

CHAPTER 2

The Protopalatial Period – The Rise of the Palaces and the Establishment of Cretan International Trade

At the end of the Early Bronze Age most of the lands of the Aegean and the Eastern Mediterranean were emerging from a period of upheaval. Crete had felt the backlash of this turmoil in the destruction of EMII sites. Her recovery and the establishment of new settlements in MMIIa may have been the result of new immigrations from the north or east. The apparent differences in culture in east and southern Crete may be indicative of this. The Levant was also not free of these disturbances and cities such as Byblos, Ugarit, Kultepe and Ebla were destroyed by fire at the end of the Early Bronze Age.¹ In Egypt the collapse of the Old Kingdom in ca. 2134 brought about a stagnation of trade with Syria until the Middle Kingdom (ca. 2040-1640 BC). The beginning of the Middle Bronze Age marked a turnaround in the fortunes of the East. Trade in the Levant began to improve after 2000 BC and fifty years later was well established. Contemporary texts such as the Mari Tablets and the documents from Ugarit note that considerable volumes of trade in gold, silver, tin and textiles were moving through the cities of the Levant. In Egypt a resurgence in trade began after the re-establishment of the monarchy and royal control. From the 12th Dynasty (ca. 1963 BC) a large number of Egyptian artefacts travelled up the coast to Byblos and probably also into Crete at the same time.

Protopalatial Chronology

The Protopalatial sequence in Crete begins in ca. 2000 BC with MMIIb and continues until ca. 1700 BC (MMIIIb) and the establishment of the new palaces. In MMIIa the Minoans began to emerge from

¹ Watrous: 1994, 734.

a mini Dark Age which had engulfed them in EMIII and by the end of the Protopalatial period had taken the lead in Aegean affairs. The trade links forged in the Early Minoan period are strengthened and expanded, with a multitude of Cretan exports appearing throughout the Aegean. The period was also the age of the early palaces. These buildings are the first manifestation of the stratified societies which were to govern the island. With more resources at their disposal the palaces were able to encourage specialisation in agriculture that was impossible in Early Minoan times, which means that crops such as the olive and vine that had a doubtful impact in the preceding period became more dominant.

In order to try to place Minoan development within a historical framework, various methods for recording Minoan chronology and correlations have been devised over the years. Evans proposed the well known Early, Middle and Late Minoan sequence. This has also been correlated to the palace periods with Prepalatial, Protopalatial and Neopalatial characterising the phases in Minoan development in terms of architecture. In the Middle Minoan period, which is discussed in this chapter, there are further divisions. Tables 1 and 2 illustrate these splits based on various archaeological digs and pottery production. Doro Levi, the excavator at Phaistos rejected Evan's Middle Minoan classification and dated the various stages of Phaistos' construction as Phase I, II and III.² Walberg, in studying the distinctive Kamares pottery chose to date this period based on the various stages of its development.³

The chronology of the Middle Minoan period is based mainly on datable pottery found in Egypt. Foreign artefacts found in Crete itself have had little impact on the chronology as most of their levels are not secure. Many of the artefacts, such as Egyptian scarabs, have been found in tombs which have

² Betancourt, P., *The History of Minoan Pottery*, Princeton, 1985, 66.

³ Walberg, G., *Kamares: A Study of the Character of Palatial Middle Minoan Pottery*, Göteborg, 1987, 98-125.

been in existence from Early Minoan times, casting doubt on the stratigraphy. The chronology of MMI and MMII is moderately reliable. However there is great difficulty in dating MMIII accurately. Neither exported nor imported goods provide much assistance in this regard. Betancourt concludes that MMIII spans part of the Second Intermediate period of Egyptian history, but there is no definitive start or end.⁴

EVANS / KNOSSOS	LEVI / PHAISTOS	PALATIAL	BC
MMIb / MMIIa	Phase Ia	Protopalatial Period I – Protopalatial Period II	ca. 2000 – 1800 BC
MMIb	Phase Ib / Phase II	Protopalatial Period III	ca. 1800 – 1700 BC
MMIII	Phase III	Neopalatial Period I	ca. 1700 – 1600 BC

Table 1: Chronological comparison between Evans and Levi

EVANS	WALBERG	PALATIAL	BC
MMIa / Early MMIb	Pre-Kamarens	Prepalatial III / Protopalatial Period I	ca. 2100 – 1950 BC
MMIb / MMIIa	Early Kamarens	Protopalatial Period II	ca. 1950 – 1800 BC
MMIIa / MMIb / MMIIIa	Classical Kamarens	Protopalatial Period III / Neopalatial Period I	ca. 1800 – 1650 BC
MMIIIa / MMIIIb	Post-Kamarens	Neopalatial Period I	ca 1650 – 1600 BC

Table 2: Chronological comparison between Evans and Walberg

⁴ Betancourt: 1985, 68.

The growth of trade in Crete in the Middle Minoan period was the result of two forces. The establishment of a stratified society from within and the influence of the civilised east from without. The areas of the Troad and Greek Mainland were slow to recuperate after the destruction and migrations at the end of the Early Bronze Age. Crete, while not unaffected, had a much more rapid recovery. This may have been in part due to her relationship with the Levant and Egypt. A resumption of the old trade routes in MM1a and the strengthening of them during the first phase of the Middle Minoan period provided a strong financial base that the other lands in the Aegean lacked.

Internal Changes within Minoan Crete and their Effects on Trade

One of the most dramatic features of the Middle Minoan era was the building of the first palaces. While not as opulent as those at the apex of Minoan power they were undoubtedly the symbols of a changed society. Construction began at Knossos and Mallia in late MM1a, followed shortly thereafter by Phaistos and Zakros in MM1b (ca. 2000 BC). By MM2b (ca. 1700 BC) these early palaces had been destroyed probably by natural disasters and probably not concurrently. The Minoans recovered rapidly and the new palaces were erected on the same site, often using existing walls and rooms. Because of this the knowledge of the early palaces has been severely curtailed. Still, parts of the old palaces have been identified. The nature of these areas can be determined through the examination of Protopalatial pottery and other artefacts found in each room.

