabia is sparse. Recent excavations at the site of Fulayj in Oman have, however, revealed it to be a Late Sasanian fort, the only securely dated example in Arabia, or indeed on the western shores of the Indian Ocean more generally. AMS dating supports the ceramic chronology proposed for the site, demonstrating occupation until the Islamisation of South-eastern Arabia in the early seventh century AD, and also briefly into the very Early Islamic period. Fulayj fort provides new insights into Sasanian military activities during this crucial period of Arabian history.

Keywords: Arabia, Sasanian period, military architecture, Islamisation

Introduction

By comparison with the Roman Empire, knowledge of Sasanian military expansion is still very limited. This is partly due to the relative paucity of historical sources, but also to the lack of related archaeological fieldwork. Although current fieldwork along the frontiers of the Sasanian Empire is contributing towards improving our knowledge, there is still much to be learned (Sauer *et al.* 2013).

One region that attracted occasional Sasanian (AD 224–651) interest is Eastern Arabia, specifically Bahrayn (covering Bahrain/eastern Saudi Arabia) and ‘Uman (covering northern Oman and the UAE)—the latter of which is the focus of this article. It has been argued that these areas were important for the control of trade, defence of the western frontier and access

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to mineral resources (e.g. Piacentini 1985, 1992: 124–25; Morony 2001–2002; Daryae 2003: 9). Early Islamic sources, however, suggest that the Sasanians launched expeditions into the region only when necessary. For example, according to Tabari, Ardashir in the early third century and Shapur II in AD 325, which may both have resulted in a period of formal control (Potts 1990: 232–34, 239–41, 2008; Bosworth 1999: 15–16, 54–57). Indeed, ‘Uman was included in Shapur I’s (AD 242–270) list of imperial possessions (Huyse 1999: vol. 1: 23–24, vol. 2: 38; Potts 2008). The nature and durability of Sasanian control is, however, unclear and there is ambiguity about the degree to which ‘Uman in particular was affected (Potts 1990: 330; Kennet 2008: 55–56; Ulrich 2011: 381). It was not until Khusraw I (AD 531–579) that indications of attempts at direct control emerge, for example, again in Tabari (Potts 1990: 335–38, 2008; Bosworth 1999: 159, 237, 253). Prior to this, Sasanian control was exercised through the client Lakhmid dynasty at Hira in Iraq, but the extent and degree of their control is also unclear (Kister 1968).

Archaeological evidence for this period in ‘Uman is problematic. Until recently, it was believed that ancient field systems marked a Sasanian-period apogee of agricultural development (Wilkinson 1977: 50, 130–33). A recent review of the archaeological evidence, however, challenges this by suggesting that the period is amongst the least represented in the region’s archaeology, and that contemporaneous activity and population size was limited (Kennet 2007).

It is important to differentiate between ‘Sasanian-period’ activity—that is to say contemporaneous activity—and direct Sasanian activity itself. While archaeological evidence for Sasanian-period settlement is already sparse, there is no such evidence of direct Sasanian settlement in Eastern Arabia. Most of the reliable Sasanian-period evidence has only recently come to light and consists predominantly of scattered cairn burials belonging to a local tradition but containing occasional Sasanian artefacts. Their dispersed nature and lack of associated settlements suggest that they belonged to nomadic populations. Very few settlements are known: it is almost certain from historical sources that Sohar was occupied, although no incontrovertible archaeological evidence has yet been found (Wilkinson 1979: 888–89; Kennet 2007: 97–100). Additionally, a few Early Sasanian-period fortified elite residences are known from Ed-Dur and Mleiha (UAE), which appear to have been abandoned by the third century AD, Kush and Khatt in Ras al-Khaimah (UAE), and Jazirat al-Ghanam in the Musandam. The site of Jazirat al-Ghanam comprises a few stone structures associated with Sasanian-period pottery, on a remote island, which may represent a Sasanian outpost (de Cardi 1972). Kush and Khatt are more substantial agricultural settlements. Excavations at the former revealed a Late Sasanian-period occupation sequence (Kennet 1998, 2009). The nature of the occupation is not clear; while arrowheads and chainmail suggest a military focus, it is impossible to identify the occupants.

Fulayj FJ3.S3

Despite the paucity of archaeological evidence, new sites are occasionally discovered. One such is the fort at Fulayj (FJ3.S3), not far from Sohar on the Batinah Coast of Oman (Figures 1 & 2).

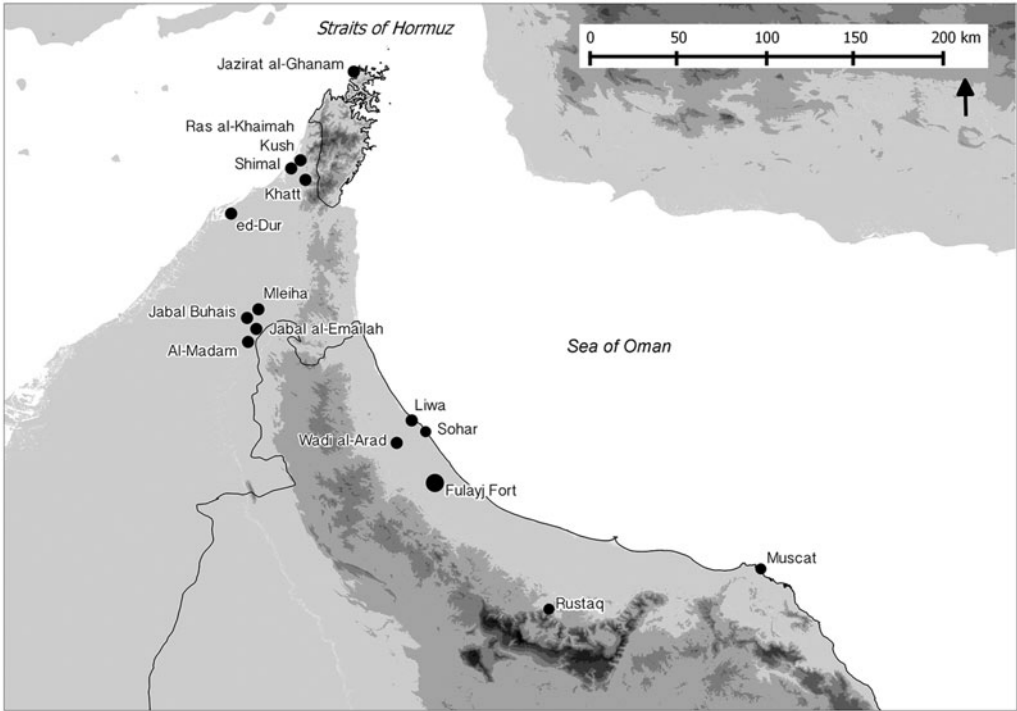


Figure 1. Map of northern Oman and the UAE showing the location of sites mentioned in the text.



Figure 2. Kite aerial photograph of the Fulayj fort from the north-east (photograph: Mark Woolston-Houshold).

