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Analyzing Tophets: Did the Phoenicians Practice Child Sacrifice?

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Abstract

This paper examines the controversies surrounding Phoenician religious practices and in particular, the Phoenician Tophet, a cemetery containing the cremated remains of infants and young children in clay jars. According to ancient Hebrew and Greek sources, in the ceremony known as *mulk*, the oldest son was placed on the arms of a bronze statue and dropped into a brazier below. Though these ancient authors were unanimous in criticizing Phoenician religious practices as cruel and savage, the use of these biased sources to conclude that child sacrifice did occur remains controversial. Both the Hebrew and Greek sources were xenophobic and furthermore, there are no Phoenician texts preserved that describe this religious practice. Hence, it is difficult to judge these rituals from a Phoenician viewpoint.

Partly because of this, the interpretation of *mulk* and the Phoenician Tophets remains highly controversial within the academic world. The purpose of my research is to weigh the evidence in light of recent discoveries in North Africa (Carthage), Phoenicia (Tyre), the Greek island of Astypalaia (Kylindra Cemetery), Israel (Ashkelon), and Cyprus (Amathus) in an attempt to reach a balanced conclusion based on the evidence. In this paper, the Tophet at Carthage is first discussed, in particular the skeletal remains, the grave goods, and the stelae. In addition, other burial practices on mainland Phoenicia, Greece, Israel, and Cyprus are examined and then compared to the Tophet at Carthage in order to determine if the latter had distinct practices associated with it.

The examination of the skeletal remains, the associated grave goods, and the stelae in the Tophet at Carthage and the comparisons of the burial practices suggest that the Phoenicians did indeed practice child sacrifice.

Introduction

The Phoenicians are one of the greatest enigmas of the ancient world being both praised and despised in antiquity. They were exalted sea-farers, valiant explorers, learned scribes, skilled engineers and gifted artisans (Markoe 2000: 10). However, these same traits also brought the Phoenicians contempt and they were scorned as cheaters and peddlers who could not be trusted, as devious profiteers who kidnapped the helpless and traded in human lives, and as a morally corrupt race of people who in honor of their gods slaughtered their infants (Markoe 2000: 10). It is this last trait that has been the greatest source of contention in the ancient world and in modern academia.

One of the most famous, or rather infamous aspects of Phoenician religion was their practice of child sacrifice. Ironically, though their principal cultural legacy was the transmission of the alphabet to the West, very few Phoenician manuscripts have survived in the original or in translation due either to their destruction during Macedonian and Roman aggression or for having been written on perishable material (Aubet 2001: 3; Kaufman 2009: 40; Markoe 2000: 9-11). As a result, this has inhibited scholars' understanding of the Phoenicians from their own cultural lens and forced them to rely in part on the ancient sources. This is especially problematic for Phoenician religious practices and in particular, the Phoenician Tophet, a cemetery containing the cremated remains of possibly sacrificed infants and young children in clay jars (Agelarakis et al. 1998: 217; Aubet 2001: 245; Gernard 2010: 100). According to ancient Hebrew and Greek sources, in the ceremony known as *mulk*, the oldest son of a family was placed on the arms of a bronze statue and dropped into a brazier below, as suggested by a description of this ritual found in the work of Kleitarchos (Cleitararchus), a Greek author writing in the third century BC, paraphrased by later writers:

Out of reverence for Kronos, the Phoenicians, and especially the Carthaginians, whenever they seek to obtain some great favor, vow one of their children, burning it as a sacrifice to the deity, if they are especially eager to gain success. There stands in their midst a bronze statue of Kronos, its hands extended over a bronze brazier, the flames of which engulf the child. When the flames fall upon the body, the limbs contract and the open mouth seems to almost be laughing, until the contracted [body] slips quietly into the brazier. Thus it is that the “grin” is known as “sardonic laughter,” since they die laughing (Brown 1991: 23; In Schwartz 1993: 31-2; Schwartz et al 2010; In Stager et al. 1984: 32-3, In Quinn 2010: 388).

Though these ancient authors were unanimous in criticizing Phoenician religious practices as barbaric, the use of these biased sources to conclude that child sacrifice did occur remains controversial because these ancient sources were xenophobic.

Partly because of this, the interpretation of *mulk* and the Phoenician Tophets remains highly controversial within the academic world. In this study I propose to examine the archaeological record in hopes of gaining a better understanding of this Phoenician religious practice. The purpose of this paper is to weigh the archaeological evidence in light of recent discoveries in North Africa (Carthage), Phoenicia (Tyre), the Greek island of Astypalaia (Kylindra Cemetery), Israel (Ashkelon), and Cyprus (Amathus) in an attempt to reach a balanced conclusion on whether or not the Phoenicians practiced child sacrifice. This paper will first present a brief background on the Phoenicians before discussing the Phoenician Tophet at Carthage, in particular the skeletal evidence, the grave goods and the stelae and it will conclude by examining the other sites in order to reach a conclusion as to what really took place in the Carthage Tophet.

Who were the Phoenicians?

Aside from their general Semitic roots, the Phoenicians' ancient name remains ambiguous. The modern term 'Phoenician' is actually a Greek invention, from the word *phoinix*, whose very meaning is still debated amongst scholars because the root of *phoinix* is neither Phoenician nor Semitic. It first appears at the time of Homer and Hesiod in the ninth to seventh centuries BC. Among other meanings, it signified the color purple-red or crimson possibly referring to either the reddish color of their skin or their production of a highly prized purple dye (Aubet 2001: 6; Markoe 2000: 10). It seems unlikely that the former would be the source for the origin of *phoinix* because the Phoenicians would not have had red-colored skin. Rather, it most likely refers to the dye which became well-known throughout antiquity, thus the term might have either been a specific reference to the dye itself or to the hands of the dye-makers. The dye, produced from murex shells is highly abrasive, staining and disfiguring the hands of those responsible for its production (See Figure 1; personal communication with Stuart Swiny, 04/03/12).

Some scholars believe that the Phoenicians called themselves *can'ani*, 'Canaanites,' and referred to their homeland as Canaan. This word is of eastern Semitic origin and is thought to be indigenous to the country, however, like *phoinix*, the etymology of the term, starting with *kn'n*, is controversial (Aubet 2001: 9, Markoe 2000: 10).

The Phoenicians' origins also remain a mystery. Ancient classical authors associated them with the region of the Red Sea, however, modern scholarship rejects this account as the ancient's attempt to explain their color association with 'red' (Markoe 2000: 9).

They are no more easily defined geographically. According to the Classical sources, they occupied the entire Levantine coast between the Suez and the Gulf of Alexandretta. In actuality

the Phoenician homeland was significantly smaller, consisting of a narrow coastal strip between the Lebanese mountains and the Mediterranean, stretching from northern Palestine to southern Syria, which is a slightly extended version of modern Lebanon (See Figure 2; Aubet 2001: 13; Markoe 2000: 10-11). The geography of this coastal plain consists of regions isolated from each other by mountain spurs and deep, steep sided river valleys, thus favoring the development of independent political units (See Figure 3; Aubet 2001: 17). This is illustrated in the Old Testament which speaks of Sidonians, Byblians, Arvadites and Tyrians, all independent rival cities on the Phoenician coast, instead of alluding to a single Phoenician confederacy. As a result there exists a modern debate on whether the Phoenicians had a national identity or identified with a specific city-state (Markoe 2000: 10). The latter view seems more likely because, unlike their Palestinian or Syrian neighbors, the Phoenicians were a confederation of traders rather than a country defined by territorial boundaries hence, their empire was a patchwork of widely scattered merchant communities focused on maritime trade (Markoe 2000: 11).

