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**BRONZE AGE TRADE IN THE
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THE NATURE AND CONTROL OF MINOAN FOREIGN TRADE

Malcolm H. Wiener

For Sinclair and Rachel Hood

THE PREPALATIAL BACKGROUND

Trade (along with many other activities) has been called the world's second oldest profession, and indeed the eagerness with which five-year-olds trade objects might suggest that trade is the oldest. In archaeological time also, trade can claim great antiquity as suggested by the appearance of Melian obsidian at various places, including inland sites on the Greek mainland beginning with the Paleolithic period (Perlès 1989; *c.f.* Torrence 1986).

On Crete EMII witnesses a great expansion of trade horizons, with the appearance of imports including gold, a silver seal, faience, ivory, and Egyptian stone vases on the islands. The contemporaneous burials at Mochlos give evidence for the first time of significant social stratification (Soles 1988, 49-61). From a tomb at Mochlos with EMIIA to EMIII material comes a bronze dagger of Cretan type (Branigan 1967, 214-215, Note 44), with a tin content of 4.8% (Herakleion Museum, HM 1560), suggesting the importation of tin to supply Cretan metalsmiths at this period. The first ostrich egg known in Crete, from a tomb at Palaikastro, also comes from this horizon (Dawkins 1903-1904, 192-231). Trade links to the north at this time are indicated by the probable Kythnian origin of the copper from which Minoan figurines and daggers found in Mesara tholoi are made (Stos-Gale 1989, 279-292), and by sherds from EH/ECII sauceboats from good EMII contexts (Wilson, D. E. 1985, 358-359).

THE MINIMALIST VIEW OF TRADE AND THE PROBLEMS OF INFERENCE FROM EVIDENCE

Does the limited evidence of overseas contact

from the prepalatial period provide support for the minimalist view of trade advocated at this Symposium by Snodgrass and Catling? Or does the evidence cited merely hint at the true extent of trade, given the accidents of recovery and the possibility of trade in perishables leaving no trace? Of course even occasional cross-cultural exchanges between rulers could have had major consequences, such as the acquisition of knowledge of metallurgy and writing (particularly if the exchange involved gifts of artisans, a practice well-attested in Near Eastern texts). But was Bronze Age long-distance trade as limited in extent and nature as the minimalists suggest?

Three contrary arguments in particular seem worth noting. First, trade would always have consisted in large part of goods which leave no trace. The tale of the mid-11th century B.C. voyage of Wenamun, who travelled from Egypt to Byblos to purchase timber in exchange for significant quantities of linen garments, papyrus, ox hides, ropes, lentils and fish, plus gold and silver, is an excellent example of trade without a trace (Pernigotti 1988, 267-268; Dothan 1981, 4-5; Van Seters 1979, 37; Lichtheim 1976, 224-230; Gardiner 1961, 306-313). When the nature of trade goods can be determined from their containers the result is sometimes a surprise, as in the early Chalcolithic period in the western Mediterranean where, in the first half of the third millennium, Malta imported significant quantities of ochre from Sicily for use in funerary and other rituals (Maniscalco 1989, 541).

Second, harbour sites are particularly subject to loss through change of shoreline or reoccupation. Much of our knowledge of

prepalatial Minoan contacts with Egypt or the Near East comes from the island of Mochlos, which in Minoan times is thought to have been part of a peninsula. Detachment as an island here acted as a partial deterrent to post-Roman reoccupation or cultivation, thus protecting the tombs from discovery and looting. (Our other major source of evidence for overseas contact in the prepalatial period is Knossos, where the levelling of the hill, first perhaps before the construction of the Old Palace and again after the MMIIA destruction, scattered much of the evidence of earlier occupation.)

Third, the archaeological record tends in particular to preserve a deceptively small proportion of the metal in use at any time, since metal is always subject to melting and reuse. An illustration of the phenomenon is the contrast between the evidence for the existence of armour in the 11th century A.D. provided by the Bayeux tapestry on the one hand, and by the archaeological record on the other. In the tapestry, senior ranks on both sides wear iron-link tunics, but no Norman and only one Anglo-Saxon piece of the period survives (Wilson, D. M. 1985, 221). In the 17th century A.D., a silver brazier, or *brasero*, was a frequent item of equipment in upper class houses in Spain and France, but due probably to the large amount of silver these objects contained practically none have survived (Gruber 1982, 232). Similarly, Egyptian New Kingdom tomb paintings and temple reliefs depict a great number of copper ingots, but only one has ever been found in Egypt. The Annals of Tuthmosis III carved on his temple at Karnak record as booty 52 silver jars of Canaanite shape (Wrezinski 1923, Plates 33A and B, Item 100), but who has ever seen a Canaanite jar in silver? Few of the gold vessels depicted in the annals or in Egyptian tombs survive either (Lilyquist 1988, 39). The Kas shipwreck disclosed ingots of tin and glass, otherwise unknown (except for some tin

ingots from another shipwreck off Haifa), and an enormous number of copper ingots (Bass 1986). Near Eastern archives from Ebla, Mari and the Assyrian trading colony at Kültepe list great amounts of metal, practically none of which was found in the excavations. The paucity of bronze in LH-LMIIIB habitation sites and tombs led some scholars to suspect a IIIB bronze shortage, but the Pylos tablets suggest a total of about 400 bronzesmiths (Chadwick 1976, 141). The existence of this number of bronzesmiths in the territory of Pylos is surely of some significance, even if most receive only a small allotment of bronze and some none on the tablets in question.¹

On balance, it would appear that the risk of underestimation of the amount and societal impact of long-distance trade in the Bronze Age is at least as great as the risk of overestimation.

Snodgrass in his paper argues that trade by one definition - "movement of goods without knowledge of a further purchaser" - did not exist to any extent in the Aegean Bronze Age. Markets, he believes, were marginal and the concept of profit absent. Snodgrass envisages, instead, a process of ceremonial gift exchange between rulers involving high value, low bulk prestige items, accompanied by negotiated exchange of high bulk necessities and the systematic redistribution of these within Aegean communities. To this view certain objections may be raised. First, as Snodgrass notes, trade by any definition clearly flourished in the Near East in the Bronze Age. The principal function of the Assyrian trading colonies in Anatolia was the generation of profits for state institutions and private investors in Assyria. (See, e.g., the papers by Garelli, Larsen and Veenhof in Hawkins (ed.), *Trade in the Ancient Near East* 1977; Adams 1974; and Veenhof 1972.) And the injunction contained in one letter -

"Sell at any price" - surely speaks the language of markets (Veenhof 1972, 88).

In any event, it is the effect of long-distance, cross-cultural trade that matters, rather than the purported intent. If, pursuant to a carefully negotiated agreement the Pharaoh sends a gift of a thousand Egyptian stone vases filled with unguents to the King of Babylon in exchange for other goods (Moran 1987, 99-100; Knudtzon 1915, 118), and some of the vases are distributed within Babylon while others are exchanged elsewhere, then the result in fact is trade. Conversely, a ceremonial gift exchange relationship between rulers, even one maintained despite the availability of equivalent supplies at lower cost elsewhere, need not necessarily constitute "archaic" non-profit-maximizing behaviour, when viewed in the long run. A rational purchaser may elect to maintain a long-term relationship with a higher-cost supplier in order to insure access to a critical resource (such as metal in the Bronze Age) while satisfying any increase in demand from a lower-cost source. It is appropriate at this point to recall the adage: "Markets [*i.e.*, prices] are made at the margin". It would be surprising if Minoan trading ventures did not seek out the lowest cost source of metals and other goods from time to time. Moreover, royal emissaries/merchants throughout history have traded on their own account in the course of their missions, as in the case of the merchant ambassadors of Zimri-Lim of Mari in the 18th century B.C., some of whom used the occasion of royal journeys to make private purchases for future sales (Sasson 1984, 248). As Adams observes, "The analytical separation between 'administered' and 'market' trade may, in other words, lack a cognitive or behavioural equivalent" (Adams 1974, 239).

