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# The Function of the Minoan Palaces

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Robin Hägg and Nanno Marinatos



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# Trade and Rule in Palatial Crete

by  
Malcolm H. Wiener

## Abstract

A number of factors suggest a strong palatial role in long-distance overseas trade, particularly with regard to the acquisition of bronze, or copper and tin, beginning with the protopalatial period. Bronze was needed for weapons and tools and desired for prestige items, but Cretan copper sources are scanty and there is no known source of tin anywhere in the Aegean. Tin, however, was available and widely traded in the Near East during MM II and there is evidence of Minoan contact with known tin routes including recent suggestions of protopalatial habitation sites on a chain of islands leading to Anatolia. Evidence suggests the palaces would have been active in providing ships, shipwrights, shipyards, provisions, cargoes for trade and perhaps weapons and shields for dangerous voyages. The trade visible in the archaeological record is likely to have been only a small part of the whole. It appears probable that even in MM II trade with the East was both directional and directed from the palaces; arguments to the contrary seem unpersuasive. In the neopalatial era, bronze is plentiful in Crete. The evidence from Zakros suggests palatial control of trade with the Near East, and may also suggest centralized rule in general in LM I Crete.

The role of the palaces in the organization of overseas trade and particularly in the acquisition of copper and tin in the protopalatial period is a subject of major importance. Cretan sources of copper seem scanty, and there is no known source of tin anywhere in the Aegean. However, tin as well as copper was available and widely traded in the Near East during the time of the first palaces.

Contact between the Near East and Crete begins in EM. By MM II the tempo and scope of contact have increased, and there is evidence of the beginning of Minoan habitation along the coast of Anatolia and on the islands en route. Excavations have produced MM II stone bowls, both imported and locally made, from Rhodes and MM II—III pottery from Rhodes and Kos.<sup>1</sup> Recent surface explorations and limited rescue excavations have disclosed Middle Minoan pottery including open vessels, some of which are said to be MM II, on Kasos, Karpathos, Saria, Chalki, Kalymnos, Telos, Nisyros, Astypalea and Samos, the last of which also has fragments of MM II or earlier stone vessels.<sup>2</sup> Island sites capable of providing food and water on the frequent occasions when the wind or weather in the Eastern Mediterranean is unsuitable for sailing would have facilitated trade with the East.

In Anatolia itself, MM II sherds are known from Miletus, Iasos and Knidos, three of the four coastal sites at which excavation has reached Middle Bronze Age levels.<sup>3</sup> C. Laviosa has observed that at Iasos the architecture of building F displays Minoan characteristics in the MBA.<sup>4</sup> Kamares

Ware of course appears along the Syrian, Canaanite and Palestinian coasts, particularly at the important emporium of Ugarit, where a local (or at least non-Minoan) imitation of Kamares Ware has also been reported.<sup>5</sup> Cyprus and Egypt also received Kamares Ware, and imitation Kamares appears in Egypt as well.<sup>6</sup>

With respect to metalwork, Syrian daggers appear in Crete by EM III—MM I, and some Minoan daggers and vessels such as lobed kantharoi and animal-headed rhyta may be based on Eastern prototypes.<sup>7</sup>

<sup>1</sup> M. Benzi, 'Evidence for a Middle Minoan settlement on the acropolis at Ialysos (Mt. Philerimos)', in *The Minoan Thalassocracy: Myth and reality*, ed. by R. Hägg and N. Marinatos, Stockholm 1984, 93—105; W.-D. Niemeier, 'The end of the Minoan Thalassocracy', *ibid.*, 205—207.

<sup>2</sup> C. Mee, 'Aegean trade and settlement in Anatolia in the second millennium B.C.', *AnatSt* 28, 1978, 121—156; E. Melas, 'Minoan and Mycenaean settlement in Kasos and Karpathos', *BICS* 30, 1983, 53—61; I. Love, 'From Crete to Knidos: A Minoan sea route via the Dodekanese', *AJA* 88, 1984, 251; Niemeier (*supra* n. 1).

<sup>3</sup> W. Schiering, 'The connections between the oldest settlement at Miletus and Crete', in *The Minoan Thalassocracy* 187 f. and particularly the discussion on p. 189; C. Laviosa, 'The Minoan Thalassocracy: Iasos and the Carian coast', *ibid.*, 183 f. and discussion on p. 185. MM IB sherds as well are reported from Knidos, Love (*supra* n. 2). At Didyma the earliest Minoan pottery reported thus far is MM III, R. Naumann, *AnatSt* 23, 1964, 23.

<sup>4</sup> Laviosa (*supra* n. 3).

<sup>5</sup> For Kamares Ware at Ugarit, see C. Schaeffer, *Ugaritica* 1, Paris 1939, 22, 54—56; II, Paris 1949, 51, fig. 109A and pl. 38; cf. D. Saltz, 'The chronology of the Middle Cypriote period', *RDAC*, 1977, 51—70. Imitations of Kamares Ware from Ugarit are reported by H. Kantor, 'The Aegean and the Orient in the second millennium B.C.', *AJA* 51, 1947, 19. The ports of Syria may have replaced those of Anatolia as the principal destination of Minoan ships seeking metal at some point in MM II. The Dodekanese island chain would still have been useful to mariners wishing to stay within sight of land or find shelter, however. On Minoan trade with the Near East generally and in particular with regard to metal and metallurgy, see (e.g.), K. Branigan, 'Minoan metallurgy and Cypriot copper', in *Early metallurgy in Cyprus, 4000—500 B.C.*, Nicosia 1982, 208—210; *idem*, 'The earliest Minoan scripts: The prepalatial background', *Kadmos* 8, 1969, 20—22.

<sup>6</sup> P. Betancourt, 'The Middle Minoan pottery of southern Crete and the question of a Middle Minoan thalassocracy', in *The Minoan Thalassocracy*, 90—92; G. Cadogan, 'Early Minoan and Middle Minoan chronology', *AJA* 87—4, 1983, 512—518; B.J. Kemp and R.S. Merrillees, *Minoan pottery in second millennium Egypt*, Mainz 1980.

