Cemetery or sacrifice? Infant burials at the Carthage Tophet

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In their publication from 2017 (entitled: *Two tales of one city: data, inference and Carthaginian infant sacrifice*), Schwartz et el. misquoted many of the statements in my 2013 article on the Carthage Tophet (entitled: *Age estimations attest to infant sacrifice at the Carthage Tophet).*

Unfortunately, their errors were not picked up before publication but a CORRIGENDUM was later published by the editors of Antiquity highlighting some of the errors in their work and is appended here.

CORRIGENDUM

Two tales of one city: data, inference and Carthaginian infant sacrifice—CORRIGENDUM

J.H. Schwartz, F.D. Houghton, L. Bondioli & R. Macchiarelli

Published by Cambridge University Press, 4 April 2017.

We wish to correct the following errors that have been brought to our attention in a paper published in the April 2017 issue, written by J.H. Schwartz, F.D. Houghton, L. Bondioli and R. Macchiarelli: Two tales of one city: data, inference and Carthaginian infant sacrifice. *Antiquity* 91: 442–54; the following page numbers refer to that article.

1) p. 447 "Our age estimates (*pace* Smith *et al.* 2013) did not derive primarily from measurement of the petrosal bone and an inappropriate combination of its length and width."

Smith *et al.* (2013) made reference in their critique not just to the petrosal bone but to the cranial bones in general.

2) p. 447 "Although Smith *et al.* (2013) cited Krogman (1949) as demonstrating marked heat-induced shrinkage [. . .]"

Smith *et al.* (2013) did not quote Krogman (1949) on this issue, and Krogman (1949) is not included in the references to that paper.

3) p. 448 "They also claimed (Smith *et al.* 2011, 2013) that both Shipman *et al.* (1984) and Buikstra and Swegle (1989) demonstrated heat-induced crown shrinkage."

Buikstra and Swegle (1989) were not cited in either Smith *et al.* (2011) or Smith *et al.* (2013). Shipman *et al.* (1984) was only cited in relation to colour change and changes in the microstructure of enamel, not to heat-induced crown shrinkage.

4) p. 448 "any effect heat might have on tooth size can be determined only by measuring the same teeth, pre- and post cremation as Deutsch and colleagues (Deutsch & Shapira 1987 [. . .]) and Soleil *et al.* (1958) did."

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Neither Deutsch and Shapiro (1987) nor Soleil *et al.* (1958) measured the same teeth pre- and post-cremation.

5) p. 448, caption to Figure 2B: "Carthage Tophet molar (left) and an uncremated molar (right), which Smith *et al.* (2013) correctly identified as being at the same developmental age, thereby demonstrating that heat does not affect tooth morphology or relative states of development".

Figure 2B is reproduced from Smith *et al.*'s (2013) Figure 2, but the caption to the latter figure refers to the illustrated teeth "showing differences in surface anatomy and loss of cervical enamel in the cremated specimen", not to shrinkage or crown height.

6) p. 448, caption to Figure 2D: "the dark band delineates the dentino-enamel juncture, which Smith *et al.* (2011) misidentified as a neonatal line".

In none of the images in Smith *et al.* (2011) did the authors delineate a neonatal line.

Full citation

Schwartz, J., F. Houghton, L. Bondioli & R. Macchiarelli. 2017. Two tales of one city: data, inference and Carthaginian infant sacrifice. *Antiquity* 91: 442–54. https://doi.org/10.15184/aqy.2016.270

Cemetery or sacrifice? Infant burials at the Carthage Tophet

Two articles in recent issues of Antiquity *have taken opposing views of the infant burials in the 'Tophet', the precinct at Carthage, sacred to the goddess Tanit, that contained funerary urns of thousands of cremated infants. The first (Smith* et al. *2011) held that these must be evidence of the infant sacrifice that was so loudly condemned by Greek and Roman writers, since the infants were not perinatal, although most were under two months old at the time of death. In a rejoinder, Schwartz* et al. *(2012) argued that the Carthage Tophet was the place of burial for the very young regardless of the cause of death. They estimated age at death between prenatal and six months, consistent with the recorded incidence of perinatal mortality in certain societies in recent periods.*

Here we close the debate with two related papers. In the first of these, Patricia Smith and her co-authors return to argue that infant sacrifice is still (in their view) the most likely interpretation of the data, based on the age distribution of the deceased. In the second, Paolo Xella and colleagues, too, are convinced that infant sacrifice took place. They step aside from the details of the cremated remains, however, to emphasise a range of other social and archaeological aspects of the Tophets in Carthage and elsewhere that are critical for understanding these sanctuaries and their rituals.