Maritime trade was crucial for the Phoenicians because it enabled them to supplement the limited agricultural and natural resources from their homeland and to become one of the greatest seafarers of the ancient world. Long before the invention of the mariner's compass, Phoenician sailors mastered the waterways and explored previously uncharted paths. The archaeological record confirms that the Mediterranean was their domain with settlements in Spain, Sardinia, Sicily, North Africa, the Greek mainland, the central Aegean and Cyprus (Markoe 2000:13, 170-87). They traded finished products, such as jewelry (See Figure 4), carved ivory (See Figure 5), bronze vessels, bottled oils (See Figure 6 and Figure 7) and cloth dyed with purple, for raw materials. Because many of these commodities were highly valuable and unique, it enabled them to participate in and monopolize the Mediterranean trade systems (Bikai 1989: 205). There is

even speculation that the Phoenicians might have ventured beyond the Mediterranean as noted by Herodotus who states their sailors circumnavigated Africa, a task which was completed in three years (Markoe 2000: 13). Though Phoenician material culture is plentiful, in part because it was traded all over the Mediterranean, most of their written texts have been lost. This is unfortunate because it has prevented the Phoenicians from being understood from their own cultural perspective as demonstrated by the current debate surrounding the Phoenician Tophet.

The term ‘Tophet’ does not appear on any Phoenician inscriptions, rather it originates from the Hebrew word ‘*tpt.*’ In the Old Testament, this refers to an installation, possibly an altar, located in the Valley of Ben Hinnom, near Jerusalem, where children were sacrificed by fire in honor of Ba’al. The Old Testament sources condemned the Tophet as idolatrous and claimed it was destroyed at the end of the seventh century BC by King Josiah. It is unknown, however, if this destruction was final (Aubert 2001: 245; Lancel 1997: 226; II Kings 23: 10; Jeremiah 7: 30-31). Though this term is not Phoenician and seems to refer to the actual sacrificial rite, it has become synonymous with the open-air sites containing the cremated remains of infants and animals (personal communication with Joseph Green, Harvard Semitic Museum, 05/04/12). There are nine Phoenician Tophets found in the western Mediterranean: three in North Africa (Carthage, Hadrumetum, Cirta), two in Sicily (Motya, Lillibeum), and four in Sardinia (Nora, Sulcis, Monte Sirai, Tharros) (See Figure 8 and Figure 9; Brown 1991: 49-70). However, the Tophet at Carthage is the only one discussed in this paper because it is the most extensive and well-known and more importantly, the final archaeological report of the American Schools of Oriental Research Punic Project excavations at Carthage (1976-1979) is pending. This publication will provide an analysis on the skeletal and archaeological remains using modern techniques (Garnand 2010: 100).

The Phoenician Tophet at Carthage

The Tophet, also known as the Precinct of Tanit, was in use from the eighth century BC until the Roman destruction of Carthage in 146 BC (See Figure 10 and Figure 11). By the fourth century BC, the site covered approximately 6,000 square meters and included nine levels of burials grouped into the following three periods: Tanit I (ca. eighth to seventh century BC), II (ca. sixth to fifth century BC), and III (ca. fourth century to 146 BC) (Aubet 2001: 250; Lancel 1997: 40; Smith et al. 2011: 860; Stager et al. 1984: 32 & 35; prs. comm. J. Green, 05/04/12). Since the beginning of the 20th century, excavations have yielded over 20,000 urns containing cremated infant and animal remains from an area enclosed by a thick wall that separated it from other areas of the city. The wall itself was robbed out in antiquity, however the excavators found the trench dug into bedrock in which the foundation stones of the wall were laid, thus they were able to determine the trench was around 2 m wide (Aubet 2001: 245; Smith et al. 2011: 860; Stager et al. 1984: 36; prs. comm. J. Greene, 05/04/12). Each urn was placed in a pit which could be lined with cobbles and capped with a flat stone. Occasionally there were two or three urns in one pit (Stager et al. 1984: 36).

Urn from Tanit I were frequently decorated with wide red-slipped and burnished bands at the waist and vertical line patterns at the shoulder. They were sealed with unbaked red clay stoppers, which was probably the same clay used to make the urn, capped with a bowl or lid, and placed on the bedrock (Stager et al. 1984: 36). In Tanit II, the clay of both the urn and stopper was usually yellow and the former usually “wasp-waisted.” These urns were mass-produced because they were all small and of a standardized size and shape, lacking decoration. The clay of the Tanit III urns was white or light buff (Stager et al. 1984: 36).

Many of the urns were surmounted with carved stone markers, *stelae* or *cippi*, often

bearing inscriptions whose importance will be discussed below (See Figure 12). As with the urns, the style of the burial monuments changed from period to period (Brown 1991: chapter 4; Smith et al. 2011: 860; Stager et al. 1984: 32 & 35). Tanit I had simple and relatively small grave stone that usually lacked inscriptions and Tanit II had more elaborate and larger *cippi* with inscriptions. Tanit III appears to also have had elaborate and large stelae with dedications but unfortunately very few of these markers are found in situ in this uppermost part of the Tophet because they had been removed by the Romans for use as building fill (prs. comm. J. Greene, 05/04/12).

Skeletal Remains

One of the most controversial issues surrounding the Tophet is the determination of the age of the remains within the clay jars. In order to demonstrate infant sacrifice archaeologically, it is crucial to show that the age profile in the burials differs from that expected for normal mortality at this time (Smith et al. 2011: 860). Population studies have not been conducted on the Phoenicians hence, the specific infant mortality rates are unknown. It seems that even today neonatal mortality in populations lacking neonatal care remains high, similar to that recorded before the advent of modern medical care. For example, the national census carried out in the United States in the 1920s reported that 60% of all infant deaths occurred during the first month after birth, with two-thirds taking place within the first week. Based on this and other studies, the consensus is that infant mortality peaks in the perinatal period (first week after birth) and primarily affects low birth weight or premature infants (Smith et al. 2005: 86; Smith et al. 2011: 869). “Since birth weight is highly correlated with size (de Onis et al. 2009), stillborn or premature low birth weight infants (which comprise the highest proportion of perinatal deaths) fall within the size range defined by forensic standards as ‘foetal’ because they are smaller than

expected for healthy, full term infants (Smith et al. 2011: 869).” As a result, in order to determine that the Tophet contained sacrificed infants and young children, there needs to be a greater number of older infants than the smallest infants, identified as “fetal” on the basis of size. Osteological investigations have demonstrated that the majority of the cremated remains at Carthage and other Tophets were less than six-months old, but they differ in their estimations of age distribution within this six-month period (Smith et al. 2011: 860, 869). Before discussing the varying ages that are yielded in two important and current studies, one by Smith et al. (2011) and the other by Schwartz et al. (2010), it is important to examine the impact cremation has on both bones and teeth.

When bones and teeth are exposed to fire, they undergo a consistent pattern of color change with increases in temperature. Smith et al. (2011: 862) argue that these changes are associated with differential shrinkage resulting in fracturing and warping as the organic matrix of the bones is burnt away. Since fetal and infant bones contain more organic material in the form of proteins and water than mature bones, their shrinkage is greater than those of adults. Studies have reported that the diaphyses of long bones of fetuses and infants contracted by a minimum of 10% in length after cremation with shrinkage being even higher in younger specimens. Developing teeth also have a high organic content prior to crown completion, thus, shrinking considerably when cremated. In order to estimate the extent of shrinkage in cremated teeth, Smith et al. (2011: 863) calculated the differences between tooth length published for foetal incinerated autopsy specimens of known age and that published for nonincinerated autopsy specimens of the same age. They found that measurements recorded on the former average 6mm less than those published for the latter on samples of comparable age. This difference represents four to six weeks of growth based on a daily increase of 0.015 mm. Thus, they argue that in order

to accurately age the cremated remains, the shrinkage of teeth and long bones must be taken into account which they accomplish by adding a minimum of four weeks to the initial age estimate (Smith et al. 2011: 863, 865).