While distinctions between "market" and "administered" trade, or between "trade" and "exchange", do not seem particularly fruitful,

the question of the role of the state in comparison with the role of other entities and of individuals in long-distance, cross-cultural trade appears of critical importance for our understanding of the governance and economy of Crete and the development of Minoan civilization.²

MINOAN OVERSEAS TRADE IN THE OLD PALACE PERIOD

What, then, was the nature and structure of Minoan overseas trade in the Old Palace period? In a 1984 symposium Alexiou (1987), Kopcke (1987) and Wiener (1987) argued for a strong palatial role in this trade, the last named emphasizing the need of the palaces to insure access to supplies of copper and tin, or bronze. This paper expands on that discussion, then considers the current state of the evidence regarding the control of Crete in general (including overseas trade) in the Old Palace period, and ends with a brief postscript on the control of foreign trade during the New Palace period.

Bronze, of course, was of critical importance for weapons, for tools to build palaces and ships, and for prestige objects - that is to say, bronze was of critical importance to the security, economy and prestige of the palaces. Above all, the palaces would have wished to insure and control the supply of weapons in troubled times. (A discussion of evidence for warfare in protopalatial Crete appears below.) Accordingly it seems inconceivable that Minoan rulers would simply have waited passively, hoping for a Near Eastern merchantman to arrive with copper and tin. Rather, it seems likely that copper and tin would have been the object of intensive search, planning and investment by the controlling elite.

Middle Bronze IB to II was a time of intensive trade, including trade in metals, in the Near East. From the approximately 5% of the Karum Kanesh tablets published to

date, we know already of 110 donkey loads carrying 13,500 kilos, or almost 15 tons, of tin into Anatolia, enough to produce (assuming a 5%-7% tin content) 200 to 300 tons of bronze. Adams in his analysis of Near Eastern trade observes that the amount involved seems considerably in excess of local needs, and accordingly suggests that the tin was alloyed with copper in Anatolia and the resulting bronze shipped elsewhere (Adams 1974, 239). One tablet from the palace at Mari on the Euphrates records over 500 kg of tin in the palace inventory, or enough for 8 to 10.5 tons 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, as is generally believed, 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). Other Mari tablets refer to a Kaptarite inlaid metal weapon, and to Zimri-Lim of Mari sending goods from Kaptara to Hammurabi of Babylon - an example, perhaps, of "down the line palatial gift exchange" (Villard 1984, 528-529, number 556; Kupper 1973, 8-22; Malamat 1971, 31; Dossin 1952, 3, 37 [Letter 20] and 1970, 97).

The existence of an interpreter 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 Old Palace period. Judith Weingarten has recently argued that the first complex administrative system of Crete for which we have evidence, that of the palace at Phaistos in MMII, shares certain specific characteristics with the system in use at Karahöyük in Anatolia, such as the use of

multiple sealings and seals which are extremely similar but not identical, as well as a few specific design motifs previously noted by Levi. Weingarten notes that Near Eastern specialists have only recently begun to study sealings with respect to their function in administrative systems, but believes on present evidence that the Minoan system was imported in its entirety from somewhere abroad, probably coincident with the foundation of the first palaces in Crete (Weingarten 1990, 105-106).

Ports along the coasts of Anatolia and Syria were obvious destinations for Middle Minoan voyagers seeking tin or bronze. Accordingly it is not surprising that Middle Minoan pottery (including open shapes which could not have served as containers for Minoan exports), much of it said to be MMII in date, has been found along an island chain including Kasos, Karpathos, Rhodes, Kos, Chalki, Kalymnos, Telos, Nisyros, Astypalaea and Samos, and that Middle Minoan stone bowls have been found on Samos and Rhodes, with the latter producing evidence of local manufacture of stone bowls of Minoan type as well. MMII sherds are also known from the Anatolian coastal sites of Miletus, Iasos and Knidos (Wiener 1984, 17-25 and forthcoming). Conversely, pieces of obsidian, linked through trace element analysis to the Çiftlik source in southern Anatolia (near mines identified by Yener as potential sources of silver and other metals in the Bronze Age), have been found at Knossos (Renfrew, Cann & Dixon 1965, 225-247; Yener, Özbal, Minzoni-Deroche & Aksoy 1989, 477-494; Yener, Sayer, Özbal, Joel, Barnes & Brill, forthcoming). Cypriot sherds have been recovered from a MMIB context at Kommos (Watrous 1985, 12), and Minoan pottery from the beginning of the Old Palace period has been found at Lapithos and Karmi on the north coast of Cyprus.

In the foregoing discussion emphasis is

placed on the necessity of obtaining bronze because of the active Minoan maritime role which such a need implies. Minoan imports were of course not limited to bronze. Gold, silver, ivory and various types of stone arrived, the last in the form of Egyptian vases which were then reworked into Minoan forms (Platon 1971, 137-138) and in the form of raw material. Yule (1981, 199) catalogued 135 seals made from six different Near Eastern stones found in Crete and belonging to the MMII-III horizon; Branigan (forthcoming) calculates that at least 15% of all known Cretan Old Palace seals were made from Near Eastern stones. Lead, probably from Laurion, was imported for rivets and plugs and for linings such as those used to waterproof the cists in the West Magazines of the Palace of Knossos. It is reasonable to assume a palatial interest and role in such imports.

Minoan exports, in addition to Kamares ware pottery, may have included wood, oil (possibly perfumed), woollen cloth and agricultural products (including wine and medicinal herbs). The annals of Tuthmosis III speak of ships of the Keftiu in Levantine ports laden with poles, masts and great trees destined for Egypt (Breasted 1962, 206). An Akkadian type of wood (thought to be poplar or willow) is called "Kaptura", a term believed to mean "Crete" or "Cretan" (Astour 1973, 22). Both elm and willow are recorded later in the Linear B tablets from Knossos (assuming no shift in the names of various woods between Linear B and Classical Greek) with willow mentioned frequently as the material of which chariot wheels are made (Ventris & Chadwick 1973, 370-373; I am grateful to T. Palaima for this reference.). In the 5th century B.C. Crete exported cypress wood; in the 16th century A.D. travellers reported the Samaria Gorge in western Crete was the chief source of cypress in the Venetian Empire (Nixon, Moody & Rackham 1988, 168-169). The

proximity to forests may account in part for the location and significance of the Old Palace site of Monastiraki, considered below, and the New Palace site of Zominthos. An Egyptian tomb of the 18th Dynasty depicts Keftiu bearing folded cloth (Kantor 1947, 58). Linear A tablets from Ayia Triadha indicate that it was a centre of wool production in LMIB (Palaima 1990, 94-95). From the Knossian Linear B tablets we know that wool production was a major element of the Minoan economy at that time (Killen 1964, 1-15). A Mari tablet (ARMT 21 342:4-12) records clothing and a pair of leather shoes from Kaptara (Sasson 1985, 451). Egyptian texts of the early 18th dynasty refer to the importation of medicinal herbs and of lichens for embalming fluid from Keftiu, the Egyptian term generally thought to mean Crete (Sakellarakis 1984, 197-203). Egypt was no doubt a ready market for wood, olive oil and wine, all of which it lacked. (In the 18th century A.D. Crete exported wood, olive oil, woollen cloth, wine, herbs and currants to Europe [Cadogan 1976, 16]).