Age estimations attest to infant sacrifice at the Carthage Tophet

Patricia Smith[1]*, Lawrence E. Stager[2], Joseph A. Greene[2] & Gal Avishai[1]

Supplementary Tables S1 and S2 are published online at http://antiquity.ac.uk/projgall/smith338/

Debate

Introduction

The recent article on the Carthage Tophet infants by Schwartz *et al*. (2012) takes issue with our paper (Smith *et al*. 2011) that claims the Carthaginians practiced infant sacrifice. Both studies were carried out on the same sample of cremated infant remains excavated by the ASOR Punic project between 1975 and 1980 (Stager 1982). We examined the contents of 334 urns while Schwartz *et al*. (2012) examined the same sample plus an additional fourteen urns (N = 348). We differed, however, in our conclusions regarding the age distribution of the infants and the extent to which it supported or refuted claims that Tophet infants

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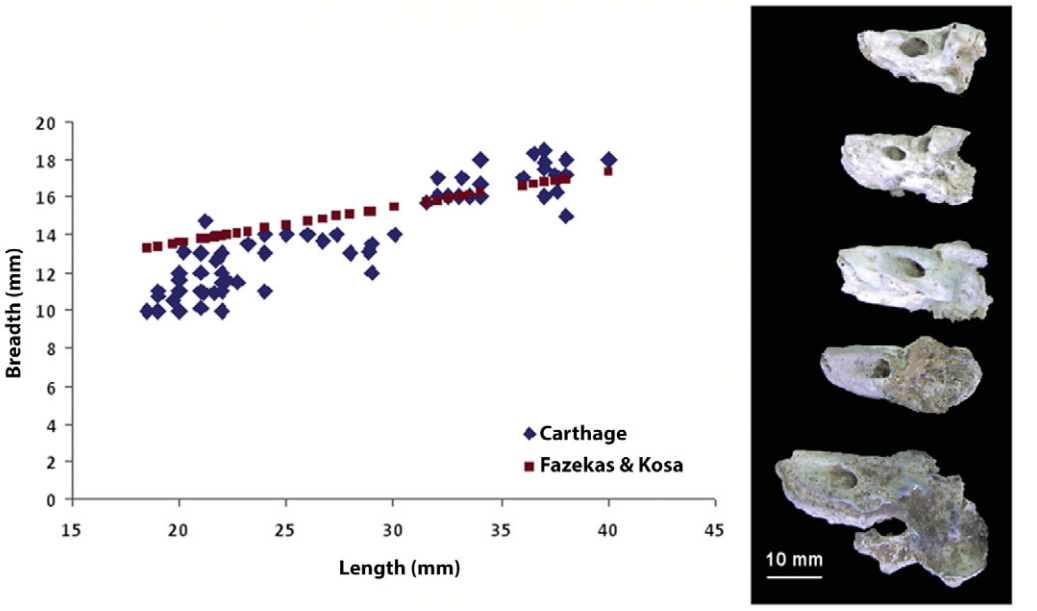

Figure 1. Scattergram showing length-breadth measurements of the cremated petrous bones from Carthage. The line of red squares shows the expected values from Fazekas and Kosa (1978). Note the wide range of variation in breadth measurements relative to length in the Carthage sample.

were sacrificed. This note explains why we think that Schwartz *et al.* (2012) erred in their age assessments and introduces additional evidence to show that the age distribution of the Tophet infants supports our contention of infant sacrifice.

We identified 1422 deciduous teeth, 74 permanent teeth and 350 petrous bones, as well as smaller numbers of other skeletal elements representing a minimum number of 372 individuals (Supplementary Tables S1 & S2; Smith *et al.* 2011). All showed evidence of incineration with colour change indicative of temperatures between 200°C (yellowish-brown) to 700°C (whitish-grey) (Bonucci & Graziani 1975; Shipman *et al.* 1984). We investigated their reliability for age estimation by comparison with non-cremated specimens of known age. We found that length to breadth proportions of non-incinerated petrous bones were highly correlated with one another (Figure 1) and with age ($R^2 = 0.833$). However, in the cremated Tophet bones these measurements were poorly correlated ($R^2 = 0.315$), reflecting uneven shrinkage of length and breadth and highlighting the unreliability of this bone for age estimation.

We found that the surface of the developing Tophet teeth was wrinkled and they had shrunk (Figure 2). Measurements taken on computerised 3D models compiled from serial micro-CT scans showed that maximum circumference in the Tophet developing molars was 18 per cent smaller than that of non-cremated teeth of similar crown height (Smith *et al.* 2011). To evaluate the effect of such shrinkage on age estimations, we compared crown height measurements reported by Soleil *et al.* (1958) for incinerated teeth with those of non-cremated forensic specimens of the same gestational age (Tables 1 & 2). We found that the incinerated teeth were 0.6mm shorter (a misprint in Smith *et al.* 2011: 862 mistakenly

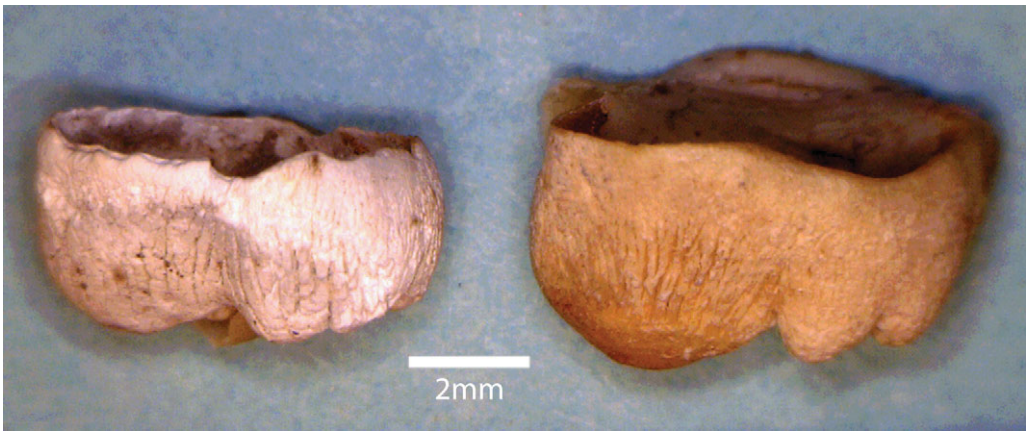

Figure 2. Photograph of a cremated tooth from the Carthage Tophet (left) compared with a non-cremated tooth (right) from an archaeological site showing differences in surface anatomy and loss of cervical enamel in the cremated specimen.

