

Chapter 7

Old Bones Overturned

New Evidence for Funerary Practices from the Sasanian Empire

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When the body is properly eaten away, the bones should be carried to an *astodan*, which should be so elevated from the ground and be so [constructed] with a roof [or cover] that the rain shall in no way fall over the dead substance, and that water shall not remain over it from above, and that not a drop shall fall over it from above, and that a dog or a fox shall not have access to it, and holes be made into it for the admission of light. It is further enjoined on this point that the *astodan* shall be prepared of a single stone and its cover be made of a single well-prepared perforated stone, and that it be set with stone and mortar all round (*Dadistan-i-dinik* Question XVII).

Introduction: the variation in funerary practices

The Sasanian Empire was founded in the early 3rd century AD, lasted for over four centuries and encompassed a wide range of peoples and faiths over a large and disparate region stretching from north-east Syria to Central Asia and Azerbaijan to the Persian Gulf. The official religion was Zoroastrianism, but there were substantial and economically important populations of Christians and Jews, particularly in Mesopotamia (modern Iraq and northern Syria), as well as Buddhists in the eastern provinces and numerous minor sects. There are periodic reports of the persecution of non-Zoroastrian communities, violation of their dead and proclamations concerning the exposure of bodies during the reigns of Varahran V (421–39), Yazdgird II (439–57), Peroz (459–84) and Kavad (488–531), but these appear to have been exceptional events and local communities were normally tolerated where they integrated into society. Different faiths have different burial practices and, as the archaeology of Muslim graves shows very clearly, these are often subject to local conditions and customs (Simpson 1995; 2007b, 110–14, 118–20; Insoll 1999, 166–200). Identifying the faith of the deceased is therefore not an easy task on the basis of archaeological evidence alone, and the archaeological evidence for funerary practices in the Sasanian Empire is particularly complex to interpret.

Within Iranian archaeology, much attention has been paid to the interpretation of certain types of rock-cut installations which are particularly numerous on the slopes of Kūh-i Rahmat and Kūh-i Husain above the city of Istakhr (Gotch 1972; Huff 1991; Gotch, Simpson and Taylor forthcoming). A systematic survey of these is long overdue, but the Pahlavi inscriptions engraved next to a small number of these installations or on free-standing column-*dakhmas* and trough-*dakhma* covers (see below) confirm that they were intended as the resting-place for individuals of both genders and in a few cases even give the name of the family members and the date (Frye 1970; Gropp and Nadjmabadi 1970; Nasrollah Zadeh 2007; Tafazzoli 1991; Tafazzoli and Sheikh-al-Hokamayi 1994). The financial status of these individuals is hinted at in an inscription from Iqlīd which refers to payment in silver (Frye 1970, 155–6), and the size and clustering of the tombs around Istakhr strongly suggests that they were used by urban families.

Burials within rock cairns are also attested across southern Iran during this period and represent a widespread 1st millennium AD tradition stretching from Fars to Baluchistan (Stein 1937; Lamberg-Karlovsky 1972; Lamberg-Karlovsky and Humphries 1968; Azarpay 1981; Boucharlat 1989). Pottery, personal ornaments, a spear-head

and coins provisionally identified as dating to around AD 100 were found inside a cluster of cairns on a ridge above Qasr-i Abu Nasr, near Shiraz (Whitcomb 1985, 210–16); a Parthian glazed ‘pilgrim flask’ was found in a cairn tomb excavated south of Tang-i Bulaghi in the Marv Dasht (Stronach 1978, 167, fig. 115: 8, pl. 145a–b), and a lugged plainware pot, four large tanged trilobate iron arrow-heads, a tanged iron knife or short sword, an iron dagger in a silver-studded copper alloy scabbard and a silver coin identified as belonging to Yazdgard III (632–51) found among a group of 24 cairns excavated by Aurel Stein near Bishezard confirm that they remained in use as late as the 7th century AD (Stein 1936, 157–9, fig. 13, pl. XXIX: 5–12, 15, 18, 20, 23–4, 26, 38, 40, 43, 50). The location of these cairns on rocky ridges and along routes ensured that they were easily visible yet situated away from the fertile valley floor. Whether this reflects their construction by nomads, as originally suggested, is unconfirmed and the occasional presence of glazed pottery vessels within the tombs might suggest otherwise. Moreover, the absence or at best highly fragmented state of the human remains within cairns has been interpreted that they either represent cenotaphs or fractional secondary burials.

Elsewhere in the Persian Gulf there is evidence for the secondary interment of multiple individuals placed within shallow cists cut into flat rocky outcrops on Kharg Island (Steve *et al.* 2003, 69–77). Some of the human remains were placed inside pottery jars or bitumen-lined baskets whereas others appear to have been placed directly into the cavities; the accompanying coin of Honorius (395–423), personal seals, glass and pottery all suggest a Sasanian and possibly early Islamic date. The cists are said to have been originally covered with gabled roofs formed by pairs of large flat stones erected over the top, although this is not certain and they may simply have been capped with flat slabs. There is evidence for both Jewish and Christian populations on the island during the 7th to early 9th centuries AD and these had their own cemeteries which differ again in style of interment. Despite the proposal in the final report that the secondary interments may reflect a transfer of remains from the rock-cut niches used by the Christian community (Steve *et al.* 2003), the possibility that they instead represent a local form of *dakhma* seems more likely.

Burial mounds and cairn burials have an even longer history on the western side of the Persian Gulf and there is archaeological evidence for the reuse of a small number of these during this period in parts of eastern Saudi Arabia, Bahrain and the United Arab Emirates (UAE). These late occurrences are datable through associated finds which include Sasanian facet-cut glass, personal seals and weapons placed with articulated skeletal remains in a flexed position (Zarins, Mughannam and Kamal 1984, 42, pl. 50.10; Andersen 2007; Kästner 1987). The identity of the individuals is unclear, but the presence of fragile glass tablewares and seals imply that they belong to sedentized individuals rather than transient Bedouin. Moreover, two burials excavated at Jabal al-Emalah in Sharjah (UAE) were radiocarbon dated to between the late 5th and 8th centuries AD and were found accompanied by a long sword in one case and a heavy thrusting spear in the second. Anthropological analysis of the human remains by Professor D.L. Martin

(Hampshire College) and P.K. Stone (University of Massachusetts) indicates that they belonged to well-built mature male adults aged 35–9 and 25–30 years respectively; the first had osteoarthritis, possibly arising from pulled ligaments or muscles, as well as healed injuries to the left clavicle and left ribs, and the second had well-developed muscles in the lower arm bones (Potts 1997, 135–6). In both cases the findings of healed trauma are consistent with their grave-goods and suggest they may have been warriors, either professional soldiers or client tribesmen, although the radiocarbon dates imply that they may be early Islamic rather than Sasanian (King 2001, 76).