<sup>7</sup> K. Branigan, 'Minoan metallurgy' (*supra* n. 5), 204; *idem*, 'Byblite daggers in Cyprus and Crete', *AJA* 70, 1966, 124—126;

MB II was a time of expanding international trade generally, with Assyrian merchant families (often connected through family ties to the court) organizing caravans to take goods including tin to their *kārū* in Anatolia, emissaries from pharaohs of the Twelfth Dynasty going to the cities of Syria and Palestine, and messengers of the ruler of Mari supervising trade in various goods including quantities of tin. One Mari tablet (A 1270) records over 500 kg. of tin in the palace inventory, or enough for 7–10,000 kg. of bronze. The tablet shows that the tin came to Mari from the direction of Iran and went to many places including Aleppo, Hazor and Ugarit where two resident and probably Mariote tin merchants are mentioned. If “Kaptara” was indeed Crete, then the connection of Crete to this tin route is established by a reference in the same text to tin destined for a man from Kaptara and an interpreter resident in Ugarit (who is to be paid in tin for his services).<sup>8</sup> The Mari tablets also refer to a Kaptarite inlaid metal weapon, and to Zimri-Lim sending goods from Kaptara to Hammurabi of Babylon—an example, perhaps, of palatial gift exchange.<sup>9</sup>

The existence of an interpreter (assuming this reading is correct) suggests regular contact, trade beyond the scope of sign language or a tourist shopping vocabulary, and an increased likelihood of exchange of significant knowledge and stimuli between Crete and the Near East during the protopalatial period.<sup>10</sup>

The weapons and other bronze objects which continue to be deposited in the Mesara tholoi in MM II, the large Middle Minoan crucibles from Kommos, and the grand ceremonial swords from Malia (superior to any swords known from this period in the Levant or Egypt) suggest that a significant amount of metal was arriving.<sup>11</sup> In all probability what we see is only a small fraction of the whole; metal, unless deposited in an un plundered tomb or abandoned in a destruction, would have been melted and reused.<sup>12</sup>

If goods from the Near East, and in particular bronze or copper and tin, came to Crete during the protopalatial period in large part on Minoan ships (as seems likely),<sup>13</sup> who provided the ships and also the shipwrights and shipyards, provisions, cargoes for trade, weapons and shields for voyages to sometimes dangerous waters, and the way-stations en route?

The view that independent merchantmen were the principal agency of Bronze Age trade between the Near East and the Aegean has been popular ever since the discovery of the Cape Gelidonya shipwreck.<sup>14</sup> Of course independent merchantmen could have existed in the protopalatial period, along with fishing boats willing to undertake voyages out of season or farmers turned merchantmen in the summer months, as in Hesiod. But it seems highly unlikely that in palatial Crete the bulk of long-distance trade, particularly the trade in prestige goods and metal, was carried on in this manner; in all probability the palaces were the major organizing force, providing the necessary resources.<sup>15</sup> While the palatial interest in long-distance trade would by no means have been limited to tin and copper, or bronze, surely their acquisition would have been a primary palatial concern; bronze was needed for weapons and tools and desired for items of display, including state and/or cult objects and vessels.

*idem*, ‘Further light on prehistoric relations between Crete and Cyprus’, *AAJ* 71, 1967, 117–121; E. Davis, *The Vaphio cups and Aegean gold and silver ware*, New York 1977, 67–95; *idem*, ‘The silver kantharos from Gournia’, in *TUAS* 4, 1978, 34–45; cf. G. Walberg, *Provincial Middle Minoan pottery*, Mainz 1983, 146. Other signs of contact include a few Eastern cylinder seals in protopalatial contexts and some copying of foreign seal forms including cylinders, looped seals, and scarabs, sometimes with imitations of Eastern motifs. A number of the MM IB–II sealings from Phaistos bear close resemblances to seals from Karahöyük in Anatolia: D. Levi, ‘Sulle origini Minoiche’, *PdP* 127, 1969, 241–264; S. Alp, *Zylinder- und Stempelsiegel aus Karahöyük bei Konya*, Ankara 1968; N. Özgüç, ‘Acemhöyük Saraylarında bulunmuş olan Mühür Baskıları’, *Belleter* 1977, 357/1; *idem*, *The Anatolian group of cylinder seal impressions from Kültepe*, Ankara 1965; *idem*, *Seals and seal impressions of level IB from Karum Kanish*, Ankara 1968; P. Yule, ‘Notes on scarabs and Aegean chronology’, *BSA* 78, 1983, 358–367; C. Mora, ‘La produzione glittica e i contatti tra Anatolia e Creta nel III–II millennio’, *SMEA* 22, 1980, 297–313; E. Möller, ‘A reevaluation of the oriental cylinder seals found in Crete’, in *Interaction and acculturation in the Mediterranean, International congress of Mediterranean pre- and protohistory*, ed. by J. Best and N. DeVries, Amsterdam 1980. Egyptian contacts in MM II in Crete appear at Malia in Quartier Mu: J.-C. Poursat, ‘Une thalassocratie minoenne au Minoen Moyen II?’, in *The Minoan Thalassocracy*, 85–87. No doubt ideas came with the metal and other trade goods. See L. V. Watrous, ‘The role of the Near East in the rise of the Cretan palaces’, in this volume.

<sup>8</sup> J.-R. Kupper, ‘Northern Mesopotamia and Syria’, *CAH* II,1, Cambridge 1973, 8–22; A. Malamat, ‘Syro-Palestinian destinations in a Mari tin inventory’, *IEJ* 21, 1971, 31; G. Dossin, ‘La route de l’étain en Mésopotamie au temps de Zimri-Lim’, *RAssyr* 64, 1970, 97.