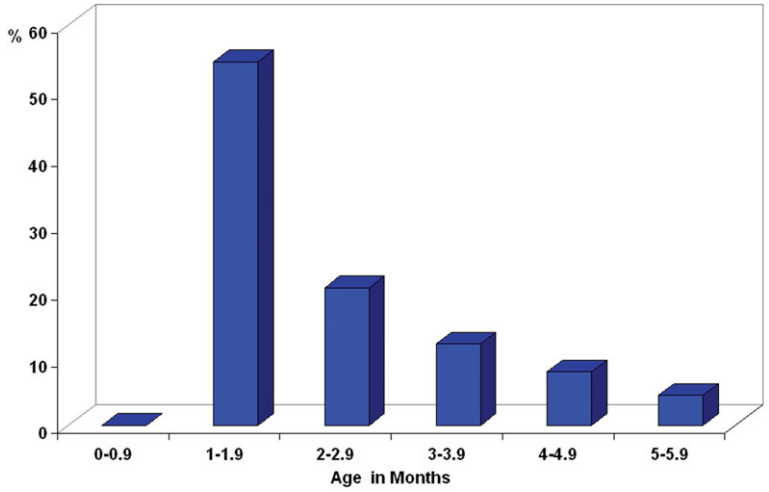

Figure 3. Frequency distribution of infant mortality derived from measurements of tooth size, after correction for shrinkage as described in text.

gave this measure as 6mm instead of 0.6mm). This represents just under six weeks' growth, assuming a daily increment of 0.15μm as reported by Deutsch *et al.* (1985) and Mahoney (2012). In order to avoid over-correction for shrinkage in different tooth types, we used a minimum correction factor of four rather than six weeks' growth in age estimations. The results are shown in Figure 3. They are consistent for all tooth types examined, with the highest frequency of infant deaths occurring between one and two months of age and dropping markedly in the following months.

Schwartz *et al.* (2010, 2012) refer to three types of age assessment: (i) bone measurements, (ii) tooth development and (iii) the location of the neonatal line. All were inaccurate because they misjudged the effects of heat-related shrinkage:

(i) *Bones*: Schwartz *et al.* (2012) used length and/or breadth measurements of cranial and ischial bones for age estimates. They assumed that shrinkage in both dimensions was

Table 1. Crown height in cremated and non-cremated upper deciduous teeth at different ages.

Specimens	Reference	Age	Tooth size (mm)				
			Central incisor	Lateral incisor	Canine	1st molar	2nd molar
Incinerated	Soleil *et al*. 1958	8 gestational months	3.1	2.2	2	2	-
Autopsy	Deutsch *et al.* 1985	8 gestational months	3.7±0.45	2.9±0.47	2.1±0.72	-	-
Incinerated	Soleil *et al*. 1958	Birth	4.8	4.2	3.3	3	1
Autopsy	Deutsch *et al*. 1985	Birth	5.2±0.43	4.2±0.36	3.1±0.48	-	-
Archaeological	Liversidge *et al.* 1993	Birth	5.4±1.04	4.5±0.82	3.4±0.94	4.0±0.38	3.1±0.55
	Cardoso 2007	Birth	5.4	5	4.2	4.2	3.4
Incinerated (includes root length)	Soleil *et al*. 1958	8 months after birth	8	6.6	5.5	5.1	5
Archaeological (includes root length)	Liversidge *et al.* 1993	8 months after birth	9.8±0.19	8.7±0.17	6.7±0.22	7±0.25	5.65±0.26
	Cardoso 2007	8 months after birth	11.1	8.8	7.4	7.9	6.2

Table 2. Data on crown height and crown formation times used to assess rates of growth in crown height.

		Tooth type				
Reference	**Parameter**	**Central incisor**	**Lateral incisor**	**Canine**	**1st molar**	**2nd molar**
Liversidge *et al.* 1993	Measurements (mm)	6.17±0.53	5.92±0.49	7.0±0.44	5.86±0.39	6.33±0.39
Mahoney 2012	Crown formation time (days)	388	345	474	-	-

Note: Daily rate of increase in crown height of the upper central deciduous incisor was calculated using data in this table, where an upper deciduous incisor height of 6.17mm and a crown formation rate for this tooth averaging 388 days (Mahoney 2012) is considered equal to 0.159μm increase in crown height per day (cf. 0.15μm reported by Deutsch *et al.* (1985) from a cross-sectional study of foetal teeth). The 0.6mm difference in crown height for this tooth, between cremated and non-cremated specimens of the same gestational age as shown in Table 1, means that shrinkage in this tooth was equivalent to 40 days' growth, approximating six weeks.

similar to that reported in the literature for long bone length. However, Gilchrist and Mytum (1986) have shown that the pattern of shrinkage is related to bone shape. This may explain why Fazekas and Kosa (1978: 357–71) excluded cranial bones from their standards published for age estimation of cremated remains. Our study exemplifies the errors resulting from their use (Figure 1), but they are also apparent in the data published by Schwartz *et al.* (2012: fig. 2), showing consistent differences in age distribution based on length as opposed to breadth measurements of the same bone.