In contrast to Smith et al. (2011), Schwartz et al. (2010: 9) believe that bone shrinkage was minimal because most of the studies conducted on heat-induced bone shrinkage used ovens rather than fire as well as dry and defleshed green bone rather than fleshed bone. Based on the growing literature of experimental studies documenting the range of bone shrinkage related to burning, it appears that their conclusion is incorrect.

In a 1970 study by Van Vark, experiments involved the combustion of patella, femur, and mandible fragments in an electric oven with temperatures ranging from 200 °C to 1500 °C (In Ubelaker 2009: 3). Dimensions were recorded at successive intervals of 100 degrees with shrinkage beginning at 700 °C, increasing at 800 °C, and not continuing at higher temperatures. Though subsequent research has suggested considerable variation in shrinkage depending on the temperature, duration of heat exposure, and bone type, this study still provides key information regarding temperature related shrinkage of bone dimensions (In Ubelaker 2009: 3). At Carthage, 87% of the cremated bones and teeth were colored whitish-blue to chalky-white indicating temperatures above 700 °C. The remainder varied in color from yellowish-brown, corresponding to temperatures of approximately 200 °C, to whitish-grey, designating temperatures of up to 700 °C (Smith et al. 2011: 864). Though many of the bones and teeth in the same urn varied in color indicating uneven and/ or incomplete incineration, this appears to correlate with studies conducted on open fire cremations (Schwartz et al. 2010: 6; Smith et al. 2011: 864). Thus, based on the results from Van Vark's study, the bones and teeth of the remains at Carthage were indeed affected by the cremation process and hence, shrinkage needs to be taken into account.

Studies have also been conducted on heat-induced bone warping and thumbnail fractures which were previously thought to be linked only to the burning of fleshed and green bones, where the soft tissues have been removed from the bones soon after death, in contrast to dry bones (Goncalves et al. 2011: 1308). Schwartz (1993: 47) uses this evidence to suggest that the infant remains might not have been fleshed when they were cremated because his studies found minimal evidence of these splits across the surface of the bone which are thought to be indicative of fleshed bone. Goncalves et al. (2011: 1312) conducted a study on 61 skeletons and found that these heat-induced changes were also found on dry bones, thus emphasizing that its occurrence is not directly related to the presence of soft tissues and that interpretation of the state of the individual before cremation should be made with caution. More importantly, the study further demonstrates how cremation impacts the bones.

Furthermore, Schwartz's belief that the infants and young children may not have been fleshed is incorrect because the bones lack cut marks which would have been made during defleshing. Also, based on our understanding of animal sacrifice during the Iron Age in the Near East, where animals were killed and then cremated still fleshed, it can be deduced that infant sacrifice would have been carried out in a similar manner. This means that they would have been fleshed when they were cremated, however whether they were still alive or already deceased cannot be determined at this point (prs. comm. J. Greene, 05/04/12).

Despite Schwartz et al. (2010: 10) disagreeing on the affects cremation has on the bones and teeth, they did increase all of their measurements by 5, 10, and 25% in order to account for possible shrinkage. Even at a 25% increase in size, their analysis still classified some individuals as prenates hence, they were not sacrificed. However, as will be discussed, this may be due to their choice of skeletal material for age estimations.

Both of the studies conducted by Schwartz et al. (2010) and Smith et al. (2011) used most of the same sample. Smith et al. (2011: 863) examined 445 urns and found that only 325 yielded identifiable human remains, mostly represented by developing teeth, followed by the temporal portion of the petrous bone, with all other bones being poorly represented. Altogether, they identified a minimum number of 390 individuals. In some urns, duplication of bones or teeth or differences in size implied the presence of more than one individual (Smith et al. 2011: 863). They found that 16.7% contained the remains of two or more individuals, 2.3 % contained three and 0.58% contained four. The age differences in the urns with two or more infants were greater than expected in the case of twins, but less than 9 months, suggesting that the remains were not biologically related (Smith et al. 2011: 864). Schwartz et al. (2010: 1) examined 348 burial urns and identified 540 individuals. Some of the urns only contained one infant but others contained as many as seven (Lobell 2011: 28). The discrepancy between the two minimum number of individuals (MNI) of the total and the number of individuals within the urn might be in part due to Smith et al. (2011: 862) having underestimated the number of infants originally present, since some of the urn contents were unidentifiable and others had been removed for analysis by Schwartz et al. (2010).

The two studies used different criteria for ageing. Age estimation by Schwartz et al. (2010: 3) was based on comparative measurements of skeletal elements, in particular the petrous bone and the presence or absence of a neonatal line (NL) in the enamel of tooth crowns. Their study found that most of the sample fell within the range of 2 to 12 postnatal months, clustering between 2 and 5 months at death. At least another 20% of the sample could be identified as prenatal which would be consistent with modern infant mortality data (Schwartz et al. 2010: 9; Lobell 2011: 28).

Smith et al. (2011: 863) measured tooth length and the petrous bone and then compared the two age estimations. The study found that ages ranged from one month to four years, with 84% aged less than six months. The majority of the infants in the 0-6 month category were aged between one and three months which was 76% and only 3% were classified as foetal (2011: 866). Unlike Schwartz et al. (2010), Smith et al. (2011: 866-67) found that the petrous bone length resulted in variation in age estimates, especially for the smallest bones and consistently underestimated age (See Figure 13). They averaged two weeks less than those calculated from uncorrected tooth length of the same individual. Osteologist Vanessa Dale (NY State Museum) supports this conclusion and notes that just using the temporal bone as the main measurement of age, especially when it is shrunken, is unreliable as being more susceptible to damage in a cremation than teeth (prs. comm. from Kerri Tunici, 04/05/12) Using their conservative estimate of four weeks, which is the correction used for dental age to compensate for shrinkage, Smith et al. (2011: 867) found that this would indicate a six week difference in age evaluations for cremated individuals based on petrous bone length. This is important because it suggests that a significantly lesser number of remains analyzed by Schwartz et al. (2010) should be considered prenatal, thus not conforming to modern infant mortality rates. As a result, this suggests that many infants were sacrificed and did not die of a natural death.

The petrosal bones might have been used by Schwartz because they are one of the densest and hardest parts of the infant skeleton. They lie at the base of the skull, one on each side and are unfused until around one year after birth when the petrosal and the temporal bones do fuse to form a larger mass (Schwartz 1993: 47-8). Schwartz (1993: 48) found that isolated petrosal bones dominated his sample and as a result concluded that most of the individuals were extremely young at death, since these bones were not yet fused with the temporal bone.

However, as we have seen the majority of the remains were aged between the 0-6 month category thus, he is partially correct in using the petrous bone to determine that the remains were young.

Similar to the petrous bone length, Smith et al. (2011) did not find a direct correlation between age and the absence or presence of the neonatal line (NL), which separates the enamel formed during the intrauterine life from that formed after leaving the womb (See Figure 14). It is the first postnatal hypoplasia or stress-induced alteration of enamel deposition and since all of the deciduous teeth begin calcifying by the 20th week in utero, the NL is usually observable in individuals who survive at least 7 to 15 days extra-uterine (Schwartz et al. 2010: 10; Smith et al. 2005: 84). Hence, the NL enables scholars to discriminate between infant death during the first postpartum week and the succeeding three weeks. Normally, tooth development is one of the best methods to use for aging fetuses and infants because it is more buffered against environmental conditions than skeletal development (Cunha et al. 2009: 3; Smith et al. 2005: 84; Smith et al. 2011: 868; Stager et al. 1984: 44). Schwartz et al. (2010: 10) argue that the absence of the NL in at least 20% of the sample indicates that the remains represent either miscarriages, abortions, or neonates, thus concluding that while the Carthaginians may have occasionally practiced child sacrifice, this Tophet was a cemetery containing the remains of human prenatals and infants who had died from a variety of natural causes. Smith et al. (2011: 865) argue that the absence of the NL does not necessarily determine that the remains were not sacrificed. Their study found that on the more severely incinerated specimens, colored whitish-grey, the NL could not be identified. This was true even for teeth of infants whose size indicated that they were several months old and hence, should illustrate a well defined NL. It seems that the absence of the NL may be due to heat-related changes to the structures of the apatite crystals of the enamel

and thus, the NL should not be used as conclusive evidence for age estimates (Smith et al. 2010: 865).

