
Karen Polinger Foster

New Haven

OPIUM ART AND TRUFFLE TEXTS IN THE AEGEAN AND ANCIENT NEAR EAST

ABSTRACT: From the third millennium BC on, the opium poppy was exploited by the civilizations of the Aegean and Near East. While the terms for it in the ancient languages of the region are still unknown, the distinctive features of the harvest-ready seed pod would seem to find reflection in numerous works of Minoan, Mycenaean, Mesopotamian, and related art. This paper proposes that the corpus of opium imagery is far more extensive than previously recognized, including pins, finials, jewelry, seals, vessels, and weapons. It would also seem that certain elite women played vital roles in ancient opium matters. As for the desert truffle, it thrives in the area's arid and semi-arid ecosystems, where the opium poppy cannot. We have no truffle art, so far as can be determined, but its suggestive presence in cuneiform documents, among them the seven Mari letters collected here, may signal that it was prized for its ability to engender altered states of consciousness, in addition to its nutritional and pharmaceutical benefits.

KEYWORDS: opium; desert truffles; Minoan art; Mycenaean art; Mesopotamian art; Mari

Introducing the soporific poppy

Botanically classified by Linnaeus in 1753 as *Papaver somniferum*, the opium poppy belongs to a large family of poppy species found today throughout the

temperate and subtropical zones of the Northern Hemisphere (Emboden 1979; Kapoor 1995; Booth 1996; Wink and van Wyk 2008). Until very recently, the miniscule size of its seeds impeded understanding of the opium poppy's origins, diffusion, and domestication. An Acceleration Mass Spectrometry project has now found that by the mid-sixth millennium BC, the opium poppy was present in central and western Mediterranean regions, whence it spread to central Europe by the late fifth millennium BC, and onward from there (Salavert *et al.* 2020).

But when and where was it the domesticated *somniferum* subspecies, as opposed to its putative wild ancestor, the *setigerum* subspecies? Geometric morphometric analysis has for the first time successfully distinguished between the two, based primarily on the slightly larger size and rounder profile of *somniferum* seeds (Jesus *et al.* 2022). Currently, the evidence points to initial domestication occurring in Alpine sites during the fourth millennium BC. In contrast to nearly all domestication trajectories in the Old World, opium poppy exploitation in the Aegean and Near East *followed* that of Europe, for the known archaeobotanical remains from Greece, Anatolia, Mesopotamia, and the Levant date only as far back as the third millennium BC (Arnott 1999; Merlin 1984; Samorini 2019; Hnila 2002; Ilan 2022). As in the Alpine populations, there were presumably transitional phases, whose temporal and geographical parameters await an expanded, contextual database for these tiny seeds.

The plant (Pl. 1) grows to a meter or more in height, normally with a main stem and two secondary ones, or tillers, each ending in a flower bud. These droop at first, but the stems straighten up as the buds open into four overlapping petals, usually white, pink, or pale red, with darker centers. The flower lasts a few days before the petals fall, exposing the blue-green seed pod, or capsule. Over the next two or three weeks, this swells until it is 5 to 7.5cm at its widest diameter, spherical, globular, or lentoid in shape. At the top, the stigmas resemble a small crown with 9 to 13 points, golden brown in color, while the stem just below the base is encircled by a ring, or torus. The pod body is ribbed, reflecting its inner walls. These hold many hundreds of minute seeds that eventually disperse through openings directly under the crown.

The seed pod is also the concentrated locus of the opaque, milky sap containing the alkaloids of morphine, codeine, and thebaine, among other substances. The sap's labor-intensive harvesting begins prior to the plant's reaching full maturity, when gatherers see the points of the crown standing erect or curving slightly, signifying that the opium alkaloids have attained the desired level of potency (Scarborough 2010, 16). The pod is scored with a sharp tool,

typically a single- or multiple-bladed knife, cutting at just the right depth, no more than 1.5mm, to avoid puncturing the seed chamber. Incisions are typically made vertically, but the pod may also be lanced at parallel, oblique angles, or horizontally around its circumference, with local preferences observable (Krikos and Papadaki 1967, 6; Hodgson 1999, 18).

White droplets of raw opium ooze out along the cuts (Pl. 1: 2). Contact with the air soon turns them brown and viscous. At this point, the harvesters scrape them off the pod with a curved blade, depositing the gummy, sticky material in special containers. Further incisions on the same pod may be made over the next several days. Traditional processing methods involve a lengthy sequence of treating and shaping procedures before the product is ready for distribution.

In modern times, opium is consumed in three states (Hodgson 1999). To disguise its bitter taste, in solid form it is mixed with flavoring agents, in liquid form with pomegranate or other sweet wines. Most often, it is smoked. Various reduction and extraction techniques render an opium mass malleable enough to make pea-sized balls, or pills. In anticipation of the drug's soporific effects, the opium smoker usually reclines, holding a pipe and a long pin, with other items in the layout, or kit, within easy reach. The smoker fixes one of the opium balls on the pin, so that it may be inserted into a tiny hole in a bowl attached about three-quarters the way down the pipe from the mouthpiece. The bowl is warmed over a brazier or small lamp until the opium ball inside vaporizes. The smoker then inhales the opium-impregnated air through the pipe, refilling the bowl for each additional dose.

In search of Bronze Age opium

Despite the appeal of the identification, there is no basis for Thompson's oft-quoted proposal (1949, 223-230) that opium appears in cuneiform sources as the 'joy plant.' At present, no Sumerian or Akkadian word for opium is known (Böck 2022, 128). Pharmaceutical, medical, and other texts, however, describe plant-based analgesic and sedative protocols corresponding so closely to the effects of opium that we may feel confident in asserting ample Mesopotamian (and beyond) awareness of its properties (Arnott 1999).

Decades ago, Merrillees (1962, 1979) hypothesized that Cypriote Base-Ring juglets afford the earliest examples of containers referencing the nature of their contents (Pl. 2: 1). He proposed that the vessels' globular bodies, flaring feet, and

tall, slender necks evoke, respectively, the seed pod, stigma crown, and upright stem of the mature opium plant. Widely distributed around the eastern Mediterranean and up the Nile Valley, the juglets regularly made their way into graves, ostensibly to supply the deceased with opium in the next life.

Analytical support for Merrillees' theory was long elusive. Tests repeatedly failed to reveal traces of opium residues in these vessels (e.g. Counsell 2008; Chovanec *et al.* 2015; Chovanec and Flourentzos 2021), with the possible exception of a Base-Ring juglet of unknown Egyptian provenance (Koschel 1996). To counter the problem that opium alkaloids tend to degrade over time and are particularly hard to detect if a vessel had been re-used in antiquity, or cleaned post-discovery, a sealed juglet in the British Museum was opened, at last yielding solid proof of opium (Smith *et al.* 2018). As it happens, this piece was one of those painted with close-set white lines (as in Pl. 2: 1), bearing out the idea that these show either the scoring of the pod or the milky beading along the incisions. Then, of 22 juglets newly excavated from tombs at Tell Yehud, near Jaffa, eight were found to contain opium (Linares *et al.* 2022). Intriguingly, the imported Cypriote Base-Ring vessels had higher concentrations of opium alkaloids than the locally manufactured ones.

Archaeological evidence for opium consumption has been similarly elusive. After all, if we presume, and there seems no reason to the contrary, that techniques have remained essentially unchanged over the millennia, most of the items needed are not use-specific, or, in the case of the pipes, were usually made of perishable wood. From a temple shrine at Kition on Cyprus, though, comes an ivory tube likely to be an opium pipe (Karageorghis 1976; but *contra*, Chovanec and Flourentzos 2021, 148, fig. 12.2). In addition, small cylindrical containers with strategically placed apertures, such as those found at Kition and at Gazi on Crete, may have functioned as pipes (Behn 1986). A class of vessel known as the ring-kernos perhaps contained psychoactive libations, and was possibly involved in opium inhalation (Ilan 2022). And as I propose below, certain opium-art pins may conceivably have skewered opium balls.

As for ancient harvesting tools, any sharp, pointed implement could have lanced the pod, and any curved blade could have scraped off the raw opium. According to Dioscorides, even mussel shells would do as scrapers (Scarborough 2010, 15-16). The razors, surgical instruments, and other hand-held implements of that ilk recovered in large numbers from the Aegean and Near East certainly offer a range of equipment suitable for opium harvesting, though none can be definitively so designated (Branigan 1974; Arnott 1999).

The ambiguity of opium imagery

Assigning modern botanical names to ancient representations is an enterprise fraught with challenges. Issues of stylization, hybridization, and artistic skill and intent frequently converge to present us with more than one candidate for a given plant image, and thus more than one iconographic interpretation. To cite an Aegean instance, identifying the flowers in the Fresco of the Garlands from Knossos would certainly affect how we read these wreaths, especially as they were painted in a room next to one with the bones of a sacrificed child (Warren 2005). Prime Mesopotamian examples are seen in the gold floral ornaments on the headdresses from the Royal Graves at Ur. While some resemble pomegranates or apples (Miller 2000), others may be belladonna or mandrake (Selz 2004, 194-195), substances possibly given to the courtiers who apparently perished *en masse* in the burial rites of several of these Ur notables.

It can be particularly hard to distinguish between opium and pomegranate imagery (Jacobsthal 1956, 185-200; Samorini 2016). Like the opium poppy, the pomegranate fruit produces an impressive number of small seeds, but these disperse through jagged slits opening naturally in the reddish skin of the mature fruit (Melgarejo *et al.* 1997). The pomegranate similarly has a crown, but this has five to seven tall points formed from the sepals. The fruit was valued for its pharmaceutical uses, as an emblem of fecundity, and as a food commodity (Ward 2003; Bonneterre 2022).