(ii) *Tooth development*: Schwartz *et al.* (2012) insisted that developing teeth are fully mineralised and do not shrink when incinerated, quoting Antoine *et al.* (2009) as their authority. Antoine *et al.* (2009: 53) do not, however, discuss this, simply noting that "the last formed friable enamel is frequently lost, contributing to under estimations [in age] of from two–five weeks". In fact tooth enamel is only 30–60 per cent mineralised until shortly before crown completion (Deutsch & Pe'er 1982; Smith *et al.* 1989; Robinson *et al.* 1995, 1998; Chadwick & Cardew 2007). Forming teeth, with a high organic content, therefore shrink during cremation, which affects age estimations (Smith *et al.* 2011), while the highly mineralised enamel in fully formed teeth cracks and shatters at the same temperatures (Schmidt 2008).

(iii) *Neonatal line*: further inconsistencies can be seen in the age estimates given by Schwartz *et al.* (2012: tab. 3) where age estimates based on the location of the neonatal line and skeletal age of the same individual differ in 20 out of 22 individuals. Moreover, *contra* their claims, absence of a neonatal line in some of their specimens is not in itself evidence of perinatal death. For example, Antoine *et al.* (2009) were able to locate this line in only one out of five teeth they examined from three- to four-year-old children. They reported that inability to visualise the neonatal line may result in underestimation of age by as much as 12 weeks. Since the visibility of the neonatal line depends on the light-scattering effect associated with differences in the angulation of the prisms between the neonatal line and adjacent enamel, its visibility is even further impaired in cremated teeth where heat-related changes affect the chemical and crystalline composition of the enamel (Mayer *et al.* 1990; Person *et al.* 1997; Lebon *et al.* 2008).

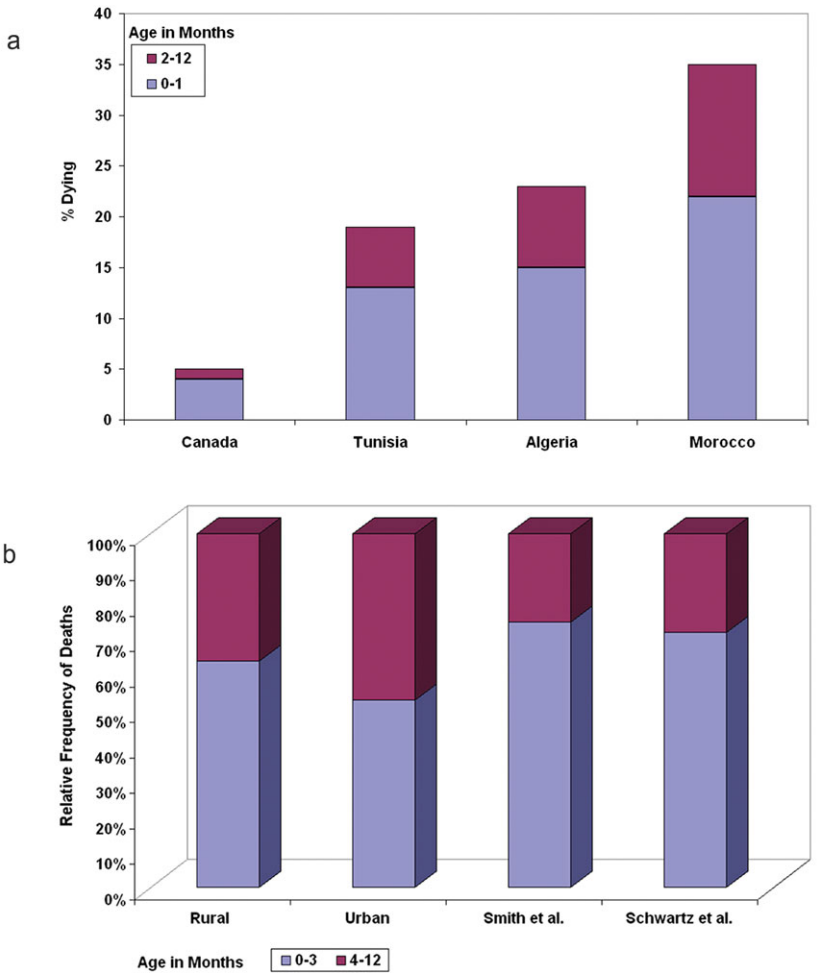

Figure 4. a) Regional differences in infant death rates. Note the increase in the relative frequency of deaths in older infants (2–12 months) in countries with higher rates of infant mortality (data from WHO 2011). The exceptionally low frequency of older infants in the Tophet samples (shown in Figure 4b) thus deviates from expected mortality rates. b) Comparison of the relative frequency of deaths in infants at Carthage (data from Smith et al. *2011; Schwartz* et al. *2012) and rural and urban regions of England and Wales in 1889–91 (data from Galley & Wood 1998). Note the similarity in proportions of older and younger infants in both Tophet samples, and the difference between them and nineteenth-century England and Wales, which have markedly higher proportions of deaths in the older age group.*