Long-distance trade with the eastern Mediterranean and Egypt would have required the following: first, ships suitable for long voyages, which could have served as well for attacking pirate lairs, together with ships' crews and provisions, plus shipyards and shipwrights; second, goods for exchange, in some cases of a kind sufficient to interest foreign rulers; third, establishment of relations with foreign courts and ports; and fourth, a chain of safe harbours, such as those noted, on the route to the metal sources. While there may have been periods of maritime security and partial suppression of piracy in the eastern Mediterranean, stemming perhaps from *entente* among the great powers during which maritime rights were respected (Sasson 1966, 138; Revere 1957, 38-63), when a single private merchantman carrying goods of high value

could have embarked on a long voyage, numerous Late Bronze Age Near Eastern and Egyptian texts indicate that naval attacks and piracy were endemic at times (Portugali & Knapp 1985, 66 and sources cited therein). There are numerous references also to fleets of ships in Egyptian and Near Eastern records.³ While there is no reason to assume that long-distance overseas trade was the exclusive prerogative and domain of the palaces in Middle Minoan Crete, it seems highly probable that the palaces provided the critical incentive, investment and infrastructure required.

This view, however, has been challenged by Branigan, who argues that the frequent appearance in Cretan non-palatial contexts of Egyptian scarabs, Near Eastern cylinder seals, Syrian daggers, Egyptian stone bowls, and objects made of bronze strongly suggests a limited palatial role in the overseas trade of the Old Palace period (Branigan 1989, 65-71 and forthcoming).⁴ The argument appears unpersuasive for the following reasons. (1) The scarabs may simply have been the tourist trinkets and trading tokens of mariners; the scarabs from the Kas shipwreck off the coast of Anatolia of about 1300 B.C. seem to be mostly bric-a-brac or heirlooms covering a period of over 200 years, and Phoenician and Classical scarabs have been found as far afield as Britain and Scandinavia. (2) Cylinder seals travel in a similar manner; specimens of Collon's Green Jasper Group have been found in a MMIII-LMI tomb in Crete, in a much later context at Kition, and even at Carthage (1986, 62-63). Moreover, there is no evidence that Near Eastern cylinders were ever used as seals in Crete. In any event, only three of the seven cylinder seals cited by Branigan come from non-palatial contexts, and those three come from tholos tombs in the Mesara. While it is conceivable that some members of the palatial elite may have elected to be buried in long-established family or clan tholoi, these

Mesara tombs are not generally thought to be the burial places of the palatial elite, unlike Tholos B at Arkhanes which may well have held the remains of a palatial elite. What may be a royal burial enclosure at Chryso-lakkos was thoroughly looted, so we have no palatial analogue to the Mesara tholoi to indicate how many seals a royal tomb contained. (3) Three of the five Syrian daggers with tangs also come from Mesara tholoi as does one Syrian dagger of another type (Koumasa tholos); the other two come from sacred caves in the Lasithi Plain, where the rich deposits may have included palatial offerings. Finally, the tang from what may be a Syrian dagger was found at Knossos (Branigan 1970, 182 and personal communication. I am most grateful to K. Branigan for his comments and assistance, given generously notwithstanding our differing views on the question at issue.). (4) As to the Egyptian stone vases, of the twelve prepalatial examples six come from palatial contexts and five of the remaining six, listed as non-palatial by Branigan, come (as he notes) from a deposit immediately adjacent to the NW corner of the Palace at Knossos, an area within the outer enceinte wall of the Old Palace. (5) Branigan also notes 92 bronze objects appearing outside the palaces versus 14 within during MMI-II, but observes that these figures are difficult to assess accurately because of incomplete publication, variation in quantity of raw material used for individual objects, and other reasons. In addition to these caveats, we should note that different parties may be responsible for importing metals on the one hand and production of implements on the other; a smith in a town, for example, may receive copper and tin from a palace and manufacture implements for his locality and local cult as well as status objects for the palace and palatial shrines. Such extra-palatial issuance of metal is documented at the end of the Bronze Age in the Pylos tablets. Moreover, the comparison once again is between non-

palatial tombs and palatial habitation sites; bronze from the latter was of course usually recovered and reused. The frequent disappearance of metal from the archaeological record was noted above. Our fortuitous knowledge of the great amounts of bronze present in Crete in the neopalatial period comes from (1) the LMIB destructions and (in some cases) abandonments, (2) the bronze hoards buried in evident anticipation of them (Georgiou 1979), (3) the Arkalochori Cave deposit, discovered as it was being looted, and (4) the Minoan bronze swords and vases preserved in the Shaft Graves of Mycenae. Equivalent information is lacking for the Old Palace period. Thus we are at risk of underestimating the amount of bronze available then, although the total amount was obviously less than in the New Palace period when Crete appears to have been extremely rich in bronze.

If we examine items of trade or trade-related gift exchange likely to have been of great interest to the palatial elite, including objects dependent upon imports of metal, a pattern of distribution different from that suggested by Branigan may be observed. For example, the palace at Malia contained great swords of likely MMII date. Sandars has described the largest of the swords as "a weapon of unsurpassed size and considerable magnificence", and noted that "the armourers of Egypt and the Levant could produce nothing to compare with them" (Sandars 1961, 17-29 and 1963, 117). While these swords were of course ceremonial, surely their manufacture was based upon a tradition of functional sword production. Such swords constituted a major advance in military technology, at least in their *in terrorem* aspect, and hence would have been of vital interest to the palaces. Branigan observes that the luxurious and exotic nature of the gold pommel of one of the Malia swords, which depicts a backward-bending acrobat with what Branigan describes as African hair, is indicative of a strong

palatial interest in foreign trade. From an area at the northwest fringe of the palace of Malia came carved steatite molds for casting axes and blades, associated with a redeposited fill of MMI to II material. A metallurgical installation of the Old Palace period was discovered in the same area, adjacent to the northern wall of the later palace (Pelon 1987a, 269-271).⁵ A controlling palatial role in metallurgy, and in sword production in particular, seems likely in view of the foregoing considerations. Indeed, the number of destructions (discussed below) probably attributable to warfare in MMII-III A suggests the possibility that an "arms race" may have been partly responsible for an intensive effort to acquire copper and tin, or bronze.

In addition to ships, shipyards and armed men at times to battle pirates, long-distance trade voyages to obtain metal and luxury items required that goods desired abroad be provided for exchange. If one accepts the equation of Kaptara and Crete, then the Mari texts concerning inlaid metal objects from Kaptara, and the Kaptarite (as well as Egyptian) origin sometimes ascribed to the god of crafts at Mari, suggest the palatial nature of some of the goods exchanged. (That rulers may have exchanged luxurious ceremonial and prestige objects as gifts, and that such exchanges facilitated trade relationships between states, does not necessarily imply, however, that trade consisted solely or largely of such exchanges.)