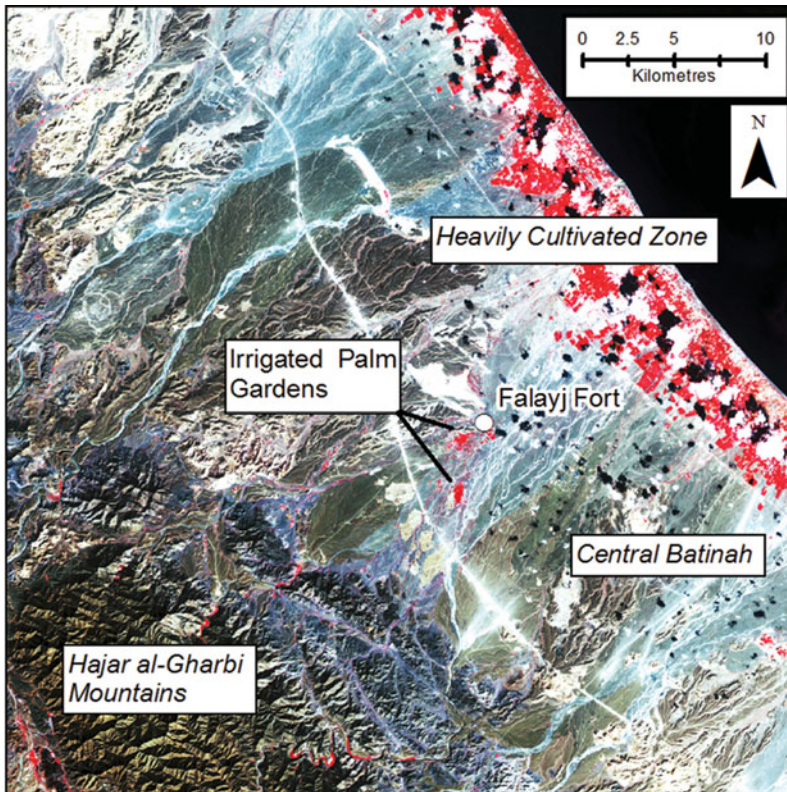


Figure 3. Map showing the location of Fulayj. Based on a colour infrared Landsat 8 image (bands 5, 4, 3). Healthy vegetation appears bright red. Image courtesy of the US Geological Survey (map: Dan Lawrence and Kristen Hopper).

The site was discovered during the ‘Sahm Survey Project’ in 2012 and identified as of Sasanian period by the plan layout and surface pottery (al-Jahwari *et al.* 2014: 85–86, figs 4, 5, 11). Two seasons of excavation were undertaken by the European Research Council as part of the ‘Persia and its Neighbours’ project. The Batinah is a 240km-long coastal plain, most of which consists of uncultivable gravels, except for a narrow coastal band that has long been the main focus of settlement and agricultural production. Fulayj (FJ3) is a large archaeological site complex consisting mostly of Iron Age (1300–300 BC) remains on an inter-fluvial terrace on the Wadi al-Mahmum, 2km from the village of Falaj al-Harth. The site location is 13.5km from the coast at the point where the outwash plain develops more contoured terraces towards the mountains (Figure 3). It is associated with abandoned fields along the wadi channel, which appear to have been irrigated by run-off or *aflāj* (underground water channels).

Fulayj is situated in the north of the Batinah, 30km south of Sohar, which historical sources indicate was important during the Sasanian period (Wilkinson 1979). Just behind Sohar, the Wadi Jizzi was an important route to the interior. Copper is present in the area: recent work at Bronze Age Dahua, 11km to the south-west of Fulayj, has yielded evidence of ancient copper working (al-Jahwari *pers. comm.*). FJ3.S3 is located at the north-western

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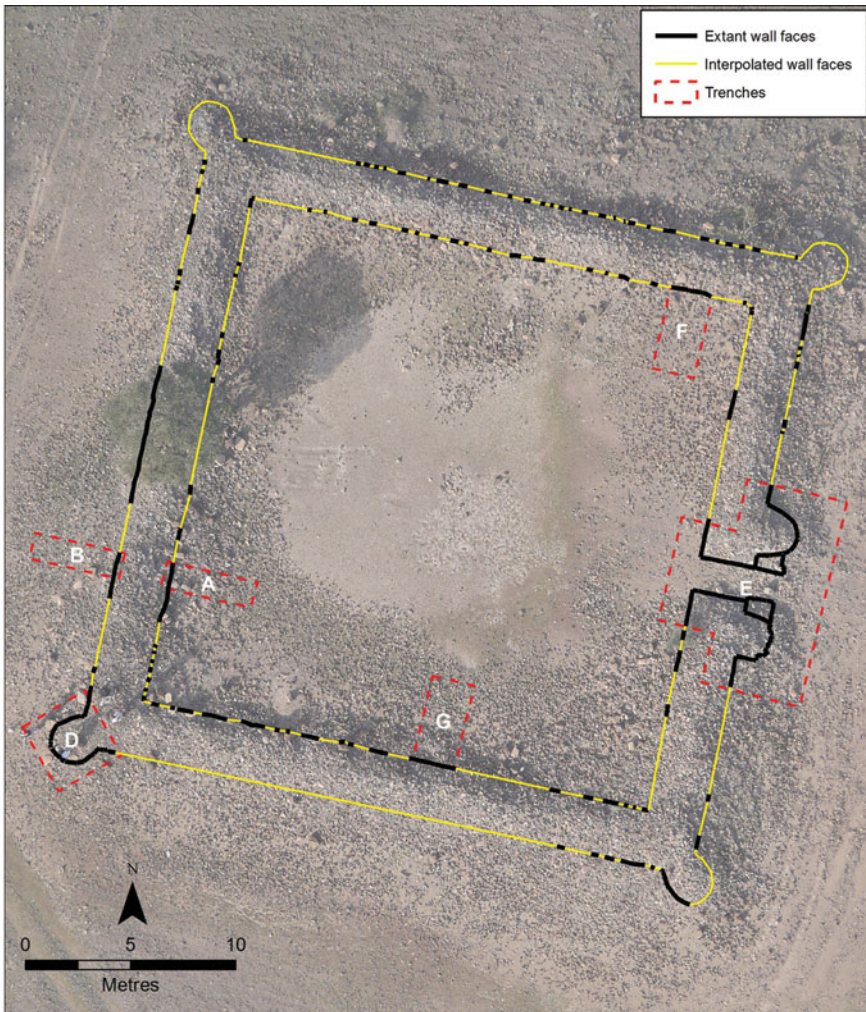


Figure 4. Annotated vertical kite photograph of the Fulajj fort showing the location of walls and trenches (photograph: Mark Woolston-Houshold; figure: Kristen Hopper).

end of the complex (UTM 40R 479290/2663670), and consists of a 30×30 m square stone fort, oriented 14° north-north-east (Figures 2 & 4). The walls are approximately 2.65 m thick and stand 0.4 m above the present ground surface. It has four solid, U-shaped corner towers (Figure 5). There is a single, narrow eastern entrance 1.62 m wide, flanked by rounded buttress towers (Figure 6). The top of the wall is levelled to a flat, even height all around, which, together with the limited stone tumble, suggests that the upper courses may have been mud-brick.