Much pomegranate imagery is unequivocal. Hanging heavily from the branches of its bush, the ripe fruit readily lent itself to imitation in round-bodied vessels with stout necks surmounted by renderings of the crown. Many such vases were made in glass, faience, stone, clay, and silver, and were widely distributed (Immerwahr 1989; Arie 2018-2019). Pomegranates also appear regularly as decorative motifs, and even as model fruits, as in a faience specimen in the tomb of the pharaoh Amunhotep II (Immerwahr 1989, fig. 2).

Some pieces, however, give us pause. How about, to take one example, a glass 'pomegranate' vase from Enkomi on Cyprus (Pl. 2: 2) (Aruz *et al.* 2008, 425)? While its shape and crown seem unexceptional, do the white, light brown, and blue-green festoons on its brown body, together with the white dots from which the upper festoons depend, hint at the opium pod's scoring and milky droplets?

Or to take another example, what of the faience model fruit found among the shrine furnishings placed in the Temple Repositories at Knossos (Panagiotaki 1999)? Flat on one side, brownish above, blue-green below, it seems to have

been part of a floral tableau. The piece has a nub of a stem, and a vertical groove ending in what might be a wisp of a crown. Archival records from the time of its discovery over a century ago show a body slightly more streaked than it is today, with darker coloring in the groove (Panagiotaki 1993, 62-64). It could be a pomegranate, but in art the skin is always smooth; it could be an opium pod, but in art the lancing line is always repeated. In both of these instances, I wonder if a measure of ambiguity was intentional, a proposition discussed further below.

Opium art

Only a small corpus of opium art is regularly cited in the literature: the so-called Poppy Goddess from Gazi, several gold signet rings from Mycenae and Thisbe, a few Aegean and Near Eastern pins, and the Cypriote juglets mentioned above. There is, I believe, much more. My criteria for recognizing opium art are grounded in what I see as the diagnostic features of the pod and stem (Pl. 1), which afford commonalities and constancies of artistic expression across time and space. To be considered, a piece ought to include some combination of the following elements. In shape, it should be globular, ideally a bit flattened at the top and bottom, or alternatively, an elongated ovoid. The stem and the torus should be explicit or implied, the crown a circlet, plain or multi-pointed. As for the body, it ought to be ribbed in relief or striated in paint, with the lancing shown as sets of parallel lines, and the raw opium droplets shown variously as rows of white dots, gold beading, or undulation sequences. The gallery offered herewith is meant to be illuminating rather than categorical, suggestive rather than dogmatic.

Pins and finials

As noted above, Alpine regions seem to have been home to the domestication of the opium poppy. Swiss lake-dwelling and other sites have yielded long pins whose round heads have parallel incisions studded with minute hollows (Jacobsthal 1956, 172). These, Jacobsthal proposes, once contained ivory or amber inlays. In my view, either would have brought to mind droplets of raw opium, fresh white or oxidized brown. Are they our earliest evidence for the pins used in opium smoking?

Millennia later, the Mycenaean world produced pins of similarly rich effect. With their long silver or bronze shafts and globular heads of rock crystal,

gold, or silver, the pins found in Shaft Grave III and Grave Omicron at Mycenae (Pl. 2: 3) and in the tomb at Vapheio exhibit an uncanny resemblance to the opium seed pod on its stem, as remarked already by Kritikos and Papadaki (1967), Arnott (1999), and others. The granulation along the ribs of the gold Vapheio head aptly recalls the look of opium droplets beading along the incisions, as seen also on a shaftless gold finial from Phaistos/Hagios Onouphrios on Crete (Effinger 1996, pl. 14f).

Their unusual length, nearly 28cm for the Shaft Grave III pin, prompted Spyridon Marinatos (quoted in Kritikos and Papadaki 1967, 28) to question their use as clothing or hair fasteners. We possibly glimpse a young man holding just such a pin, hitherto interpreted as a fruit, flower, leash, or plektron, in a fresco fragment from Mycenae (Galanakis and Egan 2017). I second Kritikos and Papadaki in proposing that these kinds of pins were opium-pill skewers. Indeed, a 19th-century Chinese smoker's kit included a pin of comparable length, its head ribbed and globular (Hodgson 1999, 5).

The same purpose might be ascribed to the ribbed, opium-head pins from Anatolia, despite their being a bit shorter. The group includes two gold pins from an unknown provenance, which have little seedlike objects rattling inside the heads; a gold-plated pin from a Kültepe grave, complete with a naturalistically positioned torus; and a mold from an unknown provenance for casting that type of pin (Hnila 2002).

From the Royal Graves at Ur come a dozen pins of gold, silver, lapis lazuli, and copper alloy, many of which have tiny holes near the heads for attaching pendant cylinder seals or amulets, as depicted being worn on contemporaneous shell plaques (Zettler *et al.* 1998, 77, 98, 118-119). Several of the finials have gold caps on ribbed lapis bodies, seeming to evoke the opium pod's crown and capsule coloration. Most were found beside the shoulder or arm, rather than on the body, where they would have fastened or adorned the deceased's clothing (Marcus 1994). Did any of these pins do double duty as opium skewers? If so, some of these court ladies, and the elites they served, may have been involved in opium matters as consumers and/or purveyors.

Less elaborate, opium-pod finials are frequently found in domestic and funerary contexts across a broad area, serving as the heads for shorter pins and as the tops of kohl sticks and spindles (e.g., Poursat 1977, nos. 25, 439, 488; Arie 2018-2019). There are also finials, often of bone or ivory, shaped like handleless juglets. Those with tall crowns as rims are probably pomegranates, but the ones with plain or everted rims may be opium-related. A specimen from Boğazköy,

for example, has little diagonal incisions, perhaps alluding to lancing (Hnila 2002, fig. 5). Of the juglet finials found among the personal items of the Uluburun ship's crew and merchants (Pulak 1994; Ward 2003), one hazards that their owners saw some as miniatures of the Cypriote Base-Ring type discussed above. From their dealings all around the eastern Mediterranean, they knew those vessels well, and surely their psychoactive contents too; in fact, on that ill-fated voyage at least three were packed in a pithos in the hold (Hirschfeld 2005).

Beads and beading

Numerous Aegean and Near Eastern jewelry elements would appear to be opium art, mainly beads with globular or nearly spherical bodies scored by plain or striated ribbing. The gold beads from Crete often have granulation, in rows of cloisonné circles, or in belts about their middles (Effinger 1996, pls. 7j, 14l). One wonders if girdling reflects a local method of pod-lancing. In that case, a similarly belted bead from a chamber tomb at Mycenae might be a Cretan import (Wace 1932, pl. XXIX: 24). From another chamber tomb comes a ribbed, globular pendant, with the poppy crown finely worked in granulation (Pl. 2: 4) (Wace 1932, pl. XXXVIII: 75).

The site of Archanes, near Knossos, yielded gold opium-art beads with contexts particularly interesting in light of the present inquiry. One necklace (Pl. 3: 1) includes finely ribbed pods, as well as a tiny gold ball, perhaps reminiscent of an opium pill (Sakellarakis and Sapouna-Sakellaraki 1991, fig. 88). Suggestively, two small knives were among the bronze implements from the same building. A tholos tomb at the site contained a lavishly adorned, elite woman (Sakellarakis and Sapouna-Sakellaraki 1991, 128-134). Beside her was a lidded clay pyxis holding a bronze knife, ivory fragments possibly from its handle, gold beads in opium-pod and other shapes, and a rock-crystal amulet.

Many centuries later, in the Bactrian tombs of Tillya Tepe, Afghanistan, we find striking parallels to her assemblage. Four of the tombs were for high-ranking women interred with small knives and sumptuous opium-art jewelry with much granulation, especially along the ribbing, as well as droplet-shaped inlays of turquoise, a favored Bactrian material (Sarianidi 1985; Schlitz 2008; Peterson 2020). Since neither the warrior nor the much younger woman in the other tombs had any opium art, the foursome may well have been involved in the upper echelons of opium affairs, with their knives hardly workers' possessions, but emblems of their status. Was this perhaps true of the Archanes woman?

And might the gold crown from Tomb III, one of the Neo-Assyrian queenly burials at Nimrud, suggest the same (Collon 2002; Gansell 2018)? On its intricate frame are set a dense canopy of grape leaves, miniature bunches of lapis lazuli grapes, eight four-winged female figures, and scores of starburst rosettes and fruits in a tour de force of jewelry techniques (Youkhanna 2002). Are the fruits meant to be pomegranates, as they are usually identified? In the smooth, round bodies and tall, pointed crowns of the gold beads from Tomb I, as well as on the gold fringes of a headband and a pair of diadem elements from Tomb II, we definitely have pomegranates. The Tomb III fruits, by contrast, are more globular, with slender ribbing on the upper half made of beaded or woven wire, and shallow, round depressions for inlays on their flattened top, ringed by fine granulation and tiny gold triangles. They rise from the frame on very short, straight stems, with a hint of a torus.

Damerji (quoted in Collon 2002, 106) proposed that the fruits are opium pods, as did Boehmer (2006), and I would agree. As for the starburst rosettes, they so closely resemble the dark-centered stigmata of the opium poppy, as seen from above (Pl. 1: 1), that this would seem to be their inspiration. In line with the Neo-Assyrian ‘rhetoric of abundance’ (Winter 2003), the whole crown would thus create a glittering cornucopia gathered from fields spangled in poppies and arbors rich in grapes. And the two could eventually meld in a psychoactive potion of opium mixed with wine (McGovern 2003; Batiuk 2022).

Opium offerings and ‘Poppy Goddesses’

If we are on the right iconographic track, opium affairs would have been among the enterprises overseen by the wealthy, influential royal women of the Neo-Assyrian court, in support of the agenda of empire (Melville 2004; Svård 2016). Unfortunately, we have limited textual and pictorial evidence for their activities, but enough survives to gauge the important contributions they made in cultic, political, and economic spheres. At least one consort even went on campaign (Dalley 2002, 172). The female figures with their shimmering cloisonné wings on the Tomb III crown may be relevant in some regard, especially as they are atypically not nude, but wear chitonlike garments on the order of the clothing whose vestiges were preserved in some of the Nimrud burials (Gansell 2018). Do the glyptic and other parallels for such garbed, winged beings in Anatolia and Syria support the idea of an exotic homeland for one or more of the ladies whose names seem Syrian (Boehmer 2006)? Alternatively, it seems to me that

the crown's quasi-magical figures might subtly reference the royal women of the poppies, as well as the visions their opium induces.