The early palace of Phaistos is fairly well preserved and archaeologists have been able to establish a small area of the floor plan (Plate 10). Phase 1 shows several rooms that appear to be storage areas. Large volumes of pottery have been unearthed in Room IL, LIII-LV corridor, LXI, LXIII and LXV. Branigan has concluded from the 250 sherds from 13 principal vessel types that Room IL was a general pottery store.⁵ On the other hand corridor LIII-LV with its high concentration of cups and

⁵ Branigan, K., "The Economic Role of the First Palaces", *Function*, 1987, 245-247.

rooms LX, LXIII and LXV which also contained large quantities of specific vessels (bridge-spouted jars, handled jugs and low-flared dishes) were specialised pottery stores. Room LVIII had a low pottery yield, but this was because it contained eight large pithoi for food or liquid stores, probably grain or olive oil. Similar stores existed in Rooms XXVII and XXVIII where a third of all phase I pithoi were found. Room LXIV might also have been a storage area for foodstuffs. Very little pottery has been found in the room, giving no indication for the room's purpose, although Branigan does concede that the room may have been a stairwell.⁶ In phase 2 of the early palace *Koulouras*, or silos, were built on the far side of the West court.⁷

The early palace at Knossos is not dissimilar (Plate 11). While not having the advantage of the same detailed information there are still traces of the economic life of the early palace. Evans' excavations along the west wall of magazines 3 to 10 revealed that the earliest construction took place here at the end of MMIA. Quite probably these structures were built shortly thereafter, not long after the erection of the first palace.⁸ Magazines 11 to 16 were probably part of the original building as the west wall of the new palace was erected over deposits on magazine 12. Magazines 11 to 16 form part of the same group. *Koulouras* were built in MMIIa in Knossos too. Three in the West court as in Phaistos and a fourth was constructed in the theatral area, which was paved over in MMIIa. At the same time the western magazines were further developed and the pithoi magazines were built at the east side of the central court.⁹ This level of construction certainly suggests that storage facilities were first considered necessary when the palace was built and enlarged to accommodate a growing demand.

⁶ Branigan: 1987, 247.

⁷ The *Koulouras* are large, cylindrical silos. Their function has been debated and various theories seek to categorise them as middens, religious waste pits or grain silos. Their use in waste disposal seems limited as they were not portable and would certainly have filled up fairly quickly. Further disposal would then have been difficult. It seems more likely that given their great size and the relative care taken in construction they were used for grain storage.

⁸ Branigan: 1987, 247.

⁹ Branigan: 1987, 247-248.

Mallia (Plates 12 and 13) was perhaps the earliest of the palaces or contemporary with Knossos. Initial construction at Mallia appears to have occurred in ca EMIII/MMIa (ca 2100-1950 BC), whereas Knossos would appear to be late in MMIa.¹⁰ There is however some debate over this. Watrous observes that the ashlar orthostates, a distinctive masonry technique, was used at Mallia and Phaistos but is absent at Knossos, perhaps indicating that Knossos had an earlier date of construction.¹¹ Like both Knossos and Phaistos, Mallia also shows evidence of a large storage capacity. Magazines were built in the eastern wing and the north-west corner, which was completely erased in the Neopalatial period and had long, narrow rooms that would also suggest storage facilities. Eight large grain silos dating from the Protopalatial period have also been found, located like Knossos and Phaistos at the southern end of the west court.

The question is whether all this storage space was used for palace and local consumption or for trade? It is reasonably safe to say that at least some of the supplies were utilised within the palace. In Phaistos rooms LI-LV and LXII had little pottery but a high percentage of stone products, about 66% of stone artefacts found in Levi's Phase I. Tools were also located in this area suggesting it functioned as a lapidary workshop. The fourteen stone loom weights also uncovered imply a textile industry as well.¹² In Mallia, Quarter Mu, consisting of two large houses built in MMIIa, has five adjacent workshops which appear to belong to a seal-cutter, a potter and two or three metalworkers.¹³ The wares produced appear to be luxury pottery, stone vases and seals. It is probable that not all the artefacts found at the palace were produced there. Some of the stone seals found do not appear to have been made in the Quarter Mu lapidary workshops (*Atelier de Sceaux* and possibly *Atelier Sud*),

¹⁰ Schoep, I., "Social and Political Organisation on Crete in the Protopalatial Period: The Case of Middle Minoan Mallia", *JMA*, 15.1, 2002, 107; Watrous: 1994, 737.

¹¹ Watrous: 1994, 737.

¹² Branigan: 1987, 247.

¹³ Watrous: 1994, 737.

but could well have been produced by another local manufacturer.¹⁴ It is also possible that some were imported. Those seal stones engraved with Minoan hieroglyphic signs have different shapes and repertoires to impressions on the clay documents found at Quarter Mu.¹⁵ In Knossos Evans identified both a pottery and lapidary workshop in the east wing. MacGillivray is however hesitant to ascribe a pottery workshop to Knossos as no convincing examples of MM kilns or production have been found at the site, but is willing to acknowledge the presence of pottery workshops in the nearby vicinity.¹⁶ The presence of these workshops would suggest permanent staff. In addition to the craftsmen and their families there must have been additional servants or slaves, palace staff and officials. All these people had to be fed. Even if they were not all accommodated within the palace it seems likely that they received food and possibly other necessities such as linen or wool in exchange for their services, which is evident from the later Linear B tablets.