The plan is regular. The stone is not dressed, but has been carefully selected for flat faces and fine jointing, with large, irregularly coursed blocks packed with small stones bound with lime mortar (Figure 7). The quality of construction suggests experienced builders and careful planning.



Figure 5. Oblique view of the south-west corner tower in trench D, looking north-east.

Excavation has revealed internal mud-brick walls, but the only internal structures visible on the surface were a few rough stone constructions against the inner face of the main wall. These were associated with seventeenth-century and later pottery. Pottery is scarce on the surface within the fort, but Sasanian-period imports are scattered outside (namely SMAG, LISV, TORP, TURQ (including type 64) and IRPW) (Figure 8). These become sparser as one moves away from the fort, with the exception of an area to the south associated with lime-burning kilns (Figure 9). The Sasanian-period pottery is mixed with a dense scatter of Iron Age wares from earlier occupation.

The fort's military nature is very obvious through the thickness of its walls, its size and layout, the scarcity of evidence of domestic activity and the lack of associated settlement. The fort was built principally to withstand attack; the corner towers and the narrow entrance flanked by buttress towers were designed to optimise security.

Excavation

The excavations were intended to elucidate the fort's construction and layout, and the depth, nature and date of occupation. Excavation at the base of the walls demonstrates that they survive, below ground, up to 1.26m in height (Figures 7 & 10). Below the surface, traces of lime mortar were revealed between stones, thus linking to the lime kilns mentioned above. One of the kilns was excavated; the ¹⁴C evidence and pottery indicate that they were built and used during the fort construction (Table 1: 13).

Excavations within the fort in trenches A, B, F and G (Figure 4) all revealed a similar sequence. The fort walls were set within a shallow foundation cut, excavated into Iron Age deposits. The backfill contains Sasanian-period pottery (e.g. SMAG and SBBW in the trench G foundation cut fill (context G.016) (Figure 10)). In trenches A, B and G the

Table 1. AMS dates from the fort.

No.	Context	Beta lab. no.	Conventional age	2 sigma calibration	Sample description	Description
1	A.007	414253	297±22	AD 1514–1652	dicot heart wood, tyloses present	deposit at east end of trench high up within the sequence
2	A.009	414254	81±20	AD 1694–1919	unidentified round wood	deposit sealing the burning layer (A.014)
3	A.014	412641	1370±23	AD 625–681	<i>Chamaerops</i> young axis	thin burning deposit against the fort wall above the foundation cut
4	A.016	412642	1434±21	AD 586–653	<i>Chamaerops</i> petiole	deposit resting against the fort wall above the foundation cut
5	A.017	414255	1585±30	AD 406–544	<i>Prosopis</i> heart wood, tyloses present	occupation deposit into which the fort wall foundation cut was made
6	A.018	414069	3980±29	2575–2460 BC	snail shell	early fort occupation layer, appears to be residual snail shell
7	A.019	414256	4192±24	2889–2678 BC	snail shell	early fort occupation layer, appears to be residual snail shell
8	A.021	414257	1530±20	AD 429–594	<i>Prosopis</i>	deeply stratified deposit seemingly below the elevation of the fort wall foundation cut
9	B.004	412646	284±20	AD 1520–1659	<i>Ficus</i> round wood with outer cortex	sloping deposit high up in sequence
10	B.007	414258	1573±20	AD 424–540	<i>Prosopis</i> fungal hyphae	first occupation deposit formed on top of the foundation cut fill
11	B.009	414259	1568±22	AD 424–544	unidentified dicot poorly preserved	fill of foundation cut for the fort wall
12	B.011	414260	3221±21	1528–1437 BC	<i>Ziziphus/Paliurus</i>	stony deposit in sounding at west end of trench below the fort occupation sequence
13	C.001	412651	1565±21	AD 415–560	? <i>Prosopis</i> twig with pith	lime kiln deposit south of fort



Figure 6. Pole photograph of the entrance way (photograph: Kristen Hopper).

foundation cut deposit is covered with a shallow occupation surface relating to use of the fort. In trench F, a 4m-long \times 0.28m-wide mud-brick wall abutted the north wall, which is associated with a series of compacted clay floors. The wall appears to have been part of a second phase internal room built against the east wall inside the entranceway. Following the subsequent abandonment of the fort, large quantities of fine, largely sterile, sediment built up against the wall through natural processes and, possibly, the erosion of a mud-brick superstructure. Further excavation is required to determine the full internal layout.

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Figure 7. View of the interior face of the main wall in trench G showing the regular construction style, looking south.

Dating

The construction and main use of the fort is dated by AMS and pottery. Thirteen AMS dates were obtained from trenches A, B and C: from the pre-fort occupation; from the main wall foundation trench and initial occupation phase; from a camp fire associated with an early abandonment phase; and from the accumulation of sediment against the walls high in the sequence (Figure 10). Two of these (Table 1: 1 & 2) from the uppermost layers of trench A date to the sixteenth/seventeenth century AD or later, and relate to the late structures mentioned above. Five date to the early fifth to mid/late sixth centuries AD (Table 1: 5, 8, 10, 11, 13)—greater precision being limited by the calibration curve. They relate to the construction and main occupation phases, including the lime kiln in trench C. Two samples (Table 1: 3 & 4) come from layers overlying the main occupation phase and probably relate to abandonment or ephemeral later use; the later sample (3) comes from wind-blown sand and ash (Figure 10: A.014). This later occupation belongs to the mid seventh century—possibly starting in the later sixth century. Three further samples (Table 1: 6, 7, 12) relate to earlier occupation. At least two of these are residual (Bronze and Iron Age) and are therefore not relevant here.

The excavated ceramic assemblage is small: 2313 sherds were retrieved, most of which come from underlying Iron Age layers. Only 346 sherds are associated with the Sasanian-period or Early Islamic occupation (Figure 8). The closest assemblage comparisons are with Jazirat al-Ghanam and phases I–II at Kush (de Cardi 1972: fig. 8; Kennet 2004: tab. 41). There are also parallels with Sir Bani Yas, area D at Jazirat al-Hulaylah, al-Qusur and Kush III, which are all dated to around the mid seventh to the mid/late eighth century (Patitucci & Uggeri 1985; Sasaki & Sasaki 1996: figs 46, 48–49; Kennet 2004: 13–18; Carter