Might all this, then, illuminate the significance of certain offerings seen in the hands of the king and the winged genius figures in pageants depicted on the palace walls of Nimrud and Khorsabad (Krikorian 1975)? These occur in clusters of three or more, hanging down from pliant stems, or held stiffly upright. While the fruits have tall pomegranate crowns, their slightly globular bodies are marked by chevrons or a ripple of ribbing. Rather than being botanical errors, as some have said, they may be deliberate poppy/pomegranate hybrids. In that case, they too may reflect a psychoactive combination of opium and wine, and thus afford small, but suitably evocative images within the construct of the palatial Neo-Assyrian decorative program, replete with the fantastical winged beings of waking dreams.

This in turn possibly sheds light on a fragmentary Mycenaean wall painting from Tiryns, which depicts a procession of beautifully dressed women, shaded by parasols (Papadimitriou *et al.* 2015). The largest in each group of three carries a small female figure, who holds curving stems of red pomegranates in one hand, globular yellow fruits in the other. Given the pairing with pomegranate and the tiny relief bead in each yellow fruit, might they be opium-pod offerings?

Two gold signet rings also from the Aegean world elaborate the links between opium and elite women. The first is from the Acropolis Treasure at Mycenae (Pl. 3: 2) (Evans 1927, fig. 194e). Seated on the ground beneath a fruiting tree, an elegantly dressed woman holds the stems of three opium pods and receives three women, two large and one small, who bring additional floral offerings. Another small female figure reaches up to touch the lowest hanging fruit. Six lion masks curve along one edge. Solar and lunar emblems, a double axe, and a diminutive armed male fill the rest of the field. For the opium pods, the seal-maker chose juglike shapes with flared rims and minute marks that may be the torus, strongly reminding us of the vessels and finials discussed above, and again below.

An offering of opium pods is also shown on a ring from the Thisbe Treasure (Pl. 4: 1) (Evans 1927, fig. 194d). They too are juglike, but more elongated, with dots below and above as possible indicators of the torus and raw opium beading. A small female figure presents a long necklace and two poppy stems to a woman dressed in finery, who holds aloft four pods, attended by a second small female figure bearing four more. Opposite the honorand sits an equally well-dressed woman. In one hand, she extends a circlet of beads, and in the other holds

a ring. The scene appears to take place outdoors on a platform furnished with carved or inlaid stools.

A third ring, or more precisely, its partial impression on clay, merits mention here (Pl. 4: 2). The piece, from the palace at Zakros on Crete, shows a woman gesturing toward a large winged insect behind her and kneeling over an object usually termed a baetyl (Crooks 2013). Depicted on gold rings, seals, and sealings, most baetyls are boulders; a few curiously resemble sea squills. The Zakros baetyl is unique in its ribbing and small, round crown, seen by Crooks as a possible cupule. To me, it has all the hallmarks of an opium seed pod, exaggerated in size just as the insect here, and the sea squill elsewhere. If so, I am tempted to suggest that opium may often have been the psychoactive stimulus for the visions in the complex rituals involving baetyls.

Thanks to Linear B documents, mainly from Knossos and Pylos, we have some sense of the varied roles that elite women played in the Mycenaean palatial economy (Olsen 2014). We also see mention of goddesses familiar from later Greek sources. But to assign divine status to any of the opium-art women, or to call, as many do, the signet from Mycenae the Great Goddess ring, is, in my view, overly interpretive. I believe they are better seen as high-ranking women active in opium matters, whose textual records have regrettably not come down to us. On the ring from Mycenae, there may even be an opium implement in the outstretched hand of the woman gesturing towards the poppies. As the item nearly overlaps with a stem, it may have been misunderstood as a leaf, for her hand is empty in the often-reproduced drawing of this ring.

While the apparent 'superfluity of elements familiar from Minoan iconography' (Krzyszkowska 2005, 254) may suggest the desire of the seal-carver or patron to include as many images as possible on the gold bezels, I suspect we have in them instances of opium-induced visions. In addition, as the eye travels along the Acropolis ring's dizzying multitude of compositional paths, it reaches the large solar emblem at the top, inscribed with a radiating pattern of *somniferum* stigmata, hardly, it would seem, a random choice.

A room at Gazi, just west of Knossos, may have afforded an environment conducive to such visions, presided over by a large terracotta figure often called the Poppy Goddess (Pl. 5: 1) (Askitopoulou *et al.* 2002). In her hair, she wears three short, movable pins with naturalistically rendered seed-pod heads, down to the brown coloring in the grooves, as though the raw opium were ripe for collection. She raises both arms, elbows bent, palms facing out. Below the waist, her body morphs into a tall cylinder. The room also had four smaller raised-

arm figures, along with equipment that could well have been used for smoking opium (see above).

Female figures with upraised arms come from over a dozen contemporaneous sites elsewhere on Crete, most of them sporting snakes, birds, or geometric attributes on their headdresses, matching the motifs on the snake tubes and plaques frequently found with them (Gesell 1976, 2004; Day *et al.* 2006). I would agree with Gaignerot-Driessen (2014) that all, including our Gazi figure, are more likely to be votaries than goddesses, and would go a bit further. Experiential work tells us that trance may be engendered by holding a pose with arms upraised (Morris and Peatfield 2022). Were these figures, then, mementos of ecstatic experience, or guides to trance practice? Did the opium lady from Gazi perhaps offer participants an alternative or supplemental portal into waking dreams? Their ecstatic states find reflection in the eyes of many women, and few men, in Aegean frescoes (Foster 2023).

In the palace of Knossos itself, was there possibly a dedicated space for opium consumption? For modern parallels, one thinks of the 19th-century opium parlors appropriately fitted out with such items as lanterns shaped like giant seed pods (Hodgson 1999, frontispiece). A pair of limestone half-capitals found on the borders of the Knossos Central Court may hint at how a Minoan den might have been embellished (Pl. 5: 2) (Evans 1927, suppl. pl. XXXa). The one is deeply ribbed, with crown and torus; the other has petals rising from a molded base. Their diminutive size suggests use in an intimate architectural setting, in which slim, engaged columns would have made convincing stems. I follow Merrillees (1979) in recognizing the former as opium art, and for the other would point out the close correlation between its petals and those of the opium poppy as it begins to flower, botanically illustrated in Pl. 1: 1, lower right. In addition, poppylike, the stone petals overlap, with the side two and the fourth engaged. As I see it, then, the capitals bespeak a thematically coherent and contextually relevant iconographic program.

Opium-art vessels

The juglet shapes we've noted on finials and gold rings lead us to opium-art vessels, prime among them the Cypriote Base-Ring wares discussed above. A few centuries later, we find analogous Cypriote pots made in Red-Slip Bucherro. These were subsequently imitated on Crete, most with ribbing, some with incised grooves (Karageorghis *et al.* 2014). In addition to ribbing, a unique piece has little knobs concentrated in a small area; I follow Karageorghis *et al.* (2014, 195) in reading these as evoking droplets of raw opium beading on the surface.

Certain ceramic vessels of opium-pod form have painted decoration similarly evocative, especially several rhyta from funerary contexts at the Cretan sites of Mochlos and Maroulas (Koehl 2006, nos. 345, 346, 347, 348). These have panels framed by undulations and filled alternately by an octopus and a lanceolate motif (Pl. 6: 1). If, as Nicgorski (1999, 538) proposes, the latter is a stylization of the scored, oozing opium pod, the panels provide apt imagery of life (regenerating octopus) and death (opium overdose). The iconography would seem to anticipate that of the life-and-death sheaves of grain and poppies carried in such classical memorials as the so-called Ceres portrait statues of women (Davies 2008).

In the case of a cylindrical pyxis from a chamber tomb at Pachyammos on Crete, we return to the matter of opium versus pomegranate. Its lid and sides are painted with ground-feeding birds, eyeing or pecking at fruits bursting with seeds and crowned with two or three little flourishes (Marinatos and Hirmer 1960, pl. 124). While these are sometimes described as opium capsules, I see instead very ripe pomegranates, naturally split open as they tumbled down from their bush, a windfall delight for the flock.

The large corpus of Aegean stone vessels comprises some suggestively opiate pieces. One is a piriform rhyton of greenish serpentine from the House of the Shields, Mycenae, with vertical bands of chevrons and columns of circular, shallow depressions (Pl. 6: 2) (Koehl 2006, no. 138). If these originally held white inlays, we would seem to have a capsule beaded with raw opium. Then there are the so-called blossom bowls (Warren 1969, 14-17). With their vertical ribbing and stone sometimes flecked with white, the bowls may have been inspired by opium pods, not flowers.

Opium War and Peace

If we imagine a smaller version of the ribbed stone bowls and a larger version of the ribbed finials, then we have the essential form of the stone heads of the ancient Near Eastern mace and scepter (Hamblin 2006). Some are likewise ribbed, as seen in examples from Hasanlu (Muscarella 1989). Most, though, are smoothly globular, with a hint of the torus and crown. Opium's capacity for fatality surely lent added meaning to these instruments of power and battle, wielded by deities and kings.

But it's in connection with the goddess Inanna/Ishtar that opium-headed maces found their richest metaphorical expression. We see the beginnings in two Sumerian stone pieces. The first, a vase fragment of unknown provenance, preserves the torso of a frontal female figure holding dates in one hand (Aruz

2003, no. 36). The goddess, for such she must be, to judge from the horns of divinity cradling her elaborate crown, has six thick stalks issuing from her shoulders, three on each side, with capsule-shaped finials. She is surely Inanna, for a parallel, a broken votive plaque, was found near the Inanna temple at Nippur (Lovisetto 2022, 58). On that, she has round-headed projections from her shoulders, the sole extant top with two short spikes. Is this shorthand for the pod crown?

