

## Article

# The Obstetric Connection: Midwives and Weasels within and beyond Minoan Crete

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**Abstract:** The Minoan peak sanctuaries call for systematic comparative research as an island-bound phenomenon whose significance to the (pre)history of medicine far transcends the Cretan context: they yield clay anatomical offerings attesting to the earliest known healing cult in the Aegean. The peak sanctuary of Petsophas produced figurines of weasels, which are usually interpreted as pests, ignoring their association with votives that express concerns about childbirth, traditionally the first single cause of death for women. The paper draws from primary sources to examine the weasel's puzzling bond with birth and midwives, concluding that it stems from the animal's pharmacological role in ancient obstetrics. This novel interpretation then steers the analysis of archaeological evidence for rituals involving mustelids beyond and within Bronze Age Crete, revealing the existence of a midwifery *koine* across the Near East and the Mediterranean; a net of interconnections relevant to female therapeutics which brings to light a package of animals and plants bespeaking of a Minoan healing tradition likely linked to the cult of the midwife goddess Eileithyia. Challenging mainstream accounts of the beginnings of Western medicine as a male accomplishment, this overlooked midwifery tradition characterises Minoan Crete as a unique crucible of healing knowledge, ideas, and practices.



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## 1. Introduction

According to evolutionary anthropologists, the conflicting conjunction of a narrow pelvis—derived from bipedal adaptation—and increased brain size resulted in difficult parturition, which is at the origins of assisted birth; namely, obligate midwifery, a therapeutic response to lessen the impact of maternal and perinatal mortality that may have been in place long before the advent of anatomically modern humans (Trevathan 1987; Rosenberg and Trevathan 2001; DeSilva 2010). The first practitioner recorded in writing is the 'wise woman' (Liturgy to Nintud, Mesopotamia, c. 2600 BCE), the expert in the core medical fields of gynaecology, obstetrics and paediatrics. Yet no attention has been paid to the therapeutic systems emerging early on to address the issues associated with gestating and birthing large helpless infants. Anthropological and comparative approaches to midwifery indicate that these medico-religious systems revolve around the cult of deities/spirits of (re)birth made in the image of the midwife. This is pertinent to Petsophas (c. 2000–1600 BCE), the Minoan peak sanctuary yielding the largest number of terracotta anatomical votives. Distinctive of Petsophas are also models of weasels, commonly interpreted as pests (Myres 1902–1903, p. 381; Evans 1921, p. 153; Mackenzie 1917, p. 275; Hutchinson 1962, p. 219; Willetts 1962, p. 72; Dietrich 1974, pp. 292, 299; Marinatos 1993, p. 117; Jones 1999, p. 33), and a largely overlooked concentration of gynaecological offerings; an association evoking the weasel's intriguing symbolic bond with childbirth and the ancestral figure of the midwife. The paper argues that their pervasive connection rests on the weasel's pharmacological use in obstetrics, which explains the animal's role as an attribute of the Cretan Eileithyia and other divine midwives. Applying this interpretation to the diachronic analysis of rituals involving mustelids beyond Bronze Age Crete leads to the identification of an animal package with a long history in midwifery cult and practice.

This package is associated in the Minoan votive record with depictions of plants later recorded as main gynaecological drugs in the Hippocratic texts, bespeaking of women's neglected contribution to the foundations of Western medicine. A Minoan midwifery system is thus revealed by pinpointing a distinctive insular tradition on Crete, nested in wider traditions and connectivities that are discernible across the Mediterranean and the Near East. As the paper illustrates the potential of integrative approaches to the study of peak sanctuary materials, it showcases Minoan Crete as an epistemic laboratory of the greatest significance to the (pre)history of medicine.

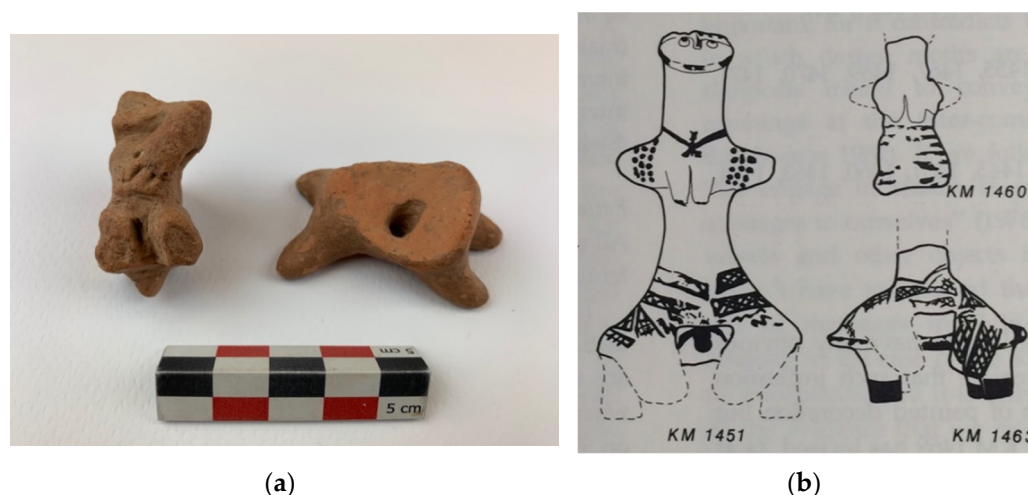
## 2. Practices Relating to Midwifery at the Minoan Peak Sanctuary of Petsophas

### 2.1. An Extraordinary Corpus of Gynaecological Votives

Dedicating models of body parts to supernatural healers is a very old ritual practice in the Mediterranean. In modern Greece, metal and wax anatomical *tamata* are offered to saint therapists (e.g., Panagia, Agios Panteleimonas) in request or thanks for cures and protection. For similar purposes, in Classical times worshippers offered clay and marble anatomical votives to medical deities (e.g., Asklepios, Hygeia). The prototypes of these dedications typically associated with healing cults are the clay body parts from the peak sanctuaries of Bronze Age Crete (Peatfield 2000, p. 11; Morris and Peatfield 2014, p. 61; McGeorge 1987, p. 414; 2008, p. 122), occurring alongside full-bodied figurines of worshippers, animal models and other votives.

Petsophas, serving the area of Palaikastro in northeastern Crete, is the Minoan peak sanctuary yielding by far the largest number of anatomical votives. These include legs, arms, hands, torsos, hips and lower bodies, often pierced for suspension, insightfully related to healing practices by John Myres (1902–1903, p. 381), who first excavated Petsophas at the turn of the 20th century. In the 1970s, Costis Davaras completed the excavations of the site, unearthing the largest part of the sanctuary's assemblage, still mostly unpublished.<sup>1</sup> Among these finds and the fewer published is a striking concentration of offerings suggesting childbirth-related concerns, the kind of dedications made in antiquity to deities protecting reproductive health. The corpus of gynaecological votives from Petsophas, unprecedented in the Aegean, encompasses the following material:

- Figurines of clearly pregnant/periparturient females (Rutkowski 1991, p. 91; Morris and Peatfield 2014, pp. 51, 60): One displays upraised arms (Myres 1902–1903, p. 370, Pl. 11, n° 22), an auspicious gesture of birth in later Greek iconography.<sup>2</sup> Other figurines are in traditional birth positions, squatting or sitting with splayed legs and/or incised vulvas. A birthing figurine with a bottom peg to be wedged in a stool (see Figure 1a) recalls the parturient figurines on birth stools (see Figure 1b) occurring with shells in the Chalcolithic deposit from Kissonerga-Mosphilia (Cyprus, c. 3000 BCE), which may well be the ritual kit of the community's midwife, as suggested by Goring (1991, p. 95).
- Figurines with splayed legs seated on stools (Myres 1902–1903, pp. 373–74), probably alluding to parturition despite showing no bulging belly; in the Iron Age childbirth models from Eileithyia's cave at Tsoutsouros (southern Crete), not all the labouring women assisted by the midwife are visibly pregnant (see Kanta 2011a, pp. 117, n° 114).
- Seated figurines with spread legs not visibly pregnant.
- Models of four-legged stools detached from figurines (see Figure 1a) (Myres 1902–1903, p. 374).
- Anatomical models of female hips and lower bodies with splayed legs and/or incised pubic triangles/vulvas (see Figure 2a) (Rutkowski 1991, Pls. 43–44).
- Anatomical models of breasted female torsos.
- Figurines of swaddled babies (see Figure 2b), to date unique in the context of Minoan peak sanctuaries, and among the earliest testimonies of the ancestral practice of wrapping newborns in cloth, still performed by the last Cretan folk midwives (*praktikes mames*) in the 1970s.



**Figure 1.** (a) Fragmentary clay figurine of a birthing female with a dilated vulva and a hand on the belly, originally seated on a stool like the one adjacent. Petsophas. Crete, 2000–1600 BCE. Archaeological Museum of Agios Nikolaos, Crete. (b) Drawing of clay parturient figurines—one with an emerging infant—seated on stools. Kissonerga-Mosphilia. Cyprus, c. 3000 BCE. Courtesy of Diane Bolger.



**Figure 2.** (a) Clay lower body models with incised female genitals, one displaying spread legs, and (b) clay figurines of swaddled newborns. Petsophas. Crete, c. 2000–1600 BCE. Archaeological Museum of Agios Nikolaos, Crete.

According to osteological studies, life expectancy in Bronze Age Crete was not even half that of modern Cretans, females having an average life span shorter than males, as due to the endangering hazards of pregnancy and childbirth, many women died during the stage of peak fertility between the ages of 20–25 years (McGeorge 1987, p. 408; 1988, p. 48; 2008, p. 118; Hallager and McGeorge 1992, p. 38). Such hazards gave rise to the cult of Eileithyia (McGeorge 2012, p. 293), the prehistoric Cretan goddess patterned on the midwife (Willets 1958, p. 221), who was to be adopted into Greek religion as the primary deity of childbirth (Farnell 1896; Baur 1902; Pingiatoglou 1981). Eileithyia's cult is attested in the 2nd millennium BCE; her name (*e-re-u-ti-ja*) appears on Linear B tablets from Knossos, one mentioning the neighbouring site of Amnisos, where she had a cave sanctuary renowned in Homeric times (*Od.* 19. 188) (Ventris and Chadwick 1973, pp. 127, 310; Flouda 2011). She is the earliest known midwife goddess in Crete and, according to Warren (1970, p. 375), the only medical deity in the Linear B archives.