The role of the early palaces, including their involvement in trade is another controversial aspect of Minoan civilisation. Almost certainly by the Neopalatial period they controlled a large percentage of maritime trade. In all probability they had a large redistribution function as well. Yet it is not certain that they played the same dominant part in the Protopalatial period. If the palaces had a redistributive function the availability of storage facilities was vital. The *koulouras* which were built in MMII (ca 1900-1800 BC) could therefore be a sign of growing palace control. Branigan believes that their presence in the far side of the west courts of both palaces probably indicates that they were for public use, although this was still overseen by the palace.¹⁷ The storage capacities of these *koulouras* is large with each having an area of about 20m², and able to store about 76 200kg of grain in Phaistos and

¹⁴ Schoep: 2002, 115; Poursat, J-C., "L'Atelier de Sceaux et le Quartier Mu de Malia: Etude Comparée des Sceaux Découverts" in Niemeier, W.D. (éd), *Studien zur Minoischen und helladischen Glyptik*, Corpus Minoischer und Mykenischer Siegel Beiheft 1, Berlin, 1981, 162-163; Poursat, J-C., Detournay, B. and Vandenaabeele, F., *Malia: Le Quartier Mu II*, Etude Crétoises 26, Paris, 189-190.

¹⁵ Schoep: 2002, 115.

¹⁶ Macgillivray, J.A., "Pottery Workshops and the Old Palaces in Crete", *Function*, 1987, 276.

¹⁷ Branigan: 1987, 248.

about 254 000kg at Knossos.¹⁸ Branigan calculates that an average Minoan consumed about 255kg of grain per annum. It is possible that these stores may have been reserves in case of drought or pestilence or as Schoep suggests for festivals and feasts.¹⁹ However, it is also possible that the availability of grain was an incentive to encourage the degree of crop specialisation that must have existed to produce the volumes of wine and olive oil that Crete appears to have traded in the Neopalatial period. This type of trade possibly had its origin in the old palace period.

The palaces therefore had been built to accommodate a large volume of commodities from pottery to foodstuffs. Some of it was for use in the palaces and more was possibly for general consumption. If there was a surplus thereafter with which to trade one can probably safely conclude that the palace controlled this segment of the market. However this does not mean that the palace had a monopoly on all trade. Much of the information on the Protopalatial period is derived from inferences from the Neopalatial period and the political situations in the east, neither of which are entirely accurate representations. The actual evidence for palatial control can only be gathered from the information garnered from the palace sites themselves. Apart from the storage facilities within the palaces, which may or may not have been used for redistributive and/or trade purposes, there are other indicators of a growing palace control over society and possibly tradable commodities. These come in the form of the appearance of writing and the development of a unified type of pottery.

There are three types of writing found in Crete during the Bronze Age, namely Cretan Hieroglyphic, Linear A, both of which are undeciphered, and the Greek Linear B. Linear A and the Cretan hieroglyphic script are contemporaries, yet they are rarely found concurrently. Their distribution appears geographical, with most of the hieroglyphic text coming from the north and east while Linear

¹⁸ Branigan: 1987, 248; Moody, J., "The Minoan Palace as a Prestige Artifact", *Function*, 1987, 236.

¹⁹ Schoep: 2001, 115.

A is found mainly in the South-central region, that is the Mesara.²⁰ Their occurrence corresponds roughly with the distribution pattern of the two types of tombs, Tholos tombs in the Mesara and the house tombs in the east. It is entirely possible that these two areas were populated by divergent cultural groups and the two scripts are representative of different languages.²¹ At the same time, due to the similarity of some of the signs, it may indicate that these two scripts had a common origin.²²

Despite our inability to understand the language the appearance of writing itself speaks volumes about the development of Minoan society. All three types of writing were undoubtedly used for some sort of archival system and the development of writing in Crete was probably due to economic reasons. This type of record keeping implies not only a centralised administration but also a large quantity of wares to justify such organisation. If the Linear B tablets are of a similar nature these records would document both raw materials and finished products. In the Middle Minoan period this system would have been in a fledgling state and probably did not have the same control which existed in the Late Palace Period. Schoep has argued that the administration system was in existence before the advent of writing and was developed in EMIIb-EMIII.²³ This seems plausible if only due to the fact that as the palace administration grew so did the need to record transactions. Writing was probably developed, with the east as an example, through this necessity. However there is no evidence to suggest any ruling aristocracy or any other form of leadership existed in the Early Minoan period. It is possible that as communities with shared wealth grew their assets began to be unmanageable without some sort of administration.

²⁰ Schoep, I., "The Origins of Writing and Administration on Crete", *OJA*, 18, 1999, 265.

²¹ Schoep: 1999, 265; Olivier: 1986, 382.

²² Schoep: 1999, 266.

²³ Schoep: 1999, 267.

The development of writing or a centralised administration is not concrete proof that the palaces had complete control over trade. A clay bar with hieroglyphic text has been discovered in the town near Mallia, indicating that literacy was not confined to the palaces.²⁴ Yet the controls that are symptomatic of permanent or semi-permanent records would indicate that the palaces were tightening their grip on the economy. This was probably on a regional basis, with each palace controlling their immediate domains. At this stage there does not seem to be one centralised authority that presided over the whole island and therefore controlled both internal and external trade. The manner in which the records were kept differs in the two areas. In the palaces of Mallia, Knossos and the settlement of Petras in the north-east they used hieroglyphics carved onto sealstones or inscribed on four and two-sided bars, whereas at Phaistos Linear A was scratched on flat clay tablets, similar to those used for Linear B (Plate 14).²⁵ This would suggest that there were possibly different types of administration at the various centres and therefore different governors.

It is only at Knossos that both types of script are found, although the hieroglyphics dominate. The presence of Linear A was probably as a result of trade with Phaistos and should not be considered as evidence for Knossos being the unifying factor. Wiener, following Evans, suggests that there is possibly more evidence than the occurrence of both scripts in the Minoan palace to suggest that Knossos was a central authority.²⁶ These come in the form of watchtowers which were erected, within sight of each other, along roadways, particularly on the eastern side of the island. They appear to have been constructed in MMII at a stage prior to the large-scale inhabitation of the valleys which they seem to protect. If this is true then the purpose of the watchtowers is to guard the roads themselves, roads which Evans believed radiated out from Knossos. The pivotal point of the theory is whether these watchtowers, which appear largely uniform, were built under the direction of Knossos as the

²⁴ Watrous: 1994, 738.