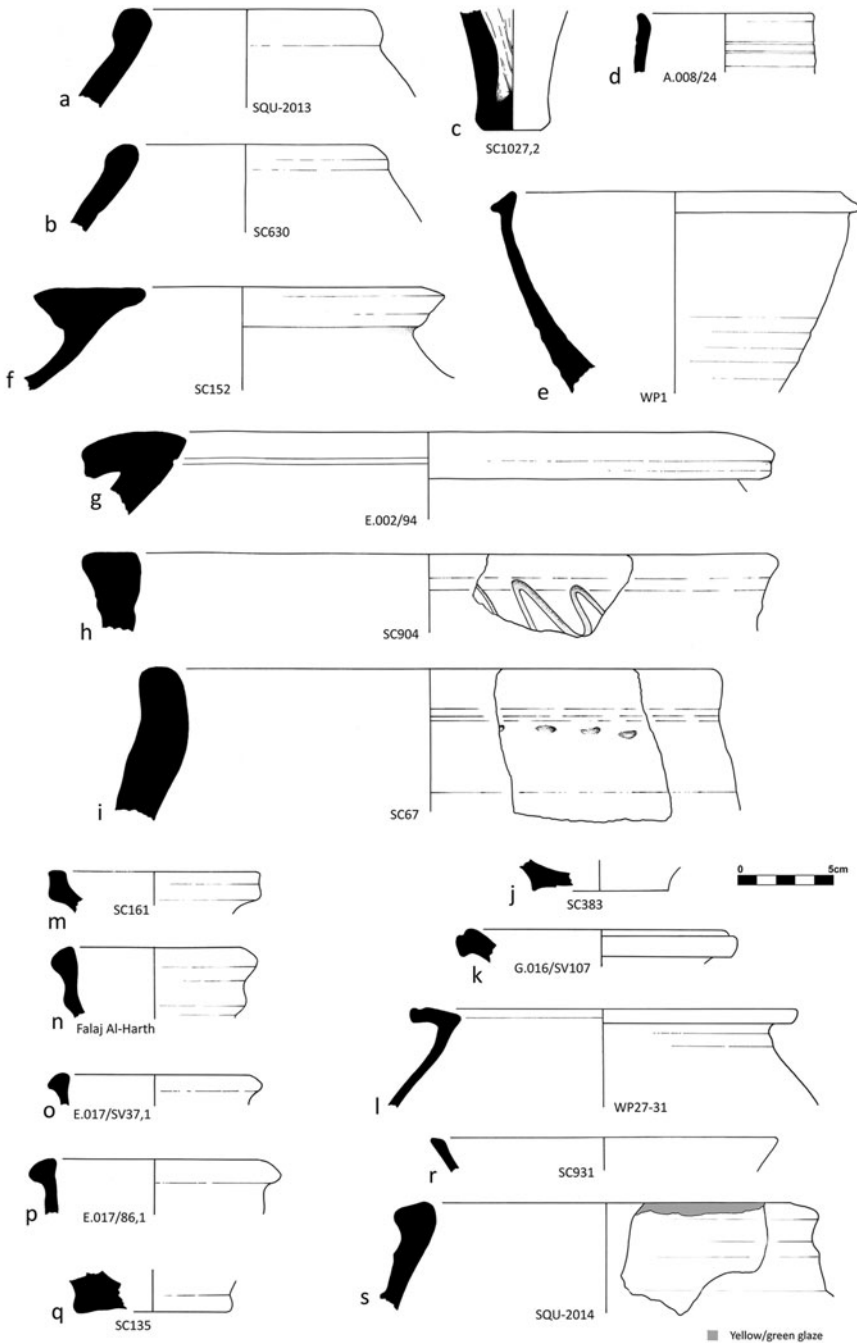


Figure 8. Selected diagnostic pottery associated with the occupation of the fort: a–c) TORP; d–e) SMAG; f–i) LISV; j) IRPW; k) SBBW; l) Indian black-painted; m–r) TURQ (turquoise); s) TURQ (yellow green, type 64). See Kennet (2004) for a description of these classes and types.

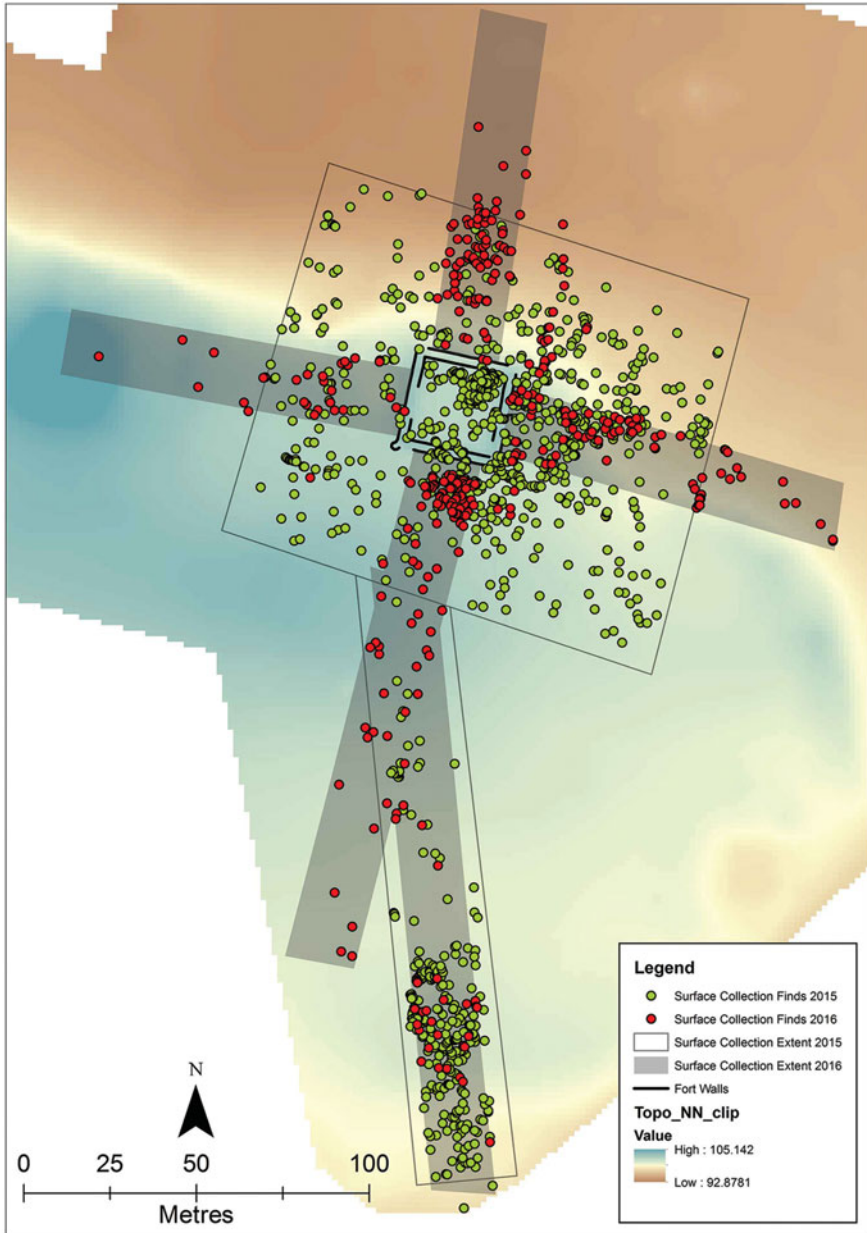


Figure 9. Plan showing the concentration of Sasanian-period pottery recorded on the surface around the fort and the lime kilns to the south.

2008: figs 13–16). Elements of these later assemblages are, however, missing, including carinated glazed bowls, Honeycomb ware, jars with stamped rosettes and cream torpedo jars, suggesting that most of the Fulayj material is earlier (Kennet 2004: TURQ Type 72, HONEY; Priestman 2013: TORP.RG, STAMP).