Besides cremated infant and young children remains, the cinerary urns also contained the remains of immature birds, sheep and goat treated in the same manner as the Tophet infants: they had been cremated and interred, either separately or together with the human remains. There seems to be a consensus that these cremated animal remains represent sacrificial offerings because it was a widespread practice during this time period (Schwartz et al. 2010: 12; Smith et al. 2011: 871; Stager et al. 1984: 36). The contention surrounding these faunal remains is the interpretation of the importance of their young age. Unlike humans which are fertile year round and where there is usually no intervention to ensure childbirth at a particular time, humans control domesticated animals and thus, their birth cycles. In the Mediterranean region animal birth would more likely occur in the spring because of the more widely available food supply and stable weather as compared to the winter (prs. comm. J. Greene, 05/04/12). It has been suggested that the infants interred in the Tophets were not sacrificed but died from natural causes and that these young animals were then sacrificed in their honor. Others, however, argue that the young age of the animals, assumed to be born in the spring, illustrates that the sacrifice of both infants and animals was a spring rite (prs. comm. J. Greene, 05/04/12). Unfortunately, it is almost impossible to test this hypothesis archaeologically without a Phoenician equivalent to the Bible and also a large-scale analysis on the faunal remains has not yet been conducted, thus one cannot conclude that this was indeed a “spring rite.”

Grave Goods

The cinerary urns also contained a rich assortment of amulets in a variety of materials including glass, ivory, amber, precious metals and faience, though gold amulets were the most

numerous. Beads once strung as necklaces were also found (See Figure 15 and Figure 16) (Garnand 2010: ASOR Abstract Book; Greene 2010: abstract; Stager et al. 1984: 36; prs. comm. J. Green, 05/04/12). None of these grave goods were burned proving that they were deposited after the cremation process (prs. comm. J. Greene, 05/04/12). Though it is not known whether these grave good were gifts to the gods from the dedicants or for the infants themselves, the fact that they were not cremated or ritually killed suggests to the present writer that they were meant for the child. By ritually killing an object, its power is taken away and since this was not done, these amulets were probably intended to protect the child. These grave goods further emphasize that the Tophet was unique and not an ordinary burial ground for infants who had died from natural causes because they were not considered to be citizens. Such burials would not be expected to contain any grave goods, lavish ones in particular.

Who was sacrificed at Carthage?

As has already been discussed, the urns were usually accompanied by stelae bearing dedications to the deities Tanit and Ba'al Hammon (Brown 1991: 29; Stager et al. 1984: 45). It appears that child sacrifice at Carthage was largely an upper-class custom resulting from a study conducted on the inscriptions (Stager et al. 1984: 45). Many of the stelae bear the Semitic word *mlk*, read as *mulk*, the technical word for a live sacrifice in fulfillment of a Tophet vow. There are three kinds of *mulk* sacrifices of which two are attested at Carthage (Brown 1991: 29; Stager et al. 1984: 45). The first type is *mlk 'mr* (*mulk 'immor*) which refers to the sacrifice of a lamb or kid as a substitute offering for a child. The second is *mlk b'l* (*mulk ba'al*) which refers to the sacrifice of a *ba'al*, the child of a estate-owning or wealthy mercantile family. The final type, not found at Carthage, is *mlk 'dm* (*mulk adam*) which refers to the sacrifice of a commoner. The lack

of *mlk 'dm* at Carthage suggests that here the ritual was reserved for the upper-class (Brown 1991: 29-33; Stager et al. 1984: 45-6).

Furthermore, the dedicants, presumably the parents, proudly displayed their genealogies on the stelae. Long genealogical pedigrees usually signify people of noble families and lineages who take their pedigrees at least as far back as their great-grandfathers. In one case, the dedicant traces the ancestry back 16 generations, in contrast to craftsmen and tradesmen who only trace their genealogies back one generation (Brown 1991: 34; Stager et al. 1984: 47).

It is interesting to note that some classical authors also refer to the young sacrificial victims as 'nobles' and literary accounts demonstrate that the god (s) did not accept a substitute child bought from a commoner because they were not biologically related to the dedicant nor did they enjoy recognized social standing (Brown 1991: 34; Stager et al. 1984: 46). This is illustrated by Diodorus Siculus (Diodorus of Sicily) in the *Library of History*, written in the middle of the first century BC, in which he discusses the siege of Carthage in 310 BC by Agatocles of Syracuse:

They also alleged that Cronus had turned against them inasmuch as in former times they have been accustomed to sacrifice to this god the noblest of their sons, but more recently, secretly buying and nurturing children, they had sent these to the sacrifice; and when an investigation was made, some of those who had been sacrificed were discovered to be supposititious. When they had given thought to these things and saw their enemy encamped before their walls, they were filled with superstitious dread, for they believed they had neglected the honors of the gods that had been established by their fathers. In their zeal to make amends for their omission, they selected two hundred of the noblest

children and sacrificed them publicly; and others who were under suspicion sacrificed themselves voluntarily, in number not less than three hundred...(In Schwartz 1993: 32-3)

Clearly, the Carthaginian nobility thought that Cronus-Ba'al had abandoned them because instead of sacrificing their own children, they had substituted them with commoners. Thus, the nobles decided to sacrifice a large number of high-born children in an attempt to pacify Ba'al so that he would assuage the siege (Aubert 2001: 249).

Through examination of the skeletal evidence, the presence of lavish grave goods and the inscriptions on the stele, the Tophet at Carthage does indeed suggest that the Phoenicians did practice child sacrifice. Discussion will now turn to the Phoenician mainland (Tyre), the Greek island of Astypalaia (Kylindra Cemetery), Israel (Ashkelon) and Cyprus (Amathus) to further demonstrate the uniqueness of the Tophet and, thus its use as a cemetery containing the sacrificed remains of infants and animals.

Tyre: A Phoenician Cemetery

The main necropolis was located on the mainland approximately 2 km away from the ancient island of Tyre, in present-day Al-Bass district (See Figure 17). The cemetery was established on a beach at the edge of the coast opposite the city. Nowadays the beach is buried under considerable amounts of clay and sand that built up as a result of the formation of an isthmus during the Hellenistic and Roman periods which transformed the ancient island into a peninsula. As a result, the Phoenician cemetery is found 3.5 m below the present ground level of Al-Bass (Aubert 2010: 145 & 149).

The 1997-2008 Spanish archaeological excavations exposed an area around 500 m² of cremation graves dating from ca. 900-700 BCE. To date, approximately 320 cremation urns have been discovered, making it the most densely occupied Phoenician cemetery known in Lebanon

(Aubert 2006: 38; 2011: 145). The cremation rite is dominant throughout the three main types of graves represented. The first is the single-urn grave consisting of a single urn and two jugs lying at the foot of the urn: one is trefoil-rimmed and the other mushroom-like or neck-ridged. The urn is capped with a flat stone or plate and usually has a drinking bowl or cup leaning against its shoulder (See Figure 18). This type of burial is rare, but is usually fairly rich in funerary offerings and is occasionally accompanied by a small stela engraved with a symbolic motif (Aubert 2011: 146).

The second type of burial, the most numerous and representative of the necropolis, is called a “double-urn grave” because it consists of two urns placed back to back. The urns share the same trench and the same individual grave goods including a bowl for drinking and two characteristic jugs (neck-ridged and trefoil-rimmed). In most instances, the two urns are synchronous and form a clear unit (See Figure 19) (Aubert 2006: 40; 2010: 146). Based on paleo-anthropological studies, it appears that the twin urns contain the cremated remains of the same individual: one holds ashes and the other contains blackened bones mixed with personal possessions. Thus, once the funeral pyre was extinguished and the cremation of the deceased concluded, the remains were carefully sifted in order to separate the ashes from the bones (Aubert 2010: 147-8).