Infant mortality rates in the Carthage Tophet: comparison of the studies

Given the different methodologies underlying the studies by Schwartz *et al.* (2012) and Smith *et al*. (2011) it is not surprising that our age estimations differ most for the youngest infants, where growth rates are fastest, so that minor differences in length mean major differences in age estimations (Mays & Eyers 2011). Our study was one of three independent investigations carried out on different samples of cremated Tophet infants (Gejvall 1949; Richard 1961;

Smith *et al.* 2011) all of which concluded that the age distribution of the Tophet infants was evidence of sacrifice. We attribute the difference between these results and those of Schwartz *et al*. (2012) to the fact that the latter failed to evaluate the reliability of the standards they used for age estimations in cremated infants. Their dental age estimations were obviously incorrect, since they were based on a false premise—namely that forming enamel does not shrink. This means that they under-estimated the ages of all infants that were younger than two to three months of age, the time at which the first deciduous teeth (incisors) complete crown formation (Liversidge *et al*. 1993; Mahoney 2012).

Regrouping our data, as well as that of Schwartz *et al.* (2012), into three-month intervals shows a similar pattern in both, with a marked drop in the three–six month age group. This contrasts with the expected pattern for infant mortality rates in pre-industrial societies (Galley & Wood 1998), Roman Carthage (Norman 2002, 2003) or societies without medical care at the present time (WHO 2011) (Figure 4). These are more appropriate analogues than those used by Schwartz *et al*. (2012), who compared Tophet infant mortality rates to those of mid-twentieth-century England and Wales, where mortality rates are modified by access to modern medical care.

The distribution seen in the Tophet reflects selection of a specific age cohort for expensive funerary rites and interment, in contrast to the more cursory funeral rites accorded other infants and children buried in Phoenician cemeteries at Carthage (Olive 1982) or on the Levantine coast (Smith *et al*. 1990, 1993; Trelliso 2004) and runs counter to known mortuary practices in the past that paid less attention to infant death than that of older individuals (Gittings 1984; Holck 1995; Lovell 1997; Scott 1999). Moreover, even those who oppose the concept of infant sacrifice at Carthage admit that the numerous animal remains found in the Tophet, that were cremated and interred in the same fashion as the infants, were sacrificial offerings (Gras *et al*. 1991).

We propose that the aberrant age distribution found in the Tophet, which reflects selection of a specific age cohort of infants under three months old, provides unequivocal evidence of infant sacrifice at the Carthage Tophet.

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Phoenician bones of contention

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Introduction

Even if the foundation, rise and eventual demise of Carthage and its overseas territories in the West Mediterranean occurred in much the same space and time as the glory days of Archaic, Classical and Hellenistic Greece and Rome, there is no doubt that the Phoenicians and their Punic successors (to use the conventional terms) have rarely been regarded as fully signed-up members of the ancient world. Reduced to walk-on cameos as skilled silversmiths, agricultural experts, shrewd traders or military strategists, Phoenician and Punic representations tend to be rather stereotypical (Prag 2010, with earlier bibliography), which perhaps should not come as a surprise, as nearly all these portraits have been sketched by outsiders; they certainly do not add up to a coherent ethnographic or political description.

The peripheral and ambiguous status of Phoenician and Punic history in the wider 'ancient world' is matched by the institutional marginalisation of the field, as the Phoenician and Punic worlds are rarely taught and researched as part of classical archaeology, let alone ancient history. Instead, its practitioners are more likely to be found in departments of Near Eastern archaeology, biblical studies or indeed prehistoric archaeology, depending on the academic traditions of the countries involved. As a result, Phoenician and Punic culture tends to remain poorly known beyond specialist circles (Vella 1996), even if research efforts have substantially increased in the past three decades. The poor institutionalisation of the field is underscored by the fact that it has just one successful dedicated journal, the *Rivista di Studi Fenici*, which is about to publish its fortieth volume.

Nowhere is the ambiguous and often contested nature of the field more obvious than in the debate over the tophets found on the outskirts of at least nine Phoenician settlements