²⁵ Schoep: 1999, 266.

²⁶ Wiener, M.H., "The Nature and Control of Minoan Foreign Trade", *BA Trade*, 1991, 336-337.

central authority or by provincial centres, perhaps even in an attempt to ward off Knossian aggression.²⁷ Until there is more evidence that indicates that these towers were indeed built by the rulers of Knossos they should not be used as evidence of a Knossian hegemonial position.

The Middle Minoan period also celebrated the arrival of the Kamares ware (Plate 15). So called due its original discovery in the Kamares Cave in central Crete, this was undoubtedly the finest pottery of its age and prized throughout the Aegean and in the Levant and Egypt. This pottery has been found throughout Crete but predominantly at the palaces, particularly Phaistos and Knossos, which has resulted in the assumption that these ceramics came from palace workshops and were indicative of their role as centres of redistribution and probably their extensive control over trade. However recent petrographical analyses of the Knossos wares have found that much of it had in fact been made in south-central Crete.²⁸ From this it would appear that Knossos was a consumer of this pottery, rather than producer, which may have been under the control of Phaistos. However there do seem to be subtle differences between the decoration of Knossos and Phaistos pieces.

If control of the Kamares ware could be positively attributed to Phaistos there would be many questions that require answers. The evidence gleaned from that palace is that there was very little external trade with the east or elsewhere. Yet they had the pottery workshops in close proximity and they certainly used the wares themselves. The Kamares ware is also one of the most widely distributed pottery of its day, appearing in Egypt, the Levant, Cyprus and the Greek mainland. It is true that these may have been imported from Knossos, but why did Phaistos not use it for trade? We have already established that there is no conclusive proof that there was a central authority in Knossos at this time and the probability of that palace restricting trade in the Kamares ware seems

²⁷ Wiener: 1991, 337.

²⁸ Schoep: 2002, 103.

doubtful. Phaistos is the principal building in Southern Crete and its use of Linear A suggests that its inhabitants were of a different culture than those of Knossos and East Crete. Therefore the concept that it deferred to Knossos in trade seems unlikely.

There could be some explanations to these questions. Firstly it is possible that more trade existed in Protopalatial Phaistos than the evidence suggests. Phaistos is ideally located for the proposed direct route to Egypt and the beneficiary of such a route would grow fairly wealthy.²⁹ Unfortunately the distinctive lack of evidence is problematical and this theory can only be speculation. Another possibility is that there were indeed trading arrangements between the two centres. The Knossos-Phaistos road is one of the more easily travelled on the island and regular use would have been made of it in the Bronze Age. Circumstances such as a lack of ships may have prevented Phaistos from engaging in international trade. Instead she may have traded her wares internally with Knossos, who then exported them to various points in the Mediterranean, although as pointed out there are subtle differences between the wares of the two regions.

Both Watrous and Schoep do not believe that the Kamares ware was controlled by the palaces at all.³⁰ Certainly large quantities of the pottery were utilised by the palaces, but the number of sherds from the palatial towns indicate that the pottery was not entirely confined to the palaces themselves. The palaces may therefore not have had a dominant role in the distribution of this pottery both within Crete and abroad. This brings about the fundamental question of who controlled trade during the Middle Minoan period. The large storage facilities, the advent of writing and the beginnings of the bureaucracy indicates that a system existed in which wares and produce could be controlled, but that in itself is not evidence of the palace's monopoly over trade. The essence of the debate is whether the

²⁹ See Chapter 2, 62-63.

³⁰ Watrous: 1994, 750; Schoep: 2002, 103.

palaces had exclusive control over trade in their areas or if a merchant class existed. In other words whether Minoan society followed the examples of Egypt, whose monarchy had rigid controls on trade, or the Mesopotamian pattern, whose trade was more open with a mixture of royal intervention and private trade. The latter seems more likely. The Egyptians had a long established and very powerful monarchy, with a society well used to controls and subservience. However there is no indication of this in Crete and the mountainous terrain in Crete would make such rigid controls very difficult to enforce. By contrast in Egypt much of the civilisation revolved around the Nile, something to which access could be restricted. Trade was of course conducted outside the river, into Nubia and the Arabian Gulf, but this was probably fairly easily controlled by a large, active army. It could be suggested that even the freedom and naturalism found in Minoan art expresses a completely different mindset to that found in Egypt.

Alexiou points out that trade in a pre-monetary society would not have been centred on profit but rather personal consumption.³¹ He notes that in Egypt all trade was conducted by the Pharaoh, who alone had access to the surpluses to be traded. Craftsmen were attached to the Pharaoh, not as slaves, but dependants who worked for “gifts” as a reward rather than wages. While it is true that a pre-monetary society dictates a different economy it is probably too simplistic to suggest that profit was not a feature of trade. Each article traded whether it was grain, pottery or metal must have had a perceived value otherwise any form of bartering would have been impossible. One of the chief driving forces of human nature is greed and the desire for luxury goods and wealth, even if that wealth is not measured in the same manner as modern standards, must have been a factor. It is also true that in a pre-monetary economy one can acquire more items to trade than is necessary for personal consumption, even after a variety of luxury goods have been obtained for personal use. These can be used for further trade

³¹ Alexiou, S., “Minoan Palaces as Centres of Trade and Manufacture”, *Function*, 1987, 251-253.