Within Iraq a large number of Sasanian graves have been excavated, either individually or as part of cemeteries. They include extended or flexed burials placed within brick-built or stone-lined cists or shaft graves with undercut side-chambers. They have been broadly dated through associated grave-offerings of pottery, glass and occasionally coins and seals (e.g. Ehrlich 1939; Negro Ponzi 1968/9; 2005; Roaf 1984; Kamada and Ohtsu 1988; Simpson 1987; al-Shams 1987/8; al-Haditti 1995). Jar burials have been found at several sites, but the discovery of a cremation urn in what appears to have been a more extensive jar cemetery at *Habl as-Sakhr* is exceptional (Simon 1989). Most of these sites are set within rural landscapes and probably belong to agricultural villagers, although some may belong to transient groups and the isolated burial of an adult man with an oval bronze drinking-bowl and glass bottle on the summit of the mound of Tell Razuk in the Hamrin basin of east central Iraq (Gibson 1981, 81, pl. 101) may reflect the personal grave location choice of a local late or post-Sasanian landlord, equivalent to the inscribed column-*dakhma* at Tang-i Karam in Fars (Huff 2004, 612). In any case, the location of these excavated finds largely reflects the chances involved in archaeological research as in most cases they were discovered by accident during the excavation of sites from much earlier periods. Urban cemeteries must have also existed, although none have yet been excavated. A possible exception is the site of Umm Kheshm, south of modern Najaf, where the number and density of graves were interpreted by the excavator as evidence that they belonged to the nearby city of al-Hira (al-Haditti 1995).

Despite these finds from Iraq, the extent to which inhumation burial was practised across other parts of the Sasanian Empire has attracted some criticism as it challenges the assumption that the population was exclusively Zoroastrian. However, part of a cemetery containing flexed burials accompanied by similar object categories was excavated on the summit of the site of Haftavan Tepe in western Iran (Burney 1970, 169–71, figs 7–9, pls VIIc–d, VIIIb–c; 1973, 172, pl. VIIIId), and Bivar (1970, 157) suggested that they might belong to a local Christian population. Additional graves found at Susa (Boucharlat 1991, 72), Tal-i Malyan in Fars (Balcer 1978), and Kangelou and Pahlauj in Mazandaran (CAIS 2007; 2008) confirm that this practice did extend deeper into Iran and was probably more widespread than currently recognized. The large numbers of complete facet-cut glasswares, high-tin bronzes, occasional skeuomorphic painted pottery pitchers and high-value weapons reportedly

found in commercial excavations in the Dailaman region of north-west Iran during the late 1950s and 1960s indicate that these Sasanian and post-Sasanian objects were buried as grave-goods and Japanese investigations confirm the existence of Sasanian (and earlier) cemeteries containing flexed articulated bodies placed at the feet of shaft graves (Sono and Fukai 1968; see also Akira 1981; Simpson 1998). Little is yet known about equivalent funerary practices in north-east Iran, but the density and organization of military as well as civilian and agricultural infrastructure on the Gorgan plain implies that careful thought must have been put into the disposal of the dead (cf. Omrani Rekavandi, Sauer and Wilkinson *et al.* 2008). South of the Elburz mountains, a large ruined Parthian structure at Shahr-i Qumis in the Damghan plain was found to have been reused as a repository in the late 6th century AD judging by an associated coin of Hormizd IV (Bivar 1970). Much further to the south-east, a Kushano-Sasanian cemetery containing adults buried in an extended position within shaft graves and accompanied by items of personal adornment and weapons was excavated at Said Qala Tepe, approximately 25km west of Kandahar (Shaffer and Hoffman 1976) and another cemetery was explored at Shamshir Ghar cave (Dupree 1958). In several instances, the deceased was also accompanied by a coin placed either in the hand or the mouth, and there is additional evidence for this from slightly later Hephthalite burials excavated at Old Kandahar (McNicoll 1996, 235–6, figs 184–6), Kara Tepe (Stavisky 1988, 1403) and Dal'verzín (Turgunov 2006, 58–62).

The archaeological evidence therefore clearly demonstrates a wide variety of local customs and practices pertaining to the disposal of the dead across the Sasanian Empire. Some of these individuals were undoubtedly Zoroastrian, others were clearly not and in some cases the evidence is ambiguous. In the case of highland Iran, it was a relatively easy matter to select accessible rocky outcrops for the exposure and disposal of members of the Zoroastrian community. In lowland areas, particularly with intensive agriculture and pressure on land, other options must have been explored.

The description of Zoroastrian funerary practice quoted at the beginning of this paper comes from a book of religious opinions composed by Manuchihir, the high priest of Fars and Kirman in the 9th century AD. It is very explicit in its description, yet the physical identification of such practices from antiquity has had a mixed history of success within Iranian studies (Casartelli 1890; Boyce 1987, 12–16, 120–1, 157–8; Grenet 1984; Trümpelmann 1984; Meitarchiyan 1990; Huff 2004). The traditional view that the Zoroastrian dead were exposed on the summits of large constructed *dakhmas* (today referred to as ‘Towers of Silence’) is based on post-medieval Parsi practice in the urban environment of Bombay and there is no evidence that such monuments existed in pre-Islamic Iran. Trümpelmann (1984, 317–18) attempted to identify a circular rampart at Tal-e Khandagh near Sar Mashhad as an exposure *dakhma* founded by the priest Kirder. However, it is more likely to simply be a fortified complex, particularly as it is surrounded by a ditch or moat, and this and other monuments of the type have

been recently discussed by Ghasemi (2012). Moreover, the identification of a recently excavated structure at Bandiyan as a *dakhma* attached to a fire-temple (Rahbar 2004: 13–14; 2007) has also been challenged and the complex instead reinterpreted as a funerary complex associated with a large residence (Gignoux 2008).

There has also been some confusion over the meaning in antiquity of the words *dakhma* and *astodan*. It is now clear, however, that the word *dakhma* was formerly used in the wider sense of tomb whereas *astodan* was used to refer more narrowly to a bone receptacle or ossuary. In the absence of evidence for monuments constructed for this purpose, the place of exposure must have occurred in the open and the carefully levelled rock-cut platforms found above the Sasanian city of Bishapur quite likely represent the remains of open-air exposure platforms (Huff 2004, 595–6). Within southern Iran, several different types of rock-cut *dakhma* have been found. The cliffs around Istakhr and Naqsh-i Rostam contain many small carved niches or chamber-*dakhmas* with a groove along the front indicating that they were originally sealed with a single stone slab (Huff 2004, 596–602). A second type which is found in very large numbers on the nearby mountain known as Kuh-i Rahmat consists of a rock-cut trough-*dakhma* which was originally sealed with a long domed stone lid (Huff 2004, 603–8). The lids of several of these have also been found at other sites, notably in the Qazeroon area, and these are engraved with formulaic Pahlavi inscriptions stating that they were constructed as the *dakhmas* for named individuals (Gignoux 1975, 221–4; Nasrollah Zadeh 2007; Tafazzoli 1991; Tafazzoli and Sheikh-al-Hokamayi 1994). A third type was long regarded as evidence for open-air fire altars, but these are simply free-standing *dakhmas* which have lost their domed covers (Huff 2004, 609–18; cf. Stronach 1966). Some of these are in the form of a pillar and their reidentification is confirmed by Pahlavi inscriptions which again refer to them as *dakhmas* and also give the name of the deceased and/or builder and occasionally a date (Huff 1992a; 1998; Frye 1970). All of these *dakhmas* must have been opened in the past and no traces of human remains are preserved.

Elsewhere in Iran, let alone in other parts of the Sasanian Empire, there appears to have been considerable variation in funerary practices, but the extent to which this reflects local custom or different religious faiths is unclear and in very few cases have detailed analyses been carried out on the human remains themselves. Finally, it might be added that the identification of religious practice either from archaeological evidence or the human remains alone is always challenging.