The succeeding Akkadian period brilliantly developed this iconography to convey the goddess's contradictory nature (Dajani 2022). Sumerian Inanna/Akkadian Ishtar was the principal female deity of the Mesopotamian pantheon, in literature portrayed as a maiden in the first flush of young love or as a woman well aware of her sensuality and allure. In those guises, she made the land and its denizens flourish. But her passion might turn in a moment to fury, vented in capricious punishment for the male of the moment, or in widespread war and devastation. In Akkadian glyptic, we see emerging from her shoulders sickle swords or axes, fruiting branches, and opium-headed maces, three on each side, symmetrically arranged in various configurations (Pl. 6: 3). As Frankfort (1939, 130) observed, this perfectly captured her unique duality, since the 'projections from her shoulders may be either plants or weapons,' frequently described as 'sprouting' from the goddess's body. The imagery remained consistently hers in a range of media for centuries (Maxwell-Hyslop 2002), except in what I see as an anomalous panoply on a stone mold showing Ishtar with Naram-Sin (Hansen 2002), a work of unknown, perhaps suspect origin (Braun-Holzinger 2017).

The tantalizing truffle

While the opium poppy tolerates a range of growing conditions, it does not thrive in the arid and semi-arid ecosystems of much of the Near East. Those are, however, optimal environments for the desert truffle, principally of the genera *Tirmania* and *Terfezia*, whose symbiotic relationship with a host plant (see below) critically enhances the ability of both to withstand drought (Hall *et al.* 2007, 83-86). Today, all truffle species are classed within the Fungi kingdom, whose members also include mushrooms, mildews, yeasts, and a diverse groups of other organisms that are neither plants nor animals.

For three reasons, I include the desert truffle in the present discussion to highlight its hitherto overlooked cultural significance, together with its possible

role as a complement to opium, especially in the Mari region of greater Mesopotamia. First, its occurrence in a surprising number of cuneiform documents attests to its being well known and actively sought. In Syria today, gatherers and purchasers prize truffles for their high nutritional value and as an important ingredient in certain traditional remedies, as doubtless was true in the past (Shavit 2008; Allen and Bennett 2021; Khlaif *et al.* 2021). Unfortunately, land mines and armed attacks have made the deserts increasingly dangerous; during the first four months of 2023, nearly 100 truffle hunters were killed (Abdulrahim 2023).

Second, there is the economic factor. As we saw with opium production, much skilled labor is required before the goods may be marketed, which is expended, in the case of truffles, in the finding and harvesting stages. Selling for considerably less than their European woodland cousins (Jacobs 2019), desert truffles still command relatively high prices. Black truffles in Damascus, for instance, currently cost \$35 a kilogram, the equivalent of a month's salary for many Syrians (Abdulrahim 2023). We have no Mesopotamian evidence for the prices of either opium or truffles, but it seems logical to suppose that both brought profit to all along the supply chain.

And third, the desert truffle may have occupied a particular niche among the mind-altering substances of the ancient Near East. In dry areas where opium, cannabis, mandrake, belladonna, and the like were not available ecologically or commercially, the special properties of the desert truffle (see below) would have afforded an attractive, local alternative.

Unlike the situation for opium, there seems to be no truffle imagery, but we do have a high level of confidence in identifying as "truffle" its Sumerian word-sign, UZU.DIRI.KUR.RA, and its Akkadian term, *kamatum*, which has cognates in Arabic down to the present day (Jean 1949; Stol 1978; Hall *et al.* 2007, 241; Stol 2014-2016). In some translations, one finds "mushroom" instead of "truffle," owing to the misapprehension that they are one and the same. They are not. While caution is generally advisable, in this case we are justified in transferring modern classifications and distinctions to Mesopotamian thought systems. Most compelling is their use of the standard Sumerian verb for digging (ba-al) to describe how they are collected (see below); mushroom fruiting bodies, by contrast, grow above ground, so are gathered by cutting or twisting the stalk.

The truffle is a fungus of the mycorrhizal variety, a term coined in the late 19th century, from the Greek for fungus and root, to describe a remarkable nutrient exchange partnership. Its life cycle begins when the mature fruiting body produces spores. Since this takes place entirely underground, the spores cannot

be spread by wind or water. Instead, their dispersal depends primarily on the fruit being found, dug up, and eaten by animals attracted by the volatile organic compounds it exudes (see below). The spores' thick outer walls insure their undamaged passage through the faunal digestive system. If deposited near roots, certain plant excretions stimulate germination and the formation of hyphae, fine filaments collectively known as mycelium, which first encase the root tips and then penetrate their cortex. Once ensconced intercellularly, they receive carbohydrates from the host and in return provide the plant with supplemental nutrients, among them potassium, phosphorous, magnesium, and nitrates, thanks to the ability of the hyphae to exploit soil areas the roots are too large to reach. When the fungus itself has accumulated sufficient resources, it forms a fruiting body that produces spores, and the cycle comes full circle.

Host plants of the desert truffle include acacia (camel thorn), a species of pine, and the rock rose. Collecting typically takes place between February and April, when the truffle has reached maturity. Modern gatherers report that occasional showers of light, gentle rain are desirable then, for the moisture aids them in spotting the small mounds and cracks in the soil which often signal that truffles are present in the ground below, ready to be unearthed (Shavit 2008). They also hold that winter lightning storms presage a good crop, a belief borne out by scientific evidence showing that to initiate fruiting the truffle requires a high level of nitrogen compounds, released from the atmosphere by lightning (Volk 2007). Desert truffles may be black, red-brown, or light-colored, 10cm or more in diameter.

According to a Sumerian narrative poem now entitled *The Marriage of Martu*, the Amorites, originally semi-nomadic inhabitants of northern Syria, were well known for gathering desert truffles, but not to their credit (Klein 1997). The text relates how Martu, one of the Amorite gods, resolves to wed a young woman raised in Sumerian urbanity. A friend tries to dissuade her from what she sees as a very unsuitable match. The Amorites, she claims, are inferior in every way: they look like monkeys, live in tents not houses, know nothing of agriculture or cooking, and dig up truffles in the foothills! Other Sumerian literary sources are equally contemptuous (Buccellati 1966, 330-331). The bride-to-be is not fazed. The poem ends with her declaring 'I will indeed marry Martu.'

Mari and the desert truffle

Our best extant evidence for desert truffle procurement and distribution in the ancient Near East comes from the site of Mari (Margueron 2014). Founded in the early third millennium BC beside the middle reaches of the Euphrates, Mari grew to be the most important city of the region, culminating under the Amorite rulers of the early second millennium BC in boasting a magnificent palace, an ice-house, and other wonders. Its prominence came from establishing extensive river and overland connections, rather than from agriculture, since the mean annual rainfall there is inadequate for dry-farming (Weiss 1986). The capital was sacked by Hammurabi of Babylon about 1760 BC, and never resurrected.

For us, Hammurabi's destruction had a silver lining, as the fires preserved many thousands of clay tablets in the Mari archives, dating mostly to the reigns of the last two Amorite kings, Yasmah-Addu and his son Zimri-Lim. The royal correspondence includes the following seven letters about truffles sent to the court by local worthies in the Mari sphere. Of special interest are the remarks about rain, which neatly align with modern gatherers' views and methods.

A present fit for a king

Mut-Bisir, who on another occasion recommended a diviner to Yasmah-Addu, has the idea of sending the king a gift of ostrich eggs and truffles, possibly from his native Bishri highlands, northwest of Mari. He says the truffles were collected after a rain and are nice and tender. But when Ka'lalum, a trusted royal emissary, advises him that the king would not welcome the eggs, Mut-Bisir cooks them up himself. Then he decides to go ahead anyway, and dispatches the truffles and another batch of eggs he personally collected, together with this cover letter of explanation (after Charpin 2010, 244; on the Bishri highlands as a prolific truffle source today, Shavit 2008, 20).

Satisfaction guaranteed

Yaqqim-Addu, the governor of the district capital of Saggaratum, north of Mari, where the Habur joins the Euphrates, writes the king that he's sending six more consignments of truffles to Mari, since the king said the previous two were 'not good.' He assures him that these will meet with his approval (after Durand 1997, 313).

Signed, sealed, and sent

In this letter, Yaqqim-Addu reports that he went to Zurubban, upriver on the Euphrates between Mari and Terqa, where he was given a consignment of truffles and a sealed tablet to forward to Mari. He wants to be sure the king sees that he hasn't opened it, nor, we presume, reading between the lines, helped himself to any truffles (after Durand 1997, 312).

Treats from Terqa

Kibri-Dagan, governor of Terqa, says that shepherds brought him five consignments of truffles, which he is sending on to the king (after Durand 1997, 312-313).

A plentiful harvest

The official Hadni-Ilumma writes from Qattunan, a district capital farther up the Habur from Saggaratum, to announce that recent rains have revealed an abundance of truffles, which he sends to the king along with two ostrich eggs (after Durand 1994, 104).

Accept no substitutes

Zakira-Hammu, governor of Qattunan, had people go out to gather truffles for the king on the outskirts of the city, where he'd heard they could be found. What did they do but bring him mushrooms that look like truffles! He tells the king that he ordered them back out again, with strict instructions to find truffles. They did (after Heimpel 1997; on desert mushrooms in the Near East, Muhsin *et al.* 2012).

Fresh truffles for sale

Writing from upriver on the Euphrates, the official La'um reports that right after some rain, he purchased truffles collected across the river from the town of Ganibatam, which he dispatches herewith to Yasmah-Addu (after Birot 1973, 3; Charpin 1989).