If they did not control trade it cannot be doubted that the palaces opened new avenues that were unavailable to the individual. The wealth which these buildings undoubtedly possessed enabled them to organise greater trading expeditions with more ships and more commodities than would be accessible to the common merchant. Centralised workshops and probably an increased number of craftsmen ensured that there was a constant supply of goods which were ready to be exported when the trading season began. Fine wares such as the Kamares pottery and perhaps an increased specialisation in agriculture could produce surpluses of commodities such as olive oil or wine. In return the Minoans needed necessities such as copper and tin, but there was an increase in the demand for luxury goods as well. Hard stones, not native to Crete, were imported for seal-cutters, ivory, gold and silver were all brought onto the island. It has been suggested that the Kamares ware was not considered a luxury item in the Bronze Age Aegean due to the fact that it was plentiful and made of pottery, a cheap material.³² This seems unlikely. This pottery has been reproduced in other centres outside of Crete, which implies admiration and a desire for ownership and as Andreou says in the same discussion that the very fact that it was restricted to the palatial towns and not the provincial centres indicates that it was in fact a luxury item.³³

Minoan Seafaring and Ships

One aspect of Minoan civilisation is certain, namely the dependence on the sea. Not only did it provide a link to the outside world but it also provided the easiest route between the coastal towns of the island. The importance of ships cannot be underestimated. Their size and structure would have determined the commodities traded and the distance travelled. The evidence for Minoan seagoing vessels is slight. Despite the obvious importance of the sea and the delight the Minoan artists took in

³² Zois, A., in discussion, *Function*, 1987, 279.

³³ Andreou, S., in discussion, *Function*, 1987, 279.

depicting sea creatures and vegetation there are very few representations of ships. They appear on some seals, which for the most part would seem to be illustrations of a ceremonial or religious nature.³⁴ The only painted evidence comes from the miniature fresco from Akrotiri, Thera (Plates 16 and 17). The close relationship between the Minoan civilisation of the Neopalatial Period and that of Akrotiri might suggest that social conditions were similar. The fresco was found in room 5 of the west house, the so-called “Admiral’s House”, which also housed the famous fishermen frescoes as well as a riverscape and a sea battle or wreck (Plate 19).

The question arises as to whether the ships illustrated in this fresco are indicative of Aegean seafaring ships in the same age. To try to achieve a clearer answer one has to examine the boats on this fresco in comparison to those on the Minoan seals as well as other vessels plying the Mediterranean at the time, such as those from Egypt. The fresco itself clearly depicts some type of procession, probably only travelling a short distance between two harbour towns. There are two distinct types of vessel in the procession. The first and smallest are manned by two people (fig. 1) and is perhaps similar to the model found at Mochlos in Early Minoan times (fig. 2).³⁵ Although the Mochlos craft does not have the same curved hull of the canoe in the fresco the basic concept appears to be much the same and quite possibly remained unchanged for centuries.³⁶ These boats would have travelled from one town to another along the coast of Crete, but their usefulness in trade is limited. At best they could have been used for small commodities between coastal towns of close proximity.

³⁴ Betts: 1973, 334.

³⁵ See Chapter 1, 7-10.

³⁶ A clay model of a boat found in the Postpalatial period seems to be quite similar to that of the EM Mochlos model (fig. 3).



Fig 1. Small rowing boat from the Ship Fresco, Akrotiri, Thera. (From Morgan, 1988, Appendix 1).

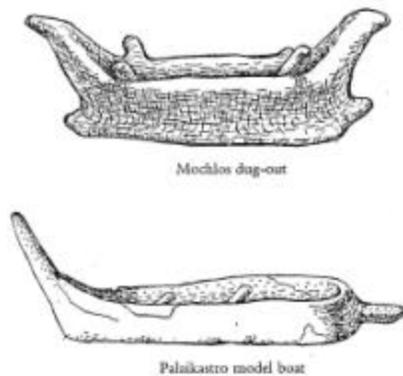


Fig.2. Early Minoan (3rd Millennium) models found at Mochlos and Palaikastro. (From Hutchinson: 1962, 92.)



Fig.3 Terracotta model from Post-Palatial period, currently housed in the Herakleion Archaeological Museum.

(From Vasilakis: 154.)³⁷

The other ship type has a rounded keel and both the prow and stern are raised. Propulsion comes from paddling, rowing and the use of sail. The paddlers are in a most unnatural position of leaning over the side in order to make their oars reach the water. This method may have been used to propel the vessel for very short distances perhaps in conjunction with the sail, but it is certainly not sustainable.

³⁷ Vasilakis, A., *Visitor's Guide: Herakleion Archaeological Museum*, Athens, 154.

Morgan Brown believes that the paddling may be an anachronism from an earlier time and copied for a particular religious ceremony. A similar occurrence is noted in some contemporary Egyptian festivals.³⁸ The smaller boat is rowed, indicating that this form of propulsion was certainly well known. The sail is very much in evidence on the fresco. Only one ship is under sail, but two of the largest vessels have their masts raised, if not the sail. All these ships have a helmsman with a steering oar, two for the ship under sail, which is similar to contemporary Egyptian designs. A canopy has been erected to protect the occupants from the harsh Mediterranean sun. In addition to this the vessels all seem to a panelled cabin or *ikrion* behind the helmsman. Behind that, on the rear of the boat at water level there is a type of a beak or ram.

This fresco can be fairly accurately dated to LMIa (ca. 1700-1580 BC) with recent theories placing the Thera eruption at about 1627/8 BC.³⁹ There are clearly dangers in looking to later images for earlier information. However in order to evaluate this fresco in relation to the Middle Minoan sequence one has to look at the other evidence of sea craft from that period. This material is slight and exists entirely in the form of seals. Minoan seal carving began shortly before the beginning of the second millennium with bone and ivory seals, which have been found in the tombs of the Mesara plain.⁴⁰ These were followed shortly by engravings on soft stone, such as soapstone and steatite. During MMI and MMII (ca. 2100-1750 BC) a series of three-sided prism seal stones made an appearance. Many of these had engravings of ships. They gradually became more stylised and were often accompanied with pictographic script. With the construction of the palaces new techniques in seal carvings were developed, allowing the artists to work on hard stones. By Late Minoan times these carvings had become works of art. Unfortunately no Late Minoan hard stone seals depicting

³⁸ Morgan Brown, L., "The Ship Procession" in *Thera and the Aegean World*, Vol I, ed. Doulas, C., London, 1978, 631.