<sup>9</sup> One Mari tablet records a complaint from a prince of Qatna in the Orontes valley of west Syria to the eldest son of the king of Assyria that in return for two horses worth 600 shekels of silver sent as requested, the king has sent in return only the ridiculous sum of 18 kg of tin: G. Dossin, ‘Correspondance de Iasmah-Addu’, in *Archives royales de Mari V*, ed. by A. Parrot and G. Dossin, Paris 1952, 3, 37 (letter 20). Kamars sherds have been found at Qatna. (Eshnunna near modern Baghdad was also on the tin route, which perhaps could explain how a cuneiform inscription of Naram-Sin came to Kythera. The find spot was said to be a tomb at the Minoan site of Kastri, but as with any unexcavated object the time of arrival is uncertain: E. Weidner, *JHS* 59, 1939, 137 f.; J.N. Coldstream and G.L. Huxley, eds., *Kythera: excavations and studies*, London 1972, 33.) One Mari document records that Zimri-Lim, accompanied by a bodyguard, personally visited Ugarit: Ch.-F. Jean, *RAssyr* 36, 1939, 112, cited in Malamat (supra n. 8), 33. For the Near Eastern tin trade, see generally Dossin (supra n. 8) and *idem*, ‘Les archives économiques du palais de Mari’, *Syria* 20, 1939, 97–113; W.F. Leemans, *JESHO* 11, 1968, 201; Malamat (supra n. 8), 31–38; N. Yoffee, ‘Explaining trade in ancient western Asia’, *Monographs on the ancient Near East* 2, Malibu 1981, 21–60; M. Larsen, ‘The Old Assyrian colonies in Anatolia’, *JAOS* 94, 1974, 468–475; M. Heltzer, *Goods, prices and the organization of trade in Ugarit*, Wiesbaden 1978; I. Ström, ‘Middle Minoan Crete: A re-consideration of some of its external relations’, in *Interaction and acculturation in the Mediterranean* (supra n. 7), 105–211; N. Pack, *The administrative structure of the palace of Mari ca. 1800–1750 B.C.*, Ph.D. diss., University of Pennsylvania, University Microfilms 1983.

<sup>10</sup> M. Astour, ‘Ugarit and the great powers’, in *Ugarit in retrospect, Proceedings of Symposium at the University of Wisconsin*, Winona Lake 1981, 8; *idem*, ‘Ugarit and the Aegean: A brief summary of archaeological and epigraphic evidence’, in *Orient and occident: Essays presented to Cyrus H. Gordon*, ed. by H. Hoffer, Neukirchen-Vluyn 1973, 21; J.-C. Courtois, ‘Ras Shamra, I. Archéologie du site’, in *Supplément au dictionnaire de la Bible*, ed. by H. Cazelles and A. Feuillet, Paris 1979, Fascs. 52 and 53, pp. 1205–1208.

<sup>11</sup> The five-meter-long square installation in area 90 at Phaistos

The opposite view concerning the role of the palaces has been expressed by K. Branigan, who believes there is no evidence to support palatial domination of metal trade in MM I—II, since “Minoan exports of this period cannot be identified as exclusively palatial products, and certainly the ivory and scarabs imported into Crete are widely distributed outside palatial contexts.”<sup>16</sup> The evidence for Minoan exports in this period, however, consists largely of pottery and much of that—for example, the Kamares Ware sherds found in Egypt—is of a quality which in Crete is largely limited to the palaces of Knossos and Phaistos.<sup>17</sup>

While bronze may have been worked into tools and knives, melted, or even smelted in secondary centers, it seems doubtful the manufacture of swords or scepters such as those at Malia in MM II<sup>18</sup> would have occurred outside the control of the palaces. Rather it appears likely that the palaces would have had both the desire and ability to insure the supply of bronze through overseas ventures and control its availability for weapons. The palatial elites would have regarded bronze as necessary for construction and perhaps for survival. Indeed the ability to maintain overseas trade links and thus largely to control the flow of copper and tin may have been

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has been considered evidence of large-scale metal working in MM I—II (L. Pernier and L. Banti, *Il palazzo minoico di Festòs II*, Rome 1951, 215—217), but the installation is more likely a lime kiln (H. Blitzer, personal communication).

N. Sandars has described the large sword with a pommel of rock crystal as “a weapon of unsurpassed size and considerable magnificence” (N. Sandars, ‘Late Aegean bronze swords’, *AJA* 67, 1963, 117). While this sword was undoubtedly ceremonial, it seems unlikely that a society would produce for ceremonial purposes swords technologically far superior to any other known swords in the world at the time without first producing swords for combat.

<sup>12</sup> Without the Kültepe and Mari records we would not begin to suspect the amount of metal transported by Assyrian traders or stored at Mari. Our impression of an LM I Crete extraordinarily rich in bronze depends on the ingots, hoards and objects (such as the giant cauldrons from Tyllisos, double axes from Nirou Khani and two-man saws from Knossos, Tyllisos and Zakros) found in the LM IB destruction deposits. While hoards from palace basements may be preserved by collapsed walls and floors, bronze tools from farm-houses are particularly likely to escape archaeological detection. Tin may convert to a grey powder at temperatures below 15°C. The Kaş shipwreck has recently produced the first identification of grey tin powder from an Aegean archaeological context (J. Muhly, personal communication). Much of our knowledge of Minoan Type A sword and bronze or copper vessel production comes not from Crete but from the material preserved in the Shaft Graves; the other main body of Type A swords is what remained from the interrupted looting of Arkalochori cave. The 18th dynasty tomb paintings showing Aegean emissaries bearing goods which are principally metallic (vessels, ingots and swords) may depict the essential reality lying behind the potsherds recovered in excavations.

<sup>13</sup> M. Wiener, ‘Crete and the Cyclades in LM I: The tale of the conical cups’, in *The Minoan Thalassocracy*, 17 f. and comment p. 218. No Syrian or Canaanite material has been reported from any of the Dodecanese or Anatolian sites, and recognized Cycladic material is extremely rare or nonexistent. See also J. Cherry, ‘The appearance of Aegean states’, *Proceedings of the Cambridge Philological Society* 30, 1984, 18—48.

<sup>14</sup> To Branigan, for example, the evidence suggests that Minoan ships carried on “free lance trade” with the Near East and Egypt in MM I—II: Branigan, ‘Minoan metallurgy’ (supra n. 5), 209.

<sup>15</sup> Naval organization may already have been similar to that described in an Ugaritic text from the end of the Bronze Age: profes-

sional captains, officers, crewmen and shipwrights engaged regularly in seafaring, plus rowers and warriors on auxiliary duty: E. Linder, ‘Ugarit: A Canaanite thalassocracy’, in *Ugarit in retrospect* (supra n. 10), 40.

A sizable domestic surplus would have been required to provide goods in exchange for metal and various luxury imports. At Phaistos, where we have the best evidence for MM IB—MM II, the palatial role in creating and directing that surplus seems implied by the concentration of people at a time when the nearby Ayiofarango valley is depopulated,<sup>19</sup> by the deposit of 3,000 sealings representing 282 seals, and by the first appearance of Linear A.<sup>20</sup> The last point is significant: any amount of trade at a given time can take place without writing, but both complex administration and investment over time require literacy.<sup>21</sup> Providing ships and goods for extensive overseas trade involves an investment over time.