In Hellenistic-Roman times, on the island of Paros, Eileithyia was offered models of female breasts and hips with incised genitals (Forsén and Sironen 1991, pp. 176–77; Forsén 1996, pp. 97–100, 135), the kind of dedications made for safe birth, lactation (Wise 2007, pp. 103–16), or other gynaecological issues. Nilsson (1925, p. 30; 1950, pp. 518, 523) and Willetts (1958, pp. 221, 223, n. 16) respectively acknowledge Eileithyia as “the divine midwife” and her “obvious origin in the human midwife”; but they then argue that she was a deity of childbirth except on Paros, where she was a healing goddess because only there did she receive anatomical votives. This view is supported by other scholars (Piniatoglou 1981, p. 88–89; Forsén and Sironen 1991; Forsén 1996, p. 135; Leitao 2007, p. 257), including Dietrich (1974, p. 87, n. 88), who—except on Paros—sees Eileithyia as a “goddess of nature”. Ancient sources show, however, that this paradoxical division of her skills and roles and her association with nature rather than culture are modern perceptions obscuring data relevant to the history of medicine. On an Archaic relief amphora from the island of Tinos depicting Athena’s birth, Eileithyia holds her *harpē*, the obstetric knife to cut the umbilical cord (Olmos 1986, pp. 686–87, 697; Étienne et al. 2013, pp. 63–65, 109–10); as we shall see, the divine midwife displays other attributes of her medical expertise. Writing on her human prototype, Plato (*Theaet.* 149c–d) says that by means of drugs and incantations, she induced labour, eased the birth pangs, promoted conception, and abortion, if needed. Soranus (*Gyn.* 1. 4) states that, when skilled, the *maia/obstetrix* was a general practitioner.<sup>3</sup> In the Orphic Hymn to Protothyraia, Eileithyia is invoked as she who frees from pain those in terrible distress. Human or divine, the midwife is always a healer. The anatomical votives dedicated to Eileithyia on Paros in historical times find close parallels among the gynaecological offerings from the Minoan peak sanctuary of Petsophas, themselves pointing to her cult. Supporting this suggestion is an animal with surprising names that takes us on a journey across the Mediterranean and beyond.

## 2.2. *Kalogennousa: The Intriguing Weasel Models from Petsophas*

Along with human figurines including body parts, when excavating Petsophas, Myres unearthed clay models of cattle, goats, sheep, swine, birds, beetles, tortoises, dogs, and a creature with a pointed nose, prick-ears, long neck and tail, and a kink in the back (see Figure 3). He recorded this animal as the most common “non-domestic” species represented at the sanctuary and identified it as a mustelid, probably the *kalogennousa* (Myres 1902–1903, pp. 377, n. 2, 381), a Cretan name for the weasel meaning ‘she who births well/easily’. Myres (1902–1903, p. 381) listed the *kalogennousa* models among the few finds from Petsophas difficult to interpret. Arguing that the mustelid had an evil repute among pastoral people, he deemed it “vermin”, “definitely noxious”, and suggested that worshippers dedicated the figurines of weasels “by way of imprecation or out of gratitude for deliverance from their ravages”.

Except for a few voices recalling the animal’s ancient domestic use to repel mice and/or its symbolic connotation with fertility (Rutkowski 1991, p. 36, n. 64; Watrous 1996, p. 87), archaeologists have mainly followed Myres’ lead and variously portrayed the weasels<sup>4</sup> from Petsophas as “unclean animals”, “mere vermin”, “bestial enemies of mankind”, “lowly creatures”, and “pests” (Evans 1921, p. 153; Mackenzie 1917, p. 275; Hutchinson 1962, p. 219; Willetts 1962, p. 72; Dietrich 1974, pp. 292, 299; Marinatos 1993, p. 117; Jones 1999, p. 33). No new insights have been offered on the weasel figurines from the sanctuary, nor have questions been raised as to their occurrence together with anatomical votives attesting to healing practices. Yet the role played by mustelids in Minoan ritual should not be neglected. As discussed below, Palaikastro, the settlement served by Petsophas, yielded weasel iconography and wells with remains of dedicated mustelids. And the Temple Repositories of the Palace of Knossos, the cult assemblage containing the iconic faience ‘snake goddesses’, included a weasel skull along with depictions of plants suggesting that the animal was neither noxious nor lowly.





**Figure 3.** (a,b) Clay models of weasels. Petsophas. Crete, c. 2000–1600 BCE. Archaeological Museum of Agios Nikolaos, Crete.

### 2.3. Telling Names: The Lexicon of the Weasel

While inquiring about the weasel in Crete, some people told me that “it is bad because it attacks chickens in their coop”—yet the chicken is virtually absent from the island’s Bronze Age record (Reese 1990, pp. 200–2; Moody 2012, p. 240), so this could hardly have been a problem for the Minoans. Other people reported instead that the weasel is *gouri*, a bringer of good luck. Cretans have funny local names for the animal. Along with *kalogennousa*, ‘she who births easily/well’, they call it, or rather, her, *kalosynteknari*, ‘she who is good with the infant’; *kalogynekari*, ‘good little woman’; or *nyfitsa*, ‘little bride’, the common Greek term for the mustelid. This peculiar nomenclature would have no further significance if it were restricted only to the Aegean. But that is not the case. In an array of languages and dialectal variants over a broad geographic area stretching from the Atlantic to the Black Sea and from the Baltic to the southern shores of the Mediterranean, the weasel is regarded as female and commonly designated by names meaning ‘little lady’, ‘little beautiful lady’, ‘little bride/newlywed’ (Hutchinson 1966; Bambeck 1972–1974; Coseriu et al. 1979, pp. 36–37; Mesnil and Popova 1992; Witczak 2004; Kaczynska and Witczak 2007), and also ‘little midwife’: *comadreja* (Spanish), *kumairelo* (Tolosan), *cummatrella* (Campanian), *cumarella* (Abruzzian), *cumătriță*, *cumetriță* (Romanian) (Coseriu et al. 1979, pp. 36–7; Bambeck 1972–1974), all deriving from Late Latin *commater*, ‘with (the) mother’; namely, the *obstetrix*, she who stands before the mother in childbirth. Belonging to this same semantic field are the Cretan terms for the weasel *kalogennousa* and *kalosynteknari*. Why is the animal’s identification with women’s transition to motherhood (brides), birth and midwives imprinted in the linguistic record across Europe and beyond? Looking into this question sheds light on the joint occurrence of gynaecological and weasel votives at the Minoan peak sanctuary of Petsophas.

### 2.4. Mustelids, Brides and Midwives: Ethnographic and Historical Sources

Ancestral practices and beliefs often lie embedded in words. The weasel’s striking lexicon brings to mind the popular Athenian ritual of the *Nyfitsa* (‘little bride’) still performed in the 19th century, by which the animal was ceremonially invited to partake in wedding celebrations (Rodd 1892, p. 163). The *Nyfitsa* ceremony evokes, in turn, the Hungarian custom of offering weasel furs as wedding gifts (Dömötör 1982, p. 126); the belief held in Montenegro that such furs eased delivery (Mesnil and Popova 1992, p. 96); the use of the skin of another mustelid, the otter, as a childbirth charm in the Scottish Highlands (Beith 1995, p. 180); amulets with hair of yet another mustelid, the badger, given to newly delivered mothers and their babies in the Abruzzi (Italy) (Canziani 1928); and a Renaissance custom linking the weasel to the girdle, an association we shall come across in the Minoan record. In her study on weasels and pregnancy in Renaissance Italy, Musacchio (2001) discusses weasel iconography on birth trays, inventories recording jewelled mustelid heads

as expensive bridal gifts (see Figure 4a), and portraits of wealthy ladies holding weasel pelts, at times outfitted with golden mustelid heads, which are attached to their girdles by a chain (see Figure 4b).



**Figure 4.** (a) Jewelled gold head of a marten. Venice, c. 1550. The Walters Art Museum, Baltimore; (b) A similar head set with mustelid fur is worn attached to the girdle by Countess Livia da Porto Thiene on the portrait with her daughter Deidamia, painted by Veronese in 1552 when the noblewoman was pregnant. The Walters Art Museum, Baltimore.

Some art historians have interpreted these ‘weasel girdles’ as flea-catchers worn to draw vermin away from the body, but there are no references to such a function in contemporary texts; relying on primary sources, [Musacchio \(2001\)](#) argues instead that in the Renaissance mustelids served as amulets in pregnancy and childbirth. Could their apotropaic use to propitiate this risky passage explain the weasel’s identification with the midwife in the linguistic record? Or is there more to it? Trota of Salerno’s *De mulierum passionibus* (12th c.), a major reference on women’s medicine disseminated throughout Europe by the Late Middle Ages, offers a first insight into this question. Trota, whose treatments stem from female oral lore ([Green 2008](#), p. 58), prescribes a vaginal pessary containing weasel oil and musk to promote conception ([Boggi 1979](#), p. 22). Beyond, or rather, beneath its apotropaic function, the weasel was then a pharmacological animal in midwifery.

When turning to Classical texts, we learn that the weasel was an attribute of Eileithyia, Hekate and Leto (Ael. NA 10. 47, Ant. Lib. 29. 4. 1), all goddesses of birth, the latter identified with the Egyptian Wadjet (Hdt. 2. 59). The ancient Greek name for the weasel was *galē*, a term also designating other mustelids and the Egyptian mongoose, the ichneumon. At Herakleopolis, the Egyptians worshipped the weasel-like ichneumon, sacred to the goddesses of birth (Clem. Al. *Protr.* 2. 39. 5, Ael. NA 10. 47); mummified mongooses were placed in statuettes of Wadjet (James 1982), and when children recovered from serious illnesses, ichneumons received thank-offerings of bread and milk (Diod. 1. 83). In the Greek polis of Thebes, the weasel was worshipped in honour of Galinthias (Clem. Al. *Protr.* 2. 39. 6, Ael. NA 12. 5), the female metamorphosed into a weasel who unblocked Alkmene's delivery of Herakles, saving mother and child from likely death. Out of gratitude, Herakles set an image of Galinthias by his house and offered her sacrifices, a cult perpetuated by the Thebans, who, before the festival of the Herakleia, sacrificed to Galinthias first (Ant. Lib. 29).

### 2.5. Galinthias, the Oxytocic Weasel

The myth of Galinthias (<*galē*, 'weasel'), recorded by various sources, is a story about obstructed labour, a main cause of maternal and foetal death. Wishing to hinder Alkmene's delivery of Herakles, Hera/Juno dispatches Eileithyia and the Moirai (Ant. Lib. 29), the Pharmakides (Paus. 9. 11. 3), or Lucina (Ov. *Met.* 9. 281–323), who, by crossing their limbs, 'lock' the parturient's womb.<sup>5</sup> But Alkmene's clever attendant, Galinthias/Galanthis, fools them. With a joyous cry in their hearing, she announces that the baby has been born, which so startles Hera/Juno's envoys that they 'unlock' their limbs, thus allowing Alkmene to bring forth Herakles. Then, in punishment for her deed, Galinthias/Galanthis is metamorphosed into a weasel. According to Ovid, the mustelid is doomed to give birth through the mouth for having assisted Alkmene by uttering a lie. In another version (Ant. Lib. 29), out of pity for the metamorphosed Galinthias, Hekate appoints the weasel as her sacred attendant.