Truffles certainly arrived more often than documented in these surviving letters. It is difficult to estimate the quantity in these consignments. The terminology suggests the use of large reed baskets, some holding perhaps as many as sixty truffles (Durand 1997, 313). In the early 20th century, caravans could be seen regularly coming in from the desert, their donkeys and camels laden

with baskets of truffles to sell (Jean 1949, 92; Stol 1978, 220), so we may picture something of the sort millennia ago.

Many surely went to the palace kitchens. While the Mari scribes kept detailed records of foodstuff sources and disbursements, the cooking and serving staff, and the etiquette for court dining, they did not write down menus and recipes nor comment on any gustatory pleasures (Sasson 2004). It is likely, though, that fresh truffles enhanced the meals gracing the royal and divine table, hence our correspondents' remarks about quality. The pairing of truffles and ostrich eggs brings to mind a dish popular in the Near East today (Shavit 2008), but I wonder if this indicates only a common origin in the steppe, with the eggs perhaps nestled for safe transport among the fungi. For luxury vases throughout the ancient world, ostrich eggs were esteemed, especially those from wild, as opposed to farmed, birds (Hodos *et al.* 2020).

Magic truffles at Mari?

I propose that some Mari truffles were also destined for engendering altered states. Truffle aroma has long been recognized anecdotally as a powerful aphrodisiac. Recent scientific analyses of the volatile organic compounds exuded by various species have been able to isolate and identify many of them, elucidating the basis for their aphrodisiac effect and deepening understanding of the vital part they play in the truffle life-cycle (see above; Allen and Bennett 2021, 205-208). From Mari, there are some 300 mentions concerning the perfume and aromatic oil industry, evincing a high level of expertise (Joannès 1993). While no surviving records deal specifically with truffle aphrodisiacs, it seems reasonable to suppose skilled Mariote production and distribution of truffle-based, sensorial substances.

Of potentially greater significance for our purpose here, new research has discovered that the Périgord black truffle contains an appreciable amount of anandamide, a compound aptly named after the Sanskrit word for bliss, which is functionally related to Δ^9 -tetrahydrocannabinol (THC), the principal psychoactive component of marijuana (Pacioni *et al.* 2015). In the human brain, marijuana produces its high owing to cannabinoid receptors located in the regions controlling memory, higher cognition, motor coordination, appetite, and emotions (Lee 2012, 208-214). As THC binds to these receptors, an altered state of consciousness results, manifesting itself in myriad ways.

Normally, these receptors serve another purpose, thanks to our ability (shared with all animals except insects) to autogenerate anandamide as part of an endocannabinoid system regulating numerous fundamental biological processes in what has been described as a ‘natural repair kit, an in-built mechanism of protection and regeneration’ (Lee 2012, 214). Today, treatment protocols involving ingestion of supplementary anandamide have proven efficacious in manipulating the molecular signaling of the body’s endocannabinoid system to address a broad range of conditions (Scherma *et al.* 2018). Once introduced, anandamide passes rapidly through the blood-brain barrier to latch onto the cannabinoid receptors, inducing a trancelike state of preternatural calm, among other effects.

To my knowledge, the desert truffle has never been tested for anandamide. But, as Pacioni’s team hypothesized (2015), since anandamide is responsible for melanin synthesis in humans, any very dark truffle would likely have a certain level, including the black desert varieties. If that is so, who might have used truffle anandamide at Mari? The archives provide much information about the activities of Mariote prophets, diviners, healers, visionaries, and those who uttered ecstatic speech (Charpin 2015, 10-58; B. Foster 2022). Such individuals would have been well versed in the pharmaceutical and other properties of many kinds of *naturalia*, as confirmed in other sources (Stol 2014-2016).

The Mari texts also refer to ‘responders,’ non-specialist men and women called upon to answer ‘yes’ or ‘no’ to questions about political or governmental matters they likely knew little or nothing about (B. Foster 2022, 432-433). They were given a beverage to drink, which apparently transported them into an alternative, trancelike state during which their replies were recorded to be dispatched to the court. Scribes and responders were sworn to secrecy about the whole proceeding, so we have no clues as to the nature of the liquid. While it could have been wine alone, as Durand (1982) suggested, the drink’s effects would seem to point to additives. The prevalence of truffles at Mari leads me to propose that some were diced and steeped to concoct mind-altering infusions. These should not be confused with today’s misleadingly marketed ‘magic truffle’ tisanes, which actually use the sclerotia (spherical, nutrient-storing clumps of mycelium) from psychoactive mushrooms. Did the Mariotes make a true truffle potion?

Conclusions

The foregoing discussion has sought answers to three principal questions. First, can we define the particular features of opium art? The harvest-ready seed pod seems to have inspired a wide-ranging corpus of artifacts, far more extensive and pervasive than previously thought to exist. Of special note is the close attention, both naturalistic and stylized, paid to rendering raw opium beading, often using gold granulation techniques to advantage. At the same time, some opium art appears deliberately ambiguous, especially in its confounding with pomegranate imagery. While ambiguity is for various reasons intrinsic to much Aegean and Mesopotamian art (discussed e.g. in McGown 2011; Brown and Feldman 2014), it often seems to occur here in the context of dazzlingly rich iconographic programs, as in the Mycenaean gold rings and the gold crown from Nimrud. In my view, such surfeit of imagery reflects lived ecstatic experience, or was meant to encourage or enhance such experience in the minds of viewers, just as in the psychedelic art of Minoan Crete and Thera (K. Foster 2022). In other words, the effects of opium consumption seem embedded in certain opium art.

Second, what can we say about the societal context of opium and truffle dealings? High-ranking women are regularly associated with opium art in depictions or in their grave goods. While the evidence is perforce circumstantial, I believe that a good case may be made for proposing that some of these women, from the Aegean to Afghanistan, played important roles in opium affairs, especially in entrepreneurial and ritual spheres. In the realm of goddesses, Inanna/Ishtar's opium attributes brilliantly conveyed her complexity and power. As for desert truffles, it was men in the upper echelons who conveyed those large consignments to the king of Mari, but we cannot as yet tell who participated in other aspects of what must have been a lucrative trade.

Finally, how may we compensate for gaps in the evidence, notably the fact that we have opium art but no texts, and truffle texts but no art? The present inquiry has aimed to marshal data from iconography, philology, archaeometry, natural history, ecology, and ethnography to create a fuller picture than could ever be achieved by pursuing these avenues individually. So, for example, new analyses of opium origins and residues go far toward filling in the sparse archaeobotanical record, while new research on truffle properties complements information gleaned from modern gatherers and ancient documents. Still, like the desert truffle, much remains hidden, awaiting the spring rains of fresh insights.

Acknowledgements

For references and comments, I am grateful to Robert Arnott, Eva Braun-Holzing, Sarah Kielt Costello, Benjamin R. Foster, David Ilan, Estelle Orelle, Cemal Pulak, Diana Stein, Judith Weingarten, John Younger, and SAAC's anonymous reviewers. For permission to reproduce her splendid color photograph of opium poppies (Pl. 1: 2), I thank Vera Kuttelvaserova.

References

- Abdulrahim R. 2023.** A Beloved Pastime in Syria is Now a Perilous Venture. *The New York Times*, 11 April, A4.
- Allen K. and Bennett J. W. 2021.** Tour of Truffles: Aromas, Aphrodisiacs, Adaptogens, and More. *Mycobiology* 49/3, 201-212. <https://doi.org/10.1080/12298093.2021.1936766>.
- Arie E. 2018-2019.** Pomegranate and Poppy-Capsule Headings from Ivory and Bone in the Late Bronze and Iron Ages: Putting the Famous Inscribed Ivory Pomegranate in Context. *Israel Museum Studies in Archaeology* 9, 2-39.
- Arnott R. 1999.** Healing and Medicine. In Y. Tzedakis and H. Martlew (eds), *Minoans and Mycenaeans: Flavours of Their Time*, 262-271. Athens.
- Aruz J. (ed.) 2003.** *Art of the First Cities: The Third Millennium B.C. from the Mediterranean to the Indus*. New York.
- Aruz J., Benzel K. and Evans J. M. (eds) 2008.** *Beyond Babylon: Art, Trade, and Diplomacy in the Second Millennium B.C.* New York.
- Askitopoulou H., Ramoutsaki I. A. and Konsolaki E. 2002.** Archaeological Evidence on the Use of Opium in the Minoan World. *International Congress Series* 1242, 23-29. [https://doi.org/10.1016/S0531-5131\(02\)00769-0](https://doi.org/10.1016/S0531-5131(02)00769-0).
- Batiuk S. 2022.** Caucasian Cocktails: The Early Use of Alcohol in “The Cradle of Wine.” In D. L. Stein, S. K. Costello and K. P. Foster (eds), *The Routledge Companion to Ecstatic Experience in the Ancient World*, 101-120. London. <https://doi.org/10.4324/9781003041610-9>.
- Behn C. P. 1986.** The Use of Opium in the Bronze Age in the Eastern Mediterranean. *Listy filologické/Folia philologica* 109/4, 193-197.
- Biro M. 1973.** Nouvelles découvertes épigraphiques au Palais de Mari (salle 115). *Syria: Archéologie, Art et histoire* 50, 1-11. <https://doi.org/10.3406/syria.1973.6374>.
- Böck B. 2022.** Mind-altering Plants in Babylonian Medical Sources. In D. Stein, S. K. Costello and K. P. Foster (eds), *The Routledge Companion to Ecstatic Experience in the Ancient World*, 121-137. London. <https://doi.org/10.4324/9781003041610-10>.