The amount and significance of Bronze Age overseas trade has been questioned because of the basically agrarian and pastoral nature of the economy, the lack of recognizable references to overseas trade or merchants in the Linear B tablets and the absence of coinage.<sup>22</sup> However, in interstate trade the value of a coin in antiquity was simply its approximate bullion value. In the Babylonian and Assyrian texts silver often serves as a unit of measure, or “numeraire”, but

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sional captains, officers, crewmen and shipwrights engaged regularly in seafaring, plus rowers and warriors on auxiliary duty: E. Linder, ‘Ugarit: A Canaanite thalassocracy’, in *Ugarit in retrospect* (supra n. 10), 40.

<sup>16</sup> Branigan, ‘Minoan metallurgy’ (supra n. 5), 210.

<sup>17</sup> Betancourt (supra n. 6), 90; G. Cadogan, ‘What happened at the Old Palace of Knossos?’, in this volume.

<sup>18</sup> F. Chapouthier, *Deux épées d'apparat découvertes en 1936 au palais de Mallia*, Paris 1938. H. van Effenterre has suggested that the swords belong with MM III material (‘Peut-on dater les épées de Mallia?’, *BCH* 106, 1982, 163 f.), but a MM II context has been reaffirmed by O. Pelon (‘L'épée à l'acrobate et la chronologie maliote’, *BCH* 106, 1982, 165—190; 107, 1983, 679—703).

<sup>19</sup> D. Blackman and K. Branigan, ‘An archaeological survey of the lower catchment of the Ayiofarango Valley’, *BSA* 72, 1977, 13—84.

<sup>20</sup> D. Levi, ‘L'archivio di cretule a Festòs’, *ASAtene* 35/36, 1958, 136—192; E. Fiandra, ‘A che cosa servivano le cretule di Festòs’, *Proc2CretCongr*, 382—397; Branigan, ‘The earliest Minoan scripts’ (supra n. 5), 4; L. Godart, ‘Le linéaire A et son environnement’, *SMEA* 20, 1979, 27—42.

<sup>21</sup> Examples of the importance of writing to investment may be found in Near Eastern and Egyptian texts stipulating payment of interest, and in contracts such as the one from Kültepe listing fourteen men who invest 30 minas of gold for twelve years in the narug’um, literally sack, of a trader: Yoffee (supra n. 9), 31.

<sup>22</sup> St. Alexiou, in this volume; J. Chadwick, *The Mycenaean world*, Cambridge 1976, 156 f. However, the tablets are for the most part the immediate accounting or dictation records of the scribes itemizing goods going in and out of the palace. We cannot tell from the tablets where certain goods are going or for whom they are ultimately intended. Moreover, records of long-distance trade and of investment over time would probably have been kept on parchment or papyrus (I. Pini, ‘Neue Beobachtungen zu den tönernen Siegelabdrücken von Zakros’, *AA* 1983, 4; J. Weingarten, *The Zakro master and his place in prehistory*, Göteborg 1983, 38—42). The evidence for parchment suggests the amount of Aegean writing we may be missing; indeed experiments have shown that the linear scripts are poorly suited to incision in clay but well adapted to inking on parchment or papyrus (E.L. Bennett, Jr., personal communication). Two bowls from Knossos with cursive inscriptions in ink show the suitability of Linear A for such a medium.

oil and grain sometime serve this function as well.<sup>23</sup> In the tablets from Pylos there is a possible instance of textiles valued in terms of grain.<sup>24</sup> Of course the numeraire chosen need not be physically present in a transaction; an Egyptian text from the sixteenth year of Ramesses II records the purchase of a young female slave for 4 deben and 1 kite (= 41 kite) of silver, paid in the form of garments and cloth valued at 26 1/3 kite of silver, 5 vessels of bronze valued at 8 2/3 kite, 1 kite worth of beaten copper and a container of honey valued at 4 kite of silver. Although copper vessels and corn were used regularly in the Ramesside period as currency, their value was usually stated in terms of silver.<sup>25</sup> Finally, as the Egyptian example indicates, in the absence of currency one should not underestimate the ingenuity of traders in the art of barter. Accordingly neither the evidence for the distribution or origin of trade goods in Crete, nor the silence of the later Linear B tablets regarding trade and merchants, nor the absence of coinage give adequate reason to question the importance of long-distance trade, particularly in metals, to protopalatial Crete.

In sum, it is likely that Crete in the old palace period obtained its tin, and probably much of its copper, from points along the well-established metal routes in the Near East, that the trade was extensive, and that it was largely (though not wholly) directed from the palaces.<sup>26</sup>

In the foregoing discussion of Minoan long-distance trade, no distinction has been made between gift exchange and trade, administered trade and trade for profit, or barter and trade at a market price, nor between down-the-line exchange, prestige gift exchange, freelance commercial trade, and directional commercial trade.<sup>27</sup> There are two reasons for this restraint. First, there is the very partial and potentially misleading nature of the evidence, given the general lack of data, the accidents of recovery and the fact that most trade will have been in goods which leave no archaeological trace. The 20th Dynasty Story of Wenamun, where the King of Byblos receives linen garments, papyrus or mats, ox hides, ropes, lentils and fish in exchange for wood, provides a good illustration of trade without trace.<sup>28</sup> So does the export trade in woolen garments implied by the listing of 100,000 sheep in the Knossos Linear B tablets. Killen has observed that wool played an important role in the Minoan economy, as in the economy of medieval England.<sup>29</sup> Food would often have been a major trade item, particularly in times of drought. Lumber and plants or herbs thought to have medicinal properties were sometimes major trade goods in antiquity, as were slaves.<sup>30</sup> The tendency of metal to disappear through reuse has already been noted.

The second reason for restraint is that the categories suggested for trade often tend to dissolve in the disorder of reality. A merchant, messenger or sea captain of a ruler may set out with a specific destination and goal but indulge in other trade on his own along the way, while private traders may bring gifts to a foreign prince to facilitate their trading. Enkomi in the Late Bronze Age may have sent copper, scented oil, spices and other products to the great emporium at Ugarit, from where they would have been taken by others to places ranging from the Troad to Egypt. From the Cypriot

<sup>23</sup> R. Sweet, *On prices, moneys and money uses in the Old Babylonian period*, Ph.D. diss., University of Chicago, 1958, p. 50; D. Snell, *Ledgers and prices: Early Mesopotamian merchant accounts*, New Haven and London 1982, 7.