The following paper offers two case studies, one based on 19th-century antiquarian exploration of Sasanian cemeteries on the Bushehr peninsula of the Persian Gulf coast of southern Iran and the second from more recent excavations between 1992 and 2000 at the city site of Merv in present-day Turkmenistan, both formerly within the Sasanian Empire (Pl. 1). The human remains from these sites are part of the registered collection in the British Museum and were the subject of a detailed study by Theya Molleson as part of the project to publish and pursue new research questions arising from the Merv excavation project.¹

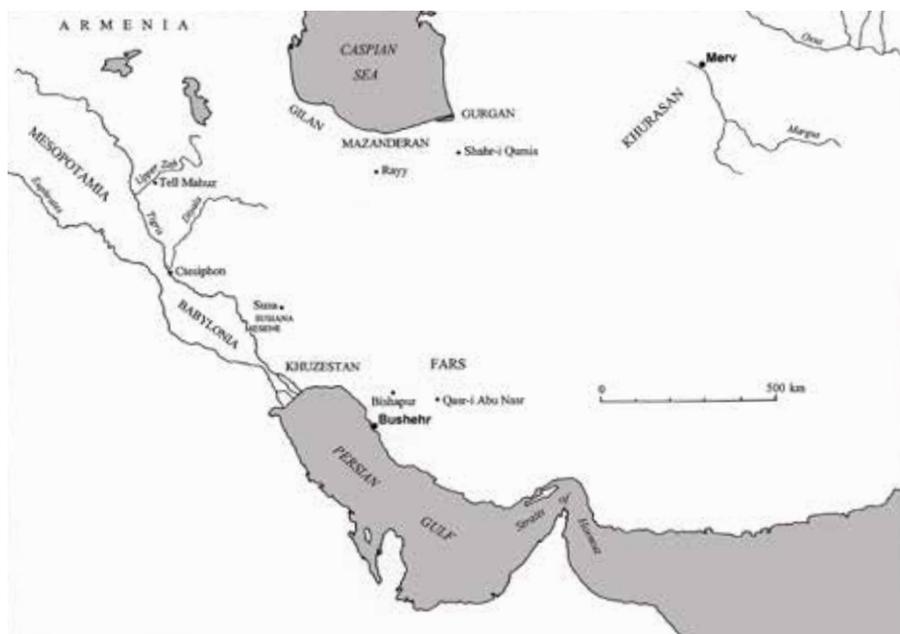


Plate 1 Map showing the location of Bushehr and Merv in relation to selected other Sasanian sites

The archaeological evidence from Bushehr

Bushehr is technically a peninsula, but for much of the year is effectively an island as the landward side of the low rocky outcrop is marshy and prone to regular flooding. An archaeological surface survey carried out in the 1970s prior to the extensive modern urban and industrial sprawl shows that it was densely occupied during the Sasanian period (3rd to 7th centuries AD), with a major settlement located midway along the coast at Rishahr and extensive rural settlement in the hinterland (Whitehouse and Williamson 1973, 36). A total of nine archaeological sites have also provided evidence for the careful disposal of human remains (Simpson 2007a, 153–7; Simpson forthcoming). Broadly datable to the Sasanian period, these remains were found to have been interred in reused and modified pottery jars and purpose-made lidded ossuaries carved from limestone. Most of these sites were discovered in the 19th century, but in recent years further remains have been investigated by the Iranian Cultural Heritage Organisation at the sites of Shoqab, Bahmani and Bagh-e-Zahra, although none have yet been published in detail (Mir Fattah 1374/1996; Curtis and Simpson 1997, 139; Yamauchi 1997, 241–2; Rahbar 2007, 468, figs 19–21; 2008; Tofghian, Nadooshan and Mousavi 2011, 3–4).

Despite periodic flurries of interest throughout the 19th century, relatively little attention has been paid since then to the significance of these finds and one modern writer without access to the original publications went so far as to suggest that the rows of pottery jars were a description of water-channel linings (Whitcomb 1987, 315). Nevertheless, several conclusions can be drawn. The pottery jars were reused as containers for human remains and were modified for this purpose either through being broken in half and secured with metal bands or being cut down at the shoulder and then sealed with an ad hoc lid of pottery or stone (Morier 1818, 44–5; Modi 1889, 3; Rahbar 2008; Tofghian, Nadooshan and Mousavi 2011, 4). The jars were often interred in groups and/or in rows (Alexander 1827, 92; Erskine 1819; Tofghian, Nadooshan and Mousavi 2011, fig.

6), sometimes in proximity to architecture (Modi 1889, 2–3; Rahbar 2008), and in at least two cases were specifically described as being orientated east–west (Johnson 1818, 19; Morier 1818, 44–5; Curzon 1892, vol. II, 235). The jars vary in size, possibly inferring a process of selection for different ages of deceased (Morier 1818, 44–5; Erskine 1819), and human remains previously reported from them include a child, an adult female (Morier 1818, 44–5) and an adult male (Modi 1889, 1–2). Nevertheless, the size of the jars prevented them accepting a fully articulated body, at least that of an adult, and it has generally been accepted that they must contain secondary burials and were places of deposition after burial, exposure or excarnation elsewhere. Where described in the earlier literature, these remains were found disarticulated and the bones contained within a sandy matrix which appears to be different to the surrounding soil (Erskine 1819; Johnson 1818, 19). Although these remains are sometimes described as fragmented and bleached (Erskine 1819), two independent accounts remarked on the quality of the preservation of the teeth (Morier 1818, 44–5; Dickson 1938). The jar burials have been found in proximity to purpose-made lidded limestone ossuaries at three sites (Johnson 1818, 19; Curzon 1892, vol. II, 235; Rahbar 2008). The separate perforated lids of these imply that they were also originally secured (Modi 1889, 1). The remains inside one of these were said to be burnt, but this may be a misidentification based on natural brown staining as will be discussed below (Budge 1920, vol. I, 331) and another was said to contain the remains of a single male individual estimated as about 60 years of age at death, but without the use of modern anthropological methods this estimate is unlikely to have been accurate (Modi 1889, 1–2). Associated finds with any of the interments appear to be scarce, but include beads (Dickson 1938; Rahbar 2008), personal seals (Dickson 1938), a silver crucifix (Rahbar 2008) and occasional coins (Rahbar 2008). Plant seeds were reportedly associated with two of the sites (Ouseley 1819, 215–20, 404, pl. XXIII; Modi 1889, 3); in one case a



Plate 2 Reused torpedo jar ossuary from Sabzabad, 3rd–7th century AD, presented by Captain J.A. Maude, British Museum, London (1823,0614.1 = BM 91952). Munsell pale yellow 5Y 8/2 surfaces with more heavily oxidized fabric; asphalt-lined. Length as preserved 76cm, maximum width 22cm, circular hole 1.5cm across, drilled through the wall at a height of 70cm above the base

nearby area of eroding bones was interpreted as a place of open exposure (Modi 1889: 4).

The consensus in 19th-century literature was that these remains from Bushehr belonged to ancient Zoroastrian communities and were assumed to be Sasanian in date (Malcolm 1815, vol. I, 198, n.*; Johnson 1818, 19–20; Curzon 1892, vol. II, 235). Modi (1889) cites K.R. Cama's *Zarthoshti Abhyas [Zoroastrian Studies]* by stating: 'Sir John Malcolm ... brought with him from Persia a jar of this kind, which had some inscriptions on it, and had showed it to the late learned Dustoors Moola Feroze and Edaljee Sanjana. On inquiring from the successors of these learned Dustors, I find that no notes have been left of the decipherment, if any, of these inscriptions' (Modi 1889, 4); this is the only published reference to inscriptions being associated with these ossuaries. Modi went on to draw attention to a passage in the *Vendidad* (VI. 49–51) which stated that the dead ought to be placed in:

an edifice ... above the reach of a dog, above the reach of a fox, above the reach of a wolf, inaccessible to rain water from above. If the azdayasnans can afford it [they may place the bones] in an *astodan* of stone, or in that of mortar, or in that of an inferior material. If the Mazdayasnans cannot afford to do so, they may place them on their beddings and expose them on the earth to the rays of the sun.