The creation of the first palaces in Crete sees the concentration of craft production, with palatial workshops combining various crafts (MacGillivray 1987, 277). Other workshops located near the palaces but outside their walls may also have been under palatial control. The concentration of agricultural surpluses in the Old Palaces is indicated by the textual evidence (Palaima 1990, 91-92)

and by the significant storage capacity of the koulouras (underground storage silos). At Knossos the three koulouras in the West Court alone could hold sufficient grain to feed 800 people for a year, and at Phaistos the West Court koulouras could feed 300 people for a year.⁶ The concentration of administration in the early palaces is shown by the more than 6,500 nodules or seal impressions, plus tablets and other inscribed items, from one room at the palace at Phaistos. The recording of goods in and out was obviously of great interest to the palace.⁷ It would be surprising in this context if the palaces did not also play a predominant role in the organization of long-distance trading ventures.⁸

The non-textual archaeological evidence for Minoan exports in the Old Palace period consists principally of stone bowls and Kamares ware vessels. There is evidence for stoneworking in basement rooms LI-LV of the Old Palace at Phaistos (Branigan, forthcoming). Fine palatial Kamares in Crete is found almost exclusively in the palaces and in peak sanctuaries and caves connected with the palaces, and it is largely this Kamares ware which appears abroad. The exception to this rule is the east Cretan ware which appears occasionally in Egypt, and whose presence abroad may be due to the role of Palaikastro as a port (MacGillivray & Driessen, forthcoming), as well as one jug found at Aswan which, if not from Palaikastro, may come from Malia (Cadogan 1983, 516). Of course the total number of Kamares ware sherds now known from the Near East and Egypt may represent no more than 50 vases, but other such sherds may await publication, as in the case noted. More significant in terms of control of foreign trade is the fact that palatial Kamares ware has not been found or imitated in the hinterlands of the Minoan palaces (Walberg 1987, 284) but appears frequently and is sufficiently known to be imitated locally at ports in east Crete,

sites along the coast of mainland Greece, the Cyclades, the Near East (where it is copied in Ugarit and appears as far inland as Qatna in Syria) and in Egypt as far up the Nile as Abydos (Schaeffer 1939, 22, 54-56 and 1949, 51, Figure 109A and Plate 38; Saltz 1977, 51-70; Kantor 1947, 19; Betancourt 1984, 90-92; Cadogan 1983, 512-518; Kemp & Merrillees 1980, 1-3, Plate 1, 200-201, Figures 59-60, Colour Plate opposite 176; Wiener 1984, 18 and 1987, 262, Note 9).

Perhaps the metal prototypes on which Kamares ware appears based (Evans 1921, 242-245; Walberg 1976, 34-39), and which may have been made in the same palatial workshops (MacGillivray 1987, 277), were prized in the East. Tablets from Mari refer to bronze vessels and pincers from Kaptaru. In Quartier Mu at Malia a clay mould which had been formed over a metal bowl generally similar to the silver bowls from the Tôd Treasure has been recovered (Detournay, Poursat & Vandenabeele 1980, 89; Poursat 1984, 87). Of course if the silver bowls in the Tôd Treasure with their affinities in decoration to Kamares ware (Bisson de la Roque 1950; Warren & Hankey 1989, 131-135, 170, Notes 9 & 10, Plates 5-11) come from Crete, they are likely to have come from a palace, and the bronze boxes bearing the cartouche of Amenemhet II in which they were found in a temple in Egypt suggest that they may have been a gift to the temple from the pharaoh, again suggesting that palatial gift exchange played a prominent role in Middle Minoan overseas trade. Some of the palatial Kamares ware, on the other hand, was found in workmen's houses at Kahun. Poursat and S. Immerwahr have concluded on the basis of examination of the Egyptianising motifs of moulded clay reliefs from Malia and fragments of the earliest Minoan wall painting that Minoan artists travelled to Egypt in the Old Palace period (Poursat 1984, 86-87; Immerwahr 1984, 87). If so, it seems likely that they would have

accompanied a Minoan ambassadorial voyage.

The discovery at the Palace of Knossos of part of a diorite statue of an Egyptian Middle Kingdom official named User may be relevant to the question of the palatial role in Minoan-Egyptian trade in the Middle Bronze Age. Found in an unstratified context 70 cm below the pre-excavation surface of the palace, the object could have arrived as a piece of black diorite raw material rather than as a statue. (The excavation of Myrtos-Pyrgos produced a piece of Egyptian stone possibly reworked as a foot amulet [V. Hankey 1976, 213, Note 9]). The User fragment could also have come, however, from an Egyptian statue of a type known from the Middle East and thought to have been deposited in local shrines by Egyptian emissaries while abroad (Uphill 1984, 213). Uphill notes that these statues, which in Egypt were deposited in temples to receive offerings, have been found in the Near East in cult places either in or near ports or in important towns on main trade routes. While the unstratified and incomplete User statue can hardly be considered persuasive evidence of the presence of an Egyptian ambassador or resident agent at Knossos, it would also be unwise to ignore this possibility.

Could persons not directly connected to the palaces have amassed enough capital to play a significant role in long-distance overseas trade, perhaps by following in the wake of palace-directed trade? The Old Palace period appears to lack the number of luxurious, extra-palatial dwellings near the palaces and the number of prosperous towns and villas that are so marked a feature of neopalatial Crete, but we cannot exclude the possibility of an independent merchant class. After all, gold, tin, ivory and ostrich eggs were brought to Crete, as we have noted, before there were any palaces, or at least before there were any palaces as we subsequently

know them. In the absence of texts, we cannot hope to know the nature of the relationship between the Old Palaces and Minoan ship captains. The remuneration of captains and crews may have taken the form of authority and license to trade on their own, as long as the palatial mission, including in particular the procurement of metal, was accomplished. A specialist group of traders could have emerged as a result of such voyages. A class of at least semi-private merchants, often connected in some way to palace or temple, developed in the Near East⁹ where, however, long-distance overland trade is likely to have been more extensive than the sea trade between Crete and the Near East, as shown by the data on Near Eastern metal trade cited earlier.

In Crete, however, it was surely the palaces which provided the basic infrastructure for long-distance trade, including (1) ships in strength, (2) relations with foreign courts and ports, and (3) capital, including luxury and other products used in exchange. For example, the manufacture of the inlaid metal weapon from Kaptara to which a Mari document refers would have required access to precious and other metals and experience with a sophisticated pyrotechnology gained over time, which strongly suggests that the object was fashioned in a palatial workshop.

A trading expedition carrying valuable goods would have required either protection by naval military strength (as in the case of Viking trading expeditions), respect for the power behind the venture, previously established friendly relations with both the arrival area and any way stations en route, or some combination of these elements. Kopcke has put the proposition as follows: "The farther the distance, the more organized the forces one expected to encounter, the greater the gains, [then] the more thoroughgoing the preparations. 'States' were better equipped to

meet these challenges than individuals" (1987, 257).¹⁰

CONTROL, CONFLICT, COMPETITION AND/OR COOPERATION BETWEEN THE OLD PALACES AND THE EFFECT ON FOREIGN TRADE

Kopcke's reference to "states" raises the question of the number of polities involved in sponsoring long-distance trade, and perhaps establishing relations with foreign courts, in the Old Palace period. In the absence of texts we must again admit to great uncertainty. It appears likely that a poll of Minoan prehistorians would show a majority favouring the existence of at least three independent palaces in the Old Palace period, but (perhaps by a smaller majority), Knossian domination in the New Palace period.

The dividing line between the periods is generally taken to be a great earthquake which at least at Knossos (and perhaps simultaneously at Phaistos) marks the end of the Old Palaces and the construction of the New Palaces (Warren & Hankey 1989, 61-65). A problem arises, however, in attempting to describe a process by which an earthquake might lead to dramatic change of this nature in the governance of Crete or the control of its foreign trade. One possibility of course is that the destruction at Phaistos and in the surrounding area (probably including Kommos, where there is also some evidence of earthquake damage at this time) was greater than that at Knossos and its surrounding area (including Archanes and Anemospelia, where there is also evidence for earthquake damage perhaps at this time). The amount of damage implied at Knossos, however, by the remains of the House of the Fallen Blocks (and the uplift visible on the slopes of Juktas and Ailias, together with the fault lines in the Kairatos Valley, if attributable to this earthquake) is certainly considerable. Of course it is possible to imagine a great earthquake causing (1) delegitimizing damage

to the authority of a ruler and/or hierarchy, religious or other-wise, and its replacement by a different elite with different dynastic ties and more inclined to aggression; (2) shortages of foodstuffs leading to aggression, or (3) a period of weakness leading to attacks on Knossian dynastic affiliates or allies if not on Knossos itself, followed by counterattack and conquest. On the other hand one can imagine, perhaps more easily, that as a result of a devastating earthquake attention would for a time turn inward toward repairing the damage.¹¹ Accordingly a further consideration of the horizon in which Knossos may have taken the initial steps toward Cretan dominance, perhaps including dominance of foreign trade, seems in order.