<sup>24</sup> Chadwick (supra n. 22), 110. In the *Iliad*, oxen are the standard of value, whether for gold or bronze armor (100 oxen and nine oxen respectively, 6.235—236); bronze tripods and slave women skilled in weaving (twelve and four oxen respectively, 23.702—705); Lycaon when sold as a slave at Lemnos (100 oxen, 21.79) or the gold tassels of Athena's aegis (100 oxen each, 2.449). The "oxen standard" of course may reflect Dark Age rather than Bronze Age practice. (I am grateful to O. Dickinson for reminding me of the reference in book 23 and T. Palaima for the references in books 2 and 6.)

<sup>25</sup> J.J. Janssen, *Commodity prices from the Ramessid period*, Leiden 1975; A.H. Gardiner, 'A lawsuit arising from the purchase of two slaves', *Journal of Egyptian archaeology* 21, 1935, 140—146.

<sup>26</sup> Copper along with lead and silver may also have come from Laurion or even the Peloponnese: N. Gale and Z. Stos-Gale, 'Lead and silver in the ancient Aegean', *Scientific American* 24, June 1981, 188, 192. Cf. J. Muhly, 'Lead isotope analysis and the kingdom of Alasia', *RDAC* 1983, 210—218; S. Morris, in *The Minoan Thalassocracy*, comment, p. 111. Crete also has small native copper deposits, but there is no evidence they were exploited in ancient times: T. Wheeler, R. Maddin and J. Muhly, 'Ingots and the Bronze Age copper trade in the Mediterranean: A progress report', *Expedition* 17, 1975, 32. Sources for tin other than the Near East have also been suggested: J.D. Muhly, *Copper and tin: The distribution of mineral resources and the nature of the metal trade in the Bronze Age*, Hamden, Conn. 1973, (supplement 1976), 293, 337. However, it seems likely that the bulk of the copper came with the tin. The Mari texts refer to the import of copper from Alasia already in the 18th century B.C.: H.W. Catling, 'Cyprus in the Late Bronze Age', *CAH* II, 2, 203. The later Kaş shipwreck contains both copper and tin oxide ingots (G. Bass, personal communication).

<sup>27</sup> See, e.g., K. Polányi, 'The economy as instituted process', in *Trade and market in the early empires*, ed. by K. Polányi, C. Arenberg and H. Pearson, 1957, 243; *idem*, 'On the comparative treatment of economic institutions in antiquity with illustrations from Athens, Mycenae and Alalakh', in *City invincible, an Oriental Institute symposium*, ed. by C. Kraeling and R. Adams, 1960; C. Renfrew, *The emergence of civilisation*, London 1972, 465—475; *Ancient civilisation and trade*, ed. by J. Sabloff and C. Lamberg-Karlovsky, Albuquerque 1975, especially C. Renfrew, 'Trade as action at a distance', pp. 3—59.

<sup>28</sup> J. Van Seters, 'What is trade? The nature of Egyptian trade in the East Mediterranean during the second millennium B.C.', *Archaeological news* 8, 2/3, 1979, 37 f.; M. Lichtheim, *Ancient Egyptian literature* II, Berkeley, Los Angeles and London 1976, 224—230; A.H. Gardiner, *Egypt and the pharaohs*, Oxford 1961, 306—313.

<sup>29</sup> J. Killen, 'The wool industry of Crete in the Late Bronze Age', *BSA* 54, 1964, 1—15. Among the products carried by the Keftiu in the Theban tomb paintings are rolls of cloth. Important evidence in this connection may come from the current British excavations of Amarna, where the textile remains are combed for traces of wool.

<sup>30</sup> The major export of Cyrene in antiquity was "silphium", which has yet to be identified. Arabia grew wealthy in Hellenistic times from the export of frankincense and myrrh; but when they were no longer desired after the conversion of Constantine, Arabia was impoverished. The major trade goods of Venice at the height of its power in the 16th century were slaves, silk and spices. The Puritans in Britain and America collected and sold a great many herbs thought to have medicinal properties, most of which are now regarded as noxious weeds. In the American West in the 18th—19th centuries medicines now regarded as worthless were sold in large quantities; their discarded containers are useful dating evidence for students of the westward migration.

As to the possibility of significant trade in medicinal herbs or plants, it should be noted that one Egyptian text of the early 18th dynasty (perhaps from the early 16th century) refers to the importation of medicinal herbs from Keftiu, and another from the reign of Thutmose III mentions Keftiu lichens imported for embalming fluid:

standpoint, the trade would have been "directional". To the extent the palaces were centers of regional distribution and commerce and items such as large quantities of metal were exchanged, directional commercial trade and palatial gift exchange would have tended to merge.<sup>31</sup>

That a squadron of ships might sail east from Crete without knowing exactly where metal might be available or how much cloth or oil, how many vessels, tools, weapons or whatever might be required in exchange for the metal does not affect the underlying nature or control of the trade. Although Renfrew and Branigan have maintained that there is little evidence for directional trade involving the Aegean until Late Helladic III,<sup>32</sup> for the purpose of this paper an order from a Minoan palace to sail East and bring back tin and copper is directional enough.

Other imports such as gold, ivory, certain stones and obsidian also imply a directional search, and foreign rulers or merchants would surely have desired specific Minoan products in return. Accordingly it seems highly likely that "directional trade" existed in the protopalatial period, and that in the main and especially as regards tin and copper it was directed by the palaces.

For the neopalatial period, control of overseas trade by the palaces is more generally accepted, for example by K. Branigan, who cites glyptic evidence for neopalatial control over internal affairs, increased Minoan trading interest in the Aegean, the existence of presumably palatial prestige gift exchange with Egypt (as shown by depictions of Keftiu on Egyptian tombs and objects bearing the Pharaonic cartouche in Crete) and the concentration of skilled craftsmen in the palaces, the last point leading him to conclude that metal was controlled by the palaces.<sup>33</sup>

For the neopalatial period one further argument for palatial control of long-distance trade is available: the evidence of Zakros. At the top of a small hill about 300 meters from the harbor at Zakros is Hogarth's House A, where he found preserved 525 nodules bearing 1,005 seal impressions stamped by 214 seal types, with many nodules bearing impressions of seals on 2 or 3 surfaces and some showing indications of contact with parchment, or at least with hides.<sup>34</sup> Some of the Zakros seal impressions and a multiple sealing system appear also at Ayia Triada; four Zakros-type sealings occur at Sklavokambos, and a nodule from clay similar in appearance to Zakros nodules and bearing the imprint of a seal of Zakros type comes from Katsambas, the port of Knossos.<sup>35</sup>