The third type of burial is composed of large groupings of urns found superimposed or leaning against each other. In most instances, these clusters consist of several double-urn graves (See Figure 20). The context demonstrates that these groups of urns were purposefully deposited in the same space over several generations, possibly indicating socially significant units (Aubert 2011: 148). For example, in some burials the older vessels were dug out and relocated beside or

above the later ones emphasizing the importance of preserving the memory of the kinship plot locations (Aubert 2011: 148).

The cemetery at Tyre is important for the study of the Tophet at Carthage since both are Phoenician cemeteries, thus allowing for a comparison between the two. Similar to Carthage, grave markers also appear at Tyre. Traces of the impression of wood at the edge of some of the graves suggest the presence of markers made from this material. Stone stelae have also been found, though they appear more rarely than the other markers (See Figure 21). These stelae contained engraved symbolic motifs and inscriptions with the name of the deceased and their familial position (Aubert 2006: 41; 2011: 148). It is important to note that in contrast the stelae at Carthage did not bear the name of the deceased but that of the dedicants and their pedigree. This could demonstrate that though the children were considered important in terms of their participation in a sacrificial rite, they were not members of Phoenician society, thus not worthy of their name being placed on the stelae.

As at Carthage, grave goods also accompanied the deceased. In 20% of the urns containing human remains, a scarab used as an amulet was found either mixed with the blackened bones or located in the upper part of the vessel (See Figure 22). These scarabs, made either locally or in Egypt, show fire damage similar to the other grave goods including rings, earrings, and pendants, suggesting that personal articles accompanied the deceased onto the funeral pyre. However, not all of the personal ornaments were burned, thus some were deposited after the cremation (Aubert 2010: 149). This differs from Carthage where all of the grave goods were deposited after the cremation process (prs. comm. J. Greene, 05/04/12)

The cemetery at Tyre and the Carthage Tophet also contained very distinctive age groups. Throughout its entire duration the former was used only for adults, with the youngest individual

being between twelve and fourteen years of age. This emphasizes that infants and children did not have access to formal burial in this funerary space, thus it can be concluded that they did not have a right to be buried with adults nor were they entitled to full citizenship status in the Phoenician community at Tyre (Aubert 2010: 146; Smith et al. 1992: 668). This is markedly different from the Tophets at Carthage and elsewhere.

Furthermore, the urns from the necropolis of Tyre also contained blackened osseous (bone tissue) fragments belonging to ovicaprids and bovids. It appears that small bits of meat corresponding to these fragments were first cooked and then thrown on the pyre because they were subjected to the same temperature as the human body (Aubert 2006: 41; 2010: 149). This suggests that feasting was part of the cremation ceremony. Since there is no evidence for ritual consumption of faunal remains at Carthage, it further emphasizes the distinct practices associated with the two cemeteries, supporting that the Tophet did not contain infants having died from natural causes.

Ashkelon, Israel: A Case of Infanticide

Like the necropolis at Tyre, Ashkelon will also be compared with the Tophet at Carthage.

Based on historical and ethnographic accounts, infanticide is usually carried out at or immediately after birth, thus in order to prove infanticide in the archaeological record, there must be a narrow age range between the specimens (Mays 2000: 180; Smith et al. 1992: 668; Smith et al. 2005: 88).

Ashkelon is located on the Israeli coast and contains the skeletal remains of nearly 100 infants found in a Late Roman-Early Byzantine drainage channel beneath a bathhouse that was in use between the 4th and 6th century AD. Some of the excavators of this building suggested that the bathhouse may have been a brothel (prs. comm. Ashkelon team members, Harvard Semitic

Museum, 05/04/12). It appears that the remains were hastily buried since they were mixed in with animal bones, isolated coins, and potsherds and there were certainly no grave goods. This suggests the drain was used as a rubbish dump (Smith et al. 2005: 84; Smith et al. 1992: 669). Through careful reconstruction of the locus of each group of bones, it was established that all parts of the skeleton were represented. The bones were in good condition suggesting that their disposal in the sewer occurred soon after death when the soft tissue was still present (Smith et al. 1992: 669).

The following three independent methods were used to determine age: bone length, dental development, and examination of ground sections of the teeth for the presence of the NL. There is an extremely narrow range of variation in bone length which suggests that all bones belong to infants of approximately the same age (Smith et al. 1992: 673).

Similarly, the stage of dental development in the skeletal remains is comparable to that of modern neonates. It was found that 78.5% of the remains had a crown length less than 3.5 mm suggesting they were less than one week old. The largest tooth germ was 4.04 mm corresponding with an age of less than one month (Smith et al. 2005: 85; Smith et al. 1992: 673). Furthermore, the NL was absent in the majority of the specimens since it could only be identified on tooth germs where crown height was greater than 3.6 mm (Smith et al. 2005: 85). Thus, the narrow size range in bone and teeth measurements and the absence of the NL indicate that the remains were the same age when they died, hence suggesting infanticide. If the deposition of these remains in the sewer was due to an epidemic or a massacre, there should be greater variety in the ages (Smith et al. 2005: 88; Smith et al. 1992: 668).

Pathologies and staining of the tooth germs were also recorded. It is interesting that many of the tooth buds were stained a dark red-brown color demonstrating impregnation of the hard

tissues with iron oxide. Since none of the bones showed any similar stains, ground sections of two of these stained teeth were prepared and examined in order to identify the nature of the stain (Smith et al. 1992: 670-3).

The iron oxide was concentrated in the external layer of developing immature enamel and may represent degradation products of haemoglobin released by bleeding into the oral tissues at the time of death. Breakdown products of haemoglobin have been previously identified in the dentine of adult teeth, especially after asphyxiation (Van Wyk, 1987). It is ascribed to blood being forced into the dentine tubuli (Smith et al. 1992: 673).

Thus, it seems that infanticide, in particular asphyxiation, was the cause of the deaths of the unwanted neonates at this site.

The drainage channel skeletal remains at Ashkelon are important because they demonstrate that the human remains found at Carthage were not the result of infanticide, neither were the individuals interred in the Tophet hastily buried. Rather, great care was taken since they were first cremated, then all of their ashes and bones were collected and placed within urns which, finally, were buried. The cinerary urns also contained valuable grave goods and were marked by stelae further demonstrating the attention given to the deceased. Nor is there a narrow range in age between the specimens. As has already been discussed, the remains vary from one month to four years with the majority aged less than 6 months (Smith et al. 2011: 866-7).

Kylindra Cemetery

In contrast to the Ashkelon sewer, the Kylindra Cemetery is analyzed to show the characteristics of a burial ground containing infants and young children who had died from natural causes.

This site is located on Astypalaia, the westernmost island of the Dodecanese group in

Greece, and it was in use from 750 BC to the first century AD. Here, over 2400 infant inhumations, each buried in its own clay pot, have been uncovered with ages ranging from 24 gestational weeks to two years, with a mean age of 36.7 gestational weeks. No adult burials were recorded at the site (Hillson 2009: 137-8; Smith et al. 2011: 871). Most of the remains were infants in approximately the state of development expected at birth after a full-term pregnancy. To date, 840 of the skeletons have been recovered from these burials (Hillson 2009: 139).

As was common in the Classical times, the children were buried in large vessels, most of which were amphoras whose varying forms suggested they came from different parts of the Greek world. Many were well-used vessels since lead repairs have been found. Domestic pots of various kinds also were used but are much rarer (Hillson 2009: 139). The pots were laid on their sides in a small pit dug into the bedrock. The bodies of the infants were placed inside through an opening cut in the uppermost side, which was then capped by replacing the piece of pottery that had been cut out (See Figure 23). The neck of the pot was covered with mortar, a stone stopper, or a piece of pottery (Hillson 2009: 139).