The position as regards the Old Palace period has been stated emphatically by Cadogan, who after noting the existence of considerable regional diversity in the Middle Minoan period, particularly as reflected in pottery, writes ". . . in no way may we see Knossos as capital of Crete in Old Palace times, even though it was even then considerably larger than Phaistos or Malia -- let alone the possibility of its having a commanding position in the whole south Aegean" (1987, 72). On the other hand, a number of reasons have been advanced for the view that Crete was united under Knossos in the New Palace period. These include the secure and peaceful appearance of Crete as shown by the existence of unprotected "country houses", the expansion of Crete abroad, the spread of Knossian-inspired pottery styles throughout the island in place of the regional diversity of the Old Palace period, the possible economic control by Knossos implied by the distribution of sealings made by Knossian seals, and the nature of the site of Kato Zakros and the objects found there which suggest it may have served as a port for Knossos (Wiener 1987, 266 and works cited).

The separate ceramic zones of central, east

central and eastern Crete in MMII noted by Cadogan and others (Cadogan 1983, 507-518 and 1988, 95-99; Walberg 1983; Poursat 1987, 75-76; Andreou 1987) and the ceramic differences between the northern (Knossian) and southern (Phaistian) sectors in the central zone (Betancourt 1986, 284-292) are reinforced by what appears to be a special east central style of carpenter's tools (Poursat 1984, 75). The palatial Kamares pottery of Knossos and Phaistos, on the other hand, is very similar, as are the palaces in general in overall design, characteristics of construction (e.g., ashlar with orthostates, masons' marks) and cult areas and equipment. With regard to the possible implications of pottery zones, it is worth noting that the east-central, Malia-Pyrgos style does not appear in east Crete or the Cyclades, whereas Knossian Kamares appears in some quantity both at Palaikastro and Zakros (where it is also imitated) and in the Cyclades; and that conversely much east Cretan and Cycladic pottery has been identified in the Middle Minoan deposits from Knossos (MacGillivray 1987, 249, 276 & 278). By MMIII the regional differences in pottery have largely disappeared (Walberg 1983, 151). Accordingly the argument based on pottery and other cultural artifact zones for independent polities throughout the Old Palace period does not appear compelling.

Moreover, there is no reason why a Knossian assertion of sovereignty over certain parts of Crete in the Old Palace period should necessarily result in the closure of local pottery and other workshops or in their prompt adoption of Knossian styles or techniques, nor is there any reason why Knossian sovereignty would necessarily result in the rapid diminution of local exchange networks. Recent work in contexts where political relationships are known has shown that the circumstances under which political boundaries find clear expression in material culture are "highly variable and very complex"

(Cherry 1986, 24, citing Hodder 1977; 1978, 199-269; 1982; and DeAtley & Findlow 1984). (Conversely the subsequent marked reduction of regionalism in the pottery of the neopalatial period, standing alone, could result from an internal "Versailles effect" reflecting the cultural prestige of the Palace of Knossos and the consequent stimulus to importation and emulation of its products by the rest of Crete, rather than from the putative Knossian neopalatial hegemony in Crete.)

Another argument for politically independent regions centred on palaces in Minoan Crete has been proposed by Cherry (1986) on the basis of cross-cultural studies indicating that many societies have passed through a stage of "peer polity interaction" en route to larger federations, and on the basis of the presumption that a polity comprising a Cretan palace and its hinterland constitutes a natural unit for the Bronze Age from the standpoint of political geography, as indicated by the example of Mycenaean Greece. Considering, however, that large and imposing structures appear in Crete in EMIIIB (Branigan 1970, 43), together with indications, in the burials of Mochlos (Soles 1988), of a highly stratified society with access to foreign luxury products, and that the Old Palaces are in existence by MMIB-MMIIA, there seems a sufficient span of centuries to encompass a peer polity interaction phase prior to the earliest possible assertion of Knossian dominance in the Old Palace period. The existence of a direct link between control and topography is also open to doubt, as the later history of Crete and of the Aegean indicates. In the 5th century B.C., for example, the era of independent city-states was followed by an Athenian Empire which exercised control of Aegean trade, particularly in that basic commodity known as corn in the United Kingdom and wheat in the United States (Thucydides 2.38.2, 1.120.2; cf. 3.86.4; Rhodes 1985, 38). Cross-cultural comp-

arisons with Middle and Late Bronze Age societies in the Near East and Egypt with which Minoan palatial rulers would have been familiar disclose that Zimri-Lim of Mari had five palaces and spent a great deal of his time travelling between them (Sasson 1990; see Bottéro 1957) and that Amenhotep III had major palaces at Malkata and at Medinet Gurab at the entrance to the Fayum, and built a lake (presumably with an accompanying palace) at a site thought to be Akhmim, the home of his wife Ty, in middle Egypt (Wiener 1987, 266, Note 47).

Accordingly, it seems appropriate to ask whether there is evidence to suggest that Knossos may have taken the initial steps towards hegemony, at least as regards north-central and east Crete, in the Old Palace period.

The first body of evidence to consider is the chain of hilltop watchtowers or caravanserais, and perhaps in some cases forts, arranged in line of sight along roadways, perhaps most noticeable in east Crete but recognizable elsewhere as well. In east Crete alone over 40 have been identified, many of a seemingly canonical size of about 14 by 11 meters, and extending along roads leading inland out of sight of the sea in some cases, suggesting that the provision of internal rather than external security was their primary function.¹² Moreover, it is difficult to identify a foreign threat against which the road and watchtower system could have been directed, although the possibility of Anatolian or Syrian pirates cannot be totally discounted.

Chryssoulaki has now completed the excavation of Zakros Choiromandres, the largest and best preserved of the known east Cretan watchtowers, and has confirmed an MMII date for its construction (Tzedakis, Chryssoulaki, Boutsaki & Venieri 1989, 43-75). Chryssoulaki believes the visible remains of the road system watchtowers or

caravanserais remaining to be excavated show signs of the employment of MMII building techniques, a judgement shared by MacGillivray (personal communications, for which I am most grateful). A viaduct near the watchtower/caravanserai at Zakros Choiromandres appears to be part of the road and tower system, and thus of the same general horizon as the viaduct constructed at Knossos in MMIIA; future excavation will test this hypothesis. (I am grateful to J. A. MacGillivray for informing me of the viaduct at Choiromandres.) Some of these structures and the associated road system were noted long ago by Evans, who referred to the structures as Minoan guard stations or "phrouria" (1928, 76). With J. L. Myres he was able to trace along a route through the Lasithi district to Siteia "the repeated occurrence of such guard- or watch-stations along the course of a Minoan built way, similar in all respects to that which traverses the central sector of the island" [footnote omitted]. Evans continues, "In view of these consistent phenomena it seems impossible not to admit the conclusion that the great Minoan road-system that radiated from Knossos over the whole of the central and eastern districts was also planned with a certain strategic control by the Minoan Priest-King" (1928, 78-79; Pendlebury, Eccles & Money-Coutts 1932-1933, 99). Evans collected MMII sherds from several of the watchtowers (Evans 1928, 78) and from the one at Ziros a signet with a hieroglyphic inscription dated by Yule to MMII (1981, 85-88; Evans 1921, 275, Figure 204H; see also Pendlebury 1965, 147. Evans refers to the site as Sto Dhaso). Evans describes the road system and guard towers in numerous early publications (collected in Tzedakis, Chryssoulaki, Boutsaki & Venieri 1989); subsequent investigations have concluded that some of Evans' examples of Minoan roads were probably sections of medieval or Turkish kalderimi (W. McDonald, personal communication, for which I am most grateful). Pendlebury noted many

of these watchtowers/caravanserai in his travels (1965, 10, Note 1).¹³ Pendlebury also noted that many of the remains observed by earlier travellers, such as the walls of Kisamos noted by Buondelmonte in 1422, had disappeared (1965, 16). The process continues today; Chryssoulaki reports that the remains of three of the 40 watchtowers noted by her team in the first season have been removed by local farmers (personal communication). Accordingly the number throughout Crete in the Bronze Age may have been far greater than is apparent today.