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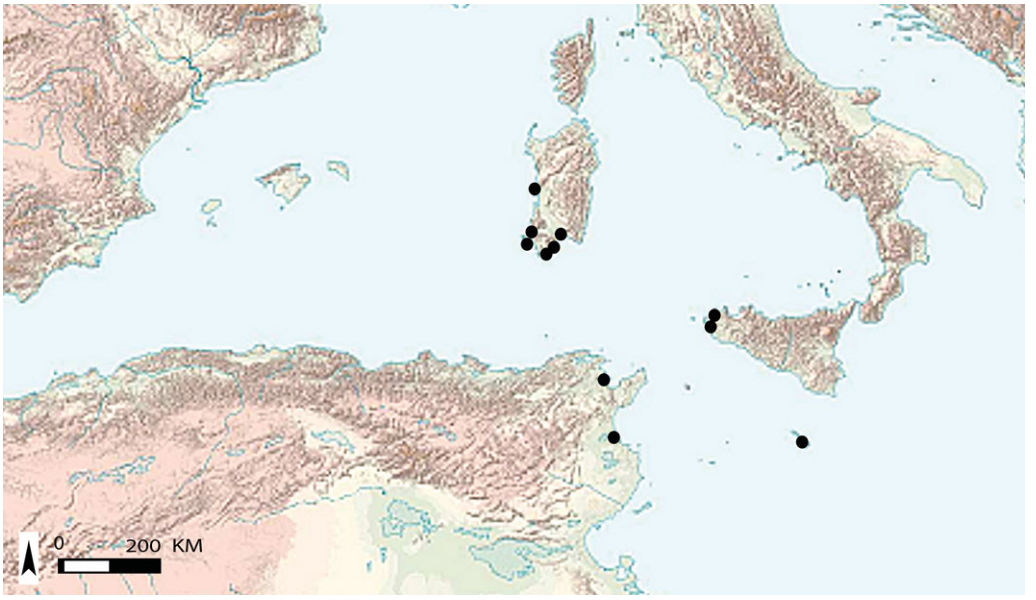

Figure 1. Map of the western and central Mediterranean, showing the distribution of 11 known tophets of Phoenician-Punic date, including those at Malta and Lilybaeum where the evidence is less clear-cut (base map courtesy of Ancient World Mapping Center).

in the central Mediterranean before the fall of Carthage. (In this essay we leave aside later sanctuaries of a similar type.) These open-air sacred enclosures hold the remains of cremated infants and animals buried in urns, sometimes beneath stone markers, as well as various altars, shrines and other cultic installations (Figures 1 & 2). Since the 1920s these have been identified as the sites of the bloody rituals of Phoenician child sacrifice described by Greek and Roman authors that had more recently captured the European artistic and popular imagination, as best demonstrated by Gustave Flaubert's novel *Salammbô* (1862). This identification has since been challenged, not least on the basis of the potential bias of the classical authors who accuse the Phoenicians, and especially Carthaginians, of child sacrifice; revisionist scholars have also appealed to the rarity of infant burials in 'normal' Punic cemeteries as evidence that the tophets were dedicated cemeteries or sanctuaries for children who died of natural causes (Bénichou-Safar 1981, 1982; Moscati 1987; Ribichini 1987; for an account of the debate in historical perspective, see Amadasi Guzzo 2007–2008: 347–51).

Debating tophets

The latest round in the tophet debate was triggered in 2010 by Schwarz *et al.*'s online publication of their osteological analysis of the contents of 348 urns excavated from the Carthaginian Tophet by the American mission that worked there between 1976 and 1979 (Stager 1980, 1982). Reporting that "most of the sample fell within the range of 2 to 12 postnatal months, clustering between 2 and 5 months", Schwartz *et al.* conclude that at least 20 per cent of the depositions were prenatal at death (2010: 9). Arguing that the Tophet depositions were thus consistent with standard modern rates of child mortality, they

Figure 2. View of the excavated Tophet of Sulcis on the outskirts of modern Sant'Antioco in southern Sardinia (photo: V. Melchiorri).

conclude that whether or not child sacrifice was ever practiced by Phoenicians, the tophets were "cemeteries for those who died shortly before or after birth, regardless of the cause" (Schwartz *et al.* 2010: 1). Their findings were challenged by Smith *et al.*, who took the debate to *Antiquity* in 2011 to argue that their own osteological analyses suggested that the Tophet was in fact a ritual site for infant sacrifice. Testing the contents of 325 urns, and taking into account the shrinkage that bones undergo during cremation, they classified only three of the individuals as foetal (8–8.49 gestational months), and argued that the overall age profile of the cremated children in the Tophet "peaked between 1 and 1.49 months, and differed from that found for infant burials in other archaeological sites or that reported for census data for populations without access to modern medical care" (Smith *et al.* 2011: 860). A year later, Schwartz *et al.* (2012) restated their case in *Antiquity*, with some additional discussion of Smith *et al.*'s argument and methodology.

We do not intend to discuss the conflicting interpretations of the osteological analyses (for a reassessment, see Melchiorri in press), though we would note that neither team makes reference to the results of the osteological work carried out by Ciasca *et al.* (1996) on the cremated remains from the Tophet at Mozia (Sicily), the more limited study undertaken by Docter *et al.* (2003) on the contents of some urns from Carthage, or the new data from Sulcis (Melchiorri 2010). Although Schwartz *et al.* do refer in passing to the study of the Tharros

Tophet by Fedele & Foster (1988), they ignore their well-grounded hypothesis about the seasonality of the ovine cremations, which points to a regular seasonal ritual, and arbitrarily insert Fedele & Foster among the defenders of the infant cemetery theory (Schwartz *et al.* 2010: 1, 2012: 739), when they in fact support the sacrificial interpretation.

It is instead our intention to broaden the conceptual confines of the debate and to demonstrate the breadth of evidence that can and, in our view, should be brought to bear on our understanding of the tophet phenomenon. We argue here that the range of sources currently available to researchers beyond the disputed osteology strongly suggests that the tophet was first and foremost a ritual site or sanctuary and that the cremated depositions of infants and animals were sacrificial offerings.