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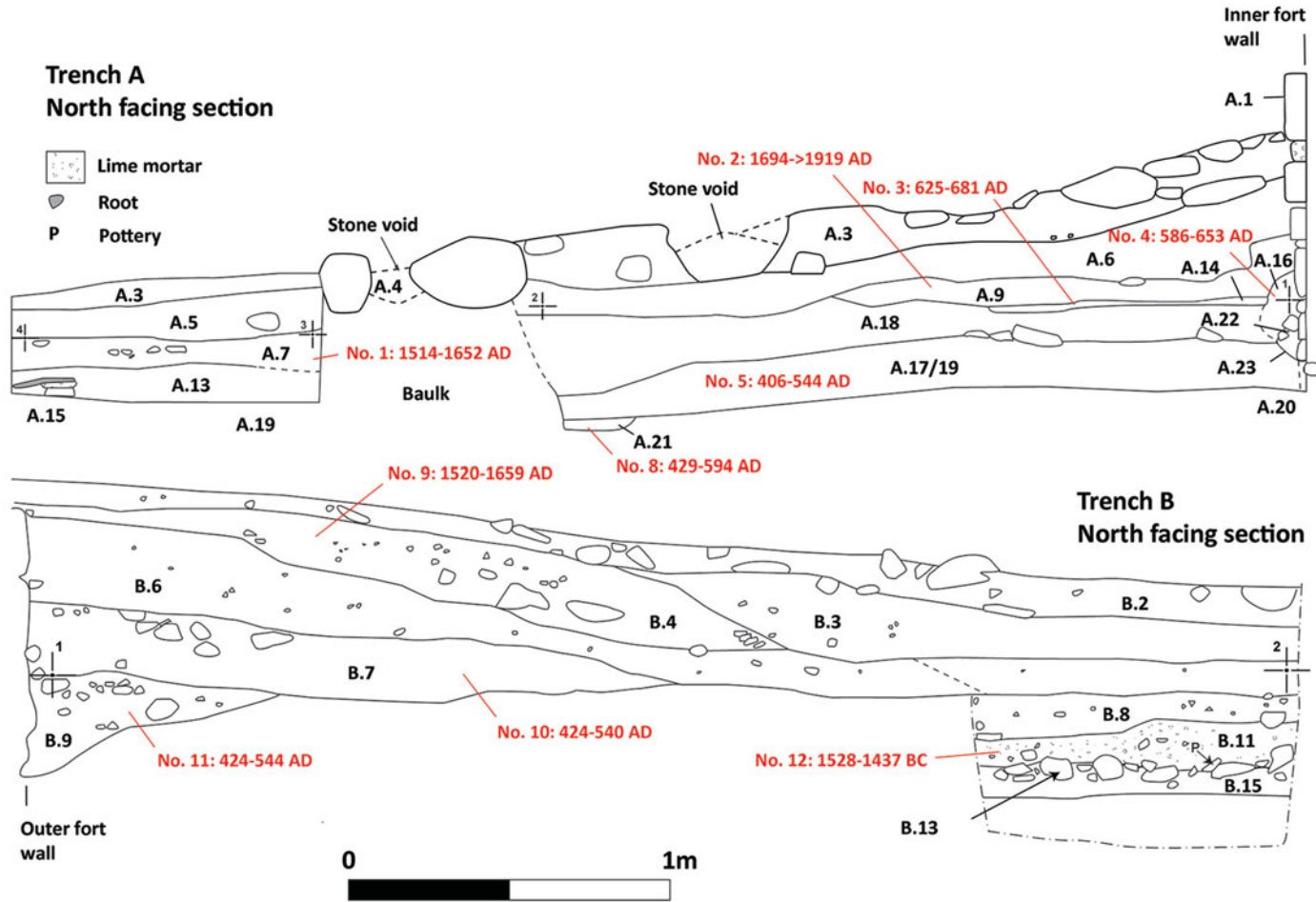


Figure 10. North-facing sections through trenches A and B on the interior and exterior of the western side of the fort. Red text indicates AMS sample locations and dates.

Combined, this evidence sets out a robust chronology. It seems clear that the fort was constructed and first used during the fifth or sixth centuries AD. This was followed either by continuous occupation until the mid seventh century, or by a period of abandonment and a second period of use at that time. There is no evidence of subsequent use until the sixteenth century and later.

How does the fort compare with other Sasanian installations? It differs distinctly from forts on the Gorgan Wall, which, while also provided with projecting towers, are much larger, brick-built and with internal oblong barracks. Architecturally more similar is the Sasanian hinterland fort of Buraq Tappeh (approximately 70 × 80m), with a central courtyard and accommodation alongside the tower-reinforced walls (Nokandeh *et al.* 2016: 575). Closer parallels of similar size, with four corner towers and a projecting gate (with or without interval towers), are found on the Iranian Plateau and on the south-western approaches to Mesopotamia (Finster & Schmidt 1977: 10–12, 44–54; Kleiss 1993: 185–88; Mohammadifar & Amini 2015–2016: 106–108; for a similar Late Sasanian monastery, see Amin Ali & Deroche 2016). Unlike the massive fortifications in the north, however, Fulayj-type forts were designed for policing internal territories or thinly populated desert frontiers.

Similar small forts with round/U-shaped corner towers were also built in Central Asia and across the Roman world from the late third century AD (Garbsch 1970: 15, figs 22–23; Gregory 1997: vols 1, 2 & 3; Hedinger 1998; Bondoc 2009: 35–36, 231, 245, figs 3–4; Lenoir 2011: 296–98, figs 34–41, 149; Grene & Rapen 2013: 24–25; Rizos 2015: 663, fig. 3). The Late Roman fort of Ain Labakha in Egypt is smaller, but its walls survive to 11.5m in height, thus providing an idea of how imposing Fulayj may have been (Reddé 1999: 380, 390–93). Fulayj follows a trend in defensive architecture from Western Europe to Central Asia, rather than a specifically Sasanian or Roman military tradition.

Discussion

It is worth considering why the fort was built at this location, being isolated and some distance from the fertile coastal plain and with no obvious links to occupation or activity in the vicinity. A number of points are worth making: U-shaped corner towers were introduced to Eastern Arabia at around the same time as the rest of the Roman/Sasanian worlds, the earliest examples being the forts at Ed-Dur (UAE) in area C, from the first/second century AD, and area F in the mid second to mid third centuries (Al-Qaysī 1975: 106–108; Potts 1990: 275–76, 300; Lecomte 1993; Mouton 2008: figs 55, 89–91, 106; Mouton & Schiettecatte 2014: 67–69). Although the Ed-Dur area C fort is a closer parallel, the proposed date requires verification. Dating of the larger fort at Qala'at al-Bahrain is also problematic, although a pre-Islamic date is most probable (Kervran 2013). By the Late Sasanian/Early Islamic period, such towers were certainly the norm in this region, as is demonstrated by building 5 at Jumairah in Dubai (UTM 40R 322780/2787890), and by the fort in the Early Islamic town of Siraf, which is thought to be Sasanian, but is possibly Early Islamic in date (Potts 1990: 300; Priestman 2005).