If the watchtowers/caravanserai and road system is in fact largely of MMII date, then on present evidence the system existed prior to significant habitation in the valleys behind the east Cretan coastline, a circumstance which suggests central, or at least regional, planning and administration rather than local defense to protect women and livestock against brigands; the farmsteads which later occupy these valleys seem to be neopalatial (MacGillivray and Chryssoulaki, personal communication). A large, imposing building surrounded by a wall with projecting towers excavated by Dr. Tsipopoulou at Ayia Photia on the eastern coast of MMI-II date may provide upon final publication important new information concerning the control and defense of east Crete.

Whether these roadways and the accompanying watchtowers, fairly uniform in appearance and ambitious in geographic scope, were built at the direction of various regional centres or centrally inspired from Knossos, and whether they were constructed cooperatively or competitively, will be difficult to determine. "Peer polity" competition (Renfrew and Cherry 1986) may exist with regard to roadworks as with other matters, particularly when the spur of military competition or necessity is added. Indeed, it is possible that in parts of Crete the roadway and watchtower system was directed

against Knossos. Elsewhere in the Aegean, Phylakopi on Melos is rebuilt during MMIIA, to judge from the fine MMIIA jars and cups from Knossos which appear, and a fortification wall at the site may have its origin in this period, although the evidence as to date is unclear (Barber 1987, 67-68). Ayia Irini on Kea is also rebuilt and re-occupied, receives Knossian pottery, and sees a fortification wall built in this period (Barber 1987, 68; MacGillivray, forthcoming A). Again, these fortification walls may have been intended to encourage Minoan contacts through trade instead of raid.

It is worth noting in connection with the suggested construction of a roadway and watchtower network covering much of central and east Crete at this time that the MMIIA horizon sees a marked increase in level of ambition and deployment of labour at Knossos and Phaistos, as indicated, *inter alia*, by the erection of monumental buildings with complex pre-planned drainage systems, by the quarrying and transportation of large ashlar blocks for building and by the construction of the koulouras, Royal Road and viaduct at Knossos. (MacGillivray [1989 and forthcoming B] and Momigliano [1989] have advocated a MMIIA horizon for various developments which Evans placed in MMIB.) It is possible that the same general horizon saw monumental construction at Malia, as suggested by the results of recent excavation under the northwest quarter of the Late Minoan palace (Pelon 1987a, 271; 1987b, 189, 195).

We have already noted the appearance of great swords in MMII, and the developed tradition of metallurgy and weapon manufacture on which they depended. Moreover Minoan prowess in metal weapon production was not limited to the long sword, but included the short sword, the solid long dagger and the shoe-socketed and tube-socketed spearhead and arrowhead, all of which may

have made their first Aegean appearance in Crete (Hiller 1984, 27, 31).

Fire destructions of large areas of major sites occur in MMII, but it is of course always difficult to say whether such destructions are the result of warfare, earthquakes or even accidents setting off widespread conflagrations. Any of these could have caused the fire destructions around the end of MMIIA at Knossos and Phaistos. Some of the destructions of major sites toward or at the end of MMIIB (or the beginning of MMIIIA -- MacGillivray, forthcoming B) may well have been caused by warfare. Phaistos at this time suffers a major destruction by fire sealed by a layer of *calcestruzzo* (cement rubble) after which large parts of the Old Palace are rebuilt. Nearby Kommos may have suffered a destruction also, but further excavation is required to determine its extent and precise horizon. What may have been an early palace at Monastiraki, lying midway on the natural route from Phaistos and the Mesara to Rethymnon on the north coast, and with sealings and pottery resembling those of Vano 25 at Phaistos (Ferioli & Fiandra 1990, 222, Note 4 and 224; Kanta 1988, 313), is completely destroyed and (perhaps more significantly) abandoned at the end of MMIIB. There is no way at present of determining whether the destruction and abandonment of Monastiraki was due to warfare involving Knossos, Phaistos or both, or to natural causes.

In the east central zone, at Malia a major administrative, storage and cult area, Quartier Mu, is also destroyed at the end of MMIIB (as defined at Malia) and never reoccupied; the excavators believe that the most likely cause of the destruction was deliberate human agency.¹⁴ (Poursat believes this destruction may occur at the same general time as the destructions at Knossos and Phaistos at the end of the Old Palace

period [1982, 677]). A major destruction of Pyrgos on the south coast to the east of Phaistos may be assignable to this general period as well. A tower, walls and a cistern had been built at Pyrgos prior to the destruction, possibly as a defensive measure (Cadogan 1977, 70-84; Walberg 1983, 151).

Of course hegemony need not result from warfare, warfare need not necessarily result in widespread destruction of sites, and destruction caused by fighting may be repaired and hence difficult to detect in the archaeological record. However, given the number of destructions of major sites, at least some in all likelihood resulting from warfare in MMII, it seems appropriate to note the possibility that MMII witnessed the initial steps towards the assertion of Knossian hegemony, at least as regards north-central and east Crete, together with some degree of control over long-distance trade.

Other areas of evidence bearing on the possibility of a single administration over major parts of Crete during parts of MMII-III may be noted. Olivier believes that the degree of uniformity in hieroglyphic inscriptions on seals and documents and in their use at the various sites where they appear probably denotes the "existence" of a large power which extended over the whole of Crete for *at least* the last part of the protopalatial period" (1990, 18). The similarity at various sites of hieroglyphic and Linear A scripts, of seals, of religious depictions and cultic equipment, of finds at peak sanctuaries, and of the general design of at least the palaces at Knossos and Phaistos after MMIIA at the latest, together with the appearance of such specific architectural practices as the use of ashlar masonry, orthostates and masons' marks, indicate at least the existence of very close contact (Cherry 1986, 33-35), if not common direction.

Is there any direct evidence for Knossian dominance or primacy with respect to foreign trade? MacGillivray (while acknowledging the difficulty of distinguishing Knossian from Phaistian Kamares ware) believes that most of the Kamares sherds found abroad appear from illustrations to be Knossian, as in the case of the MMIIA type bridge-spouted jars and straight-sided cups found in Egypt, with their closest parallels from the Loomweight Basement/Early Olive Press and the north-west pit at Knossos, the MMII material from Ayia Irini, Phyla-kopi and Akrotiri (where the holes dug for the emplacement of the roof supports rev-ealed Kamares sherds of finest Knossian quality) and the MMII B to IIIA wavy-line cups from Ugarit (1987, 273-279 and personal communication).¹⁵ The black angular tempered wares so common at Phaistos, on the other hand, are seldom found abroad.¹⁶ The occasional appearance abroad of the east Cretan variety of provincial Kam-ares ware, discussed above, may reflect the role of east Cretan ports in overseas trade.