Plate 3 Limestone ossuary from Sabzabad, 3rd–7th century AD, presented by Mr T.J. Malcolm, British Museum, London (1888,0714.1 = BM 91933/134691). Length 59.7cm, width 36.6cm, height 24.5cm. Lid length 59.5cm, width 36cm, thickness 3cm

Reanalysing the human remains from Bushehr in the British Museum

There are four complete or semi-complete 'torpedo jars' and two stone ossuaries registered from Bushehr in the British Museum (Pls 2–3). Two jars and one stone ossuary are currently on display in galleries 1 (Enlightenment Gallery) and 52 (Rahim Irvani Gallery for Ancient Iran) and both of the stone ossuaries were previously exhibited during the late 19th and early 20th centuries (cf. Simpson 2007a, 156).² The jars belong to a well-known class of Mesopotamian transport amphora known as a torpedo jar because of its streamlined shape. There are several different forms and fabrics and, although typically regarded as Sasanian, they date slightly more broadly to span the period between approximately the 2nd and 9th centuries AD, i.e. late Parthian, Sasanian and early Islamic periods (Adams 1965, 132, fig. 14 = Types (k)–(l); 1981, 234; Gibson 1972, 167 = Types K–L; Northedge 1985, 122, 126, fig. 6.2). They are usually lined with asphalt and were probably used for transporting wine (Simpson 2003, 354–5). They were widely distributed in Mesopotamia, most probably through use of the integrated river and canal network, and thence along the Persian Gulf and into the western Indian Ocean as far as Mantai and Anuradhapura in Sri Lanka (Coningham *et al.* 2006, 107–11, fig. 5.2; Tomber 2007) and Qana in Yemen (Salles and Sedov 2010, 42–6, fig. 16: nos 149–55; 154–9, fig. 68: nos 608–11). Rows of them have been observed on the Persian Gulf seabed near the Iranian port of Rig and these clearly belong to the remains of a shipwreck, while additional examples have been dredged up near the Bushehr coastline at Radar and Jalali or excavated at the inland sites of Botol and Bisitun (Tofighian, Nadooshan and Mousavi 2011). Within Arabia they have also been found inland at places such as the silver mines of al-Radrad in the Yemeni highlands (Peli and Téreygeol 2007, 192–3, fig. 4.1–4) and al-Ain oasis in present-day United Arab Emirates (Mouton 2008, fig. 129.4–7). Once empty these jars had limited use and at Coche/Veh Ardashir, they were often reused as drain covers or modified to serve as vertical supports for internal doorposts or low raised benches (Cavallero 1966, 66–7, 78, pl. VI). At many other sites they were used as grave-covers and were laid horizontally, either lengthways above the body or in a transverse row across the backfilled shaft, in both

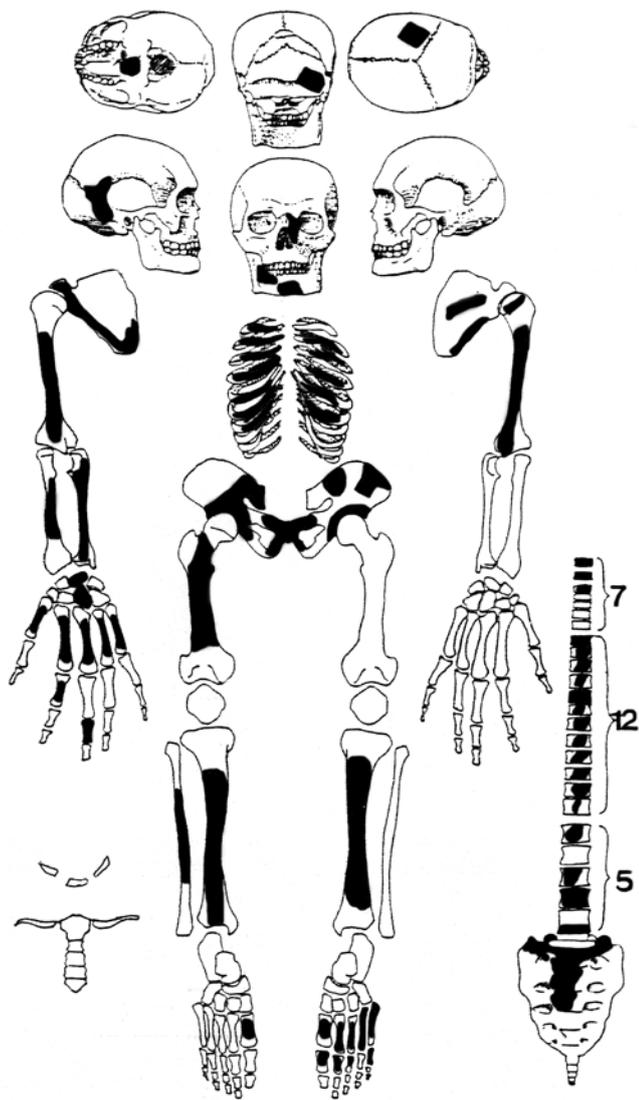


Figure 1 Individual from torpedo jar ossuary from Liyan (BM 91952)

cases probably to deter animals from disturbing the body (e.g. Baqir 1945; al-Haditti 1995, 217–21). It is unsurprising to therefore find evidence from several sites across the Bushehr peninsula for other forms of reuse.

The stone ossuaries belong to a class so far unique to Bushehr and the sizes and shapes of the two examples in the British Museum compare favourably with those described by Modi and more recent authors, and range from 48–60cm in length, 33–6cm in width and 24–7cm in height and the capacities of the two examples in the British Museum are 18,000 and 25,600ml respectively.³ Each is carved from a single piece of stone, squared off at one end and rounded at the other and has a stepped rim in order to facilitate the secure fitting of a separate flat lid which was carved from the same type of stone. The distinctive shape of the ossuaries resembles the outline of the facades of some of the niche-*dakhmas* found near Istakhr in Fars (cf. Huff 2004, 596–7) and the stepped rim also resembles a feature of the rock-cut trough-*dakhmas* from the same region (cf. Huff 2004, 603), suggesting that there was a connection between these different local traditions.⁴ Some lids have a single hole drilled through either end: this was probably in order to secure them tightly rather than as a means of admitting

sunlight as recommended in the *Dadistan-i Dilik* (quoted at the start of this chapter) as the holes are not a universal feature and they would otherwise have also admitted water which would not have been acceptable. Incidentally, the shaping marks of an adze are very clear on both the ossuaries and lids in the British Museum.

One of the British Museum torpedo jars (BM 91952) and one of the stone ossuaries (BM 91933) still contained human remains when the present analyses began in 2009, although they are now stored separately for practical and ethical reasons. A detailed taphonomic study of the Bushehr remains has been published elsewhere (Molleson 2009), but is summarized below.