Age estimations were conducted using the following methods: development of the teeth, growth in the skulls, and long bone measurements. Most of the teeth found in the burials are partially formed elements of the deciduous teeth which is indicative of a normal full-term baby. There is also large amount of variation, meaning that premature and more developed children were buried alongside each other (Hillson 2009: 144).

Analysis of the growth in the skulls further demonstrates this variation. Studies on the basilar occipital have shown that the ages of the remains varied from around full-term, to prenatal, and some were even older than 8 months after birth (See Figure 24). Thus, it further

suggests that though most burials consisted of fetuses and neonates, there were also more developed children (Hillson 2009: 148).

The long bone measurements in the Kyllindra assemblage differ when compared to those of the two previous methods. Instead of finding variation in the age of the remains, the mean of the age estimates for all of the long bones was calculated at 39.4 weeks. This could be explained because some of the older remains did not have preserved long bone shafts (Hillson 2009: 151).

This site is different than the Tophet because although it has some degree of age variation, the majority of the remains are fetal. Since there are a greater number of small infants compared to older infants, this cemetery seems to represent an area set aside for children who died of natural causes (Smith et al. 2011: 869).

The West Necropolis of Amathus: A Probable Tophet

Unlike the other sites discussed above, the West Necropolis at Amathus is significant because it represents a possible Tophet, thus allowing for a better understanding of the Phoenician ritual.

As has already been discussed, there are a significant number of Tophets throughout the western Mediterranean in contrast to the eastern Mediterranean whereas so far, the only possible Tophet occurs not on the Phoenician homeland, but on the West Necropolis of Amathus, Cyprus (See Figure 25 and Figure 26) (Karageorghis 2002: 153; Smith 2008: 274). Amathus was the capital of one of the ancient coastal kingdoms of Cyprus which flourished during the Iron Age, in particular when it was under strong Phoenician influence. The site is situated some distance from the much larger main cemetery of the town (Christou 1998: 207; Karageorghis 2002: 153). It was uncovered in February of 1992 by a bulldozer during illegal leveling operations for further expansion of a hotel (See Figure 27). The exact location of the cemetery and its burial urns,

which are not surmounted by stelae as at Carthage, lies between a group of bungalows and the hotel swimming pool resulting in its division into two sectors, east and west, identified by field context numbers 1440 and 1441 respectively (See Figure 28) (Christou 1998: 208).

In the greatly disturbed east sector, excavations were able to determine that there were three superimposed levels of shallow pits cut into the soft bedrock which contained many intact urns. The excavations uncovered a total number of 1273 different movable finds including 230 cinerary urns, of which 159 are *dinoi* (cooking pots) and the other 71 amphorae with very short necks, or amphoroid craters in Red Slip, Bichrome, White Painted, Black-on-Red and Plain White ware. The rest of the finds consisted of a variety of burial gifts such as 351 bowls and miniature bowls mostly of Plain White ware, 553 White painted and Plain White juglets, 22 dishes and miniature dishes, 17 lids of large vessels, 46 bronze bridles of horses, 7 bronze buckles, 17 silver finger-rings, 7 silver earrings, 46 astragalis, and various other metal objects and minor works of art (Christou 1998: 209-10).

The west sector was much less disturbed by the bulldozer, in particular the southern limit where the greater part of the stratigraphy was preserved. The cinerary urns were deposited in the lower layer of sand. Excavations uncovered 444 moveable objects which included 110 cinerary urns of which 100 are amphora and 10 are *dinoi* (Christou 1998: 211). The rest of the objects included 300 miniature bowls and dishes, the majority in Plain White ware, 10 bronze lamp stands, 10 scarabs, bronze fibulae, alabaster objects, ivories, silver and iron rings, and various other items (Christou 1998: 211).

As of the time of writing, only 25 of the burial urns have been examined. Human bones were found to be present in 23 of the urns, 13 with human bones alone and 10 with both human and faunal remains. Only 2 urns contained faunal remains exclusively. It is important to note that

except for one faunal bone being found in a cinerary urn in the west sector, the rest of these remains were found in the east sector. In the 13 jars with human remains and the 10 with a mixture of human and faunal remains, the presence of 16 and 39 human individuals were identified representing a total of 55 individuals (Agelarakis 1998: 219; Christou 1998: 213).

The faunal remains deposited within the cinerary vessels appear to have undergone similar processes to the cremation of the human bones. The majority of the faunal inclusions from large animals, including very young ovicaprids, were highly calcified, whereas the smaller-bodied faunal individuals, including *Sauria* (suborder for lizards), *Batrachians* (frogs and toads), and avifauna, revealed a lesser but still high degree of thermal alteration (Agelarakis 1998: 224).

It appears that there was a spatial segregation within the burial ground according to age subcategories, although with some overlap. The east sector exclusively contained very young humans of prenatal and perinatal age and infants up to a maximum of 1 year old. The west sector was dominated by a range of older individuals, namely sub-adults to mature adults (Agelarakis 1998: 220). There was, however, an overlap due to the presence of two young individuals in this area, the age of one being determined at perinatal age to a maximum of 6 months after birth and the other was between 4 and 5 years. The former was included in an urn with the remains of an individual older than 16 and younger than 21 years of age and the latter was found in its own urn void of any other human remains (Agelarakis 1998: 220 & 223).

After the examination of the cinerary urns and their contents in 1998 (Agelarakis 1998: 226-7; Christou 1998: 213) it was concluded that this site did not represent a Tophet based predominantly on the absence of stelae, the indiscriminant mixing of human and faunal remains in a single urn and the overlap of age distribution found in the west sector. The present writer does not, however, agree with this conclusion. Though stelae are found at Tophets throughout

the western Mediterranean, all of these sites are strictly Phoenician colonies. This contrasts with Amathus which was not a Phoenician colony but a Cypriot kingdom with a Phoenician presence. Cypriot culture is a mosaic of eastern and western influences, thus the lack of stelae could simply reinforce this notion (prs. comm. S. Swiny, 04/03/12). It is also possible that since the site was heavily looted before its discovery, the stelae, as well cut stone slabs, may also have been removed. However, this is less likely since not even a small fragment has been found. The grave markers might also have been made from perishable material such as wood as suggested at Tyre instead of stone and thus would not have survived in the archaeological record (prs. comm. J. Greene, 05/04/12).

Though Christou (1998: 213) states that the cinerary urns at Carthage do not contain both faunal and human remains, this is incorrect and is most likely due to the thirteen year gap between the information known to Christou in 1998 and the more current publications on the site. Thus, at both Amathus and Carthage some of the cinerary vessels contain indiscriminate mixing of cremated animal and human remains. It is also important to note that like the Tophet at Carthage, the cremated remains of infants at Amathus were found in identical cinerary urns placed in superimposed rows in the sand (Karageorghis 2002: 153).

Finally, though the other Tophets represent spatially distinct entities, meaning only cremated infant and young children remains are found within its boundaries, the discovery of a two cinerary vessels containing two young individuals in the west sector does not necessarily negate the identification of this site with a Tophet. It seems that the east sector may represent a canonical Tophet since the cinerary urns only contained infants, young children and faunal remains, which is comparable to the Tophet at Carthage. It does not appear that the west sector is

a Tophet since the urns contain the remains of mostly sub-adults and mature adults, thus both sectors seem to represent two different types of spatially segregated burial grounds.