- Boehmer R. M. 2006.** Das Herkunftsgebiet der Goldenen Krone aus Gruft III des Nordwest-Palastes zu Nimrud. *BaM* 37, 213-219.
- Bonneterre D. 2022.** *Banquets, rations et offrandes alimentaires au Proche-Orient ancien: 10 000 ans d'histoire alimentaire révélée.* Oxford. <https://doi.org/10.2307/j.ctv1r2xxb2>.
- Booth M. 1996.** *Opium: A History.* New York.
- Branigan K. 1974.** *Aegean Metalwork of the Early and Middle Bronze Age.* Oxford.
- Braun-Holzinger E. A. 2017.** Naramsîn und Ištar sitzen sich gegenüber: Darstellung auf einer Steinform unklarer Nutzung. *ZA* 107/1, 125-139. <https://doi.org/10.1515/za-2017-0008>.
- Brown B. A. and Feldman M. H. (eds) 2014.** *Critical Approaches to Ancient Near Eastern Art.* Berlin. <https://doi.org/10.1515/9781614510352>.
- Buccellati G. 1966.** *The Amorites of the Ur III Period.* Naples.
- Charpin D. 1989.** Cueillette de champignons. *N.A.B.U.* 58, 38.
- Charpin D. 2010.** The Desert Routes Around the Djebel Bishri and the Sutean Nomads According to the Mari Archives. In K. Ohnuma and A. Al-Khabour (eds), *Formation of Tribal Communities: Integrated Research in the Middle Euphrates*, 239-145. *Al-Rāfidān*, special issue.
- Charpin D. 2015.** *Gods, Kings and Merchants in Old Babylonian Mesopotamia.* Leuven.
- Chovanec Z., Bunimovitz S. and Lederman Z. 2015.** Is there Opium here?: An Analysis of Cypriot Base Ring Juglets from Tel Beth-Shemesh, *Mediterranean Archaeology and Archaeometry* 15, 175-189. Israel. <https://doi.org/10.5281/zenodo.16609>.
- Chovanec Z. and Flourentzos P. 2021.** A Review of Opium Poppy Studies in Cyprus and the Eastern Mediterranean with New Evidence from Iron Age Cyprus. In Z. Chovanec and W. Crist (eds), *All Things Cypriot: Studies on Ancient Environment, Technology, and Society in Honor of Stuart Swiny*, 145-156. Alexandria, VA.
- Collon D. (ed.) 2002.** Nimrud Treasures: Panel Discussion. In J. E. Curtis, H. McCall, D. Collon, and L. al-Gailani Werr (eds), *New Light on Nimrud: Proceedings of the Nimrud Conference 11th–13th March 2002*, 105-118. London.
- Crooks S. 2013.** *What are these Queer Stones? Baetyls: Epistemology of a Minoan Fetish.* (BAR-IS 2511). Oxford. <https://doi.org/10.30861/9781407311296>.
- Counsell D. J. 2008.** Intoxicants in Ancient Egypt? Opium, Nymphaea, Coca and Tobacco. In R. David (ed.), *Egyptian Mummies and Modern Science*, 195-215. Cambridge. <https://doi.org/10.1017/CBO9780511499654.014>.
- Dajani M. 2022.** The Gaze of Ishtar: Frontality and Fear in Akkadian Seals. In S. Babcock and E. Tamar (eds), *She Who Wrote: Enheduanna and Women of Mesopotamia ca. 3400–2000 B.C.*, 85-95. New York.
- Dalley S. 2002.** The Identity of the Princesses in Tomb II and a New Analysis of Events in 701 BC. In J. E. Curtis, H. McCall, D. Collon and L. al-Gailani Werr (eds), *New Light on Nimrud: Proceedings of the Nimrud Conference 11th–13th March 2002*, 171-176. London.

- Davies G. 2008.** Portrait Statues as Models for Gender Roles in Roman Society. In S. Bell and I. L. Hansen (eds), *Role Models in the Roman World: Identity and Assimilation*, 207-220. Ann Arbor.
- Day P. M., Joyner L., Kilikoglou V. and Gesell G. C. 2006.** Goddesses, Snake Tubes, and Plaques: Analysis of Ceramic Ritual Objects from the LM IIIC Shrine at Kavousi. *Hesperia* 75/2, 137-175. <https://doi.org/10.2972/hesp.75.2.137>.
- Durand J.-M. 1994.** Administrateurs de Qattunân. In D. Charpin and J.-M. Durand (eds), *Florilegium marianum II: Recueil d'études à la mémoire de Maurice Birot*, 83-114. Paris.
- Durand J.-M. 1982.** In vino veritas. *RAssyr* 76, 43-50.
- Durand J.-M. 1997.** *Les documents épistolaires du palais de Mari*. Paris.
- Effinger M. 1996.** *Minoischer Schmuck*. (BAR-IS 646). Oxford.
- Emboden W. 1979.** *Narcotic Plants: Revised and Enlarged*. New York.
- Evans A. J. 1927.** *The Palace of Minos at Knossos*, vol. 2. London.
- Foster B. R. 2022.** Ecstatic Speech in Ancient Mesopotamia. In D. Stein, S. K. Costello and K. P. Foster (eds), *The Routledge Companion to Ecstatic Experience in the Ancient World*, 430-440. London. <https://doi.org/10.4324/9781003041610-28>.
- Foster K. P. 2022.** Psychedelic Art and Ecstatic Visions in the Aegean. In D. Stein, S. K. Costello and K. P. Foster (eds), *The Routledge Companion to Ecstatic Experience in the Ancient World*, 489-516. London. <https://doi.org/10.4324/9781003041610-31>.
- Foster K. P. 2023.** Ocular Signs of Ecstatic Possession and Procession in Aegean Art. In J. Weingarten, C. F. Macdonald, J. Aruz, L. Fabian and N. Kumar (eds), *Processions: Studies of Bronze Age Ritual and Ceremony presented to Robert B. Koehl*, 147-156. Oxford. <https://doi.org/10.2307/jj.7514488.20>.
- Frankfort H. 1939.** *Cylinder Seals: A Documentary Essay on the Art and Religion of the Ancient Near East*. London.
- Gaignerot-Driessen F. 2014.** Goddesses Refusing to Appear? Reconsidering the Late Minoan III Figures with Upraised Arms. *AJA* 118/3, 489-520. <https://doi.org/10.3764/aja.118.3.0489>.
- Galanakis Y. and Egan E. C. 2017.** A Lost Mycenaean Fresco Fragment Re-examined. *SMEA* 3, 83-103.
- Gansell A. R. 2018.** Dressing the Neo-Assyrian Queen in Identity and Ideology: Elements and Ensembles from the Royal Tombs at Nimrud. *AJA* 122/1, 65-100. <https://doi.org/10.3764/aja.122.1.0065>.
- Gesell G. C. 1976.** The Minoan Snake Tube: A Survey and Catalogue. *AJA* 80/3, 247-259. <https://doi.org/10.2307/503037>.

- Gesell G. C. 2004.** From Knossos to Kavousi: The Popularizing of the Minoan Palace Goddess. In A. P. Chapin (ed.), *XAPIΣ: Essays in Honor of Sara A. Immerwahr*, 131-150. London.
- Hall I. R., Brown G. T. and Zambonelli A. 2007.** *Taming the Truffle: The History, Lore, and Science of the Ultimate Mushroom*. Portland, OR.
- Hamblin W. J. 2006.** *Warfare in the Ancient Near East to 1600 BC: Holy Warriors at the Dawn of History*. London. <https://doi.org/10.4324/9780203965566>.
- Hansen D. P. 2002.** Through the Love of Ishtar. In L. al-Gailani Werr, J. Curtis, H. Martin, A. McMahon, J. Oates, and J. Reade (eds), *Of Pots and Plans: Papers on the Archaeology and History of Mesopotamia and Syria presented to David Oates in Honour of His 75th Birthday*, 91-112. London.
- Heimpel W. 1997.** Mushrooms. *N.A.B.U.* 1, 3.
- Hirschfeld N. 2005.** Die Zyprische Keramik aus dem Schiffswrack von Uluburun. In Ü. Yalçin, C. Pulak and R. Slotta (eds), *Das Schiff von Uluburun: Welthandel vor 3000 Jahren*, 103-108. Bochum.
- Hnila P. 2002.** Some Remarks on the Opium Poppy in Ancient Anatolia. In R. Aslan, S. Blum, G. Kastl, F. Schweizer and D. Thumm (eds), *Mauerschau: Festschrift für Manfred Korfmann*, 315-328. Remshalden-Grunbach.
- Hodgson B. 1999.** *Opium: A Portrait of the Heavenly Demon*. San Francisco.
- Hodos T., Cartwright C. R., Montgomery J., Nowell G., Crowder K., Fletcher, A. C. and Gönster Y. 2020.** The Origins of Decorated Ostrich Eggs in the Ancient Mediterranean and Middle East. *Antiquity* 94/374, 381-400. <https://doi.org/10.15184/aqy.2020.14>.
- Ilan D. 2022.** The Ring-Kernoi and Psychotropic Substances. In D. Stein, S. K. Costello and K. P. Foster (eds), *The Routledge Companion to Ecstatic Experience in the Ancient World*, 173-186. London. <https://doi.org/10.4324/9781003041610-13>.
- Immerwahr S. A. 1989.** The Pomegranate Vase: Its Origins and Continuity. *Hesperia* 58/4, 397-410.
- Jacobs R. 2019.** *The Truffle Underground: A Tale of Mystery, Mayhem, and Manipulation in the Shadowy Market of the World's Most Expensive Fungus*. New York.
- Jacobsthal P. 1956.** *Greek Pins and Their Connexions with Europe and Asia*. Oxford.
- Jean C.-F. 1949.** Kam-a-tum 'truffes' (?). *RAssyr* 43, 89-92.
- Jesus A., Bonhomme V., Evin A., Ivorra S., Soteras R., Salavert A., Antolin F. and Bouby L. 2022.** A Morphometric Approach to Track Opium Poppy Domestication. *Scientific Reports* 11:9778. <https://doi.org/10.1038/s41598-021-88964-4>.
- Joannès R. 1993.** La culture matérielle à Mari (V): Les parfums. *Mari: Annales de Recherches Interdisciplinaires* 7, 251-270.
- Kapoor L. D. 1995.** *Opium Poppy: Botany, Chemistry, and Pharmacology*. New York.