Modern scholarship, perpetuating many a gender stereotype, tends to follow ancient authors ascribing Galinthias to the presumed female domain of magic, superstition, trickery, sorcery and deviant sexuality. The weasel is associated with witchcraft, endowed with magical potency, linked to superstitious practices owing to the blocking gestures performed by Hera/Juno's envoys, or related to miraculous birth because of the belief that the animal delivered through the mouth (Papathomopoulos 1968, pp. 134–38; Celoria 1992, p. 189; Canto Nieto 2003, pp. 205–8; Bettini 2013, p. 168). It has also been proposed that the similarity between Galinthias' name and the weasel's (*galē*) is accidental or assignable to false etymology (Maas 1888, p. 614; Hiller von Gärtringen 1910, p. 607; Forbes Irving 1992, p. 206). But the data examined so far suggest otherwise.

At the core of Galinthias' story lies a primary concern to women: surviving childbirth. Relevant in the myth then is not so much what obstructs Alkmene's labour, but rather who is credited for its unlikely positive outcome: a female turned into a weasel, identified with the animal. In Pausanias' account (9. 11. 3), Galinthias is called *Historis*, meaning 'she who knows', 'she who is skillful' (cf. Papathomopoulos 1968, p. 136), the oldest and most common name for the midwife (Stol 2000, p. 171). It may thus be inferred that Galinthias = the weasel is the practitioner able to deliver Alkmene when she is in the dire straits of stalled labour (cf. Bettini 2013, p. 247). Through metaphors embedded in Galinthias' myth, we are told that the weasel facilitates birth. In fact, the mustelid acts precisely as expressed in the linguistic record: like a 'little midwife' (Spanish *comadreja*, Tolosan *kumairelo*, Campanian *cummatrella*, Abruzzian *cumarella*, Romanian *cumătriță*, *cumetril*), a 'good birther' (Cretan *kalogenousa*), a female 'who is good with the infant' (Cretan *kalosynteknari*).

Ancient sources record the weasel as an attribute of midwife goddesses, who mirror the functions and emblems of their human counterparts. Is it possible then that the animal provided an oxytocic (<ὀξύς, 'quick' + τόκος, 'birth'), one of those drugs stimulating uterine contractions essential in obstetrics because they hasten labour, foster placental

expulsion and reduce the incidence of postpartum haemorrhage? This was indeed the case. Pliny the Elder (*Nat.* 30. 43. 14), who draws from the vast repository of ancient Mediterranean folk medicine, reports that delivery is facilitated when the parturient has taken the liquid that flows from the uterus of a weasel by its genitals. As tame weasels were often kept within the household in antiquity (Lazenby 1949, p. 302; Kitchell 2014, p. 95), the drug would have been readily available. Scholars assume that the remedy recorded by Pliny was ineffective (French 2004, p. 54) or related to homeopathic magic (Bettini 2013, p. 98), but underestimating the efficacy of traditional animal-derived drugs without inquiring into their chemical composition may be unwise. The oral administration of the pounded tail of the opossum (*Didelphis marsupialis*) to ease birth, an ancient Mayan treatment still used in Mexican midwifery (Enríquez Vázquez et al. 2006, p. 495), has been relegated to folk beliefs (Bettini 2013, pp. 128–29); but it actually rests on sound empirical knowledge as, according to laboratory analyses, opossum tail extracts contain prostaglandins, hormone-like compounds that function as oxytocics, and are effective in very small doses when taken orally (Ortiz de Montellano 1990, p. 187).

What is significant here is that a weasel-based drug deemed an effective oxytocic was employed in ancient Mediterranean obstetrics, in all likelihood explaining why the animal was sacred to Eileithyia and cognate goddesses, its apotropaic use in pregnancy-delivery, and its remarkable lexicon. Under this new light, the joint occurrence of childbirth and weasel offerings at the Minoan peak sanctuary of Petsophas seems no coincidence. This votive association undermines the view that weasels were pests, reinforces Eileithyia's connection with the sanctuary, and raises the question as to whether the animal's tenacious bond with females, birth and midwifery has left archaeological traces across the Mediterranean basin. Let us cast a diachronic eye on mustelid figurines and bones in votive/cult and funerary assemblages beyond Crete before we zoom back to the insular Minoan record.

### 3. Mustelids Associated with Ritual Practices beyond Minoan Crete

Finds from the Italic peninsula provide revealing data. A temple deposit (2nd c. BCE) unearthed at the Roman site of Praeneste contained anatomical votives, including clay models of uteri; a bronze statuette likely portraying Juno; probable iron keys, typically dedicated to ease birth (i.e., 'unlock' the womb); bones of a marten or a cat; and unique clay figurines of a female with a weasel-shaped body (Tedeschi 2007). Tedeschi, who soundly interprets these figurines as depictions of Galinthias, notes the occurrence of the weasel motif on Praenestine bridal bronze caskets (*cistae*), and briefly mentions the weasels from Petsophas as an earlier example of mustelid iconography. The reported finds, notably the association of weasel figurines and gynaecological votives paralleled at Petsophas, point to the cult of a healing goddess linked to animals of the weasel family who presided over female lifecycle transitions and related concerns, possibly Juno Lucina, Eileithyia's Roman counterpart.

Of relevance here is a pattern observable in the Roman and Etruscan votive record and beyond. Mustelids are recurrently sacrificed to midwife goddesses along with tortoises, dogs, including puppies, and/or deer. All four animals, including puppies, are documented in the faunal assemblage of the Archaic temple of Mater Matuta and Fortuna at Sant'Omobono in Rome (Rask 2014, p. 293; De Grossi Mazzorin and Minniti 2000, p. 393; Trentacoste 2013, p. 98, n. 44). Likewise, at the sanctuary of Pyrgi (Donati 2004, pp. 142, 146–148, 156; De Grossi Mazzorin and Minniti 2006, p. 63; Trentacoste 2013, p. 98, n. 42), where a votive pit yielded remains of tortoises and anatomical votives (Belelli Marchesini and Michetti 2017, p. 480); the main deity at Pyrgi was the Etruscan Uni, identified by the Greeks with Eileithyia and Leukothea (De Grummond 2016, p. 153), the latter assimilated to Mater Matuta by the Romans (Carroll 2019, p. 3). Remains of canids, tortoises and deer, also found in the *area sacra* of Tarquinia, appear to be associated with Uni's cult (De Grossi Mazzorin and Minniti 2000, p. 392; Bonghi Jovino 2005, pp. 73, 80–81; Rask 2014, p. 293); bringing to the fore Archaic relief slabs of crouching females with splayed legs and upraised arms from Tarquinian tombs, interpreted as goddesses of birth and



rebirth (Jannot 1980; Perkins 2012, pp. 159–60). Mustelid (otter) and dog bones occur at the sanctuary of Poggio Colla (Trentacoste 2013, pp. 83, 85), which yielded a stele mentioning Uni (Warden 2016, p. 213) and the stamp of a birthing female with upraised arms (Perkins 2012). Martens, badgers, canids, tortoises and deer are attested at the Etruscan sanctuary of Ortaglia (Volterra), consecrated to an unidentified goddess overseeing female concerns (Bruni 2005). Turning to the Aegean, the Acropolis sanctuary of Stympthalos (Arcadia, 4th c. BCE) produced inscriptions naming Eileithyia, snake-shaped bracelets probably offered to her for safe delivery (Young 2014, p. 143), beech marten, otter, tortoise and deer remains, many sacrificed dogs (Ruscillo 2014, pp. 250–51, 257, 266), and a puppy burial (Stone 2014, p. 329, n. 58).

The tortoise was primarily sacred to Eileithyia and cognate goddesses (Baur 1902, p. 73). Artemis Orthia (Sparta)—bearing the epithet *Chelitis* (<*chelis*, ‘tortoise’) (Clem. Al. *Protr.* 2. 33), Artemis Elaphebolos (Kalapodi), Artemis Laphria (Kalydon), Aphaia (Aegina) and Athena Lindia (Rhodes) received shells and/or figurines of tortoises, an animal also linked to Aphrodite Ourania (Paus. 6. 25. 1) and the Phoenician Astarte (Bevan 1988). As for dogs, according to literary evidence, the Argives sacrificed bitches to Eileithyia/Eilioneia for safe birth (Baur 1902, pp. 17, 22, 89; De Grossi Mazzorin and Minniti 2006, p. 62; Bettini 2013, p. 99, n. 35). A Hellenistic well in the Athenian Agora (2nd c. BCE) contained the remains of c. 500 infants and over 150 dogs, including puppies, possibly dedicated to Hekate, Artemis or Eileithyia (Liston and Rotroff 2013). At Eretria (Euboia), where Eileithyia was worshipped (Ackermann and Reber 2018), a well associated with the Sebasteion (3rd c. BCE) yielded the bones of at least 19 infants and 26 dogs (Chenal-Velarde 2006, pp. 27–28). At Messene, the Agora well hosted the remains of several hounds and c. 264 infants (3rd–2nd c. BCE), the large number of baby bones suggesting that the well was used by “mothers and local midwives as a place of disposal of infants who died at birth” (Bourbou and Themelis 2010, pp. 115–16). Eileithyia was worshipped at Messene (Paus. 4. 31.9).

Artemis, Hekate/Enodia, Aphrodite Kolia and the Genetyllides, all goddesses protecting the birth process, received dogs-puppies in sacrifice and so did the old Roman birth deities Genita Mana and Mater Matuta (Baur 1902, pp. 17, 22, 89; Dillon 2002, pp. 246–47; De Grossi Mazzorin and Minniti 2006, pp. 62–64; Trantalidou 2006; Bettini 1978, pp. 128, 130; 2013, p. 99, n. 35). Sirona, Nehalennia, Aveta, Epona and Sequana, Gallic healing goddesses who presided over human, animal and/or plant reproduction, appear represented with dogs-puppies; Sequana received anatomical votives, and Sirona is depicted with the medical serpent coiled about her arm (Gourevitch 1968, pp. 256, 275–80; De Grossi Mazzorin and Minniti 2006, pp. 63–64). Two millennia earlier, in Mesopotamia, the divine physician Gula, herself a midwife (Stol 2000, p. 79), displays the dog as a sacred attribute, which is offered to her in the form of figurines and actual dogs-puppies (Ornan 2004; Böck 2014). Gula’s opponent, Lamashtu, the demoness causing maternal and infant mortality and whose favourite trick was to pose as midwife (Stol 2000, p. 230), is frequently portrayed suckling puppies and piglets, possibly reflecting the ethnographically attested practice of suckling neonatal mammals to relieve breast engorgement after the death of an offspring (Wiggermann 2010). Mesopotamian, Hurrian, Hittite and Greek sources record the ritual use of puppies to heal and purify people and places (Hartswick 1990, p. 242; De Grossi Mazzorin and Minniti 2006, pp. 63–64; Edrey 2008, p. 271). Puppies occur in foundation deposits (Black and Green 1992, p. 70; Ornan 2004, p. 18; De Grossi Mazzorin and Minniti 2006, p. 65), and in funerary contexts (Trantalidou 2006), notably with infants, as aforementioned; altogether testifying to the animal’s propitiatory role in liminal transitions, often conceived as symbolic rebirths. According to Hurro-Hittite texts, to avert evil, purify and promote new beginnings, wise women employed piglets, animals customarily offered to birth goddesses (e.g., Hannahanna/Nintu, Gulses), which occur along with puppies in votive pits and on tablets describing rituals (Collins 2006, pp. 161–62, 174–75, 177).