Contents of a torpedo jar ossuary from Liyan (BM 91952)

The associated human remains are fragmented and weathered and belong to a single individual (**Fig. 1**). All parts of the skeleton are represented, although they are incomplete. The bones are not stained and lack surface cracking of sub-aerial weathering, but are extensively damaged from attacks by insects or decay. The skull is represented by a few small fragments that are extremely eroded on the inner surface. The pelvis, which is reasonably complete although fragmented, has a typically female form together with a number of traits that can develop during pregnancy.

The conclusion is that the human remains associated with this jar belong to an adult female who may have undergone pregnancy, was accustomed to carrying loads and was possibly used to working on the ground. The bones are generally fragmented, but do not appear to have been broken up deliberately as often happens with cremations where the bones are subsequently placed in an urn. In support of this argument, the shafts of many of the long bones are fairly complete, measuring up to 190mm in length, although all the ends are damaged. Very few of the cranial bones survive. The few fragments are deeply corroded or etched on the inner surfaces. In some pieces the diploe (the area between the inner and outer surface of the cranial bones) is channelled and tunnelled, presumably by insects and attack by maggots could account for much of the superficial erosion of the bones of both the skull and body. The edges of the ribs have been damaged, especially along the lower border. Some are also penetrated and channelled. Some ribs have a diagenetic crystalline deposit on the ventral ends, possibly where the ribs were in contact with some artefact. The minerals brushite and gypsum will both form within bone in a space consuming way. The inner surfaces of the pelvis are more eroded than the outer surfaces, suggesting that insects were attracted to this area. The long bone ends (epiphyses) have mostly been broken off. The epiphyseal surfaces in general have been preferentially attacked by insects which were able to get to the fat or marrow-rich material within the ends of the big toe bone (first metatarsal).

The widespread evidence for superficial damage to the bones of this individual indicates that the body was not interred beyond the reach of carnivores, but was left exposed on the surface. The evidence is that the most recent stage of

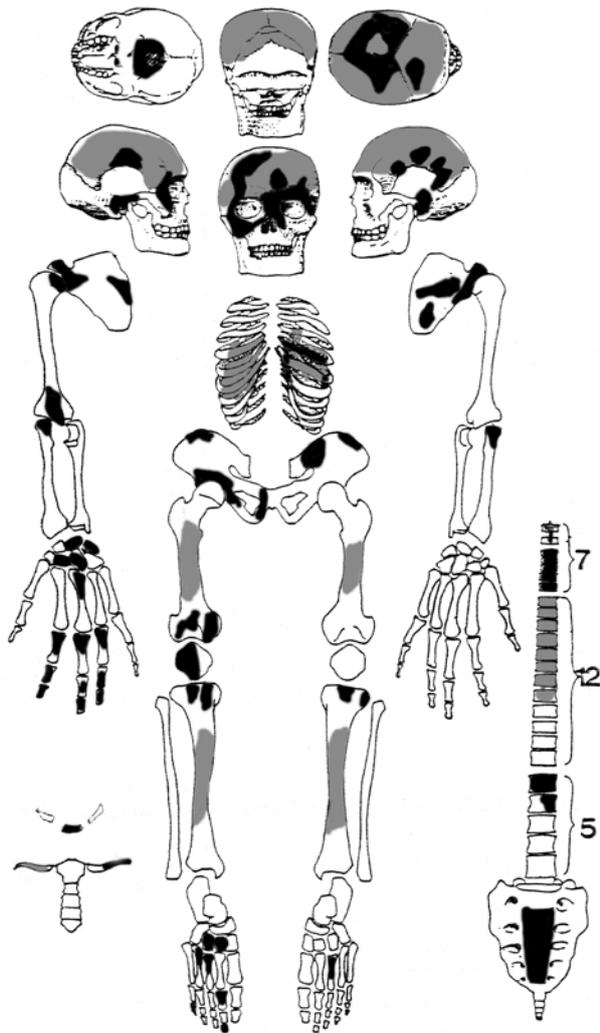


Figure 2 Individual 1 from stone ossuary from Liyan (BM 91933)

soft tissue removal was by the maggots of insects. The general loss of ends of the bones, most of the spine and even the left forearm could be due to carnivore scavenging. Any puncture marks are ambivalent: there are two on either side (10.5mm apart) of the little toe bone (fifth metatarsal) and two on the lateral side (38.7mm apart) of the lower leg bone (fibula). No tooth marks were observed which might exclude a dog as the carnivore, but these may not show on human bone that is so weathered. The lack of cracking along the length of the long bone shafts indicates that the bones, although exposed, were sheltered from periodic wetting and drying. Some of the bones (forearm, right pelvis and a few of the ribs) have dark soil staining in patches.

Contents of a stone ossuary from Liyan (BM 91933)

The human remains of this ossuary were contained within a sandy matrix which was otherwise clean and devoid of sediment. They belong to the fragmented and incomplete skeleton of a mature or elderly adult male (Individual 1 = **Fig. 2**) and there was also the isolated cranium of a younger individual (Individual 2 = **Fig. 3**). The limited size range of the cranial fragments of Individual 1 suggests deliberate fragmentation. No cut marks were observed.

The ages at death of the two individuals are quite different. Individual 1 was a mature adult male and the

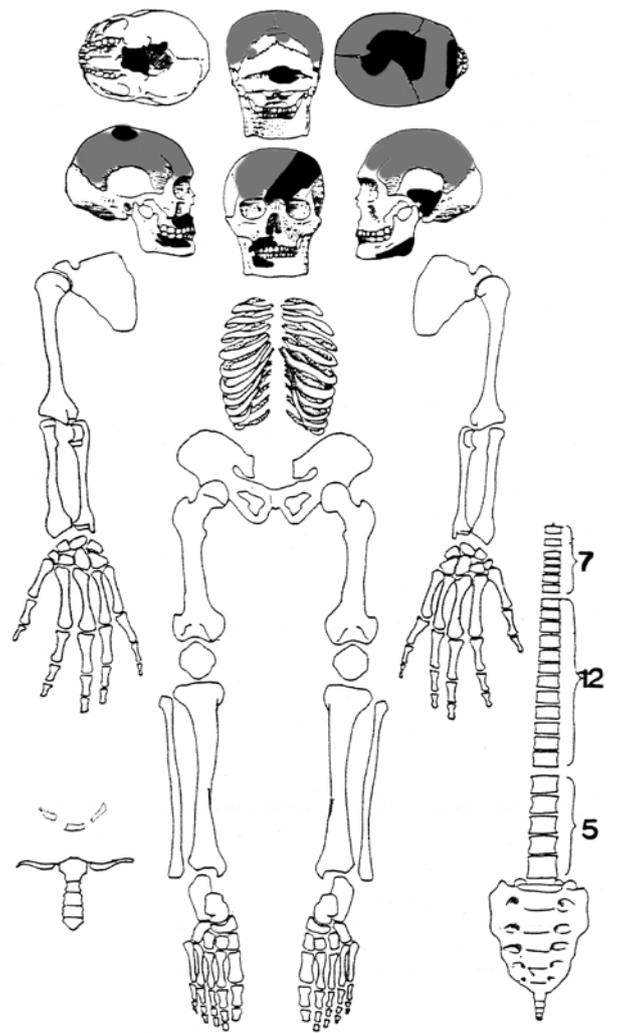


Figure 3 Individual 2 from stone ossuary from Liyan (BM 91933)

post-cranial bones have been attributed to this person. All parts of the skeleton are represented. There are some degenerative changes to the vertebrae, notably the fifth bone of the neck, possibly suggesting whiplash strain. There is also some degenerative change to the back and hip joint. The hand bones display a systemic wasting condition, possibly rheumatoid arthritis. The remains of the second individual belong to a late adolescent or young adult and are represented by the cranium and teeth. The bones are not stained except for the jaw fragments. The cranial bones are thick, possibly due to anaemia or other nutritional deficiencies. The teeth show very little wear, suggesting a non-abrasive diet (i.e. of cooked and processed food) and/or a young age.