The forts at Mleiha areas CW and H, and Ed-Dur area F, were in use until only very early in the Sasanian period (Benoist *et al.* 2003; Kennet 2005: 113; Mouton *et al.* 2012; Mouton

& Schiettecatte 2014: 59–62). With the possible exception of the small house-tower at Kush (Kennet 2009: 144–49), Fulayj is unique in that it is the only fort in Eastern Arabia dated to the Late Sasanian period (i.e. fifth to mid seventh centuries). Fulayj is different to the Ed-Dur and Mleiha forts in that it is isolated, rather than being associated with a settlement; military occupation is suggested by its very thick, solid-stone, lime-mortared walls and few associated finds. This contrasts with the earlier forts, all of which are located within settlements, have only varying degrees of defensive capability, and—in two cases at least—have a rich, luxury domestic artefact assemblage. Fulayj has the appearance of having been built and manned by a professional army, rather than being the fortified residence of a local potentate. Given the apparent lack of any political structure in ‘Uman at this time capable of such an undertaking, it seems highly probable that the fort was built by the Sasanians themselves. The unusual ceramic assemblage reinforces this idea. It is dominated by coarse grey tubular ‘vessels’ made from a probable local fabric, which are unusual in being open at both ends. They may have been used during construction of the fort. The only other Sasanian-period ceramics are imports originating from the Sasanian heartland of Iraq and Iran, with smaller quantities coming from South Asia. This suggests a degree of external provisioning and reinforces the idea of occupation by a foreign military force.

As already observed, historical sources such as Tabari indicate renewed Sasanian interest in Arabia during the reign of Khusraw I (AD 531–579), which may have included some military construction (Potts 1990: 335–38, 2008; Bosworth 1999: 290–92). Some scholars have suggested that a military force might have been placed in ‘Uman at this time, although the evidence for this is weak (e.g. Potts 2008: 210–11; Munt 2017: 269). The empire-wide reorganisation of Sasanian defences from the fifth century to Khusraw I, however, provides a possible context for the construction of Fulayj.

What was the rationale behind the construction of a fort in this location? Aside from the presence of copper in the local foothills (typical of the area), it is not situated close to any route, settlement or resource. It is difficult to imagine that it had much military value in isolation. Conversely, it would make sense had it been part of a chain of forts separating the coastal plain, which has long been the main focus of agriculture and occupation (Kennet *et al* 2016: 155). Parallels do exist: a chain of probable Sasanian forts guarded the approaches to the Khandaq Shapur Canal and the Euphrates (Finster & Schmidt 1977; Lawrence & Wilkinson 2017: 105–106), a military control line similar to the fort-lined Gorgan, Tammisheh, Darband and Ghilghilchay walls. Sasanian fortifications along the key route into TransCaucasia may have offered safe shelter for military forces or officials (Lawrence & Wilkinson 2017: 105–106, 114–16; Sauer *et al.* 2017: 257–58). Some of these are a day’s march apart, as are examples in Fars (Ghasemi 2012). A chain of forts guarding access to fertile land or strategic supply routes was a common concept across the Roman and Sasanian worlds. The Fulayj fort may similarly have been a staging post on an inland route, intended to protect the approaches to the coastal plain and perhaps a port. A larger, probably Sasanian fort with projecting corner and interval towers, at Ratto Kot near the Indus mouth (Kervran 1994: 337–39), perhaps also secured access to the interior and the empire’s strategic and commercial interests across the Indian Ocean.

While these ideas remain to be confirmed through remote sensing and fieldwork, further evidence supports this interpretation. Firstly, the putative treaty between the Arabs of the

interior and the Persians occupying the coastal areas is reported in the *Ansāb al-ʿArab*, dated to the late tenth century. It was discussed by J.C. Wilkinson (1973) and has since formed the basis of our understanding of late pre-Islamic Oman:

There was a peace treaty (muhādana) between them [the Persians] and the family of al-Julandā in Oman, in which [it was stipulated] that there would be 4,000 asāwira and marāziba together with a tax collector for them there nearby the kings of the Azd. The Persians would stick to the coastal plain (al-sawāḥil wa-shuṭūṭ al-baḥr) and the Azd would be kings in the mountains, the desert and other such places on the fringes of Oman. All affairs were to be in their charge (al-Awtabi 2006: 762; Munt 2017: 279).

It is impossible to know how reliable this information might be, particularly given that it was written around 350 years after the events described. Munt (2017) emphasises that the date of the treaty is uncertain, and may refer to a later period. Nonetheless, such an arrangement may have necessitated a defensive line along the back of the plain and the environs of Sohar.

A second piece of evidence is the presence of Sasanian-period finds in isolated cairn burials in the interior. Examples are the burial with Sasanian seals from al-Madam, the possible Sasanian pottery from cairns in the Wadi Jizzi, Jabal Emailah and Jabal Buhias, and Shimal in Ras al-Khaimah (Vogt & Franke-Vogt 1987: 45–48, fig. 30; Potts 1997; Benton & Potts 2010; Jasim 2012: 263; Düring & Olijdam 2015: 102–103; Kutterer *et al.* 2015). Other unpublished examples have recently been revealed 15km inland from the coast at Liwa, north of Sohar, and the Wadi al-Arad, where as many as 50 tombs are located (S. Laurenza *pers. comm.*). It seems certain that others will be found. The precise date of these tombs is still unclear: one at Liwa contains a coin of Hormizd II (AD 303–309), while one from al-Madam is dated to the fifth/sixth century. The armour from another tomb, near al-Madam, has been dated to the Late Sasanian period (Potts 1997; Kutterer *et al.* 2015: 46). The lack of related settlements suggests that these tombs are all that remains of nomadic Arab tribes who occupied the interior during the Sasanian period. It was the management of the relationship with these groups that was perhaps the rationale behind the construction of Fulayj.

This pivotal period in the late pre-Islamic history of ʿUman is difficult for historians and archaeologists in that the paucity and problematic nature of the evidence make it impossible to draw firm conclusions. In this context, the discovery of a Late Sasanian fort provides important new evidence. It is the first such structure discovered, and provides insights into the way that Sasanian control was exercised, and into the political-economic geography of ʿUman in the period preceding Islamisation. The AMS dates from the site strengthen confidence in the regional ceramic chronology.

If the interpretation presented here is correct—namely that Fulayj is the product of the Sasanian military—then it is evidence that even in Eastern Arabia, a region that seems otherwise to have bucked the broader trend of Late Sasanian economic growth and cultural/political integration (e.g. Payne 2014), there is evidence of strategic investment in territorial control. When set alongside frontier defences elsewhere in the Empire, including northern Iran, the Caspian, the Caucasus and the margins of Iraq, Fulayj provides a further,

important contribution to our understanding of the scale and reach of the Sasanian state and its growing power and organisational capabilities (e.g. Howard-Johnston 2014: 148).