Material contexts

Given their scientific focus, it is perhaps not surprising that the three recent articles by Schwartz *et al.* and Smith *et al.* do not cite much of the relevant historical, archaeological and anthropological bibliography on the Tophet—by no means the province of "biblical scholars" alone, as suggested by Schwartz *et al.* (2010: 1). It is nevertheless still disappointing that Schwartz *et al.* in particular demonstrate a lack of historical familiarity with the topic: whether or not the "age distribution is consistent with modern-day data on perinatal mortality" (2012: 740), for instance, the rates at which the infants are buried certainly are not: at Mozia, extrapolating the number of cremations excavated over the whole site and dividing the resulting number by the approximately four centuries of the sanctuary's use results in a figure of just one or two depositions a year (Ciasca *et al.* 1996: 319, footnote no. 6). Nor do they acknowledge that "the absence of infants and young children in the centrally located, cross-generationally representative cemeteries in which remains were not cremated" (Schwartz *et al.* 2012: 739) is a common phenomenon across the ancient Mediterranean, not just at Phoenician and Punic sites—where infant burials are, furthermore, consistently rare, regardless of whether or not a site has a tophet (Xella 2010: 265–72).

The material evidence lends further support to the sacrificial sanctuary hypothesis in that children and animals are cremated and buried together, as Smith *et al.* duly note (2011: 871). Schwartz *et al.*'s (2010: 10) suggestion that while animal sacrifices were made, this happened in the basic context of cemeteries for dead infants and prenates meets a problem in the evidence from the Roman period that at some tophets, animals alone were cremated and buried (as at *Hadrumetum*; Cintas 1947: 78). It seems that by then at least the core of the ritual consisted of a sacrifice, whether of humans or animals. The fact that animals are sometimes found buried in urns without children in the earlier period points towards the same conclusion.

The literary evidence

Among the Greco-Roman sources on child sacrifice Schwartz *et al.* (2010) mention only Kleitarchos (*Scholia* to Plato's *Republica* 337A; Allen *et al.* 1938) and Diodorus (20.14; Geer 1962); Smith *et al.* (2011) add Plutarch (*Moralia* 171C–D; Pearson & Sandbach 1960) and Tertullian (*Apologia* 9.2–4; Glover 1931), but many other authors who mention the

topic are excluded from these discussions (for a collection and commentary see Xella 2009: 63–88). Not a single one of these sources supports the thesis that the children died of natural causes. We agree with Schwartz *et al.* that the evidence of the Greek and Latin sources on Carthaginian child sacrifice should not be accepted uncritically: the dangers of ignorance as well as anti-Carthaginian bias are clear. But neither do we think that this evidence should be dismissed out of hand simply because it was not written by participants in the rituals discussed: this, it seems to us, is equally uncritical. There is no *prima facie* reason to doubt the universal verdict of Greek and Roman authors on the matter, selective infanticide being unremarkable in the ancient Mediterranean or elsewhere (Lancy 2008: 41–44) and human sacrifice by no means unknown (Davies 1981; Stavrakopoulou 2004; Finsterbusch *et al.* 2006; Dodds Pennock 2008).

It is also the case that various aspects of the passages concerned suggest that they are not simply indulging in negative propaganda, 'othering' an enemy state. In fact, while the sources contemporary with the period of operation of the Carthage Tophet present the practice as unusual, they are not overtly judgemental. When a character in the fourth or third century BC pseudo-Platonic dialogue *Minos* notes that some of the Carthaginians "sacrifice even their own sons to Kronos" (315 C; Lamb 1925), it is in the service of the wider philosophical point that peoples vary a great deal in their concepts of what is legal and religiously acceptable. In the early third century Kleitarchos notes without further comment that "out of reverence for Kronos, the Phoenicians, and especially the Carthaginians, whenever they seek to obtain some great favour, vow one of their children, burning it as a sacrifice to the deity if they are especially eager to gain success" (*Scholia* to Plato's *Republica* 337A; Allen *et al.* 1938). Around 200 BC Ennius tells us simply that "the *Poeni* sacrificed their children to the gods" (221 V; Skutsch 1953).

In addition to the Greco-Roman sources, there are also more than 25 references in the Old Testament to infant sacrifice in the Iron Age Levant (Xella in press), with only one of these (Exodus 20: 25–26) supporting the claim that this was a practice relating to firstborn males (Schwartz *et al.* 2010); in all the others it is one that involved sons and daughters. Along with other references in Near Eastern texts (Stavrakopoulou 2004), these biblical passages provide a clear Levantine context and origin for a practice that the presence of the sanctuaries in the West suggests was further ritualised in the colonial context (Bonnet 2011; Quinn 2011).