The bone of Individual 1 has been subjected to exposure and become superficially stained. It has probably not been burnt as the staining does not penetrate the bone. There is possible insect erosion. The superficial weathering and fragmentation of the bones indicate that the body had been exposed on the surface and not buried. The differential survival of bones of the torso and loss of most of the long bones is consistent with scavenging by carrion feeders. The lower border of the mandible ramus is missing. This bone has been typically damaged in this way by canid scavengers (Binford 1981, 63). The bone is too abraded to

determine whether there are any tooth marks. The few puncture marks have been noted, but evidence that these may be due to carnivore activity is weak. Some fragments of both skulls have a fine deposit of greenish grey silt that is water laid, but does not extend within the cranium which implies that it may have been complete when it was partially immersed.

Conclusions

The analyses of these human remains from Bushehr are the first to be published. They indicate de-fleshing of the corpses and this is the first occasion that this has been demonstrated archaeologically from Iran. The physical anthropological evidence indicates that the stone ossuary contained the remains of two individuals of different ages, a mature adult male and an adolescent or young adult. The torpedo jar contained the bones of a woman who may have undergone pregnancy. There is no evidence of cut marks on any of the skeletons. All three individuals were exposed to natural decomposition in the open air, hence the indication of fly-laid eggs developing into maggots. However, the local environments were different as the woman was exposed in a dry area, whereas the other two individuals appear to have been subjected to periodic flooding. The dark brown staining noted on many of the bones from the stone ossuary is presumed to be the reason why these remains were initially reported as being cremated, but is more likely to result from discoloration due to wet humic conditions. The repeated deposition of fine grey green sediment on the bones confirms that both sets of remains had been in contact with water. It is uncertain whether this was inside the ossuary after the lid became dislodged, or was prior to being scooped up, but there is evidence for maggot damage on two sets of human remains which is consistent with exposure and the differential preservation of the third set is consistent with scavenging. Decomposition was followed by deliberate fragmentation of the long bones when they were inserted into the relatively short stone ossuaries, but the heights of these seem to have been designed to potentially accommodate a complete cranium as only one of these crania exhibited signs of deliberate breakage. This evidence for deliberate breakage appears to be new in the archaeological record, at least from Iran. However, it is uncertain whether the two sets of human remains were swept up and interred as a single action or whether the second (more complete) set was placed in a reused ossuary which previously only contained the cranium of Individual 2. The fragmentation of bones was not necessary where torpedo jars were used, and the typical removal of the constricted mouth of these jars that is a feature of many of the reported discoveries is best explained by the need to insert complete or semi-complete human crania inside. The bones analysed from within the torpedo jar nevertheless indicate prior exposure and de-fleshing, thus these were also a form of *astodan* or 'bone receptacle', rather than simply representing a novel form of coffin.

It seems unlikely that the place of exposure would have taken place in immediate proximity to settlement, but it need not have been further removed than the equivalent of an extramural cemetery. O'Shea's description (1947, 14) of

the situation as late as the 1940s at Sharjah, on the opposite side of the Persian Gulf, offers a possibly equivalent scenario although admittedly in this case of refuse and dead livestock:

The villages have no drainage or sanitation; garbage and offal are thrown on a heap outside the houses, or on the sea-shore, there to be removed in time by those voracious scavengers, the vultures and kites. It is a common experience to see the carcasses of donkeys and other livestock lying on the shore, swollen and covered with flies, decaying under the hot sun. The stench within half a mile ... is simply appalling.

This type of situation was doubtless normal in most ancient societies and archaeological data from a Sasanian residential quarter excavated at Merv confirm the tipping of domestic refuse and coprolites into open drains running between properties. However, larger volumes of refuse were presumably collected and either deposited in municipal dumps or spread as muck on nearby fields (Simpson 2005; 2008).

So who were the individuals placed in these different forms of ossuary? In a few cases, objects have been found associated with the bones inside torpedo jars, although not in the case of those in the British Museum. The addition of objects such as beads, coins, a crucifix and a Sasanian seal bearing Christian iconography in other examples suggest the ancient desire to inter items of personal adornment, currency and evidence of personal ownership or religious belief. The reported occasional presence of coin is particularly evocative as there is archaeological evidence from this period, as well as from more recent periods, for the placing of single coins with inhumation burials as an eastern equivalent of the classical Greek custom of offering payment for services in the afterlife (e.g. Burney 1970, 169, pl. VIII.a; see also Simpson 1995, 245–6). However, as the jar burials were secondary rather than primary, the grave-goods may have been selected by relatives, local communities or professional mourners rather than being the personal possessions of the deceased and in no case is the reported context very specific.

The evidence from Merv

The site of Merv is located in the oasis of the same name in southern Turkmenistan, which was created by the delta of the river Murghab as it fans northwards from Afghanistan before draining into the sands of the Karakum desert. In antiquity it was a major frontier gateway controlling movement both along the Murghab to and from north-west Afghanistan and between north-east Iran and Transoxiana. Moreover, the oasis was extremely fertile and supported a large population and thriving agricultural economy (Simpson *et al.* forthcoming). Consequently, Merv was considered an important part of the region of Khurasan during the period of the Sasanian Empire and the sequence of coins struck and found at Merv proves that its mint functioned continuously throughout the 400 year period of the empire (Loginov and Nikitin 1993).

The city has attracted archaeological attention for over 120 years and between 1992 and 2000 the British Museum was part of a joint project with UCL and the former Academy of Sciences of Turkmenistan to explore the site. Human remains were identified in three areas of the city.



Plate 4 Human remains as discovered during excavations in Gyaur Kala Trench 6 at Merv



Plate 5 Human remains as discovered during excavations in Gyaur Kala Trench 6 at Merv

In two cases, these were isolated stray finds found in infilling contexts and therefore represent redeposited remains, possibly of considerably older age than the 4th to 5th and 6th to early 7th-century AD occupation deposits under investigation. The third area was a section through the fortifications next to the south-west corner bastion of the city (Zavyalov 2007). The fourth major phase of these regularly rebuilt massive defences consisted of a hollow curtain with two levels of galleries raised on a solid platform with a low outer wall (*proteichisma*). This phase is provisionally dated to the Middle Parthian period on the basis of two Parthian-Margiana coins of the late 1st century BC or 1st century AD which were found between bricks. Subsequently, these defences underwent serious reconstruction. The arrow-slits of the lower gallery were blocked and the gallery itself was filled with very clean compacted sand. The *proteichisma* was cut down and a sloping berm constructed over its remains which sealed the blocked arrow-slits. The top of the berm was aligned with the bottom of the upper gallery proving that the actions were directly connected. Coins stratified within deposits inside the upper gallery belong to Shapur II (309–79) and Varahran IV (388–9) or Kavad (488–531). Although these dates are not yet confirmed by radiocarbon, they are sufficient to suggest that any finds made within the infilled lower gallery of the Phase 3 wall date to the early Sasanian period. There were no artefacts found in this gallery and

the floor had been kept very clean. The surprising discovery was that of several concentrations of isolated and disarticulated human remains midway up the sandy infilling (Pls 4–5). These remains were exported with permission and after cleaning under the supervision of Professor Simon Hillson at the Institute of Archaeology (UCL) were transferred back to the British Museum where they were analysed by Theya Molleson. The section which follows is based on her contribution to the final report (Molleson forthcoming).