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References

- AL-'AWTABĪ (attributed). 2006. *al-Ansāb* (2 volumes; edited by Muḥammad Iḥsān al-Naṣṣ). Muscat: Wizārat al-Turāth wa al-Thaqāfa.
- AL-JAHWARI, N.S., W.S. AL-MUZINI & N.M. AL-AGHBARI. 2014. Results of the first season of archaeological survey 2010–2011 in al-Fulayj area at Saham, Sultanate of Oman. *Journal of Humanity Studies* (University of Donqola, Faculty of Arts and Human Sciences) 12: 75–138 (in Arabic).
- AL-QAYSI, R. 1975. Taḥarriyāt wa tanqībāt athariyah fī dawlat al-imārāt al-'arabiyāt al-muttaḥida—al-khalij al-'arabī [Archaeological researches and excavations in the UAE—Arabian Gulf]. *Sumer* 31: 75–155.
- AMIN ALI, N. & V. DEROCHE. 2016. The site of Bazyan, in K. Kopanias & J. MacGinnis (ed.) *The archaeology of the Kurdistan region of Iraq and adjacent regions*: 11–18. Oxford: Archaeopress.
- BENOIST, A., M. MOUTON & J. SCHIETTECATTE. 2003. The artefacts from the fort at Mleiha: distribution, origins, trade and dating. *Proceedings of the Seminar for Arabian Studies* 33: 59–76.
- BENTON, J.N. & D.T. POTTS. 2010. *Jabal al-Emalah 1993/4. Report compiled for the Department of Culture and Information*. Sharjah: Government of Sharjah.
- BONDOC, D. 2009. *The Roman rule to the north of the Lower Danube during the Late Roman and Byzantine period*. Cluj-Napoca: Mega.
- BOSWORTH, C.E. 1999. *The history of al-Tabari. Volume V. The Sasanids, the Byzantines, the Lakhmids, and Yemen*. Albany (NY): Bibliotheca Persica.
- DE CARDI, B. 1972. A Sasanian outpost in northern Oman. *Antiquity* 46: 305–10. <https://doi.org/10.1017/S0003598X0005393X>
- CARTER, R.A. 2008. Christianity in the Gulf during the first centuries of Islam. *Arabian Archaeology & Epigraphy* 19: 71–108. <https://doi.org/10.1111/j.1600-0471.2008.00293.x>
- DARYAEE, T. 2003. The Persian Gulf trade in late antiquity. *Journal of World History* 14: 1–16. <https://doi.org/10.1353/jwh.2003.0005>
- DÜRING, B.S. & E. OLIJDAM. 2015. Revisiting the Suhar hinterlands: the Wadi al-Jizzi Archaeological Project. *Proceedings of the Seminar for Arabian Studies* 45: 93–106.
- FINSTER, B. & J. SCHMIDT. 1977. Sasanidische und frühislamische Ruinen im Iraq. *Baghdader Mitteilungen* 8 (for 1976): 5–169, pls 1–79.
- GARBSCH, J. 1970. *Der spätrömische Donau-Illyer-Rhein-Limes*. Aalen: Limes-Museum.
- GHAJEM, P. 2012. Tal-e Khandagh ('moated mound'). A military structure in ancient Fars. *Near Eastern Archaeology* 75: 240–51. <https://doi.org/10.5615/neareastarch.75.4.0240>
- GREGORY, S. 1997. *Roman military architecture on the eastern frontier* (3 volumes). Amsterdam: Hakkert.
- GRENE, F. & K. RABEN. 2013. Формационные этапы согдийской культуры [Development of the phases of Sogdian culture], in P.B. Lur'e & A.I. Torgoev (ed.) *Согдийцы, их предшественники, современники и наследники; [Sogdians, their precursors, contemporaries and heirs]*: 13–28. Sankt-Peterburg: Gosudarstvennyĭ Ėrmitazh.
- HEDINGER, B. 1998. Der römische Burgus von Kloten, in C. Bridger & K.-J. Gilles (ed.) *Spätrömische Befestigungsanlagen in den Rhein- und Donauprovinzen* (British Archaeological Reports International series 704): 113–18. Oxford: Archaeopress.
- HOWARD-JOHNSTON, J. 2014. The Sasanian state: the evidence of coinage and military construction. *Journal of Ancient History* 2: 144–81. <https://doi.org/10.1515/jah-2014-0032>
- HUYSE, P. 1999. *Die dreisprachige Inschrift Šābuhrs I. an der Ka'ba-i Zardušt* (2 volumes). London: School of African and Oriental Studies.