Before this site was found, the general consensus was that Cyprus had no evidence for a Tophet, despite the presence of Phoenicians at several city kingdoms, notably Amathus and Kition (Karageorghis 1988: 163). As a result, the cemetery at Amathus is significant for both Cypriot history and for a better understanding of Tophets in general, being that to date it is the only such cemetery found in the eastern Mediterranean. Unfortunately, the site remains incompletely published, thus making it difficult to conclude whether the West Necropolis of Amathus, in particular Context 1440, is indeed a Tophet based on the published analysis of only 25 of the 340 cinerary urns. As a result, for now, only the east sector can be called a “probable Tophet” and the west sector, a burial ground for individuals who had died from natural causes.

Conclusion

One of the greatest and most ambiguous issues associated with the study of the Tophets is the question as to why the Phoenicians practiced child sacrifice. Some have argued that it was a form of ritual infanticide and would thus serve as a mechanism for population control, particularly among the elite members of Carthaginian society. As such, this institutionalized practice may have assisted in the consolidation and maintenance of family wealth (Stager et al. 1984: 50). This seems unlikely, however, since the finds at Ashkelon suggest that the deaths of the infants from the Tophet were not the result of infanticide.

It has also been suggested that child sacrifice may have been performed to ensure the prosperity of maritime trade. Since it has been argued that this was a spring rite, it might have been tied with the Phoenician shipping industry, the backbone of Phoenician society (prs. comm. J. Green, 05/04/12). However, as has already been discussed, a comprehensive study has not yet

been conducted on the faunal remains which would determine when the deaths occurred. Furthermore, the present writer believes that child sacrifice was too extreme a ritual to have been practiced for each maritime journey as it would ultimately have decreased the Phoenician population, particularly the elite. Also, the discovery of mushroom-lipped decanters, or carafes, from an eighth century BC Phoenician shipwreck off the coast of Ashkelon, Israel suggests that other rituals were associated with maritime trade. Though none of the decanters from the shipwreck have inscriptions, others have been found with writing. In particular, an inscription on a decanter from ca. 700 BC states, “Belonging to Mattanyahu, wine for libation, one-fourth (*lmtnyhw. yyn. nsk. rb ‘t.*)” (In Ballard et al. 2002: 163). The term *nsk* is used several times in the Bible when referring to the cultic libation of wine, demonstrating the use of libations and not child sacrifice as the practice associated with trade (Ballard et al. 2002: 163).

Rather, it appears that child sacrifice was performed as a Phoenician response to a major crisis, such as military or natural disasters (Brown 1991: 33). This is supported by Philo of Byblos who wrote a Phoenician history around 100 AD, of which only fragments survive today. Philo asserts that he translated into Greek, in eight volumes, a history of the Phoenicians by the Phoenician author Sanchuniathon, who is thought to have lived in Beirut or Tyre at the end of the second millennium BC (Aubet 2001: 28; Brown 1991: 22). Sanchuniathon was considered an authority on Phoenician religion and history, and he recorded that at the time of the Trojan war a Phoenician custom was for the ‘princes of the city’ to sacrifice the most cherished of their children in mysterious ceremonies in honor of Cronos (Ba’al Hammon) in times of grave danger, plagues, wars, or natural disasters (Aubet 2001: 246; Brown 1991: 22). This reference is important because it suggests that child sacrifice was an elite practice, thereby providing a

possible antecedent for the Iron Age ritual of *mulk*. It also illustrates that the sacrifice of a child was a powerful supplication for help to the gods (Bonnet 2010: 384).

Fragments of Sanchuniathon's text are important because they represent a rare Phoenician document that discusses this practice, thus allowing us to gain a better insight into the ritual from a Phoenician perspective. Unfortunately, since documents such as this are so scarce, the archaeological record must also be examined. Through analysis of the skeletal remains, the associated grave goods and the stelae at Carthage it seems that the Phoenicians did indeed practice child sacrifice. This custom is further supported by the finds from Tyre, Ashkelon, the Kylyndra Cemetery and Amathus because all these sites help emphasize the uniqueness of the practices recorded at the Tophet in Carthage and the central role it played in this much disparaged Phoenician religious ritual.

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Figures

Figure 1
Adapted from Stuart Swiny: Class
Images 2010



Figure 2
Adapted from Stuart Swiny: Class
Images 2010



Figure 3
Adapted from Stuart Swiny: Class
Images 2010



Figure 4
Adapted from Stuart Swiny: Class
Images 2010



Figure 5
Adapted from Markoe 2000: VI



Figure 6
Adapted from Metropolitan Museum



Figure 7
Adapted from Stuart Swiny: Class
Images 2010



Figure 8
Adapted from Markoe 2000: 8

Figure 9
Adapted from Markoe 2000: 9

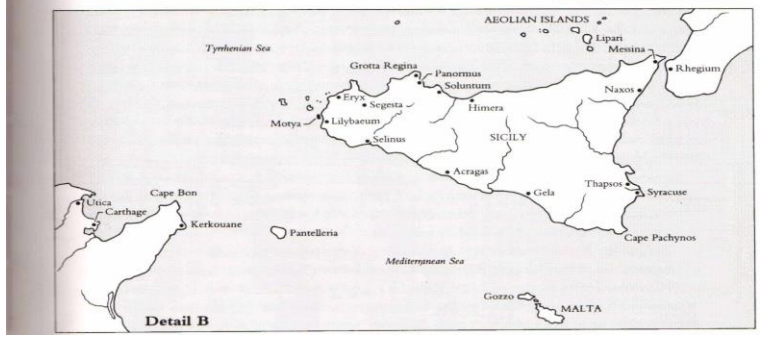
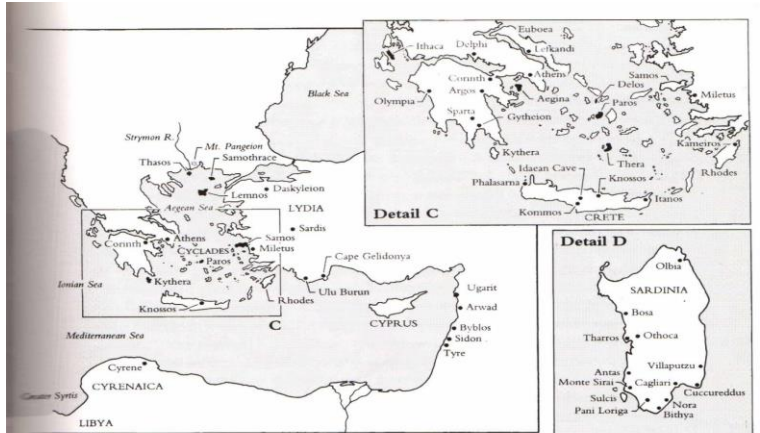
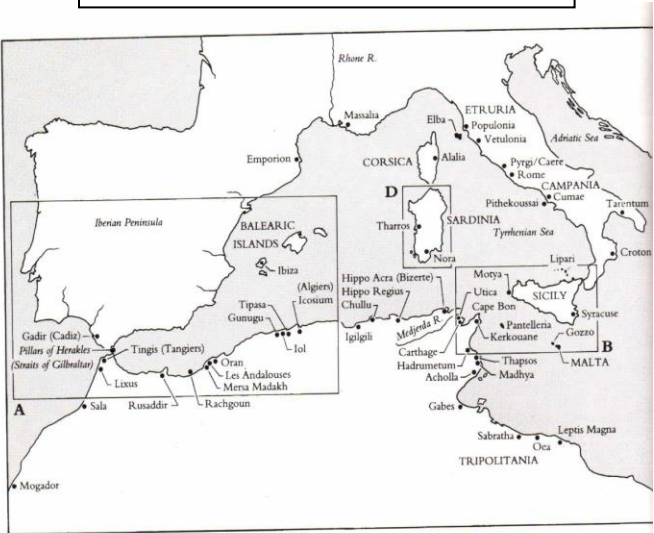