Inscriptions and stelae

The inscriptions from the tophets themselves provide perhaps the strongest support for the sacrifice hypothesis. These are particularly precious as direct, primary evidence and it is surprising that the three articles that prompted this discussion do not cite any of the detailed studies of the inscriptions (see in particular Amadasi Guzzo 2002, 2007–2008). There are thousands of published Punic inscriptions from tophet sites (the vast majority from Carthage itself) and they are all of a votive and not funerary character. Funerary inscriptions from Carthage's necropolis tend to state simply that they are someone's tomb (*qbr*): for instance, *qbr ḥmlkt khn bʿlšmm bn ʿzrbʿl hšnʾ bn ʿšmnʿms / hšnʾ bn mhrbʿl rb hkhnm bn ʿbdmlkt rb hkhnm* (*CIS* I 1881–1962: 5955: "tomb of Himilkat, priest of Baal Šamem,

son of Azrubaal the *šnʾ*, son of Eshmunamas the *šnʾ*, son of Maharbaal chief of the priests, son of Abdmilkat chief of the priests"). Tophet stelae have a very different formula, specifying that something has been given, dedicated, done, vowed or offered, usually to the god Baal Hamon (sometimes with the goddess Tanit): for instance, *lrbt ltnt pn bʿl wlʾ dn / lbʿl ḥmn ʾš ndr ʾrš bn / bdʿštrt bn bʿlšlm pʿl / hmgrdm kšmʿ qlʾ* (*CIS* I 1881–1962: 338: "To Lady Tanit, face of Baal, and Lord Baal Hamon, (that) which offered Arish, son of Bodashtart, son of Baalshillem, maker of strigils, because he heard his voice").

Figure 3. Stele from the Tophet of Sulcis, Sardinia (no. 279; Bartoloni 1986: pl. XLIX) (photo: P. Xella).

For the most part the precise nature of the offering is not made explicit, either passed over in the relative clause 'the thing which', or described as a 'gift' (*mtnt*) or an 'offering' (*ndr*) or 'something sent (to the gods)' (*mlk*). In some cases, however, the inscriptions make explicit reference to human victims, with expressions such as *ʾzrm ʾš(t)*, (a person who has not yet reached maturity) and *mlk bʿl* (an offering of a citizen); in the Hellenistic period the phrase *mlk ʾdm* (human offering) is found. An interpretation of these construct phrases as 'offering by a citizen/human' rather than 'offering of a citizen/human' must be ruled out by the fact that the phrase *mlk ʾmr* is also found at both Cirta and Carthage: 'offering of a sheep' (Amadasi Guzzo 2007–2008: 350).

In addition, the formulae used on the stelae in the tophets are basically standard, and repeat constantly through time and across different sanctuaries the claim that the offering has been made 'because he heard his voice and blessed him' (*kšmʿ qlʾ brkʾ*), or 'because he heard the voice of his words' (*kšmʿ ql dbry*). That is to say, the offering is in response to an answered prayer, request or vow (*ndr*), a scenario which is difficult to reconcile with the ritualised offering and burial of children who happened to die young. It is hard to interpret the death of a baby as an answer to a (common) prayer or as an event which regularly coincided with other, happier, events in life for which the dead child could conveniently be offered in thanksgiving. It seems much more likely that this was a deal that was set up in advance: the dedicant asked the god for a favour and vowed in return his/her next child. If the deal could not be fulfilled in a reasonable amount of time, sheep and goats perhaps made acceptable alternatives.

Finally, it is worth taking another glance at the famous Carthaginian stele often interpreted as depicting a priest carrying an infant in his arms. Mentioned in passing by Smith *et al.* (2011: 860, fig. 1d), this stele receives much more attention from Schwartz *et al.*, who

Figure 4. Stele from the Tophet of Tharros, Sardinia (no. 142; Moscati & Uberti 1985: fig. 23 and pl. LVI). The stone ranges in height between 31.5 and 28.8cm and between 20.7 and 14.7cm in width.

suggest that the child in question is already dead (2012: 743–44). In our opinion, the child's attitude suggests that he or she is still alive, but both our reading and Schwartz's could be compatible with both a natural death and a sacrifice hypothesis: the stele is far from decisive evidence in the sacrifice debate. We do wish to call attention, however, to several other representations of ritual activities involving infants on stelae from the tophets (e.g. Figures 3–4) that could be taken into consideration alongside the so-called 'priest stele'; such images are unlikely to resolve the circumstances of death of the infants but further attention to them could shed light on other aspects of the ritual, and therefore on the phenomenon as a whole. It should not be forgotten that while understanding the true nature of the rituals performed in the tophets is a fundamental starting point, we are dealing here with polyfunctional sanctuaries, and all aspects of the tophet phenomenon merit attention.

Conclusions

We are, first of all, delighted to see the renewed interest in the Phoenician and Punic world and discussion of the tophets in a wider forum. We also welcome the scientific analysis of the material remains of these sites and have no doubt that similar endeavours will continue to make major contributions to the debate. At the same time, however, we are concerned that the archaeological and historical contexts of these materials risk being relegated to the

background. As the relationships between scientific practice and social, archaeological and historical interpretations continue to be debated in the discipline at large (McGovern 1995; Jones 2001; Knapp 2002), it should perhaps not come as a surprise that we insist that it is critical that all types or 'genres' of evidence be taken into account in relation to the tophets as both a historical phenomenon and a series of archaeological contexts. We all have to work within the limits of our own expertise, whether as scientists, archaeologists, philologists or epigraphers, but we should also strive in the humanities as much as in the sciences to apply the highest standards of academic rigour, without preconceptions, in order to formulate falsifiable hypotheses and interpretations that take into account the full range of available sources—however strange we may find the results (Jones 2001). Given the limited space available, we have not even begun to do justice to the richness of archaeological, historical and especially epigraphic evidence (Xella in press provides a much fuller treatment), but we hope that we have brought out the abundance, variability and complexity of the information available to investigate the Phoenician and Punic tophets of the central Mediterranean.

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