³⁹ Chapter 3, 93-94.

⁴⁰ Betts: 1973, 325.

ships survive, although some rings, seal impressions and a steatite lentoid seal have endured. Most of these vessels show the same rounded keel and single mast with two or three stays. Some show oars, but the mast and rigging is never absent. A square sail is evident in some seals from Late Minoan times, often depicted with cross-hatching perhaps indicating fabric. Oars are often represented as lines drawn across the hull.

The *ikrion* (Plate 18), a panelled cabin located at the stern of the ship, was until the discovery of this fresco almost impossible to interpret. It is present in a number of seals, but these images are sometimes so stylised that they appear as a series of lines and semi-circles. The *ikrion* is often depicted together with what would seem to be the prow of the ship. Van Effenterre maintains that the number of seals which depict only a portion of the ship often with the *ikrion* would naturally show the front of the boat.⁴¹ The main problem with this assessment is that quite clearly in the fresco the *ikrion* is at the rear of the boat. The hook formation on the sprit of the prow which is visible in the fresco is also apparent in the seals and has been described by Betts as a *fleur-de-lis* arrangement.⁴² In the fresco the *fleur-de-lis* appears at the front along with the *ikrion* which would make van Effenterre's suggestion correct. Raban has offered the explanation that the *ikrion* had a military function and the vessels themselves could be rowed in either direction, which would show the *ikrion* at either the prow or stern.⁴³ If the *ikrion* faced a potential foe it was threatening from the prow, and was therefore always at the back when approaching friendly harbours or ships. Another explanation, possibly the most plausible, could be that the depictions on the seals are taken too literally. Perhaps if both the *ikrion* and *fleur-de-lis* arrangement had a religious function and if the seals themselves were talismans the stone cutters may have chosen to represent only the sections of the vessels which were important

⁴¹ van Effenterre, M., "Cretan Ships on Seal-Stones", *Thera and the Aegean World*, Vol I, ed. Dumas, C., London, 1978, 594.

⁴² Betts: 1973, 332.

⁴³ Raban, A., "The Thera Ships: Another Interpretation", *AJA*, 88, 1984, 17.

from a religious perspective, namely the *Ikrion* and *fleur-de-lis*. What is apparent though is that there are distinct similarities between the seals and the fresco, with the appearance of sails, oars, *ikria* and *fleur-de-lis* formations. The seals cover a period from MMI to LMI and it is possible that the ships which were in use during the first palace period did not change much over the period of the Minoans greatest prosperity. This is generally true of ship construction throughout antiquity, for example the galley remained essentially the same shape until medieval times.

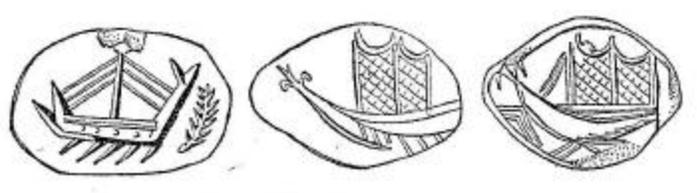


Fig. 4 Minoan Seals with Ships. Both second and third seal show the panelled cabin / *Ikrion* as well as the *fleur-de-lis* configuration. (From Hutchinson: 1962, 94).

There is also a clear relationship between Egyptian ships and those of the Aegean. Firstly the shape of the Minoan vessels appear to have the same curved hull with both ends raised as the Egyptian boats. The shape was originally derived from the small papyrus boats that plied the Nile. Steering oars are also found in Egyptian vessels, which generally have two. In the fresco only the vessel under sail has two steering oars, the others all seem to have one. The square sail too seems similar to that of Egyptian vessels and appears to be the regular Minoan type. The placement of the mast in the centre of the boat and the rigging at the top of the mast also seems to be an Egyptian derivation.⁴⁴ Like their Egyptian prototypes it would seem that the Thera ships had a mast that could be raised or lowered.

⁴⁴ Morgan, L., *The Miniature Wall Paintings of Thera: A Study in Aegean Culture and Iconography*, Cambridge, 1988, 122-123.