There are also, however, some indications of contact during MMII between Malia and Egypt. The clay of a jug from Aswan resembles that of Malia Town group (though the decoration finds its closest parallel at Palaikastro) and the Minoanising pottery of Haregeh and Kahun resembles the crinkled-rimmed or lobed kantharoi from the same group (Cadogan 1983, 516), although such vessels are also found at Knossos and in the south of Crete, and all the kantharoi imitate metal prototypes with probable Anatolian origins (Davis, E.N. 1977, 89-90). The general similarity of the clay mould from Malia to the Tôd Treasure has already been noted. Lastly and more significantly, Egyptianising motifs (falcons, cats, palm trees, sphinx) appear on moulded-clay relief appliques for vases from Quartier Mu at Malia, which also produced an Egyptian stone vase (Poursat 1982, 677; 1984, 86-87).

The questions of course remain whether the inspiration for the Egyptianising motifs came from the movement of Egyptian objects or Minoan artisans, and whether the contacts between Malia and Egypt indicated by the appliques and other material were direct or indirect, such as via Knossos-led gift exchange/trading ventures.

Of course the establishment of Knossian hegemony, whenever it occurred (if ever), need not have involved the direct use of force; some combination of manoeuvre and marriage, for example, might have been sufficient. Moreover, hegemony if achieved is unlikely to have been permanently maintained; rather the differing effects of war, drought, plague and malaria, the accidents of individual longevity affecting rule and succession, and the varying influence of dynastic intermarriage would probably have resulted (if the history of other civilizations is any guide) in shifting alliances and political boundaries and differing degrees of central authority over time. Complex societies throughout history have tended, in the words of Adams, to "dominate weaker neighbours, coalesce, suffer from varying forms and degrees of predation, develop and break off patterns of symbiosis -- all in dizzyingly abrupt shifts" (Adams 1974, 249).

Adams continues: "A concern for trade highlights these inter-reactions -- partly aggressive, partly symbiotic, at best only partly intelligible to the societies involved, at most times dangerously competitive" (Adams 1974, 249). While these observations were made in the context of Adams' work on trade in the ancient Near East, they appear relevant to Middle and Late Bronze Age Crete as well. Of course it is also possible that two or more palaces cooperated in major foreign ventures; the Old Testament describes a joint sea venture through the Red Sea by Solomon and Hiram, the Phoenician ruler of Tyre, to acquire luxury items such as gold, ivory,

spices and rare animals (I Kings 9, 26-28). Moreover, a Knossian hegemony need not have affected the trading relationships or activities of other palaces, any more than the creation of a Macedonian Empire in Hellenistic Greece affected the trading activities of the individual Greek poleis. But whether one, two or several palaces were primarily responsible for Minoan long-distance trade by the end of the Old Palace period, the case for a decisive palatial role in Minoan trade with the Near East and Egypt seems compelling.

A POSTSCRIPT ON FOREIGN TRADE IN THE NEW PALACE PERIOD

The creation of the New Palaces has sometimes been seen as marking a change in the control of Cretan trade (for example by Branigan, who while doubting a significant palatial role in long-distance trade in the Old Palace period, accepts a directing palatial role for such trade in the neopalatial period [1982, 209; 1987, 245-249 and 333; 1989, 68; and forthcoming]).

It would appear, however, that the case for an independent maritime or merchant class with a significant role in long-distance trade actually becomes somewhat more plausible, if quite unproven, in the New Palace period. For it is with the new palaces that we find a large increase in population, particularly in settlements along the coasts, the growth of towns which in some cases surround mini-palaces, luxurious separate town houses at palatial and other sites, and fine country villas. Palaikastro, for example, with its main street running "straight and true, broad and well-surfaced, and flanked by impressive facades" (Branigan 1972, 754), could have provided homes for such merchant-mariners. The villa at Nirou Chani, a harbour on the north coast, was stacked with ritual equipment including 40-50 plastered stucco offering tables possibly destined for export, although religious use at the site or the

existence there of a workshop are possible alternative explanations for so large a supply of offering tables and other ritual equipment.

Lead and stone weights are found, as Michailidou (forthcoming A and B) has observed, not only in the palaces and in houses around the palaces, but also in houses in non-palatial settlements, villas and tombs. Villas and houses at Ayia Triadha and Tyliisos contained not only weights and loomweights, but also copper oxhide ingots and Linear A tablets, and both are rich in luxury products and bronze objects. It is possible, however, that by LMIB Ayia Triadha had become the administrative centre of the Mesara while Phaistos remained the religious centre, in which case the buildings in which most of the tablets and ingots were found would have been part of the palatial rather than the private sector.¹⁷

At Akrotiri on Thera, where the eruption preserved in one precise horizon so many of the materials of daily life, almost every house contained lead weights, but with a greater concentration in houses containing large numbers of loomweights, suggesting to Michailidou that the lead weights were used in weighing wool (Michailidou, forthcoming A and B). Seal impressions as well as weights appear in houses. The West House contained loomweights in a number to rival the Loomweight Basement at the Palace of Knossos, at least raising the question of possible private production of woollens for export. Whether the West House was indeed private is of course open to question, given the non-domestic nature of its pottery assemblage with its numbers of particular types of specialized vessels, such as incense burners on stands, together with numbers of specialized vessels from the Cyclades and mainland Greece;¹⁸ the religious aspects of the building and its contents (N. Marinatos 1984, 34-51) and the "official" appearance of the fleet depicted on one of its walls. (A

green jasper seal found by Soles at Mochlos on the north coast of Crete in 1989 shows a ship closely resembling those in the Thera West House fresco [Soles and Davaras, forthcoming]. The case for regarding Thera at the time of the eruption in LMIA as part of a "Greater Minoan" is set forth in Wiener, forthcoming.)

Accordingly the possibility of a significant private role in long-distance trade may in fact be greater in the New Palace period than the Old, although hardly compelling in either. Indeed, it is far from clear whether the evidence for trade noted in houses at Akrotiri, Nirou Chani, Tylissos, Ayia Triadha and other places represents private ventures, or whether this activity was centrally controlled, either by regional centres or (directly or indirectly) by Knossos. At Zakros, for example, "palace" and "town" appear to function as an economic unit, with the palace shrine, storerooms and workshops containing all the luxury products and imports, including reworked Egyptian vases, ivory elephant tusks and oxhide ingots, and the town responsible for preparing and storing essential foodstuffs as indicated by the frequent appearance there of wine and olive presses (Chryssoulaki & Platon 1987, 77-84). Indeed, the town blocks on the flanking hills seem to tower over and encroach upon the palace. At the corner of the hill to the north, 50 meters from the palace and 300 meters from the sea at what may have been the landward entrance to the town, stood House A with its 525 nodules bearing 1,005 seal impressions stamped by 214 seal types, some showing contact with parchment or hides (Weingarten 1983, 38-42. Subsequent research by Weingarten may provide additions to these figures). It seems likely that House A was a control point for goods coming in and out of Zakros. It would be difficult to find at Zakros any demarcation

between the domains of palace and town, public and private.¹⁹

While it may be true in general that "Aegean life was essentially and always concerned with agriculture and stockraising" (Warren & Hankey 1989, 4), surely the wealth of sites like Zakros and Akrotiri can only be the result of their role in a Minoan trade network, zealously maintained by the palatial rulers. The West House at Akrotiri provides, in addition to the lead weights and loom-weights cited earlier, a dramatic depiction in the Miniature Fresco of fleets, armed warriors and fighting, a useful reminder that the palaces must have played a critical role in providing the infrastructure for long-distance trade in the New Palace period as in the Old. Neopalatial Crete is extremely rich in bronze, but very poor in sources of copper and of course totally lacking in sources of tin. Obtaining bronze or its constituents through long-distance trade must have been of vital interest to the New as well as the Old Palaces. In the Late as well as the Middle Minoan period, it was surely the palaces which determined, and provided, the basic structure and infrastructure of Minoan long-distance trade.

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FOOTNOTES

1. The number of bronzesmiths is surely much in excess of that required by the internal needs of the palace, and implies that the palace controlled the

distribution of bronze throughout its realm. (The role of the Cretan palaces in controlling the distribution of bronze, at least as regards weapons, is considered below and in Wiener 1987.)