House A at Zakros is at the furthest point of the site and uphill from the harbor but adjacent to a roadway, and may have functioned as the northwest corner entrance to the palatial port site, and a point of control for goods moving by land.<sup>36</sup>

Zakros commands a fine harbor protected from both north and west winds, but is unique among major Minoan sites in that the readily accessible agricultural hinterland seems insufficient to create an agricultural surplus or even fully to support the site, to say nothing of the needs of a fleet of ships. The area devoted to storage may have been proportionally less at Zakros than at other palaces, with supplies coming

regularly from the area of Palaikastro or Siteia.<sup>37</sup> The situation suggests that the palace at Zakros fulfilled a special function in connection with trade to the East within a wider palatial system, upon which it depended. While the argument is hardly conclusive—Zakros might have thrived independently as a specialized port site—the factors cited plus the nature and value of the prestige goods found there (including the fine ware which is almost exclusively of Knossian origin) may suggest that neopalatial Zakros was ultimately governed from Knossos. The resumption of excavation at Palaikastro may provide important new information bearing on this question.

The foregoing discussion of whether long-distance trade (including in particular trade in metal) was controlled by the

E. and Y. Sakellarakis, 'The Keftiu and the Minoan Thalassocracy', in *The Minoan Thalassocracy*, 197—202 and comments, p. 203.

<sup>31</sup> In the story of Wenamun, the local ruler replies to a request for logs for the sacred bark of Amon-Re by reminding Wenamun that the Pharaoh has always sent gold in exchange, and produces written records of the terms of past transactions (supra n. 28).

<sup>32</sup> Renfrew (supra n. 27), 473; Branigan (supra n. 5), 209.

<sup>33</sup> Branigan, 'Minoan metallurgy' (supra n. 5), 209 f. See also Alexiou, *Minoan civilization*, Herakleion 1969, 130—135. Of course if the extent of palatial knowledge and regulation of economic life disclosed by the Linear B tablets (see D. Page, *History and the Homeric Iliad*, Berkeley 1959, 181) reflects to a significant degree the palatial Minoan economic and bureaucratic system of LM I (as seems likely), then the argument for neopalatial control of overseas trade is accordingly strengthened. The types and ideographic contents of Linear A documents have been interpreted as indicating LM I regional specialization under palatial direction: T. Palaima, 'Preliminary comparative textual evidence for palatial control of economic activity in Minoan and Mycenaean Crete', in this volume.

<sup>34</sup> Weingarten (supra n. 22). The Egyptian word for a contract—*ḥtmt*—literally means "sealed thing".

<sup>35</sup> Weingarten (supra n. 22), 7—24, 107; S. Marinatos, *ArchEph* 1939—40 (publ. 1948), 69—96; J. Betts, 'New light on the Minoan bureaucracy', *Kadmos* 6, 1967, 15—40.

<sup>36</sup> See discussion following paper by S. Chrysoulaki and L. Platon, in this volume.

<sup>37</sup> Halstead has estimated that at Zakros only about 5 % of the palace area as traditionally defined (and as we know it, with much of the east side missing) was used for magazines, compared to about 30 % at all other palatial sites: P. Halstead, 'From determinism to uncertainty: Social storage and the rise of the Minoan palace', in *Economic archaeology*, ed. by A. Sheridan and G. Bailey (BAR International Series 96), Oxford 1981, 187—213. J. Moody also believes that the magazine area of the Palace at Zakros is significantly less in terms of percentage of total area than the other palaces, although her estimates differ from Halstead's: J. Moody, 'The Minoan palace as a prestige artifact', in this volume. Such estimates are of course problematic; for example, ethno-archaeological research has shown that in Greece large amounts of grain were sometimes stored in baskets (H. Blitzer, personal communication). If baskets were used for storage in Minoan times, they would generally have left no trace, making it difficult always to identify storerooms. Moreover, comparisons at different points in time require the assumption that the function of areas both within and without the palaces remained unchanged. It may be, however, that in the neopalatial period storage previously accommodated within palace walls was transferred to areas outside the walls. At Knossos *kouloures* capable of storing grain sufficient to feed 1,000 people for a year (K. Branigan, 'The economic role of the first palaces', in this volume) are paved over to create a monumental West Court and facade in MM III. There are no *kouloures* at the neopalatial palace of Zakros.

palaces, and the related question of whether the palace at Zakros played a special role in palatial trade with the East under the control of Knossos, raises inevitably the larger question of whether all major aspects of overseas trade and settlement, and Crete itself, were governed directly or indirectly by a central authority, particularly at the height of the neopalatial period during mature LM IA—B. Only a brief summary of the position can be given here.

First, there is the often-noted absence of city walls and the existence of undefended and indefensible "country houses"<sup>38</sup> in LM I, on an island whose later history is marked by frequent destructive wars between city-states and whose topography invites separatism and rebellion. The palace at Knossos now reaches its maximum extent, with a geographical size two-and-one-half times that of Phaistos and close to twice that of Malia.<sup>39</sup> Cretans settle at sites in the Cyclades and Dodecanese in increasing numbers during the course of LM IA. At Phylakopi, Akrotiri, Ayia Irini and Trianda, Minoan influence is dominant at least in the cultural and economic spheres, if not politically as well.<sup>40</sup> The country houses or villas are established (beginning in MM III) at places well suited to controlling roadways and entrances to valleys.<sup>41</sup> The peak sanctuaries, led by Juktas, take on a more formal and uniform appearance with palatial iconography, and are themselves reflected in representations in finds from Knossos and Zakros.<sup>42</sup>

Knossos now dominates pottery innovation, in contrast to the distinctive regional pottery traditions of the protopalatial period,<sup>43</sup> and much of the LM I fine ware found at Phaistos, Ayia Triada, Zakros, Kommos, Kythera, Melos, Kea and Rhodes is of Knossian origin.<sup>44</sup> Architecture also seems to follow a Knossian inspiration, particularly in the use of ashlar. Whether the Knossian primacy in pottery, architecture and other arts reflects political domination or merely cultural preeminence and prestige—the "Versailles effect"<sup>45</sup>—is of course hard to determine.