- Karageorghis V. 1976.** A Twelfth-century BC Opium Pipe from Kition. *Antiquity* 50, 125-129. <https://doi.org/10.1017/S0003598X00101528>.
- Karageorghis V., Kanta A., Stampolidis N. C. and Sakellarakis Y. (eds) (2014).** *Kypriaka in Crete: From the Bronze Age to the End of the Archaic Period*. Nicosia.
- Khlaif D. K., Kadum H. and Abod N. S. 2021.** Nutritional and Chemical Compositions of the Desert Truffle (Terfezia Claveryi) in Samawa City of Iraq. *Earth and Environmental Science* 923. <https://doi.org/10.1088/1755-1315/923/1/012050>.
- Klein J. 1997.** The God Martu in Sumerian Literature. In I. L. Finkel and M. J. Geller (eds), *Sumerian Gods and Their Representations*, 99-116. Groningen.
- Koehl R. B. 2006.** *Aegean Bronze Age Rhyta*. Philadelphia. <https://doi.org/10.2307/j.ctt3fgvvz>.
- Koschel K. 1996.** Opium Alkaloids in a Cypriote Base Ring I Vessel (Bilbil) of the Middle Bronze Age from Egypt. *Egypt and the Levant* 6, 159-166.
- Krikorian A. D. 1975.** Were the Opium Poppy and Opium Known in the Ancient Near East? *Journal of the History of Biology* 8, 95-114. <https://doi.org/10.1007/BF00129597>.
- Kritikos P. G. and Papadaki S. P. 1967.** The History of the Poppy and of Opium and Their Expansion in Antiquity in the Eastern Mediterranean. *Bulletin on Narcotics* 19/3, 17-38 and 19/4, 5-10.
- Krzyszowska O. 2005.** *Aegean Seals: An Introduction*. London.
- Lee M. A. 2012.** *Smoke Signals: A Social History of Marijuana – Medical, Recreational and Scientific*. New York.
- Linares V., Jakoel E., Be'eri R., Lipschits O., Neumann R. and Gadot Y. 2022.** Opium Trade and Use during the Late Bronze Age: Organic Residue Analysis of Ceramic Vessels from the Burials of Tel Yehud, Israel. *Archaeometry*, 1-18. <https://doi.org/10.1111/arcm.12806>.
- Lovisetto G. 2022.** Goddesses Visualized in Early Dynastic Mesopotamia. In S. Babcock and E. Tamur (eds), *She Who Wrote: Enheduanna and Women of Mesopotamia ca. 3400–2000 BC*, 47-63). New York.
- Marcus M. I. 1994.** Dressed to Kill: Women and Pins in Early Iran. *Oxford Art Journal* 17, 3-15. <https://doi.org/10.1093/oxartj/17.2.3>.
- Margueron J.-C. 2014.** *Mari: Capital of Northern Mesopotamia in the Third Millennium: The archaeology of Tell Hariri on the Euphrates*. Oxford. <https://doi.org/10.2307/j.ctvh1dt7w>.
- Marinatos S. and Hirmer M. 1960.** *Crete and Mycenae*. New York.
- Maxwell-Hyslop R. 2002.** Curved Sickles-Swords and Scimitars. In L. al-Gailani Werr, J. Curtis, H. Martin, A. McMahon, J. Oates, and J. Reade (eds), *Of Pots and Plans: Papers on the Archaeology and History of Mesopotamia and Syria Presented to David Oates in Honour of His 75th Birthday*, 210-217. London.
- McGovern P. E. 2003.** *Ancient Wine: The Search for the Origins of Viticulture*. Princeton.
- McGowan E. 2011.** *Ambiguity and Minoan Neopalatial Seal Imagery*. Uppsala.

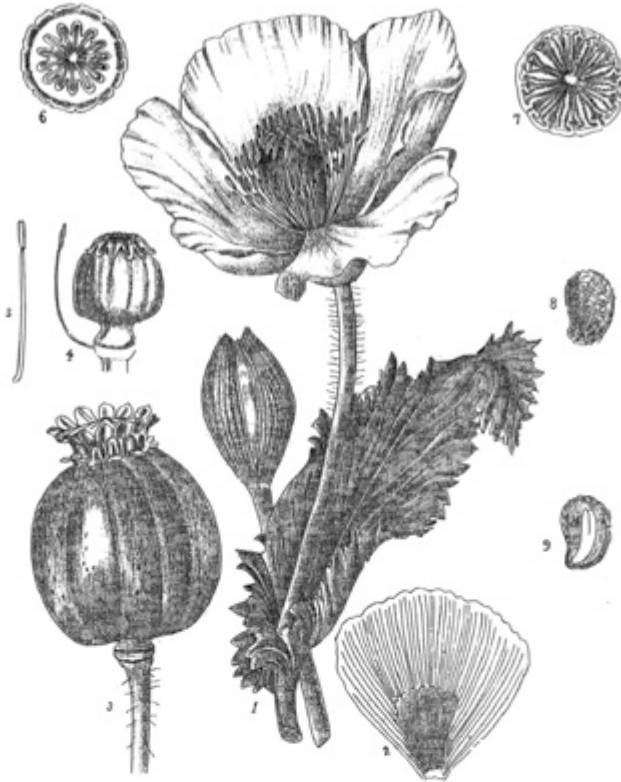
- Melgarejo P., Martínez-Valero R., Guillamón J. M., Miró M. and Amorós A. 1997.** Phenological Stages of the Pomegranate Tree (*Punica granatum* L.) *Annals of Applied Biology* 130, 135-140. <https://doi.org/10.1111/j.1744-7348.1997.tb05789.x>.
- Melville S. C. 2004.** Neo-Assyrian Royal Women and Male Identity: Status as a Social Tool. *JAOS* 124/1, 37-57.
- Merlin M. D. 1984.** *On the Trail of the Ancient Opium Poppy*. London.
- Merrillees R. S. 1962.** Opium Trade in the Bronze Age Levant. *Antiquity* 36/144, 287-292. <https://doi.org/10.1017/S0003598X00036814>.
- Merrillees R. S. 1979.** Opium Again in Antiquity. *Levant* 11, 167-171. <https://doi.org/10.1179/lev.1979.11.1.167>.
- Miller N. F. 2000.** Plant Forms in Jewellery from the Royal Cemetery at Ur. *Iraq* 62, 149-155. <https://doi.org/10.2307/4200486>.
- Morris C. and Peatfield A. 2022.** Bodies in Ecstasy: Shamanic Elements in Minoan Religion. In D. Stein, S. K. Costello and K. P. Foster (eds), *The Routledge Companion to Ecstatic Experience in the Ancient World*, 264-283. London. <https://doi.org/10.4324/9781003041610-19>.
- Muhsin T. M., Abass F. A. and Al-Habeeb E. K. 2012.** *Podaxis pistillaris* (Gasteromycetes) from the Desert of Southern Iraq, an Addition to the Known Mycota of Iraq. *Journal of Basrah Researches (Sciences)* 38/3A, 29-35.
- Muscarella O. W. 1989.** Warfare at Hasanlu in the Late 9th Century B.C. *Expedition* 31/2, 24-36.
- Nicgorski A. M. 1999.** Polypus and the Poppy: Two Unusual Rhyta from the Mycenaean Cemetery at Mochlos. In P. Betancourt, V. Karageorghis, R. Laffineur and W.-D. Niemeier (eds), *Meletemata: Studies in Aegean Archaeology Presented to Malcolm H. Wiener as He Enters His 65th Year*. (Aegaeum 20), 537-541. Liège.
- Olsen B. A. 2014.** *Women in Mycenaean Greece: The Linear B Tablets from Pylos and Knossos*. London. <https://doi.org/10.4324/9781315795577>.
- Pacioni G., Rapino C., Zarivi O., Falconi A., Leonardi M., Battista N., Colafarina S., Sergi M., Bonfigli A., Miranda M., Barsacchi D. And Maccarrone M. 2015.** Truffles Contain Endocannabinoid Metabolic Enzymes and Anandamide. *Phytochemistry* 110, 104-110. <https://doi.org/10.1016/j.phytochem.2014.11.012>.
- Panagiotaki M. 1993.** The Temple Repositories of Knossos: New Information from the Unpublished Notes of Sir Arthur Evans. *BSA* 88, 49-91. <https://doi.org/10.1017/S0068245400015872>.
- Panagiotaki M. 1999.** *The Central Palace Sanctuary at Knossos*. London.
- Papadimitriou A., Thaler U. and Maran J. 2015.** Bearing the Pomegranate Bearer: A New Wall-Painting Scene from Tiryns. In H. Brecoulaki, J. L. Davis and S. R. Stocker (eds),

Mycenaean Wall Painting in Context: New Discoveries and Old Finds Reconsidered, 173-211. Athens.