In the Near East, the ritual association of mustelids, dogs and/or tortoises with females can be traced far back in time. At the Neolithic site of Çatalhöyük (southern Anatolia, 8th–6th millennium BCE), weasel skulls were embedded in plaster representations of breasts, the animals' teeth protruding from the open nipples (Mellaart 1967, pp. 101, 106, 183). The site, yielding the clay statuette of an enthroned birthing female and plaster relief figures with upraised arms, widely splayed legs and swollen bellies (Mellaart 1967, pp. 76, 139), produced the burial of a woman interred with a complete weasel, a small dog, and many owl pellets (Farid and Cessford 1999; Hamilton 1999). This remarkable grave, calling for further study, brings to mind two preceding ones in the Mesolithic Levant: an Early Natufian burial at 'Ain Mallaha (Israel, c. 12,000–10,800 BCE) hosting the skeleton of a woman with a hand on a puppy placed above her head (Maher et al. 2011, p. 8), and an unprecedented tomb at the Natufian site of Hilazon Tachtit (Israel, c. 10,000 BCE) containing the remains of a mature woman buried with 86 tortoise shells; the skulls of two mustelids (beech marten) without skinning marks, suggesting they were interred with their skins attached; selected parts of other animals (wild boar, golden eagle, leopard, cow); a pointed bone tool and a basalt bowl fragment (Grosman et al. 2008; Grosman and Munro 2016). Since cross-cultural evidence shows that shamans are often buried with objects reflecting their medico-religious role, such as the remains of particular animals and the contents of healing kits, the woman from Hilazon Tachtit has been interpreted as a healer, a medicine-woman closely bonded to the animals that accompanied her to the afterlife (Grosman et al. 2008). In cultures the world over, midwives were shamanic practitioners with broad healing competence (Tedlock 2005; Zimmermann Kuoni 2019, pp. 56–67). The mature Natufian female could thus be a wise woman and perhaps also the female buried with a weasel and a small dog at Çatalhöyük.

Looking beyond the island boundaries of Bronze Age Crete, we have identified a trans-cultural set of animal associations embedded across the Mediterranean that are relevant to the cult of goddesses concerned with reproductive health. These ritual associations include mustelids, tortoises, dogs-puppies and/or deer, occasionally occurring with anatomical votives or snake iconography. In the prehistoric Levant and Anatolia, mustelids, dogs-puppies and/or tortoises are connected with females, one of them consistently interpreted as a shamanic healer. Keeping in mind the weasel's oxytocic dimension in ancient obstetrics, let us zoom back to mustelids and associated finds in the Minoan votive record.

#### 4. Unravelling Evidence for a Minoan Midwifery Tradition

##### 4.1. *Petsophas-Palaikastro and Juktas*

Coming back to Petsophas, we may now safely argue that the association of gynaecological votives with weasel figurines at the sanctuary is far from coincidental: the assemblage also includes models of tortoises and dogs (Myres 1902–1903, p. 377; Rutkowski 1991, pp. 108–9, 112; Jones 1999, p. 45), which, like weasels, are sacred to Eileithyia in the historical record. Juktas, the peak sanctuary of Knossos and Archanes in north-central Crete, produced a pregnant figurine, over 60 models interpreted as embryos or women crouching in childbirth (Karetsou 1981, p. 146; Watrous 1996, p. 70); figurines with splayed legs, paralleled at Petsophas;<sup>6</sup> models of puppies (Karetsou and Koehl 2014),<sup>7</sup> snakes (Karetsou 1974, 2018) and tortoises.<sup>8</sup> These Minoan materials are contemporary with the dedication of dogs to the midwife goddess Gula, the foremost medical deity in Mesopotamia, and with midwifery devices from Middle Kingdom Egypt displaying tortoise and/or snake iconography; such as a baby's feeding cup, apotropaic wands to propitiate birth and the rebirth of the dead, bricks upon which women crouched during delivery, and segmented rods thought to be conceptually and functionally linked to the bricks (Wegner 2009, pp. 466, 473–74, Fig. 13; Teeter 2011, p. 169; Fisher 1968, pp. 30–32).

This brings to the fore the therapeutic dimension of the animals represented in peak sanctuary assemblages, which should not be disregarded in the context of a healing cult; all the more so considering that zootherapy was common practice in antiquity, as shown by the wealth of Egyptian animal-based drugs (Nunn 1996, pp. 137–62), or the over a hundred

animal species employed in Hippocratic medicine (Von Staden 2008, p. 175). The question pending here is why tortoises and dogs-puppies are emblematic of deities patterned on the midwife. It has been suggested that the tortoise is associated with fertility because it lays many eggs (Rappenglück 2006, p. 227), but this symbolism could have stemmed from actual medical practice. In the Hippocratic Corpus, tortoise-based treatments are predominantly gynaecological—to stimulate postpartum lochia discharge and promote conception (Von Staden 2008, pp. 187, 202). The Babylonian medical compendium from Assur prescribes eating turtle meat to ease delivery (Stol 2000, p. 71) and the Ebers Papyrus a tortoise-based remedy “to release a child from the belly of a woman” (Nunn 1996, p. 195). The animal was, like the weasel, deemed an oxytocic agent. As for dogs, it is often argued that the beneficial effect of their saliva in curing wounds through licking explains the animal’s bond with Gula and other healing deities (Fuhr 1977, p. 143, n. 5, 144; Böck 2014, p. 38; Ornan 2004, p. 18; Ogden 2013, p. 369, n. 113). But this might not account for the dedication of dogs-puppies to divine midwives stretching all the way from Mesopotamia to the Gaul. When turning to medical sources, we learn that in Hippocratic medicine bitch milk was used to expel the foetus (Andò 2001, p. 125, n. 283). According to Pliny (*Nat.* 30. 43. 14), bitch milk and placenta facilitate childbirth. It may be noted that bitches, not male dogs, were offered to Eileithyia/Eiloneia, Hekate, Genita Mana (Plut. *Quaest. Rom.* 52), Artemis and Enodia (Baur 1902, p. 17, n. 22; Lacam 2008, p. 43).

According to endocrinological research, breast milk contains high concentrations of oxytocin (Takeda et al. 1986). The placenta, a major endocrine organ in mammals, contains both oxytocin and high levels of prostaglandin (Fields et al. 1983; Onuaguluchi and Ghasi 1996; Burd and Huang 2011), the two chief endogenous compounds activating uterine contractions and lactation (Neville and Walsh 1996, pp. 25–26; Kota et al. 2013). The intake of placenta extract increases the opium-like substances released during childbirth, thus enhancing the tolerance to labour pains; it fosters milk secretion, may help to arrest postpartum bleeding and promote lochia discharge (Burd and Huang 2011), and effectively alleviates menopausal symptoms (Lee et al. 2009). In European, Moroccan, Nigerian, Chinese, Vietnamese, Javanese and Mexican midwifery traditions, the placenta, usually dried and pounded, was used to hasten birth, expel the dead foetus, prevent afterpains, promote lactation and treat infertility (De Nobleville and Salerne 1757, pp. 478–80; Mérat and de Lens 1837, p. 174; Croft Long 1963, p. 238; Onuaguluchi and Ghasi 1996; Burd and Huang 2011; González Casarrubios and Timón Tiemblo 2018, p. 291).

As for puppies, what about their connection with female healing practices? We may develop here Wiggermann’s (2010) suggestion that the iconography of Gula’s opponent (Lamashtu) suckling puppies and piglets might mirror their use as breast pumps after the loss of a nursling. The breastfeeding of puppies—and other neonatal mammals—by women, encouraged by midwives and doctors until the 19th century in Europe, is performed in many cultures to develop good nipples, stimulate lactation, relieve breast engorgement after the death of an offspring, disperse mammary nodules and prevent conception (Rabdill 1976, pp. 26–27; Simoons and Baldwin 1982, pp. 429–32, 435; Gourevitch 1990, p. 94). This therapy was prescribed as well to expel the afterbirth; for example, when the writer Mary Wollstonecraft was dying of puerperal fever in 1797, the attending doctor applied puppies to her breasts in an attempt to remove the infected placenta from her womb (Tomalin 2004, pp. 280–81). As oxytocin is released in response to sucking (Neville and Walsh 1996, p. 25), breastfeeding puppies could also have been effective to induce/ease labour. Such treatments may account for the persistent connection of neonatal dogs with midwife goddesses.

Coming back to Petsophas, the dog figurines offered by worshippers at the sanctuary could refer to the animal’s role in the hunt or as guardian of flocks (Myres 1902–1903, p. 381; Platon 1951, p. 111; Zeimbekis 1998, p. 253); but its therapeutic agency in cleansing/renewal/rebirth rites should also be considered in light of finds from the settlement where the worshippers lived. At Palaikastro, also yielding weasel iconography (Evely 2012, pp. 227, 252–3 Fig. 8.18; Zimmermann Kuoni 2019, p. 283, Fig. 25), two Late Minoan

wells produced bones of at least 28 dogs, including puppies, and remains of mustelids (beech martens), in some instances articulated skeletons (Wall-Crowther 2007, pp. 184, 194), indicating that the animals were carefully deposited (MacGillivray and Sackett 2007, p. 226). As argued by Cunningham and Sackett (2009, p. 91), the offering of puppies and piglets—also documented in the wells—should be regarded as part of the cultic life of the inhabitants of Palaikastro since cross-cultural parallels attest to their use in purification rites. Such rites, the Classical evidence for dog sacrifice in wells, paralleled at Palaikastro, and the animal's bond with the medical goddess Gula are recalled by Karetsou and Koehl (2014) in their discussion of the puppy models from Juktas, which underscores the dog's sacral connotations in the Aegean Bronze Age.