The human remains from the fortifications

The first set of remains consists of the partial skeleton of a young child, probably aged three to four years judging by the dental development (The London Atlas 2008). The bones are in good condition and the skull is almost complete (Fig. 4). The only long bone – the thigh bone – was incomplete and it is not possible to estimate the original stature of the individual. There is loss of enamel on the lower right deciduous molars with distortion and discoloration of the underlying dentine which might be the result of trauma or an enamel dysplasia. There are several indications of deficiency conditions on the cranium and jaw bone. The thigh bone is bowed possibly due to rickets. Rickets can develop temporarily in children who learn to walk in the spring months after a hard winter lacking in exposure to sunlight, especially where the weaning food is cereal based.

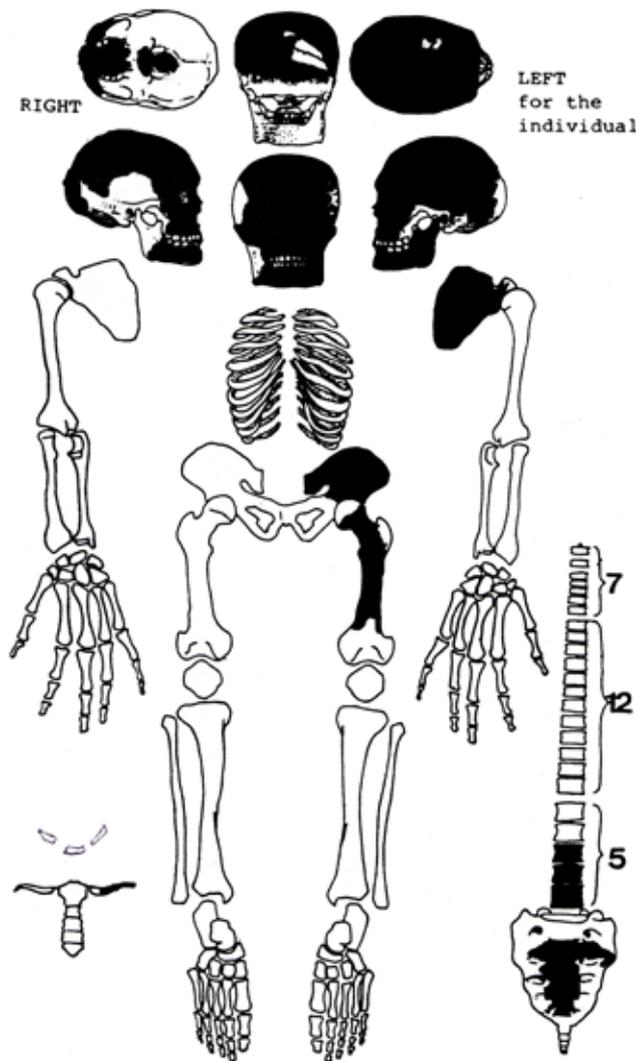


Figure 4 Individual 1 from Merv, Gyaur Kala Trench 6

A child of the age indicated by the dental development would normally be weaned, while the lack of wear on the teeth indicates a soft diet such as cooked cereal. None of the deficiency conditions would have been life threatening, but could have lowered the child's resistance to many pathogens.

The second individual was an adult male, represented by a nearly intact cranium (**Fig. 5**). The bones of the face were broken probably post-mortem and there is further damage to the base of the skull. These two areas of damage are not new and could be associated with the deliberate removal of the head. There is a small impact perforation on the back of the upper jaw. Dental attrition is extreme but probably not indicative of age; it is greater than would be developed by normal dietary chewing. Pitting of the palate is likely to be an inflammatory response to the infections of the incisor and molars. The bone around the posterior part of the cranial base has a rough surface, a failure of the bone to grow which may be due to Vitamin A deficiency during childhood (Barnicot 1950; Barasi and Mottram 1987, 78; See *et al.* 2008).

The third individual was a young adult and represented by the cranium, left clavicle and some limb bones (**Fig. 6**). Dentition indicates an age of around 19 to 20 years (The London Atlas). The cranial bones are fragile and lightly stained to a dark pink appearance on the inside. The left side is almost intact; the right has broken into large pieces. The

mandible is in two halves but complete. The long bones of the arms and lower limbs all lack articular ends.

Conclusions

The combination of secure archaeological context, reasonably good dating and physical anthropological analysis of the human remains underline the significance of this data set. The remains belong to three individuals of different ages whose bodies had been placed elsewhere prior to the careful gathering of the disarticulated remains and reintering them in a new location which was well drained and considered to be free of further disturbance. The sandy deposit in which they were found was completely devoid of other finds and had been deliberately brought in for the purpose of infilling, and it seems most unlikely that the human remains were originally buried in this sand and brought there by accident. The time and choice of place of burial was closely tied to a rebuilding of the urban defences. The choice of such a spot is not as strange as it might first appear and a closely parallel situation from Shahr-i Qumis is discussed below.

General discussion: an insight into funerary practices

The archaeological evidence indicates a Sasanian date for both data sets discussed here. Despite their widely separated locations at almost opposite ends of the Sasanian Empire and the very different circumstances of interment and recovery, they offer important clues into funerary practices of this period.

The evidence discussed above from Bushehr and Merv suggest local solutions. The presence of multiple clusters of jar and stone ossuaries across the Bushehr peninsula is consistent with the archaeological survey evidence that indicates a high density of Sasanian settlement, with the discovery of more than one disarticulated individual in one of the jar ossuaries suggesting that bones were gathered at intervals for ritual reinterment within sealed containers. Whether these individual ossuaries belonged to particular families is unknown. The choice of stone or pottery may have been an economic one, but the capacity of the stone ossuaries was smaller and more suited as the receptacle for the bones of a single individual.

Theya Molleson's analysis of the human remains from Bushehr strongly suggests that the place of exposure was one in the open air and in one case was periodically liable to waterlogging; whereas the former is to be expected, the latter is at odds with strict Zoroastrian belief. One possibility is that this reflects an unusual unexpected event of localized flooding, as areas of the peninsula are liable to, and the place of exposure was perhaps a fenced or walled open-air liminal zone beyond the main area(s) of settlement or farming. This raises a possible solution as to the location and management of Zoroastrian places of exposure in other densely occupied regions such as southern Iraq or the Merv oasis. Tells offer naturally well-drained locations of low agricultural worth which were, and still are, popular places of interment across the Middle East. In the case of the city of Veh Ardashir, opposite Ctesiphon in present-day southern Iraq, it seems likely that the neighbouring site of Seleucia, then known as *deserta civitas* or 'Sliq Kharawta' ('Deserted Seleucia'), offered