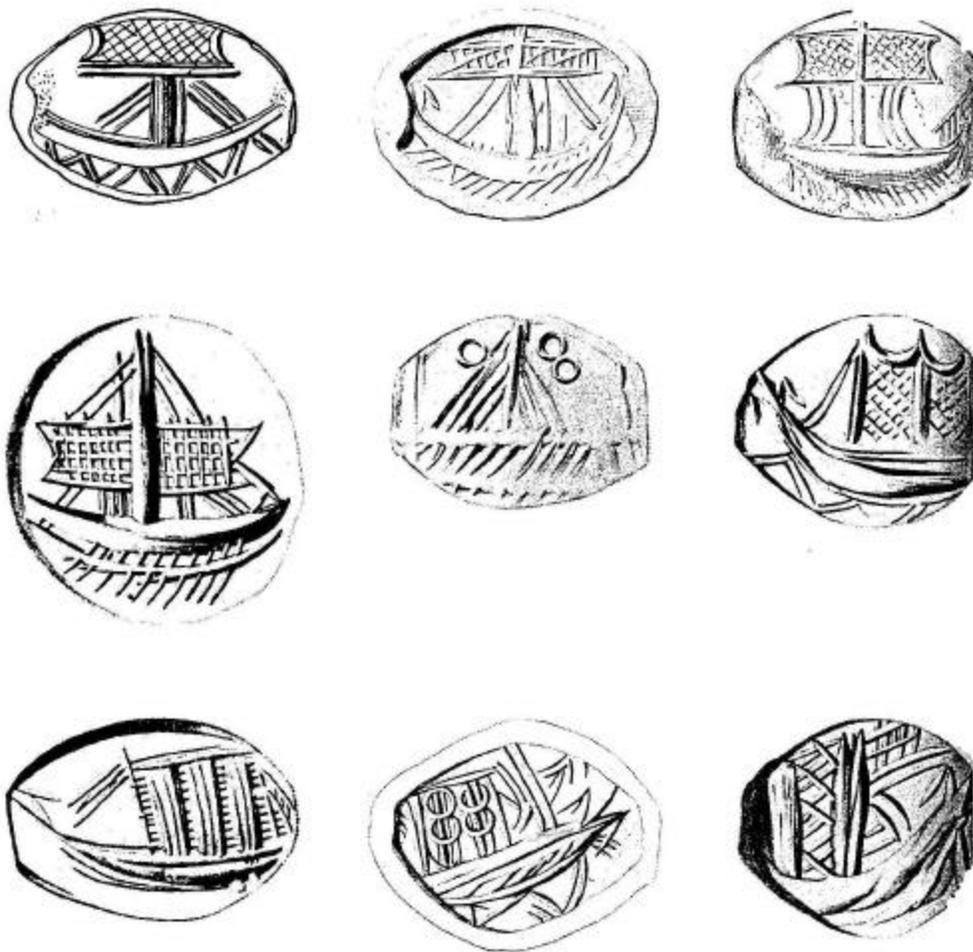


Fig 5. Middle Minoan seals with ships. Stylisation of the *ikrion* and vessels in general is particularly clear in last two seals. (From Casson: 1971, Appendix 1, figures 37-45.)⁴⁵

The relationship between these vessels and those of the early Cycladic design as represented by the Cycladic “frying pans” seems tenuous. These show a distinct level stern and sharp incline of the prow. In the Thera ships both the prow and stern are raised and are virtually at the same level. However an association may be made with the thin sprit attached to the prow topped by a symbol. In the “frying pans” this was often a fish. In the Thera ships this is a floral or avian decoration, associated with Betts’ *fleur-de-lis* type engravings on the seals.⁴⁶ The model from Palaikastro, which

⁴⁵ Casson, L., *Ships and Seamanhip in the Ancient World*, Princeton, 1971, Appendix 1, figures 37-45.

⁴⁶ Raban: 1984, 12; Betts: 1973, 332.

seems almost identical to the Cycladic ones, does show a distinct beak or ram. This could perhaps be similar to the projection at the stern of the Akrotiri ships. On the whole though the design of the Thera and probably Minoan appears to have a strong Egyptian influence.

The question then is were these vessels used for trade or warfare and piracy? The slender boats of the Thera fresco do not seem capable of carrying much cargo. The same arguments that apply to the Cycladic longboats apply to these vessels. Was their size and shape suitable for long sea voyages in the interests of trade? The question is a little more difficult to answer as the Early Minoan spirit of adventure has been replaced by a more determined maritime economy. There can be little doubt that trade was now actively pursued and for this reason the Minoans must have constructed ships that were capable of maintaining this. Unfortunately there is little in Minoan art that suggests this. It should be noted that the existing artworks are probably misleading and should only be considered in relation to the motive behind each image. Seals in general would have had some basic functions, such as religious talismans or were perhaps used as methods of authentication. Given this would the artist have felt compelled to render the ship design in an accurate format such as cargo vessel, war galley or the like? It is possible, likely even, that the same basic, familiar shape was used over and over again without thought as to the type of vessel involved. An exception to this could be boats used for religious purposes, sometimes depicted without oars or sails which would be unimportant for a deity or fantastical creature.⁴⁷ For the most part seals can therefore only be used to gain a very general understanding of the ship's structure and perhaps more importantly those features which were considered significant, particularly the *ikrion* and *fleur-de-lis*.

The same cannot be said for the fresco and some sort of interpretation has to be made in order to assess its relation to trade and the character of the Minoan "navy". The fresco was found in what has

⁴⁷ van Effentere: 1978, 596.

been called the “Admiral’s house” and clearly depicts some ceremony, possibly even recounts a story. It has been suggested that the theme is that of the admiral’s career or perhaps a triumphant return after a diplomatic or military mission.⁴⁸ There is no evidence that this fresco is of one particular event and Morgan Brown’s theory of this being a representation of an annual religious event, possibly a celebration to mark the beginning of the maritime season, is just as possible.⁴⁹ The *ikria* are of undoubted importance appearing in both the fresco and seals as well as having pride of place in room 4 of the “Admiral’s house”. The occupants of the *ikrion* would have been of some significance in the ceremony, perhaps priestesses. This coupled with the archaic use of paddling instead of rowing and the similarity of this event to Egyptian religious processions would imply a religious context. Although one cannot rule out the possibility that it may have been indicative of social ranking, or even had a military function. The tops of the *ikria* are decorated with some device, one of them being a helmet. The theme of warfare is further enhanced by fragments of a fresco found in room 5 of the “Admiral’s house” (Plate 19). This has been interpreted as a sea battle or a wreck. Wrecks and people drowning must have been a common feature in a maritime society. However the argument in favour of a battle is strengthened by soldiers in the top part of the fresco. It should also be said that a battle scene where the “admiral” was victorious is a more likely subject matter than a wreck.

Raban believes that these vessels depicted in the ship procession may be warships and the projections on the stern are rams.⁵⁰ The three main objections to this is that (1) there is no evidence of rams in the Bronze Age; (2) it is placed too high, well above the water level, to function as a ram and finally (3) that it is a non-permanent fixture and seems to be too weakly fastened to withstand the force required

⁴⁸ Schachermeyr, F., “Akrotiri – First Maritime Republic?”, *Thera and the Aegean World*, Vol I, ed. Doumas, C., London, 1978, 424; Johnston, P.F., “Thera”, *Encyclopaedia of Underwater and Maritime Archaeology*, ed. Delgado, J.P., London, 1997, 419-420.

⁴⁹ Morgan Brown: 1978, 640-641.