The appearance at Knossos, Tylissos, Ayia Triada, Gournia and Zakros of sealings made by identical or very similar seals has been proposed as evidence favoring central rule exercised in part by traveling officials.<sup>46</sup> S. Hood has suggested that the ruler of Crete may have resembled the pharaoh in Egypt in owning many palaces.<sup>47</sup>

Whatever the case regarding central rule in LM I, it is highly unlikely that the relationship between the Minoan palaces remained constant for 500 years. If the palaces were independent at the outset, then differing effects of plague, of drought and of malaria, the accidents of individual longevity affecting rule and succession, rivalry between the palaces, and the consequences of dynastic intermarriage would likely have resulted in shifting alliances and borders and differing degrees of central authority. Palatial rule from MM IB to LM

IB must have reflected not only patterns of continuity but also processes of change.

Malcolm H. Wiener

35 East 76th Street

New York, New York 10021

<sup>38</sup> S. Alexiou, 'Pre-palatial citadels in Crete' (in Greek), *Kretologia* 8, 1979, 41—56; G. Cadogan, 'War in Minoan Crete', lecture, New York, 1980; S. Hood, 'The "country house" and Minoan society', in *Minoan society*, Bristol 1983, 129—135.

<sup>39</sup> Hood (supra n. 38), 129 f. The difference in terms of number and size of rooms may have been even greater, since Knossos may have had more floor levels, particularly on the east side, than the other palaces.

<sup>40</sup> Wiener (supra n. 13), 17—25.

<sup>41</sup> J.D.S. Pendlebury, *The archaeology of Crete*, London 1939, 6, 9—11, 94 and 184; L.V. Watrous, 'Ayia Triada: A new perspective on the Minoan villa', *AJA* 88, 1984, 133.

<sup>42</sup> J. Cherry, 'Generalisation and the archaeology of the state', in *Social organization and settlement*, ed. by D. Green, C. Haselgrove and M. Spriggs (BAR 47), Oxford 1978, 429—431; A. Peatfield, 'Palace and peak: The political and religious relationship between palaces and peak sanctuaries', in this volume.

<sup>43</sup> Walberg (supra n. 7), 89—137; S. Andreou, *Pottery groups of the old palace period in Crete*, Ph.D. diss., University of Cincinnati, 1978.

<sup>44</sup> East Crete also participates in pottery export, however, in Egypt (G. Cadogan, personal communication) and particularly at Thera: W.-D. Niemeier, 'The master of the Gournia octopus stirrup jar and a Late Minoan IA workshop at Gournia exporting to Thera', in *TUAS* 4, 1979, 18—26.

<sup>45</sup> Wiener (supra n. 13), 17 and 25.

<sup>46</sup> Betts (supra n. 35). Of course identical or nearly identical sealings from various places might result from the activity of inter-regional commercial or religious entities which could have existed even in the absence of central rule.

<sup>47</sup> Hood (supra n. 38), 132. Hood gives as an example the many palaces owned by Ramesses III; closer in time, Amenhotep III had major palaces at Malkata and at Medinet Gurab at the gateway to the Fayum, and a commemorative scarab records his building at least a lake at a site thought to be Akhmin, the home of his wife Ty, in Middle Egypt (A. Russman, personal communication). The extensive nature of Minoan contacts with Egypt in LM I (see W. Helck, *Die Beziehungen Ägyptens und Vorderasiens zur Ägäis bis ins 7. Jahrhundert v. Chr.*, Darmstadt 1979; E. and Y. Sakellarakis, supra n. 30), as shown for example by the depictions of Keftiu emissaries on Theban tombs and a scribal tablet from the reign of Thutmose III giving instruction in the writing of Keftiu names (see T. Peet, 'The Egyptian writing board', *Essays in Aegean archaeology presented to Sir Arthur Evans*, Oxford 1927, 90—99) suggest that the ruler at Knossos would have known that the Pharaoh ruled all Egypt and had palaces at various places, but there is no reason in particular to suggest Minoan emulation.

In the preparation of this paper I received much helpful advice and comment from J. Bennet, P. Betancourt, J. Crouwel, O. Dickinson, S. Iakovidis, O. Muscarella, J. Rutter, P. Warren and L.V. Watrous among others, to all of whom I here express my thanks.

## Discussion

*J. Shaw:* I have been concerned with Minoan exports for some time and wonder if you think that wood was a possible export. Crete had quite a bit of wood, as did Cyprus and Byblos, and of course we have the big bronze saws from Hagia Triada and Zakros.

*M. Wiener:* Yes, I think wood is a very likely export. The annals of Thutmosis III refer to Keftiu ships in Levantine ports with masts, poles and large trees en route to Egypt, and an Akkadian term for one variety of wood has been thought by some to derive from the word *kaptaru*. If the Mari tablets refer to Crete, then already in MM II Crete is taking finished products, such as pincers, bronze vessels and other types of tools and weapons, abroad. Cloth is also a major possibility and K. Branigan has already referred to the great number of loom-weights in the early palace period. The Knossian Linear B tablets indicate an enormous number of sheep at the end of the palatial period.

Perfumed oil, wine and even medicinal plants are also possibilities. In the pre-scientific age medicinal plants might

have been significant. In the American West of the 19th century a major item of trade was patent medicines, which we today consider worthless.

*C. Laviosa:* Direction of trade seems a very important question, but we should also consider the politics over such a long period of time. The Cretans must have had more than one place as a source of silver, wood, etc. It's also a matter of competition, they would have looked for the best prices.

An Anatolian question now: you pointed to the importance of the Dodecanese in the commerce with Anatolia. Do you think we could have Chios and Mytilene as trade posts?

*M. Wiener:* I would be very surprised if we *don't* find Minoan deposits in all of these islands. I agree that the Minoans must have sought contact with all the established tin routes and it's true that, as we can see from the Near Eastern texts, the relative value of metals varies considerably from place to place and time to time.

## General Discussion on Economy and Trade

*W. Helck:* Let me say first how the trade situation looks from the point of view of Egypt. We are not allowed to forget that historical changes took place during these periods. For example, it has been said that in the Old and Middle Kingdoms trade was conducted only by the pharaoh but there is also the time between the two epochs, during which there was much private enterprise.