Arnott (2014, p. 51), who sees a pregnant figurine from Petsophas and the squatting models from Juktas as “evidence for childbirth and the work of midwives”, has repeatedly postulated the existence of these practitioners in Aegean prehistory (Arnott 1996, p. 267; 1997, pp. 277–78, n. 109). He speaks of “wise women”, remarking that “midwives with a much wider healing competence are well known from other early societies”, such as the Hittite ‘Old Woman’ (Arnott 2004, pp. 162–63, n. 28); we may recall the cleansing/renewal rites involving piglets and puppies linked to the expertise of Hurro-Hittite wise women. The joint dedication of childbirth, weasel, tortoise and dog offerings at Petsophas, of dogs-puppies and mustelids in the Palaikastro wells, and of childbirth, puppy and tortoise votives at the Knossian peak sanctuary of Juktas suggests the existence of a Minoan midwifery system seemingly connected with the cult of Eileithyia, who, like Gula, is patterned on the wise woman. An iconic cult assemblage from Knossos provides further evidence for female therapeutics, including an oxytocic flower that takes us to the nearby island of Thera on a last comparative journey.

#### 4.2. *From the Temple Repositories of Knossos to the Xeste 3 Frescoes at Akrotiri (Thera)*

At the heart of the Central Palace Sanctuary at Knossos, Arthur Evans (1921, pp. 463–85) brought to light the Temple Repositories (c. 17th c. BCE), two carefully sealed stone cists containing, among others, the famous faience ‘snake goddesses’; a complete weasel skull, whose function remains obscure to scholarship (see Figure 5); and deer antlers (Panagiotaki 1993, pp. 54–55, Fig. c; 1999, pp. 118–19). The bare breasts of the figurines, often regarded as symbolizing maternal and nurturing aspects of the ‘snake goddesses’ (Evans 1902–1903, p. 85; 1921, p. 500; Nilsson 1950, p. 85; Christou 1968, p. 145; Panagiotaki 1993, p. 54; 1999, pp. 104, 273; Jones 2001, p. 264), have traditionally been invoked to support the existence of a mother goddess central to Minoan religion (Evans 1902–1903, p. 85; 1921, p. 500; Nilsson 1950, p. 85; Christou 1968, p. 145). But the notorious absence of kourotrophic (female holding/nursing infant) images in Aegean Bronze Age iconography strongly argues against any notions of such a deity in the Minoan pantheon (Olsen 1998, p. 391; Goodison and Morris 1998, pp. 114–16; Budin 2010). Indeed, the Knossian ‘snake goddesses’, found with *both* weasel and deer remains, point not to the cult of a mother goddess but to the worship of a deity embodying female healing knowledge. This contention is supported by the snake-handling figurines themselves, in association with other objects in the Repositories, when addressed within the context of ancient midwifery cults and practices. Let us briefly discuss the most relevant material.





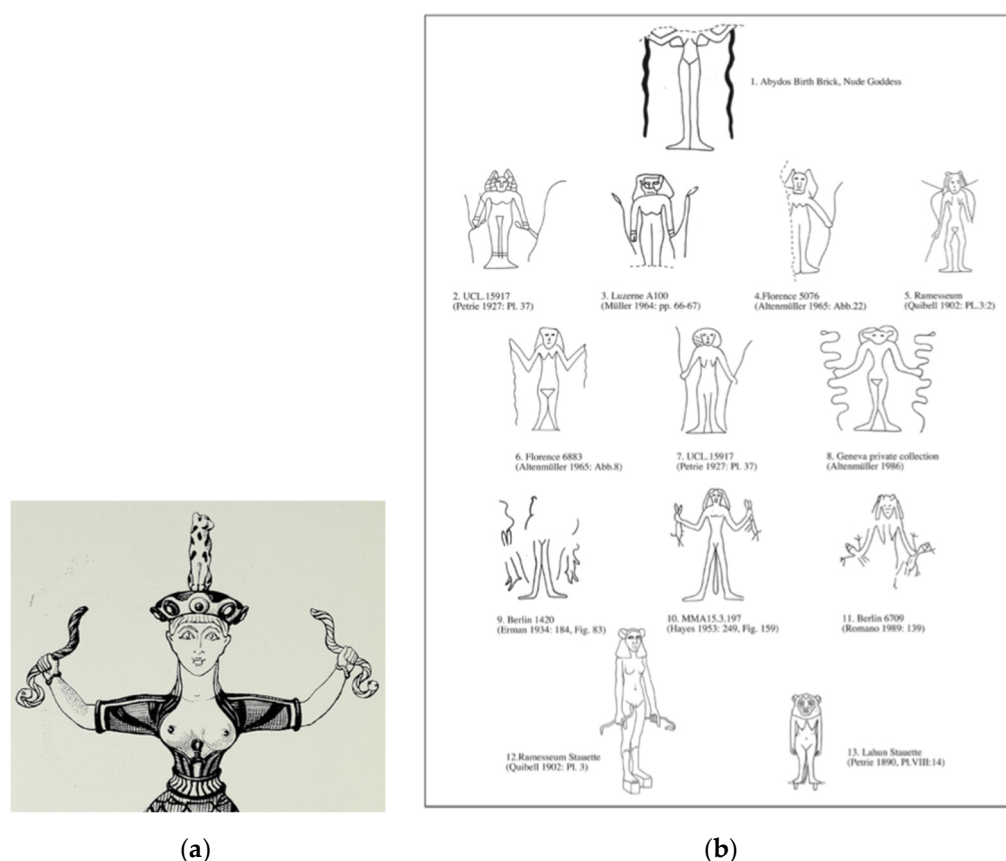
**Figure 5.** Finds from the Temple Repositories of the Palace of Knossos (c. 17th c. BCE), including the weasel skull indicated by the arrow, as arranged by Arthur Evans shortly after discovery. Courtesy of the Ashmolean Museum Archive Collections, Oxford.

#### 4.2.1. Figurines of Female Snake-Handlers

Scholarly approaches to naked breasts in ancient art, heavily influenced by the Western dichotomization of women's breasts as either sexual or maternal attributes (Morris 2009, p. 243), overshadow what the Knossian figurines *are doing*. Calling for elaboration is the suggestion that they are “snake-charmers” of a religious character (Evans 1921, pp. 506–7) or participants in a snake-handling cult (Foster 1979, p. 72). In line with mainstream interpretations of the serpent when associated with prehistoric female iconography, scholarship underscores its chthonic and fertility aspects in Minoan cult (Evans 1902–1903, pp. 85, 87; Picard 1948, p. 113; Willetts 1962, p. 120; Christou 1968, p. 145; Panagiotaki 1999, pp. 104, 149; Gesell 2004, p. 132) but tends to overlook its potential medical symbolism. The snake was already a rich repository of remedies in Sumerian times (Krumholz McDonald 1994), and its healing symbolism is so tenacious that, despite the reptile's negative Judeo-Christian connotations, it still signals our pharmacies. There is, therefore, no reason to assume that the serpent lacked medicinal value in the Aegean Bronze Age.

Associated with birth, rebirth and the prophetic gift, the snake was an attribute of ancient medical deities (e.g., Hygeia, Asklepios, Angitia, Bona Dea) (Ogden 2013). It has been suggested that the healing serpent of Asklepios originated in the cult of house snakes and related deities, first attested in the Aegean in Minoan Crete (Schouten 1967, pp. 35–36; Ogden 2013, p. 343); a type of cult perpetuated until the 20th century in rural Greece and the broader Balkans, where the house snake (*oikouros ophis*, *domachitsa*) was kept in high regard as the guardian spirit of the home (Lawson 1910, pp. 259–61; Evans 1935, p. 153). According to Greek folklore, Asklepios was a *fidopiastis*, a snake-catcher (Oikonomopoulos and Oikonomopoulou 2012, p. 696). Serpents were emblematic of snake-handling therapists across the Mediterranean, such as the *Ophiogenes* in Cyprus, the *Psylli* in Lybia, or the Italic *Marsi* linked to Angitia's cult; practitioners reputedly skilled in snake-based drugs (e.g., antidotes, *theriaca*), charming serpents and curing snake bites (Leaf 1923, p. 85; Ogden 2013, pp. 210–13; Dench 1995, pp. 24, 99, 156–74; Montinaro 1996). Similar therapists, called *serpari*, *cirauli* or *sanpaolari*, were practising until fairly

recent times in Italy (Montinaro 1996; Park 2001). There are no poisonous serpents in Crete (Weingarten 2015, p. 192) that could possibly account for a healing cult associated with the cure of snake bites in Minoan times. But the ‘snake goddesses’ from the Temple Repositories of Knossos strikingly resemble the Beset-type birth deities commonly featured on midwifery paraphernalia from Middle Kingdom Egypt, such as birth wands and bricks (see Figure 6).



**Figure 6.** (a) Drawn detail of the reconstructed faience figurine from the Temple Repositories of Knossos (Evans 1921, p. 504, Fig. 362a); (b) Beset-type figures portrayed on the Abydos birth brick and apotropaic birth wands from Middle Kingdom Egypt, and Beset statuette from the Ramesseum (Wegner 2009, p. 466, Fig. 10). Courtesy of Josef Wegner.

An extraordinary deposit from the Ramesseum (Luxor, 18th c. BCE), including a wooden figurine of Beset holding bronze serpents (see Figure 6b, n° 12) (Quibell 1898, p. 40, Pl. 3), has been interpreted as a magician’s kit (Bosse-Griffiths 1977, p. 103; Dasen 1993, p. 69; Wegner 2009, p. 482; Teeter 2011, pp. 166–67; Weingarten 2015, p. 185), the professional kit of a medical practitioner (Gardiner 1955, p. 1), a female healer (Weingarten 2015, p. 184), or the town physician or midwife, who might have assumed the role of Bes[et] to perform rituals (Dasen 1993, p. 69). The kit could indeed have belonged to a wise woman as it included apotropaic wands (Quibell 1898, p. 40, Pl. 3, Figs. 1–3) employed in (re)birth rites, ritual-medical texts recording a birth incantation, procedures to protect the newborn, the first known account of an obstetric fistula (Nunn 1996, p. 194) and a reference to mastitis (Aufrère 2010, p. 12), along with other objects relevant to midwifery.<sup>9</sup> The Beset figurine in the Ramesseum kit has articulated arms, emphasising the capacity of the midwife goddess as a serpent-handler. It may be noted that Hittite wise women used snakes in rituals (Beckman 2016, pp. 51, 53); and that the snake motif recurs on Graeco-Egyptian and Byzantine uterine amulets used to treat female conditions (Bonner 1951; Ritner 1984; Vikan 1984; Spier 1993).

The ritual handling of snakes is a distinctively female feature of Minoan cult. In later antiquity, the handling and tending of (harmless) sacred serpents was primarily a female activity (Lawler 1946, p. 121, n. 26; Ogden 2013, pp. 201–6, 319–21, 370–71). Snake worship is attested in connection with Eileithyia's cult at Olympia; the priestess of the goddess cared for the snake Sosipolis dwelling in her sanctuary (Paus. 6. 20. 5). The many serpent bracelets found at Olympia, regarded as symbols of birth and fertility, probably relate to her cult (Bevan 1986, p. 270). They recall those likely given for safe delivery to Eileithyia at Stymphalos, occurring with mustelid, tortoise, dog and deer remains, including antlers (Ruscillo 2014, p. 251). Along with the weasel skull and deer antlers, the Knossian Repositories yielded parts of missing faience figurines, including a hand and two arms—one with a coiled snake—wearing serpentine bracelets (Panagiotaki 1999, Pl. 16e).