2. Indeed this seems the main thrust and point of Snodgrass' argument, with which I am in full agreement.

3. For example, an Egyptian text from the time of Snefru, the first ruler of the 4th Dynasty, refers to 40 ships bringing cedars from the Levant (Schafer 1902, 30); a Hittite text speaks of 100 ships bringing grain (Heltzer 1977, 210; Klengel 1974, 171-174); a tablet found at Ugarit asked the ruler to equip an additional 150 ships (Sasson 1966, 133 cites *UT:2062:4-5*; Fensham 1967, 221 citing C. Virolleaud, *PRU*, Volume 5, 88 ff and especially lines 3-4) and Egyptian temples and tombs depict flotillas of ships, such as the Punt fleet of Hapshepsut at Deir el Bahari (Säve-Söderbergh 1946, 14) and the numbers of Syrian merchantmen shown on the walls of the tomb of Kenamun (Davies & Faulkner 1947, 40-46). (I am grateful to Dr. Dieter Arnold for providing the Egyptian references.)

4. Branigan 1989, 66-67 writes: "It seems unlikely therefore that Minoan commercial relations with the Aegean in the Old Palace period were controlled by the Palaces, and for the most part trading relations appear to be undirected free-lance activity"; and "There is therefore no reason to think that the palaces played any significant role in the promotion and control of trade relations with the Near East in the Old Palace period."

5. Whether there was a palace at Malia in MMII similar to those at Knossos and Phaistos is uncertain but there was at least a major MMII structure, at the site of the Late Minoan palace, as indicated by the walls observable under Quartier III and IV. In addition there were major administrative and cult buildings at Quartier Mu nearby (Pelon 1987b, 187-201).

6. Branigan 1987, 248, speaks of four koulouras at Knossos holding grain for 1,000 people, but the earliest of the four was probably covered over by the construction of the Theatral Area at the time the others were built in MMIIA (Evans 1935, 53 and Figure 30). I am grateful to S. Hood and J. A. MacGillivray for drawing my attention to the sequence of use of the koulouras.

7. A lead weight from Quartier Mu at Malia weighing 14.4 grams suggests the possibility that the metrological system of neopalatial Crete and the Cyclades, probably based on a unit of about 60 grams,

may already have been in existence in MMII (Poursat, forthcoming), but of course not much weight should be placed on a single example.

8. This view was at one point shared by Branigan. "[T]he building of the palaces coincides with a remarkable impetus in the commercial activities of the Minoans overseas... and it is unlikely that the palatial monarchs failed to foster and control this new activity. The organization and building of a fleet of ships sufficient to carry out the venture was itself a task of such magnitude that only an administration of palatial proportions could have undertaken it" (1969, 4).

9. See generally the papers in the volume, *Trade in the Ancient Near East*, edited by J. D. Hawkins, and especially the papers of P. Garelli, K. R. Veenhof, M. T. Larsen, S. Dalley, C. Zaggacchini, M. Heltzer and E. Lipinski. See also Sasson 1966.

10. Kopcke's formulation reflects the existence of highly organized states in the Near East and Egypt in the Middle and Late Bronze Age. Greek merchant mariners in the Archaic and Classical periods faced a somewhat different environment, particularly in the West.

11. Worth noting, however, is the possibility of major damage at other sites in the same general time horizon, for which there is no evidence of earthquake (Moody & Lukermann 1985, 65, 71).

12. I am greatly indebted to Dr. Stella Chryssoulaki, who has investigated these buildings, and to Prof. J. A. MacGillivray for showing me some of these structures and discussing them with me.

13. Pendlebury referred to them as forts, but preferred to think of the structures as caravanserais, noting of one, at a site called locally *stas Tavernaes*, that "it would be more in keeping with the peaceful character of Minoan civilization and with convivial Cretan habits if we could take a clue from this name and call them 'taverns' rather than 'forts'".

14. Evans believed that Knossos itself suffered a great MMIIIB destruction by earthquake, but MacGillivray, who has recently restudied the pottery, would place this destruction in MMIIIA (forthcoming B).

15. At Ayia Irini on Kea in Period IV (which is largely contemporary with MMIIA, though it may begin earlier and end a little later) Minoan pottery including Knossian Kamares appears in limited quantity at first, but then increases rapidly so that by the end of Period IV Minoan pottery constitutes a

substantial proportion of the ceramic inventory. The quantity of fragments from different vases suggests that "the number of vases brought in was immense" (J. Overbeck 1989, 12).

16. An early export, the MMIB-MMIIA cup from Karmi on the northwest coast of Cyprus (Grace 1940, 10-52), is of a kind well known both from Knossos and from Phaistos and other sites in the south and a fragment of a MMIIA globular rhyton from Phylakopi has its best parallel at Phaistos (Koehl, personal communication). Scientific studies now underway may provide a means of distinguishing more readily between Knossian and Phaistian Kamares.

17. Warren's excavation on the Acropolis hill of Knossos revealed numerous fragments of Egyptian alabaster vases outside the architectural limits of the palace (this volume, above), but the significance of this material with respect to the question of private participation in neopalatial trade is unclear given the following considerations:

(1) the possible special nature of the area excavated, with its "dancing floors", (three circular structures, unique in Crete, built from reused ashlar blocks), and its North House containing children's bones which in the judgement of the excavator bear marks indicating human sacrifice and cannibalism (Wall, Musgrave & Warren 1986, 333-388).

(2) the possibility of palatial involvement with other areas where alabaster vases or vase fragments have been recovered such as the Royal Road, the Little Palace/Unexplored Mansion complex (Warren, this volume), the Warrior Graves north of the palace and Evans' "Isopata Royal Tomb" which contained 12 complete Egyptian alabaster vases, as well as two lapis lazuli Egyptian ape amulets and an Egyptian faience frog amulet (Evans 1906, 141-161; Warren 1969, 105, 112-113; Cline, forthcoming).

(3) the possibility that nearly all of the fragments are LMII and hence not indicative of the structure of Minoan neopalatial trade since, as Warren notes, the North House produced a single fragment from the LMIB destruction level, while the fragments from the area of the dancing floors came from an LMII-LMIIIA1 context, as did those from the Little Palace/Unexplored Mansion and the twelve whole vases from the Isopata Tomb.

(4) the problem inherent in estimating by extrapolation the total number of Egyptian vases reaching a site from the number of fragments found in a given area, a task which requires at the least the

inclusion of data concerning areas which did not produce vase fragments as well as areas which did.

As to whether the vases arrived as a consequence of state or private activity, it is worth noting that a later Amarna tablet (EA 14 lines 34-46) reports the Pharaoh making a gift to the ruler of Babylon of over a thousand stone vases filled with five kinds of oil (Moran 1987, 99-100; Knudtzon 1915, 118). (I thank P. Warren who, with typical generosity, brought the existence of this tablet, which runs contra to his thesis, to my attention; and also D. Collon and C. Lilyquist, who provided information regarding the specific tablet.) The "Admonitions of Ipuwer" (Papyrus Leiden 344, Recto), an Egyptian text of uncertain date, contains a phrase which has been translated "nobles are embalmed with their oil as far as Crete" (Lichtheim 1976, 152).

18. I thank P. Betancourt for bringing the nature of the pottery assemblage to my attention.

19. Textual evidence listing large quantities of foodstuffs found together with agricultural implements and large pithoi (Palaima 1990, 95 and Notes 42-43) may require a reconsideration of the doubts expressed in Warren 1985, 101, and Wiener 1987, 265, concerning the adequacy of the hinterland at Zakros to provide a sufficient agricultural surplus to support a major independent palace.

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