In the time which interests us here, the exchange between Crete and Egypt is on a palace basis. The first mention of Crete, in the annals of Thutmoses III, a *ruler* of Crete is mentioned. This means that the Egyptians knew there was a ruler on the island. We also have a painting in the tomb of Senmut, at the time of Hat-Shepsut, which shows gifts given by the Minoans. It is important that the first person carried a big sword. I think at that time the Minoans exported arms, as well as smiths who could manufacture them. Some weapons of King Ahmose are made in the Minoan fashion, and the inscription accompanying the picture is so bad that it was perhaps made by Cretan artists. There may also have been an exchange of artists. We know for example that Hattushilis III asked for an architect from Babylon. The exchange on an official basis continues down to the times of Echnaton. A certain type of Mycenaean vessel is found only in the king's palace and in the houses of his immediate environment. This shows there was no private trade in this commodity. The evolution of trade outside the official framework comes gradually.

*B. Foster:* I would like to comment on various points made by the speakers on trade. First about venturing. In Mesopotamia the typical pattern in almost all economic activities is for the palace to avoid venturing; to leave it to private individuals and then to turn around and collect the profit. This works in land-lease, where the person who leases agrees to deliver a certain amount of harvest, and if the year is good, he makes a lot of profit, if it's bad, he takes a loss. We can look for the same mechanisms in trade. We have private archives from the Old Babylonian period (18th/17th cent. B.C.) where private merchants outfitted ships and dedicated models of gold and silver ships in the local temple. These people dealt with the state, but were not state officials, they had no titles; they merely go where the money is. The records were kept in silver value. Contrary to some points which were made here, we do know that a standard currency existed in the 18th cent. B.C. There were standard silver rings which were used as coinage.

The other point I would like to make is that one of the hidden problems in the circulation pattern of foreign goods is the trade of craftsmen and artisans themselves. We know that skilled people were exchanged, so that if you find a foreign object in a court you cannot tell if it was imported or made there.

Lastly, I would like to stress that the Old Assyrian trade was definitely private based on family relationships, with the wife staying at Assur producing textiles and sending them to



Kanesh to be exchanged in the local market for silver and to be returned to Assur. Tin was also going from Assur to Kanesh to raise money for the family. The palace extracted customs, but the profits went to private merchants. We have, in other words, the classical Mesopotamian pattern, where the individual takes the risks and the government then moves in to collect the profit.

*P. Warren:* I found the comments of both the Oriental specialists very useful and I was going to ask them myself to comment on the possibility of the existence of a free merchant class in Crete. They have done so, and have drawn diametrically opposite pictures. I would like to refocus the question and say that one of the most interesting areas for trade in Crete was the Levant, Ugarit, etc. Which of the two patterns is the strongest in the Levantine states? The palace pattern of Egypt, or the Mesopotamian model of free merchant enterprise? If one of these patterns is more dominant, this may be the closer model for understanding Minoan social structure.

*W. Helck:* I think the Mesopotamian is the stronger one, because the Phoenician towns went over to that, not to the Egyptian. Even the Egyptians changed in the Ramesside period, as I mentioned in my paper. This model also accords more with the inner feelings of man, who wants to make profit and not just work for the state as was the case in Egypt.

*S. Hood:* Scales have been found in the Shaft Graves at Mycenae and the Vapheio tomb, and it has been suggested that they were used for weighing precious metals in connection with trade. If this is the case, it would imply that some very powerful people were engaged in trade.

*L. V. Watrous:* I think that the scales may have been religious objects, in imitation of the Egyptian practice of weighing the soul. Think of the scales found in a tomb at Maurospelio, Crete, which are made of gold foil and could not have been functional.

*S. Hood:* I would also like to ask about the old idea that the ceiling patterns in Middle and New Kingdom tombs were imitations of Cretan textiles, which were used to cover the ceilings in Egyptian houses at the time.

*W. Helck:* Of course, there are three tombs in the Middle Kingdom and a good many in the New one, at Malkata for instance, and they do have Minoan/Mycenaean motifs.

*Ch. Doumas:* From what we have seen in many papers the function of the Minoan palaces was mostly economic. Today we are discussing to what extent the palaces controlled trade, and I agree with K. Kilian about trade involving more than luxury goods. At Thera we have 1/3 of the total amount of early stirrup jars in the Aegean.

Another point: since many of our assumptions about trade are conjectural, how can we discuss the destruction of the fleet, when we don't even know if it existed? As far as the

evidence of pottery goes, like, for example, the existence of Kamares ware sherds found in various parts of the Mediterranean, these could have been brought by middlemen, not the Minoans themselves.

*G. Kopcke:* I can only say that I agree with every sceptical remark.

*W. Helck:* Nevertheless, the frescoes in the tomb of Senmut show us *Cretan* people bringing *Cretan* objects. So the possibility that Cretans brought these objects lies close at hand!

*I. Pini:* But were these Cretans merchants?

*W. Helck:* What is a merchant? They are people who brought goods by order of the king or even on private initiative.

*G. Walberg:* In the Tod treasure there is no Kamares pottery, nor can any Cretan influence be demonstrated in the metal vases. Most of the "MM features" can be found elsewhere and not in Crete.

*L. V. Watrous:* I welcome the remark that pottery is not always a good indication of trade, but in some instances it is, at least within the Aegean. The extent and amount of pottery produced in LM IB Knossos, found both in Crete and elsewhere in the Aegean, is too much for us not to have to postulate some kind of centralized operation. I know from Kommos, for example, that there is a tremendous amount of imported Knossos ware. And going back to our earlier discussion about the origins of the palaces, it follows that if pottery is a poor indication of trade, we cannot use the lack of it *against* diffusion.

*S. Hiller:* Regarding Ch. Doumas' question about what evidence we have for a fleet, there is the tablet testimony at Pylos about the "shipbuilders" who are building ships for the palace. But we also have evidence for a fleet in Crete as J. Chadwick has shown in the *Doro Levi Festschrift*. The tablets also suggest that the palace controlled certain main industries, like the production of swords and bronze working. We have tablets from Pylos referring to ca. 300 smiths, which are far too many for the needs of the palace. I was impressed to hear M. Wiener talk of the palace controlling armour.

*M. Wiener:* Certainly the tablets from Pylos and Knossos show a tremendous amount of palatial control and I would think that the Linear A tablets would disclose a similar control of the palace over the economy. As to weapon control, in the first book of Samuel there is a verse that refers to the Philistines monopolizing the metal working in order to prevent anyone else from having swords; the Israelites must go to Gaza to get knives. One doesn't want to read that 800 years back, but it does show the tendency to control the main weapons. Even today, the most capitalistic society does not permit trade in uranium. The great bronze swords from Malia cannot be anything but palatial products.

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