According to ancient medical texts, the snake was commonly employed in the treatment of female concerns. Its cast-off skin, prescribed in Hippocratic medicine to promote lochia discharge (*Morb. Mul.* 1. 78), was deemed a powerful emmenagogue and oxytocic remedy (Plin. *Nat.* 30. 43. 14, 30. 44). Pliny (*Nat.* 30. 44) reports the oral administration of snakeskins to ease parturition—strikingly paralleled in Chinese (Read 1982, pp. 33–34), Mexican (Enríquez Vázquez et al. 2006) and Filipino midwifery (Oracion 1965, p. 273)—and also the use of snakeskin girdles as birth amulets. This practice evokes the snake girdle worn by the largest figurine from the Temple Repositories (see Evans 1921, Frontispiece) and by the Egyptian birth protector Bes,<sup>10</sup> the male counterpart of the snake-handling Beset, superseding her in the 1st millennium BCE. According to Greek folklore, in his capacity as a *fidopiastis* ('snake-catcher'), Asklepios assisted women in hard labour by attaching snakeskin girdles to their loins or by placing on their belly a live serpent. The animal would henceforth remain in the home as the house snake (*spitofido*), a domestic protector not kept by childless couples (Oikonomopoulos and Oikonomopoulou 2012, p. 696), leaving one to wonder whether that was because the barren did not require a regular provision of sloughs. The pharmacological and related apotropaic use of snakeskins to ease birth is deeply embedded in the Mediterranean. Both have survived throughout the basin until the 20th century (Kristić 1955; Gélis 1976, p. 326; 1986, pp. 44–45; Gicheva-Meimari 2002, p. 929; Musset 2004, p. 430); in modern Greece, the *fidopiastes* supplied snakeskin girdles in case of dystocia (Oikonomopoulos and Oikonomopoulou 2012, pp. 696–97). Though not in connection with the Knossian 'snake goddesses', Evans (1935, pp. 168, 183, n. 2) reported that in Crete, snakeskins "are still preserved as possessing certain curative or apotropaic virtues", and in the spring, young men of courting age hung them up on trees as charms "for the girls to look at". Such charms were not just looked at. The snakeskin, called *poukamiso* ('shirt') or *fidotomaro*, was used in Crete to treat persistent fever (Rigatos 2005, p. 361) and reproductive issues; elderly villagers still remember the customary feeding of snakeskins to female animals (e.g., ewes, does) as an effective emmenagogue promoting mating and conception. Considering their widespread gyneacological uses, serpent sloughs might contain some uterotonic agent—prostaglandins, oxytocin?—yet to be (re)discovered by modern clinical research.

#### 4.2.2. Deer Antlers

The Knossian Repositories yielded three roe deer antlers (Panagiotaki 1999, p. 118, 172). It has been proposed that they reflect "an aspect of the natural world" or are "talismans to ensure success in the hunt" (Panagiotaki 1999, p. 118). However, hunting is a practice holding a rather residual place in Minoan ideology (Krzyszowska 2014) and the deer, not native to Crete, has left little trace in the island's Bronze Age faunal record, suggesting that the animal was imported for reasons other than economic, possibly including its symbolism (Jarman 1996, p. 219; Harris 2014, p. 50; Harris and Hamilakis 2014, pp. 99–102). Deer antlers were offered to the Etruscan Uni, the Roman Mater Matuta and Fortuna (Bonghi Jovino 2005; Bruni 2005, p. 21), together with mustelids, tortoises and dogs. Such dedications are paralleled at the Stymphalos sanctuary where Eileithyia was worshipped, shifting again the attention to medical practice. Deer-based remedies

are exclusively gynaecological in the Hippocratic Corpus (Andò 2001, pp. 267, 294). Deer suet and marrow recur in pessaries for uterine inflammations to promote menstruation, conception and lochia discharge (Von Staden 2008, pp. 185–86, 200–1; Temkin 1991, p. 222). Roasted/burned and administered orally or in fumigations, deer antlers were used to regulate menstruation (Hipp. *Morb. mul.* 2. 192, 195, 199, *Dsc. Mat. med.* 2. 63, *Plin. Nat.* 28. 77. 19). In traditional Chinese medicine, they are prescribed in the treatment of gynaecological disorders and male impotence (Rehman et al. 2013), a clinical study suggesting that antler velvet products may “produce anti-inflammatory compounds that assist in the regulation of prostaglandins” (Rehman et al. 2013, p. 90; Nezhat et al. 2012). It has been proposed that the deer’s close bond with Artemis—often identified with Eileithyia—explains its relevance in the Hippocratic treatment of uterine disorders (Von Staden 2008, p. 186). But it may conversely be argued that the animal was emblematic of midwife goddesses because it belonged to the pharmacopoeia of wise women.

#### 4.2.3. Seashells

Seashells, found in abundance in the Temple Repositories (see Figure 5) (Evans 1921, pp. 498, 517–19; Panagiotaki 1999, pp. 78–81), occur with periparturient figurines in Neolithic Crete at Phaistos (Mosso 1908; Pernier 1935, pp. 105–6; Todaro 2012) and in the birth deposit from Kissonerga-Mosphila in Chalcolithic Cyprus (Sharpe 1991). In the East, they are offered primarily to female deities (Panagiotaki 1999, p. 130); at Mari, conch shells and objects made from seashells were given to Ninhursag (Sanavia and Weingarten 2016, pp. 337–38), also known as Nintu, the first recorded (divine) healer.<sup>11</sup> The Sumerian ideogram for ‘pregnancy’ and ‘shell’ is identical: it represents a body with water in it (Stol 2000, pp. 51–52). Shells were involved in Mesopotamian birth rituals (Stol 2000, p. 52), and girdles with attached cowries, associated with notions of birth and rebirth, were worn for protection during pregnancy-childbirth in Egypt (Golani 2014; Quirke 2015, p. 60). In Classical antiquity, the cowrie (Latin *matriculus*) was among the shells symbolizing the vagina/womb (Stol 2000, p. 52; Golani 2014). Pounded shells recur in Mesopotamian, Classical and later gynaecological recipes (Steinert 2012; Lev 2003, p. 110). To treat pregnancy bleeding, Hippocratic and later medical authors (Cyraniades, Alexander) prescribe pessaries with pounded cuttlefish bone (Voultsiadou 2010, p. 245), still administered orally in the 1960s by Cretan midwives as an “excellent remedy” for postpartum haemorrhage (Karatarakis 1962, p. 24). Like seashells, the cuttlebone contains mainly calcium carbonate (Ivankovic et al. 2009, p. 1040), which improves gestational and birth outcomes when taken as a supplement during pregnancy (De-Regil 2013).

#### 4.2.4. Depictions of Robes and Girdles

Together with the weasel skull, deer antlers and shells, the Knossian Repositories contained faience models of dresses and girdles, some decorated with crocuses (see Figure 5) (Evans 1921, pp. 505–6; Panagiotaki 1993, 1999, pp. 101–3). We may recall the Renaissance girdles attached to weasels, serving as amulets in pregnancy and childbirth (Musacchio 2001). An ancient marker of reproductive maturity (Lee 2015, p. 135), the girdle is a garment closely bonded with women’s rites of passage, whose apotropaic dimension has survived into present times. In Greece, Agia Zoni (‘Saint Girdle’) is said to bestow strength on children (Handaka 2006, p. 104) and aid in conception and delivery. The belts of Christian saint deliverers of women in travail were placed on the parturients’ belly to ease birth (Gélis 1986, p. 44); Cretan midwives borrowed the priest’s belt to incense it over women in hard labour (Karatarakis 1962, p. 36). Medieval prayer rolls served as birth girdles (Musacchio 2001, p. 185; Jones and Olsan 2015, pp. 424–27). In ancient Egypt, the amulet depicting the girdle of the healing goddess Isis (*tyet*) was deemed to staunch obstetrical haemorrhage (Nunn 1996, p. 110); plausibly depicting a looped, loosely tied cloth (Quirke 2015, p. 58), the *tyet* “may evoke general use of cloth at menstruation, or specific bandaging in extremes, above all at birth” (Quirke 2015, p. 60; citing Westendorf 1965). In Classical antiquity, the girdle signalled the transition to puberty and marriage-motherhood. Callimachus



(Fr. 620 A) refers to a prepubescent girl as *azostos* ('without a zone = belt'). Tying on the *zone* was an act signifying a girl's sexual maturity (Lee 2015, p. 135), and loosening it symbolic of consummation (Hersch 2010, pp. 109–12) and easy delivery (Baur 1902, p. 67). The Minoan peak sanctuary of Vrysinas in western Crete yielded figurines of female worshippers with tied and loose girdles, which may reflect initiation rituals, as suggested by I. Tzachili (pers. commun. 2017). In historical times, out of gratitude for surviving parturition, women who 'loosened the girdle for the first time' (primiparae) dedicated their girdles (Sch. A. R. 33. 13–14), robes and jewels to goddesses protecting birth (Rouse 1902, p. 252; Baur 1902, p. 67). Eileithyia, who bore the epithet *Lysizonos*, 'Girdle-Loosener' (Theoc. *Id.* 17. 60–63), was offered clothes pins at Sparta, suggesting the dedication of related garments, like those given to Artemis at Brauron (Kilian 1978, pp. 220–21). As argued by Warren (1988, p. 22), such practices may be continuities from the Bronze Age; Eileithyia's Cretan cave sanctuary at Tsoutsouros yielded Late Minoan-type gold rosettes that used to be sown/pinned to clothes (see Kanta 2011b, pp. 160–61). The models of robes adorned with saffron flowers from the Knossian Repositories may, like the girdles, have a bearing on women's maturation rites. Similar garments are worn by females thought to participate in initiation rites to menarche and motherhood on the Bronze Age frescoes from Xeste 3 at Akrotiri on Thera, addressed below. In later Greece, girls undergoing their puberty initiation at Brauron wore a saffron-dyed robe (*krokotos*), the crocus having a special significance in such rites because it relieves menstrual pains (Lee 2015, p. 200).