- Peterson S. 2020.** A Glimpse from the Ancient World: What a Gold Necklace from Tillya-Tepe Reveals about Opium in Afghanistan. *Afghanistan* 3/2, 135-173. <https://doi.org/10.3366/afg.2020.0054>.
- Poursat J.-C. 1977.** *Catalogue des ivoires mycéniens du Musée National d'Athènes*. Athens.
- Pulak C. M. 1994.** 1994 Excavation at Uluburun: The Final Campaign. *The INA Quarterly* 21/4, 8-16.
- Sakellarakis J. and Sapouna-Sakellarakis E. 1991.** *Archanes*. Athens.
- Salavert A., Zazzo A., Martin L., Antolín F., Gauthier C., Thil F., Tombret O., Bouby L., Manen C., Mineo M., Mueller-Bieniek A., Piqué R., Rottoli M., Rovira N., Toulemonde F. and Vostrovká I. 2020.** Direct Dating Reveals the Early History of Opium Poppy in Western Europe. *Scientific Reports* 10:20263. <https://doi.org/10.1038/s41598-020-76924-3>.
- Samorini G. 2016.** Il problema della distinzione fra melegrana e papavero nelle antiche iconografie mediterranee e mediorientali. *Rivista di Studi Indo-Mediterranei* 6, 1-25.
- Samorini G. 2019.** The Oldest Archaeological Data Evidencing the Relationship of *Homo Sapiens* with Psychoactive Plants: A Worldwide Overview. *Journal of Psychedelic Studies* 3/2, 63-80. <https://doi.org/10.1556/2054.2019.008>.
- Sarianidi V. 1985.** *The Golden Hoard of Bactria: From the Tillya-Tepe Excavations in Northern Afghanistan*. New York.
- Sasson J. M. 2004.** The King's Table: Food and Fealty in Old Babylonian Mari. In C. Grottanelli and L. Milano (eds), *Food and Identity in the Ancient World*, 179-215. Padua.
- Scarborough J. 2010.** *Pharmacy and Drug Lore in Antiquity: Greece, Rome, Byzantium*. Farnum.
- Scherma M., Masia P., Satta V., Fratta W., Fadda P. and Tanda G. 2018.** Brain Activity of Anandamide: A Rewarding Bliss? *Acta Pharmacologica Sinica* 40, 309-323. <https://doi.org/10.1038/s41401-018-0075-x>.
- Schlitz V. 2008.** Tillya Tepe, the Hill of Gold: A Nomad Necropolis. In F. T. Hiebert and P. Cambon (eds), *Afghanistan: Hidden Treasures from the National Museum, Kabul*, 219-293. Washington, DC.
- Selz G. J. 2004.** Early Dynastic Vessels in 'Ritual' Contexts. *WZKM* 94, 185-223.
- Shavit E. 2008.** Truffles Roasting in the Evening Fires: Pages from the History of Desert Truffles. *Fungi* 1, 18-23.
- Smith R. K., Stacey R. J., Bergström E. and Thomas-Oates J. 2018.** Detection of Opium Alkaloids in a Cypriot Base-Ring Juglet. *Analyst* 21, 5127-5136. <https://doi.org/10.1039/C8AN01040D>.

- Stol M. 1978.** Remarks on ARM XIV. *BibO* 35/2, 220. <https://doi.org/10.1177/107755877803500225>.
- Stol M. 2014-2016.** Trüffle. *Reallexikon der Assyriologie und Vorderasiatischen Archäologie* 14, 149-150.
- Svärd S. 2016.** Neo-Assyrian Elite Women. In S. L. Budin and J. M. Turfa (eds), *Women in Antiquity: Real Women across the Ancient World*, 126-137. London.
- Thompson R. C. 1949.** *A Dictionary of Assyrian Botany*. London.
- Volk T. 2007.** The Lightning and the Truffle. Retrieved from https://botit.botany.wisc.edu/toms_fungi/more.html (accessed 25 November 2022).
- Wace A. J. B. 1932.** *Chamber Tombs at Mycenae*. Oxford.
- Ward C. 2003.** Pomegranates in Eastern Mediterranean Contexts during the Late Bronze Age. *WorldArch* 34/3, 529-541. <https://doi.org/10.1080/0043824021000026495>.
- Warren P. 1969.** *Minoan Stone Vases*. Cambridge.
- Warren P. 2005.** Flowers for the Goddess? New Fragments of Wall Paintings from Knossos. In L. Morgan (ed.), *Aegean Wall Painting: A Tribute to Mark Cameron: British School at Athens Studies* 13, 131-148. London.
- Weiss H. 1986.** The Origins of Tell Leilan and the Conquest of Space in Third Millennium Mesopotamia. In H. Weiss (ed.), *The Origins of Cities in Dry-Farming Syria and Mesopotamia in the Third Millennium B.C.*, 71-108. Guilford, CT.
- Wink M. and van Wyk B.-E. 2008.** *Mind-Altering and Poisonous Plants of the World: A Scientifically Accurate Guide to 1200 Toxic and Intoxicating Plants*. Portland, OR.
- Winter I. J. 2003.** Ornament and the 'Rhetoric of Abundance' in Assyria. *Eretz-Israel: Archaeological, Historical and Geographical Studies* 27, 252-264.
- Youkhanna D. G. 2002.** Precision Craftsmanship of the Nimrud Gold Material. In J. E. Curtis, H. McCall, D. Collon and L. al-Gailani Werr (eds), *New Light on Nimrud: Proceedings of the Nimrud Conference 11th-13th March 2002*, 103-104. London.
- Zettler R. L., Horne L., Hansen D. P. and Pittman H. (eds) 1998.** *Treasures from the Royal Tombs of Ur*. Philadelphia.

Karen Polinger Foster
Dept. of Near Eastern Languages and Civilizations
Yale University
karen.foster@yale.edu



1



2

Pl. 1: 1 – *Papaver somniferum*. Reproduced from L. D. Kapoor 1995, Fig. 6.1

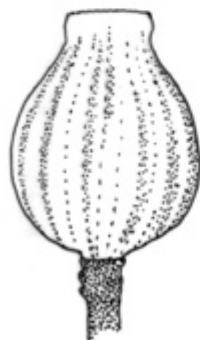
Pl. 1: 2 – Field of opium poppies, seed pod with droplets in foreground.
Reproduced by permission, AdobeStock. © Vera Kuttelvaserova



1



2



3



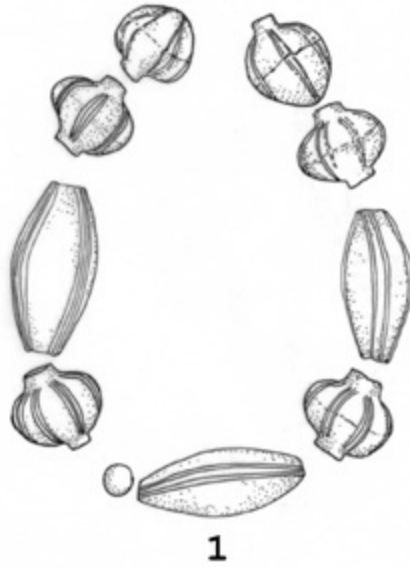
4

Pl. 2: 1 – Base-Ring juglet, unknown provenance, Egypt. Drawing by the author, after Merrillees 1962, Pl. XLIIIb

Pl. 2: 2 – Glass vessel, Tomb 66, Enkomi. Drawing by the author, after Aruz *et al.* 2008, Fig. 279

Pl. 2: 3 – Detail of pin with crystal head and bronze shaft, Grave Omicron, Mycenae. Drawing by the author, after Arnott 1999, Fig. 278

Pl. 2: 4 – Gold pendant, Chamber Tomb 518, Mycenae. Drawing by the author, after Wace 1932, Pl. XXXVII: 75

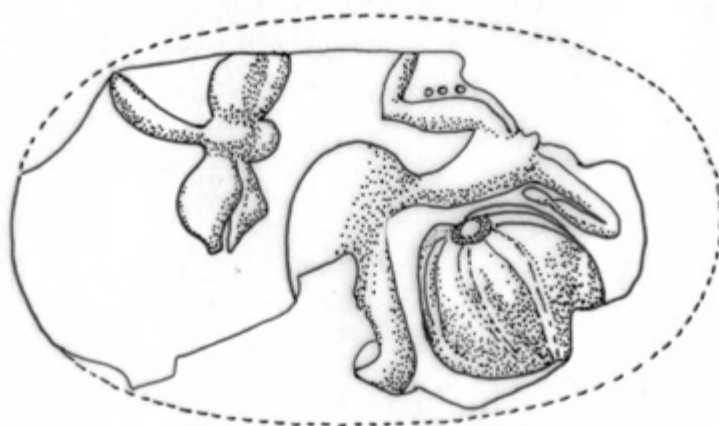


Pl. 3: 1 – Gold necklace, Funerary Building 3, Archanes. Drawing by the author, after Sakellarakis and Sapouna-Sakellarakis 1991, Fig. 88

Pl. 3: 2 – Impression of gold ring, Acropolis Treasure, Mycenae. Reproduced from A. J. Evans 1927, Fig. 194e



1

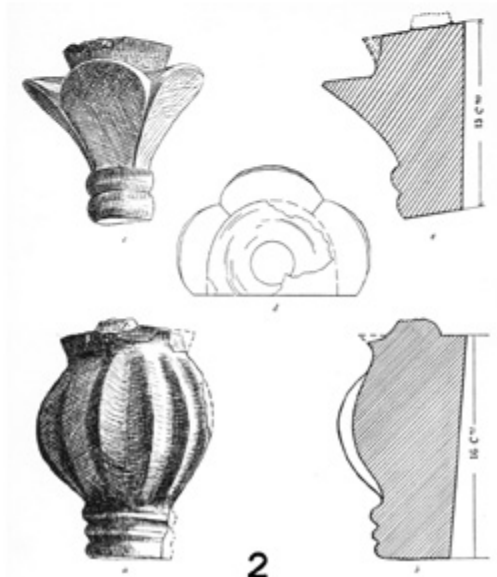


2

Pl. 4: 1 – Impression of gold ring, Thisbe Treasure. Reproduced from A. J. Evans 1927, Fig. 194d
Pl. 4: 2 – Sealing, Hall of Ceremonies, Zakros. Drawing by the author, after Crooks 2013, Fig. 43



1



2

Pl. 5: 1 – Clay figure, Gazi. Reproduced from S. Marinatos and M. Hirmer 1960, Pl. 131

Pl. 5: 2 – Limestone half-capitals, Knossos. Reproduced from A. J. Evans 1927, Suppl. Pl. XXX



Pl. 6: 1 – Rhyton, Tomb 13, Mochlos. Drawing by the author, after Nicgorski 1999, Pl. CXVI

Pl. 6: 2 – Serpentine rhyton, House of the Shields, Mycenae.

Drawing by the author, after Koehl 2006, Fig. 7: 128

Pl. 6: 3 – Detail of cylinder seal impression, unknown provenance, Mesopotamia. Drawing by the author, after Dajani 2022, Fig. 3