- JASIM, S.A. 2012. *The Necropolis of Jebel al-Buhais: prehistoric discoveries in the Emirate of Sharjah, United Arab Emirates*. Sharjah: Department of Culture & Information, Government of Sharjah.
- KENNET, D. 1998. Evidence for 4th/5th-century Sasanian occupation at Khatt, Ras al-Khaimah, in C.S. Phillips, D.T. Potts & S. Seairight (ed.) *Arabia and her neighbours. Essays on prehistorical and historical developments presented in honour of Beatrice de Cardi*: 105–16. Turhnout: Brepols.
- 2004. *Sasanian and Islamic pottery from Ras al-Khaimah: classification, chronology and analysis of trade in the Western Indian Ocean* (Society for Arabian Studies Monographs 1; British Archaeological Reports International series 1248). Oxford: Archaeopress.
- 2005. On the eve of Islam: archaeological evidence from Eastern Arabia. *Antiquity* 79: 107–18. <https://doi.org/10.1017/S0003598X00113730>
- 2007. The decline of Eastern Arabia in the Sasanian period. *Arabian Archaeology and Epigraphy* 18: 86–122. <https://doi.org/10.1111/j.1600-0471.2007.00274.x>
- 2008. Sasanian coins from ‘Uman and Bahrayn, in D. Kennet & P. Luft (ed.) *Current research in Sasanian archaeology, art and history* (British Archaeological Reports International series 1810): 55–64. Oxford: Archaeopress.
- 2009. Transformations in Late Sasanian and Early Islamic Eastern Arabia: the evidence from Kush, in J. Schiettecatte & C. Robin (ed.) *L’Arabie à la veille de l’Islam: bilan clinique*. (Orient & Méditerranée 3): 135–61. Paris: De Boccard.
- KENNET, D., W.M. DEADMAN & N.S. AL-JAHWARI. 2016. The Rustaq Batinah archaeological survey. *Proceedings of the Seminar for Arabian Studies* 46: 155–68.
- KERVAN, M. 1994. Forteresses, entrepôts et commerce: une histoire à suivre depuis les rois sassanides jusqu’aux princes d’Ormuz, in R. Curiel & R. Gyselen (ed.) *Itinéraires d’Orient: hommages à Claude Cahen* (Res Orientales 6): 325–51. Bures-sur-Yvette: Geocmo.
- 2013. Un siècle obscur de l’histoire de Tylos: 131–240 après J.C., in C. Robin & J. Schiettecatte (ed.) *Les préludes de l’Islam: ruptures et continuités dans les civilisations du Proche-Orient de l’Afrique orientale, de l’Arabie et de l’Inde à la veille de l’Islam* (Orient & Méditerranée 11): 271–309. Paris: De Boccard.
- KISTER, M.J. 1968. Al-Ḥīra: some notes on its relations with Arabia. *Arabica* 15: 143–69. <https://doi.org/10.1163/157005868X00190>
- KLEISS, W. 1993. Rechteckige Befestigungen und befestigte Plätze in Iran—II, *Archaeologische Mitteilungen aus Iran* 25 (for 1992): 177–206, pls 44–47.
- KUTTERER, A., S.A. JASIM & E. YOUSIF. 2015. Buried far from home: Sasanian graves at Jebel al-Emeilah (Sharjah, UAE). *Arabian Archaeology and Epigraphy* 26: 43–54. <https://doi.org/10.1111/aae.12051>
- LAWRENCE, D. & T. WILKINSON. 2017. The northern and western borderlands of the Sasanian empire, in E. Sauer (ed.) *Sasanian Persia between Rome and the steppes of Eurasia*: 99–125. Edinburgh: Edinburgh University Press.
- LECOMTE, O. 1993. Ed-Dur, les occupations des 3^e et 4^e s. ap. J.-C.: contexte des trouvailles et matériel diagnostique, in U. Finkbeiner (ed.) *Materialien zur Archäologie der Seleukiden- und Partherzeit im südlichen Babylonien und im Golfgebiet*: 195–217. Tübingen: Wasmuth.
- LENOIR, M. 2011. *Le camp romain: Proche-Orient et Afrique du Nord*. Rome: École française de Rome.
- MOHAMMADIFAR, Y. & F. AMINI. 2015–2016. *Sasanian art and archaeology*. Tehran: Shāpikān (in Persian).
- MORONY, M.G. 2001–2002. The Late Sasanian economic impact on the Arabian Peninsula. *Nāme-ye Irān-e Bāstān [International Journal of Ancient Iranian Studies]* 1(2): 25–37.
- MOUTON, M. 2008. *La Péninsule d’Oman de la fin de l’Age du Fer au début de la période sassanide (250 av.–350 ap. JC)* (Society for Arabian Studies Monographs 6; British Archaeological Reports International series 1776). Oxford: Archaeopress.
- MOUTON, M. & J. SCHIETTECATTE. 2014. *In the desert margins: the settlement process in ancient South and East Arabia*. Rome: ‘L’Erma’ di Bretschneider.
- MOUTON, M., M. TENGBERG, V. BERNARD, S. LE MAGUER, A. REDDY, D. SOULIÉ, M. LE GRAND & J. GOY. 2012. Building H at Mleiha: new evidence of the late pre-Islamic period D phase (PIR.D) in the Oman peninsula (second to mid-third century AD). *Proceedings of the Seminar for Arabian Studies* 42: 205–22.
- MUNT, H. 2017. Oman and Late Sasanian imperialism. *Arabian Archaeology and Epigraphy* 28: 264–84. <https://doi.org/10.1111/aae.12102>
- NOKANDEH, J., H. OMRANI REKAVANDI & E.W. SAUER. 2016. Engineering and safeguarding prosperity in the Sasanian Empire. *Proceedings of the 14th Annual Symposium on the Iranian Archaeology*: 571–75. Tehran: ICHHTO.
- PATTIUCCHI, S. & G. UGGERI. 1985. *Failaka Insediamenti Medievali Islamici, Ricerche e Scavi nel Kuwait*. Roma: ‘L’Erma’ di Bretschneider.
- PAYNE, R. 2014. The archaeology of Sasanian politics. *Journal of Ancient History* 2(2): 1–13. <https://doi.org/10.1515/jah-2014-0029>
- PIACENTINI, V.F. 1985. Ardashīr ī Pāpākān and the wares against the Arabs: working hypothesis on the Sasanian hold of the Gulf. *Proceedings of the Society for Arabian Studies* 15: 57–77.

- 1992. Merchants, merchandise and military power in the Persian Gulf (Suriyanj/Shakriyaj-Siraf). *Atti della Accademia Nazionale dei Lincei, Memoire series IX, volume III, fascicule 2*: 110–89. Rome: Accademia Nazionale dei Lincei.
- POTTS, D.T. 1990. *The Arabian Gulf in antiquity. Volume II*. Oxford: Clarendon.
- 1997 Late Sasanian armament from southern Arabia. *Electrum* 1: 127–37.
- 2008. The Sasanian relationship with South Arabia: literary, epigraphic and oral historical perspectives. *Studia Iranica* 37: 197–213.
<https://doi.org/10.2143/SI.37.2.2034315>
- PRIESTMAN, S.N.M. 2005. The rise of Siraf: long-term development of trade emporia within the Persian Gulf, in *Proceedings of the International Congress of Siraf Port, November 14–16, 2005, Bushehr*: 137–56. Bushehr: Bushehr Branch of Iranology Foundation & Bushehr University of Medical Sciences.
- 2013. A quantitative archaeological analysis of ceramic exchange in the Persian Gulf and western Indian Ocean, AD c. 400–1275. Unpublished PhD dissertation, University of Southampton.
- REDDÉ, M. 1999. Sites militaires romains de l'oasis de Kharga. *Bulletin de l'Institut français d'archéologie orientale* 99: 377–96.
- RIZOS, E. 2015. Centres of the Late Roman military supply network in the Balkans. *Jahrbuch des Römisch-Germanischen Zentralmuseums Mainz* 60: 659–96.
- SASAKI, T. & H. SASAKI. 1996. 1995 excavations at Jazirat al-Hulayla, Ras al-Khaimah. *Bulletin of Archaeology, The University of Kanazawa* 23: 37–178.
- SAUER, E.W., H. OMRANI REKAVANDI, T.J. WILKINSON & J. NOKANDEH, with contributions by S. PRIESTMAN & M. MASHKOUR. 2013. *Persia's imperial power in late antiquity: the Great Wall of Gorgān and frontier landscapes of Sasanian Iran* (British Institute of Persian Studies Archaeological Monographs II). Oxford: Oxbow.
- SAUER, E.W., J. NOKANDEH, K. PITSKHELARI & H. OMRANI REKAVANDI. 2017. Innovation and stagnation: military infrastructure and the shifting balance of power between Rome and Persia, in E. Sauer (ed.) *Sasanian Persia between Rome and the steppes of Eurasia*: 241–67. Edinburgh: Edinburgh University Press.
- ULRICH, B. 2011. Oman and Bahrain in late antiquity: the Sasanians' Arabian periphery. *Proceedings of the Seminar for Arabian Studies* 41: 377–86.
- VOGT, B. & U. FRANKE-VOGT (ed.). 1987. *Shimal 1985–1986: excavations of the German Archaeological Mission in Ras al-Khaimah, U.A.E.: a preliminary report* (Berliner Beiträge zum Vorderen Orient 8). Berlin: Reimer.
- WILKINSON, J.C. 1973. Arab-Persian land relationships in Late Sasanid Oman. *Proceedings of the Seminar for Arabian Studies* 3: 40–51.
- 1977. *Water and tribal settlement in southeast Arabia, a study of the aflaj of Oman*. Oxford: Clarendon.
- 1979. Şuḥār (Sohar) in the Early Islamic period: the written evidence, in M. Taddei (ed.) *South Asian archaeology 1977* (Seminario di Studi Asiatici 1979): 887–907. Naples: Istituto Universitario Orientale.

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