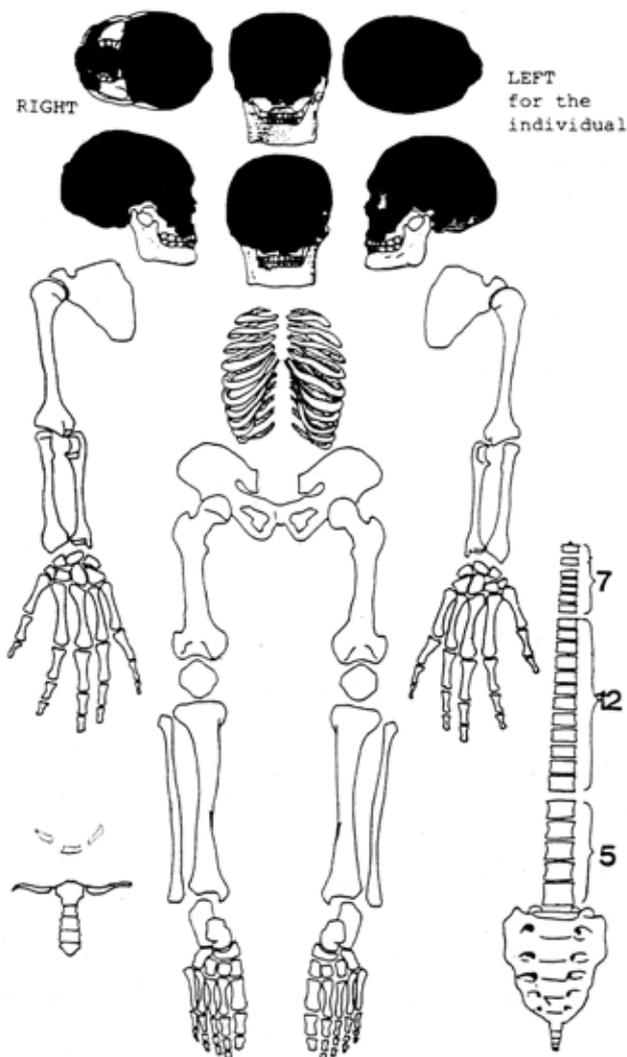


Figure 5 Individual 2 from Merv, Gyaur Kala Trench 6

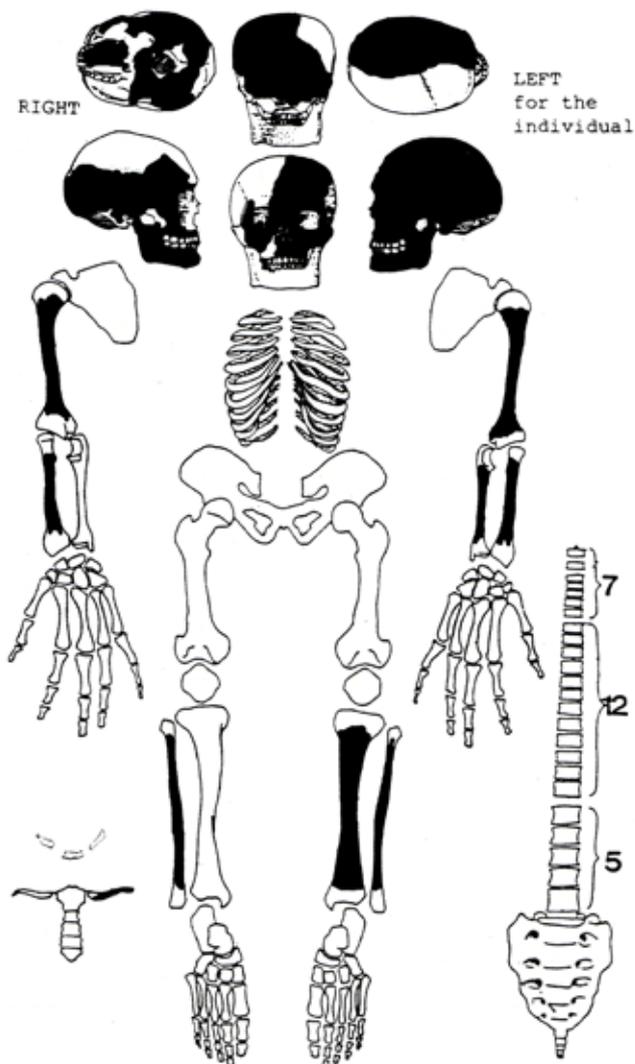


Figure 6 Individual 3 from Merv, Gyaur Kala Trench 6

a convenient place of extramural burial and open body exposure; it was used as a place of public execution between 342 and 484 AD, a martyrion is attested from the early 5th century AD and finds of magic bowls and jars containing lead scrolls are consistent with finds at other sites or places believed to have been haunted (Fiey 1967, 8–9).

The human remains found during the excavations of the fortifications at Merv are less conclusive, but clearly show that a decision was made that when the galleries of the former Parthian curtain wall were no longer fit for purpose and infilled prior to the construction of a new curtain wall, clean sand was brought in. This was probably primarily to ensure a solid secure foundation for the reconstruction of the upper defences, but the choice of sand over mudbrick or recycled refuse may have had a symbolic significance. At the same time, this spot was selected as a suitable place for the deliberate placing of bundles of disarticulated human remains belonging to several individuals of different ages and genders. This was clearly part of a decision-making process and not a random act. Nor is this consistent with a sudden response to a disaster, whether natural or military, and instead appears to reflect a view that the sandy matrix within the old walls would provide a dry environment protected from the elements and future disturbance. An identical situation was found at Shahr-i Qumis where the

excavators found the highly fragmented remains (two ribs, five vertebrae, four teeth, two small pieces of cranium and some 140 assorted bone fragments) of what appeared to be a single individual wrapped in pieces of cloth within a leather bag which was placed on a felt rug together with offerings ‘including a pomegranate, almonds, feathers, plant material, a coin, a knife and horse remains’ (Hansman and Stronach 1970). No evidence was found that might indicate how or where the bones came to be de-fleshed, but the fact that they were gathered up with a long bone, hoof, teeth and lower mandible of a horse and additional donkey teeth suggest that they may have been exposed in proximity to other large carcasses. Normal household refuse was thrown out in the streets, but the urban management of the equivalent of municipal tips at cities such as this is clear from repeated references in the Babylonian Talmud and is supported by other archaeological evidence (Simpson 2005).

The implication of these analyses is that it is possible to demonstrate a relationship between the archaeological context and the method of disposal. In both cases they are best explained as local responses to the need to carefully gather and inter remains which had been previously exposed and/or fragmented. The conclusion is that both data sets belonged to Zoroastrian communities and that the local

definition of an *astodan* could vary from reuse of a much older building, whereby the human remains were effectively interred within a hidden vault (as at Merv and Shahr-i Qumis) to being placed in a reused pottery or purpose-made stone container which was then interred in the ground, but protected from contaminating the earth or conversely from further decay by the elements. The burial rite appears to be the same for children, men and women alike.

Notes

- 1 The authors are grateful to Dr R. Boucharlat and I. Smith respectively for their comments on the archaeological and taphonomic aspects of this paper. All faults and interpretations remain the responsibility of the authors.
- 2 In the previous literature one of the stone ossuaries was said to come from Susa but, in the absence of any others found at that site, it seems more likely that this is erroneous and that it was found at Bushehr.
- 3 The capacities of these were measured by means of refilling them with inert plastic packaging chips and builds on earlier use by one of the authors (Simpson) of glass micro-balloons for the accurate measurement of the capacities of pottery, metal and glass vessels.
- 4 I am very grateful to Dr M. Farjamirad for these insightful observations.

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