Figure 10
Adapted from Schwartz et al. 2010:
Figure 1



Figure 11
Adapted from Stuart Swiny: Class
Images 2010



Figure 12
Adapted from Stuart Swiny: Class
Images 2010



Figure 13
Adapted from Schwartz et al. 2010:
Figure 3

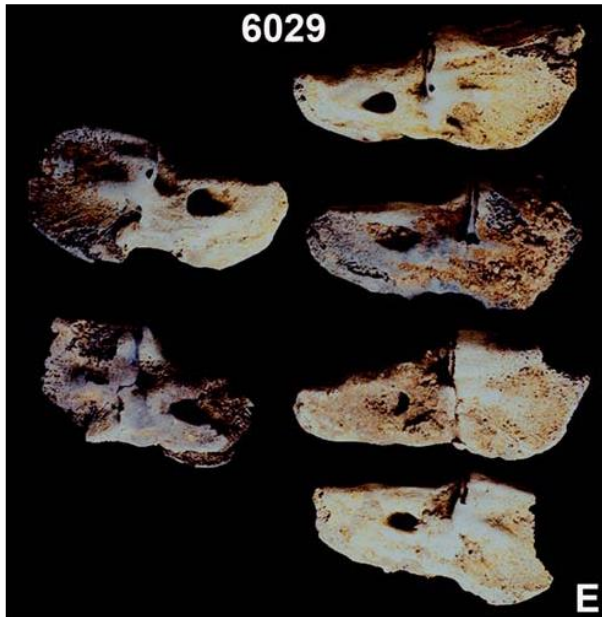


Figure 15
Adapted from Stuart Swiny: Class
Images 2010



Figure 14
Adapted from Schwartz et al. 2010:
Figure 2

42

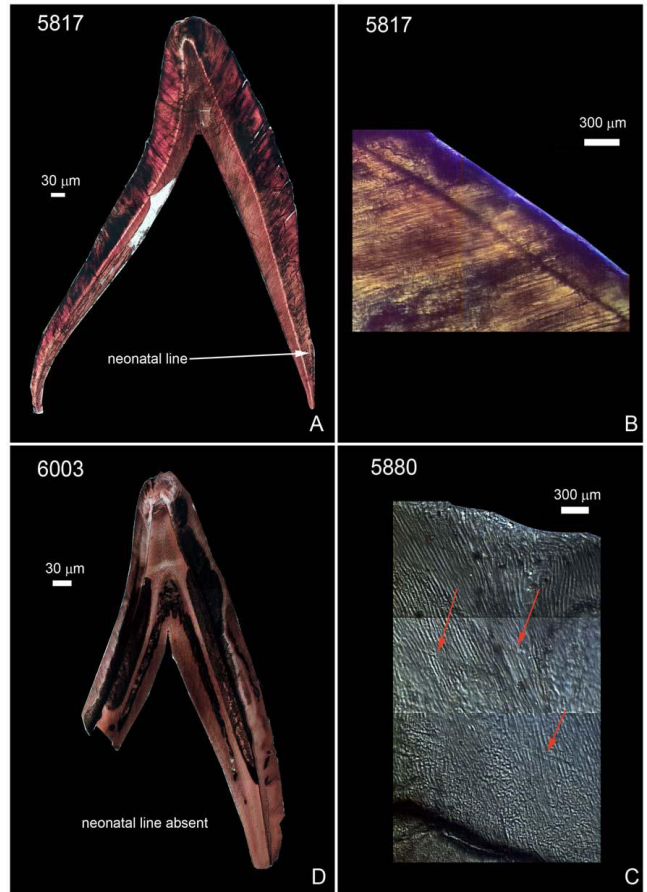


Figure 16
Adapted from Stuart Swiny: Class
Images 2010



Figure 17
Adapted from Aubet 2010: Figure 1

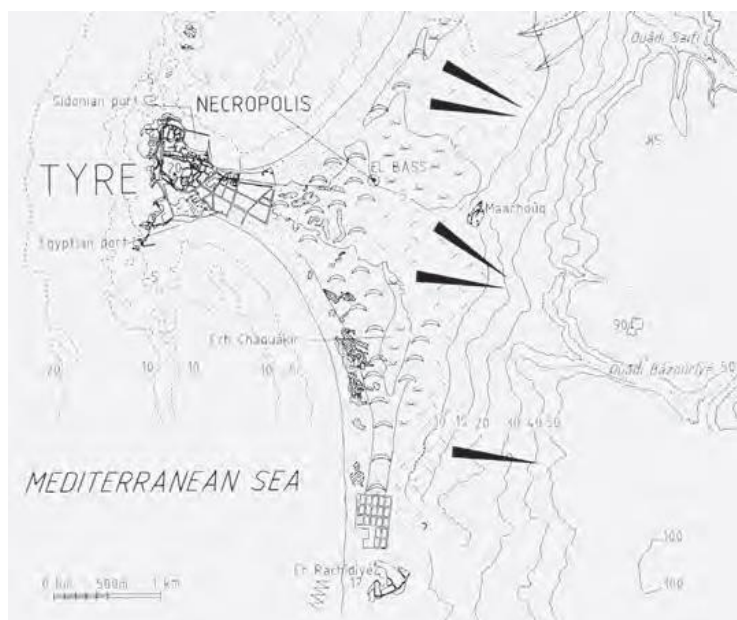


Figure 18
Adapted from Aubet 2010: Figure 4



Figure 19
Adapted from Aubet 2010: Figure 6



Figure 20
Adapted from Aubet 2010: Figure 8



Figure 21
Adapted from Aubet 2010: Figure 11a



Figure 22
Adapted from Aubet 2010: Figure 12



Figure 23
Adapted from Hillson 2009: Figure 9.2



Figure 24
Adapted from Hillson 2009: Figure 9.7



Figure 25
Adapted from Bikai 1989: 207

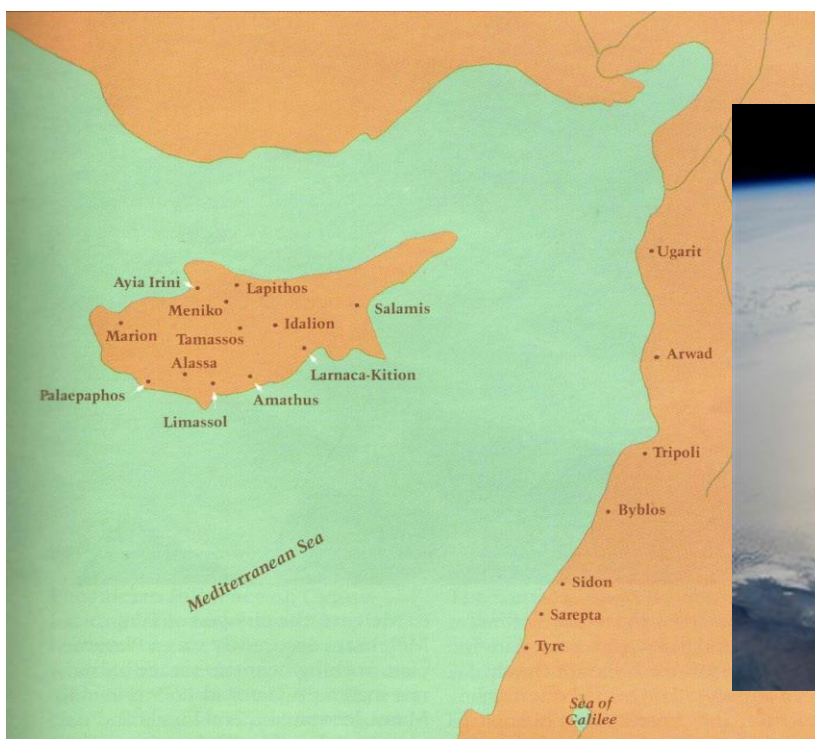


Figure 26
Adapted from Stuart Swiny: Class Images 2010



Figure 27
Adapted from Stuart Swiny: Class
Images 2010



Figure 28
Adapted from Karageorghis 2002:
Figure 319