#### 4.2.5. Medicinal Plants

Along with the crocus-decorated garments, the Temple Repositories yielded models of crocuses, lilies, pomegranates, and a vessel with a spray of rose leaves (Evans 1921, pp. 499–500; Panagiotaki 1993, 1999, pp. 75–77, 91, n°195). The rose is referenced over ninety times in the Hippocratic Corpus, exclusively in gynaecological treatments (Andò 2001, p. 242). Dioscorides (*Mat. med.* 1. 53) prescribes *rosaceum* oil to soothe irritations of the vulva, and Soranus in contraceptive pessaries, remedies for uterine haemorrhage, womb inflammations, drying up breastmilk, skin ulcers in infants, and gonorrhoea (Temkin 1991, pp. 227–28). According to modern research, rose tea alleviates primary dysmenorrhoea (Tseng et al. 2005), recurrent menstrual pain. Roses feature on the Fresco of the Garlands from the North Building at Knossos together with lilies, crocuses, papyrus and greenish leaves that might stand for dittany, myrtle or olive (Warren 1985, pp. 193–204; 1988, p. 24). Warren (1988, pp. 24–27), who includes the collection and dedication of flowers (e.g., in bunches, wreaths) among the characteristic rituals of Minoan religion, argues that the symbolic value of the plants involved in such ceremonies derived from their perceived usefulness and efficacy. Noting that lily, dittany, withy/osier, pomegranate and myrtle were associated with childbirth and menstruation in antiquity, he suggests that the wreaths on the Fresco of the Garlands relate to the cult of one or several Minoan goddesses as, in historical times, Eileithyia, Diktynna, Ariadne and Europa-Hellotis were garlanded with plants symbolic of fertility, such as dittany, pine, mastic and/or myrtle (Warren 1985, pp. 202, n. 59, 205; 1988, p. 26).

The pomegranate, occurring in the Temple Repositories in the form of bud models (Evans 1921, p. 496), is an attribute of Eileithyia (Buffa 1933; Pfiffig 1975, p. 307; Jannot 1980, p. 616) and other goddesses overseeing human, plant and/or animal (re)birth (e.g., Hera, Demeter, Persephone, Aphrodite, Artemis) (Sourvinou-Inwood 1978; Preka-Alexandri 2010; Senkova 2016; Greco 2016). In antiquity, it was used to expel the foetus and the placenta, treat uterine conditions, and as a contraceptive (Riddle 1991, p. 11; 1992, pp. 25–26, 93–94; Nixon 1995, p. 86); according to modern research, pomegranate extract stimulates uterine contractions (Promprom et al. 2010; Kupittayanant et al. 2014, pp. 531, 534), its female sex hormones accounting also for its effectiveness as a contraceptive (Riddle 1991, p. 12; Nixon 1995, p. 86). While the pomegranate is regarded as a symbol of fertility because of its many seeds and blood-red juice (Greco 2016, p. 188; Ward 2003, p. 532), this symbolism could also have to do with its long-recognised oxytocic properties. Like other life-giving midwifery

drugs—and instruments—the pomegranate played a role in lifecycle transitions conceived as symbolic rebirths. Depictions of the fruit occurring in ancient funerary contexts, in Greece and elsewhere in the Mediterranean (Immerwahr 1989; Ward 2003), might have symbolically fostered rebirth into the afterlife. In modern Greece, the pomegranate is shared by newlyweds, laid on the bier of the deceased, and is an ingredient in the *kollyba*, the customary funerary meal (Lawson 1910, pp. 13, 535, 559). The fruit is still hung or smashed on the threshold of the home to propitiate the New Year's (re)birth.

The lily models from the Repositories (Evans 1921, pp. 499–500; Panagiotaki 1999, pp. 75–76) find parallels at Petsophas. Together with the crocus, it is one of the most common plants in Aegean Bronze Age iconography, a sacred flower appearing as tribute to the deity, associated with cult objects (Marinatos 1984, p. 89; Warren 1985, pp. 203–4; Phitos 2010), and the floral motif par excellence on Late Minoan larnakes, likely symbolizing regeneration/rebirth (Watrous 1991, p. 295). The lily has pervasive historical connotations with childbirth. According to Greek mythology, the Milky Way (*Galaxias* < *gala*, 'milk') was formed by a squirt of Hera's breastmilk, lilies sprouting from the drops fallen on earth (Chirassi 1968, p. 105; Phitos 2010, p. 105). Busts crowned with lilies, periparturient figurines and keys were offered to Hera-Eileithyia for safe delivery at the Heraion at Foce del Sele (Poseidonia/Paestum) (Zancani Montuoro and Zanotti-Bianco 1951, pp. 14–15; Stoop 1960, pp. 24–41). In the Christian tradition, the Madonna Lily embodies the mystery of the Incarnation and is the flower of the Annunciation (Phitos 2010, pp. 114–15); thence the Cretan expression *myrise ton krino*, 'she smelled the lily', meaning, ironically, that a woman got pregnant. The lily is mainly a gynaecological drug in the Hippocratic Corpus (Andò 2001, p. 291). Its oil, the *sousinon*, deemed most effective to treat female ailments (Dsc. *Mat. med.* 1. 62), is recorded as an emmenagogue and an oxytocic by Pliny (*Nat.* 21. 74) and Soranus (Temkin 1991, p. 228).

As for the crocus, proven to be a powerful oxytocic by modern research (Javadi et al. 2013), it is the most represented plant in the Knossian Repositories. Prescribed as an oxytocic in Babylonian medicine (Ferrence and Bendersky 2004, p. 207), it was used throughout antiquity to induce parturition and abortion, arrest uterine haemorrhage, as an emmenagogue and a painkiller in menstruation and childbirth. Archaeologists have recognised these gynaecological applications in the context of the Xeste 3 frescoes from Akrotiri (Thera) interpreted as initiation rituals to menarche and motherhood, which depict prepubescent to mature females—some wearing crocus-decorated garments—who are engaged in the harvest and dedication of saffron to a goddess (Cameron 1978, p. 582; Marinatos 1984, pp. 64–65; Amigues 1988, p. 237; Ferrence and Bendersky 2004, pp. 207–17; Forsyth 2000, pp. 152–53, 162, 164; Rehak 2002, pp. 48–50; 2004, p. 92; Kopaka 2009, p. 192).

It has surprisingly gone unnoticed that four other plants featured on the Xeste 3 frescoes, either as offerings to the goddess or decorating the depicted altar, wall backgrounds, garments or jewellery, were themselves main midwifery drugs: the lily and the rose;<sup>12</sup> the iris,<sup>13</sup> an exclusively gynaecological plant in the Hippocratic Corpus (Andò 2001, p. 301), recorded as an emmenagogue and an oxytocic by Dioscorides (*Mat. med.* 1. 1. 1. 66) and Soranus (Temkin 1991, pp. 227–78); and, last but not least, vitex,<sup>14</sup> used in Babylonian midwifery (Steinert 2012; Böck 2013, p. 44 n. 64) and predominantly gynaecological in the Hippocratic texts, which was prescribed as an emmenagogue, oxytocic, galactagogue and fertility enhancer (Von Staden 1993, pp. 26–27; Nixon 1995, p. 87). Called *lygos* (modern *lygaria*), vitex was involved in Spartan maturation rites presided by Artemis Orthia, to whom the plant was sacred (Calame 1997, pp. 135, 163–64), and whose sanctuary also hosted the cult of Eileithyia (Kilian 1978). The *lygos* was sacred to the Samian Hera (Paus. 7. 4. 4, 8. 23. 5), who was offered pomegranates, poppies (Kyrieleis 1993, pp. 138–39) and anatomical models, including female genitalia (Senkova 2016, pp. 33–34). Lastly, vitex was associated with the most widespread Greek festival, the all-female Thesmophoria, in honour of Demeter. During this celebration propitiating human and agricultural reproduction, women congregated in the wildness, slept on *lygos*-strewn couches, uttered ritual obscenities, sacrificed piglets and imitations of snakes, ate pomegranate seeds and cakes

shaped as female genitalia (Burkert 1985, pp. 242–46; Von Staden 1993, pp. 37–40; Dillon 2002, pp. 110–20).<sup>15</sup>

### 5. The *Materia Medica* of Minoan Midwives and Crete's Identity as a Foremost Drug-Bearer

On the above-discussed frescoes from Xeste 3, contemporary with the Knossian Repositories, there is not one but five plants composing a pharmaceutical kit to ease women's hazardous transition to menarche, pregnancy, parturition, postpartum and lactation: crocus, lily, rose, iris and vitex. The Xeste 3 goddess has been interpreted as a mistress of nature (Marinatos 1984, p. 70), a mistress of animals or *Potnia theron* (Marinatos 1976, p. 33; Cameron 1978, p. 582; Rehak 1999, p. 12; Chapin 2010, p. 227), and as a medical deity owing to the manifold applications of saffron in ancient therapeutics (Ferrence and Bendersky 2004). On account of the specifically female herbal kit linked to her cult, the Xeste 3 goddess is most probably a divine wise woman, the type of deity overseeing female rites of passage. Several scholars highlight the economic importance of saffron as both a dye and a medicinal agent in the Aegean Bronze Age (Goodison and Morris 1998; Day 2011). The Xeste 3 goddess may have presided over the (re)productive cycle of this precious commodity on Thera. According to Marinatos (1976, p. 36) and Dumas (1992, pp. 130–31, 162, Fig. 125), she is crowned by a rearing snake. The figurine from the Temple Repositories wearing the serpent-plaited girdle (see Evans 1921, Frontispiece) displays a snake on her headdress.

The Knossian 'snake goddesses', traditionally ascribed to the cult of a conjectured mother goddess, are represented with the crocus, lily and rose, included in the Xeste 3 healing kit; the pomegranate, weasel, deer and snake, all midwifery pharmacological agents linked to the historical Eileithyia; garments used in female initiations; and shells, fulfilling pharmacological and apotropaic functions in birth-midwifery across the ancient world. The Knossian figurines, schematically paralleled on midwifery instruments from Middle Kingdom Egypt, recall the snake-handling Beset statuette from the Ramesseum kit including midwifery paraphernalia. They also bring to mind the ritual use of snakes by Hittite wise women—employing as well piglets and puppies—and the priestess of Eileithyia tending her sacred serpent at Olympia. It is likely then that the 'snake goddesses' mirror Minoan healers attached to Eileithyia's worship. They may be practitioners like the Mesopotamian midwives officiating in the cult of Nintu (Stol 2000, p. 76; Westenholz 2013, p. 248), the Sumerian Creator goddess who fashions humans from clay through her midwifery skills; or like the *nu.gig/qadishtu*, the 'sacred women' performing as midwife-priestesses in the cult of Ninisina/Gula, "the midwife of the mothers of the land, the great physician of humankind" (Stol 2000, pp. 79, 112, 116), who is associated with dogs-puppies and the 'dog's tongue', a plant prescribed for women in hard labour (Stol 2000, pp. 54, 131, 133; Böck 2014, pp. 141, 153–54). Leading us to the Knossian Repositories were the weasel figurines from the peak sanctuary of Petsophas, occurring with childbirth, tortoise, dog and lily offerings, themselves likely indicators of Eileithyia's worship. This same cult is suggested at the related site of Palaikastro by the joint dedication of dogs-puppies and martens in wells. And Eileithyia may also have been worshipped at Juktas, the Knossian peak sanctuary yielding childbirth votives, models of puppies, tortoises and snakes.

We seem to have here a ritual package of animals and plants belonging to the *materia medica* of Aegean Bronze Age midwives. Related to their expertise are at least two other drugs: dittany and the opium poppy.<sup>16</sup> Endemic of Crete and the island's most celebrated herb in antiquity, dittany, offered in wreaths to Eileithyia, was sacred to the goddess because it was deemed to soothe the pangs of childbirth (Warren 1985, p. 202, n. 59). In the Hippocratic texts, this Cretan herb is prescribed exclusively in gynaecological treatments (Andò 2001, p. 277). The slit poppy capsules crowning the tiara of the Late Minoan 'Poppy goddess' from Gazi attest to the use of the plant's analgesic sap (Marinatos 1937). Poppies and another gynaecological plant, lilies, are offered by two women and a girl to a likely birth goddess on a signet ring from Mycenae featuring metonymical depictions of Taweret (Younger 2009), the Egyptian birth goddess transformed into the Minoan Genius

(Weingarten 1991). The opium poppy, employed primarily for female complaints in the Hippocratic Corpus (Guerra Doce 2006, p. 141), is the source of the strongest modern pain relievers—morphine and other opiates.

In Classical antiquity, Crete was praised as the richest place in medicinal herbs (Theophr. *HP* 9. 16. 3, Plin. *Nat.* 25. 53), first among them the oxytotic dittany (Theophr. *HP* 9. 16. 1). Plants become drugs when their healing properties are tested, recognised and consistently applied in therapeutics. Therefore, Crete's identity as a unique repository of herbal medicine implies the existence of a venerable indigenous healing tradition long renowned beyond the island. Floral offerings and settings are the exclusive domain of females in Minoan iconography (Goodison and Morris 1998, p. 128), probably reflecting a gendered epistemic phenomenon: herbal knowledge, customarily transmitted along the female line (Blum and Blum 1965, pp. 170, 183; Faure 1973, p. 326), was largely the province of women because they regularly used plants to treat reproductive-related conditions (Willetts 1962, pp. 79, 160). The evidence for a Minoan midwifery tradition unravelled in this paper strongly suggests that the lore of indigenous wise women, passed down through the ages, played a major role in building Crete's historical reputation as a foremost drug-bearer.

## 6. Conclusions

The view that the clay weasels from Petsophas represent pests shows that regarding Minoan peak sanctuaries as conceptually isolated 'islands' obscures the understanding of the ritual language expressed by their extraordinary offerings. Healing practices underlying votive associations come to light when focusing on connectivities, namely when peak sanctuary materials are addressed comparatively both within and beyond Crete, and by taking a deep and wide time frame. Applying this integrative approach for analysing the joint occurrence of weasel and gynaecological votives at Petsophas has proved fruitful. It has led to the identification of evidence for a ritual healing package in the Aegean Bronze Age that includes the weasel, tortoise, dog-puppy, deer, snake, crocus, lily, rose, iris, vitex, pomegranate, dittany and opium poppy, animals and plants which are the source of important or exclusively gynaecological drugs in the Hippocratic Corpus (5th–4th c. BCE) and/or other medical texts.

The identification of this overlooked Minoan midwifery package lends material support to a claim so far unaddressed but most significant to the interpretation of women's neglected role in the history of medicine: that Hippocratic gynaecological pharmacopoeia originated in earlier female lore passed down orally (Rousselle 1980; Demand 1994, p. 63). The Hippocratic gynaecological texts compose the largest body of homogeneous subject matter within the Corpus (Hanson 1975, p. 568). They include the two oldest Hippocratic treatises, *Nature of Women* and *Diseases of Women* (Grensemann 1975; Andò 2001, pp. 10–11, 29–30), namely, the foundational core of Western (written) medicine. These texts record ancestral *materia medica* of midwives, the first attested healers. Midwifery lore is extremely persistent and may traverse the millennia virtually unchanged unless new technological paradigms set in (e.g., biomedicine). This tenacity is illustrated, for instance, by the evidence for infant swaddling at Petsophas, the pharmacological and apotropaic applications of snakeskins to ease birth/induce menstruation, or the use of mustelid pelts as birth amulets, all practices perpetuated in the Mediterranean until the 20th century. Enduring symbols do not stem from sheer imagination or unwarranted beliefs. The origin of pervasive emblems of birth-midwifery, like the weasel, dog, snake, lily or pomegranate, often ascribed vague 'fertility' connotations, is to be sought in the material responses they provided to women's pressing health concerns; responses available within the household, resting on sound empirical knowledge in the case of the placenta, crocus, vitex, poppy, pomegranate and rose, confirmed as effective gynaecological drugs by modern research.

The Minoan therapeutic package brought to light in this paper reveals the existence of a midwifery *koine* stretching in antiquity from Mesopotamia to the Western Mediterranean, as shown by the association of dogs-puppies with divine midwives all the way from



Babylonia to Gaul; the cross-cultural use of puppies for cleansing/healing purposes; shared gynaecological applications of animals (e.g., tortoises in Egyptian, Babylonian and Classical treatments) and plants (e.g., crocus, vitex and pomegranate in Mesopotamian and Classical remedies); or the widespread use of shells in birth-related practices. According to the examined data, the oldest recognisable elements of this midwifery *koine* are tortoises, mustelids and dogs-puppies. Bones of these animals are associated with females in the Mesolithic Levant, in one instance (tortoises and mustelids) linked to a woman interpreted as a shamanic healer. They are also linked to females in Neolithic Anatolia (mustelids and dogs-puppies), prefiguring the historical connection of puppies with wise women in the region. Then, at the turn of the 2nd millennium BCE, the three animals emerge together on the northeastern coast of Crete, indicating close indigenous contacts with Eastern therapeutics. This loan, however, is incorporated within a genuinely Minoan healing cosmology. Weasel, dog and tortoise figurines appear at Petsophas alongside an unprecedented type of artefact distinctive of the peak sanctuaries, bespeaking of a full-blown, highly elaborated therapeutic system: anatomical offerings. To judge by their enduring use, these embodiments of wishes or thanks for well-being are a brilliant invention consistently satisfying spiritual needs; in Crete and broader Greece, dedicating anatomical ex-votos is still a favoured mean to negotiate help and protection with supernatural healers. A new ritual language, still ‘spoken’ today in modern ways, was thus inaugurated by Minoan worshippers at the peak sanctuaries, the first known shrines to yield anatomical offerings. Lying at the crossroad of Asia, Africa and Europe, the island of Crete was strategically gifted to become a major cultural hub, interacting with and interconnected with cultures across the Eastern Mediterranean. But it was the creative vitality of Minoan culture that made the island a unique testing ground of therapeutic knowledge, ideas and behaviours.

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## Notes

- <sup>1</sup> The publication of Davaras’ 1970s excavation has been entrusted to Alan Peatfield and Christine Morris and forms part of the East Cretan Peak Sanctuaries Project (ECPSP), on which the present author is a collaborator. The Petsophas material in this paper will be more fully catalogued and discussed as part of the ECPSP publications.
- <sup>2</sup> This gesture, characteristic of Eileithyia, was deemed to convey divine forces easing delivery (Farnell 1896, pp. 613–14; Baur 1902; Bettini 2013, p. 84).
- <sup>3</sup> Up to the 1950s, folk midwives were by far the predominant healers in Crete (Clark 2011, p. 21, n. 50; Allbaugh 1953, p. 158). According to elderly villagers who remember the last *praktikes mames*, they were general practitioners and often also veterinarians.
- <sup>4</sup> The figurines may depict martens. The term weasel is occasionally employed in this paper to generically denote animals of the weasel family, namely mustelids.
- <sup>5</sup> Bindings/knots were believed to obstruct delivery (Bettini 2013, pp. 69–82).

- <sup>6</sup> The figurines from Juktas, on exhibit at the Heraklion Archaeological Museum, display both the same bodily position and hairdo as the specimens from Petsophas.
- <sup>7</sup> The Late Bronze Age sanctuary of Phylakopi (c. 13th c. BCE) on the island of Milos yielded a dog figurine resembling the puppies from Juktas (Karetsou and Koehl 2014, p. 334), beech marten bones, tortoise shells, and the probable image of a goddess with upraised arms (Psi type figurine), the so-called Lady of Phylakopi (Renfrew 1985, pp. 325–26, 372–73, 479).
- <sup>8</sup> I thank Alexandra Karetsou for mentioning the tortoise votives from Juktas in the discussion following the Online Annual Open Lecture of the Irish Institute of Hellenic Studies at Athens on 29th April 2021, “The Petsophas Peak Sanctuary: A Prelude” by Alan Peatfield.
- <sup>9</sup> For a full discussion of the finds from the Ramesseum deposit having a bearing on female therapeutics, see (Zimmermann Kuoni 2019, pp. 296–98).
- <sup>10</sup> For instance, see the statue of Bes from the temple of Nectanebo (Serapeum of Memphis, 4th c. BCE) exhibited at the Louvre Museum (N437, Room 317).
- <sup>11</sup> The Liturgy to Nintud, or Kesh Temple Hymn, one of the two oldest known pieces of literature, is an ode to the temple erected at Kesh to Nintu(d), the midwife of the gods who, according to the Atrahasis Epic, creates humans from clay. In the myth “Enki and the World Order” she is portrayed with her medical emblems including the obstetric knife. Nevertheless, Nintu is generally regarded as the Sumerian ‘mother’ goddess, leading to paradoxical interpretations of the sources (Zimmermann Kuoni 2019, p. 97–99), which recall the conflicting modern division of Eileithyia’s skills and roles discussed above.
- <sup>12</sup> On the walls of the corridor leading to staircase 8 one of the mature women depicted in procession carries a bunch of roses, another one a bunch of lilies, a flower also represented on the bodice of yet another mature woman and elsewhere at Xeste 3 (Vlachopoulos 2008, pp. 451, 453–4).
- <sup>13</sup> The so-called Wounded Woman in Room 3a wears an iris-shaped hairpin (Doulas 1992, p. 142 Fig. 106).
- <sup>14</sup> Vitex is depicted in Room 9 at Xeste 3. English publications render the plant as osier (Doulas 1992, Fig. 151; Vlachopoulos 2008, p. 454, Figs. 41.41, 41.42).
- <sup>15</sup> On other gynaecological plants associated with the cult of Demeter, see (Nixon 1995) and (Zimmermann Kuoni 2019, pp. 397–98).
- <sup>16</sup> Other pharmacological agents likely associated with this midwifery tradition are squills, pine, myrtle, and mastic, the resin from the terebinth and lentisk (Zimmermann Kuoni 2019, pp. 390–96).

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