⁵⁰ Raban: 1984, 17-18.

for this purpose. Raban tries to address these doubts, although his arguments leave room for debate. He states that Egyptian records mention how Ramses II blockaded the “People of the Sea” at Dja-hi. The blockade would only have been effective if the enemy vessels could be attacked. This is true, but at the same time rams are not essential to attack or board ships, hooks, ropes and ladders can also be used. Another point is the height of the ram. The current knowledge of rams is based on classical references, which has rams at water level. However a large amount of damage can be inflicted on ships with rams above the water line. This might have been important if the aim was piracy and the immediate sinking of the vessel is not the ultimate aim. This is pertinent as piracy probably played a large role in most maritime economies. The non-permanent structure is perhaps a safety device, allowing ships to cut free of the ram should they run into difficulties and need to escape. Rams however are more likely to have been a later invention and it seems unlikely that they would have played a part in Bronze Age warfare. It is just as possible that the projections were an aid to climb onto the ship.

There can be no debate about the existence of pirate or warships. The question that has to be asked is did they exist alongside merchant ships or did the ships combine to form the same function. The question of warships and piracy will be discussed with the Minoan thalassocracy in Chapter 4.⁵¹ Presently it is sufficient to say that cargo ships must have taken to the waters especially as trade became more important. Rowing, not paddling would have been used to propel the vessel, substituted by or combined with the sail when the wind was favourable. The canopy used to protect the occupants in the ceremony may have been used to protect the oarsmen from the fierce Aegean sun, but it is probable that these shelters were erected for the purpose of the procession and were not a feature of the Aegean sea-going ship. It seems likely that the canopy would be removed when the sail is raised as it might have affected the efficiency of the sail, would have hindered the raising and

⁵¹ Chapter 4, 135-145.

lowering of the mast, and also blocked the sight of the helmsman. The fresco clearly shows the two largest vessels with their masts raised and the canopies intact, and the canopy rigging attached to the mast. One must therefore assume that the canopy was only erected after the masts had been fixed into position.

It is possible that the one ship under sail could be a cargo ship. This appears to have some sort of wooden cabin, perhaps used for storage.⁵² However on this vessel there seems to be little room for rowers. In a long voyage the sail would be insufficient to propel the ship and must have been accompanied by rowers. It is possible that the ship is wider than it appears leaving room for a central cargo hold and still have rowers on each side. The mast would have to be fixed in an upright position for the duration of the journey if the cargo hold was permanent. It seems more likely that cargo was stored within the hull beneath the rowing benches similar to the illustration given by Bass in his description of the Uluburun wreck (Plate 20).⁵³ This was based on Syrian vessels calling at Egypt and the ship design is somewhat different. However there are enough similarities to consider their example especially as the Minoans were actively trading in the Levant.

In 1984 an experimental expedition was undertaken in an attempt to recreate the voyage of the Argo.⁵⁴ A ship was built to the specifications of a Bronze Age vessel and manned by twenty oarsman. This type of expedition, while not conducted by scholars, can only be beneficial in the understanding of Bronze Age nautical endeavours. It gives a good impression on the speeds and ability which these vessels were able to travel. The journey took almost three months from the beginning at Volos on the Greek mainland to Poti, Georgia on the Black Sea, a distance of 1500 miles. It took one month to get from Volos to the Hellespont. It would have taken much longer, perhaps about two months for the

⁵² Morgan Brown: 1978, 630.

⁵³ Bass, G.F., "Oldest Known Shipwreck", *National Geographic*, 172, 6, 1987, 694-695.

⁵⁴ Severin, T., *The Jason Voyage*, London, 1985.

people of Crete to reach the same area, or to travel similar distances to the East to reach Cyprus, Syria and Egypt, dependent of course on the wind and other climatic conditions. Minoan traders would therefore only have managed one long expedition in the nautical season. One also has to assume therefore that the cargo holds were large enough to make such long voyages worthwhile. Trade during these voyages would naturally have been a continuous affair with transactions taking place at each port of call and probably lasted the whole summer.

Minoan Trade Routes

The Middle Minoan period saw trade expanding in the East and West. The marginal trade links made in EMII were expanded upon and new ones were made. Contact with the Greek Mainland, which was absent in Early Minoan times, became common in both the Middle and Late Minoan periods. There was also extensive trade in Egypt and the Levant. There would therefore appear to be two distinct circuits one which travelled through the Cyclades to the mainland and the other which went east. There is no concrete evidence that the Minoans traded directly with the Northern Aegean or Western Mediterranean during the Protopalatial or even Neopalatial Period.

Greek seafarers, even until Classical times and beyond, have traditionally hugged the coast or hopped from island to island to reach their destination. This was undoubtedly no different in the Bronze Age, although some open sea travel was required during this period just as it was in the Classical era. Movement of Bronze Age vessels on a global scale was dictated largely by wind and sea currents, which played a considerable role despite the fact that these vessels were mainly propelled by oars. In the Mediterranean currents are negligible, therefore in order to assess trade routes one has to consider wind direction. Climate has not changed much since the Bronze Age and the predominant wind in the

summer months is from a northern or north-western direction.⁵⁵ These winds are frequently referred to by classical writers, one of the earliest comes from Hesiod in his *Works and Days*.

“The best time to sail is fifty days
 After the solstice when the exhausting heat
 Of summertime is over. Then your ship
 Will not be shattered nor your sailors lost ...”
 “... At this time winds are steady and the sea
 Untroublesome; so trust the winds and drag
 Your swift ship to the sea with confidence
 Load all your cargo in; make haste to sail
 And come back home as soon as possible.
 Don’t wait for the new wine, the Autumn rain,
 Oncoming storms and Notos’ awful blasts;
 He stirs the waves, and with him comes much rain
 From Zeus at fruit time, and the sea is rough.”⁵⁶

The best time for sailing to Hesiod then is from mid August to the end of September when the weather is more predictable. These dates appear a touch poetic and the commencement date somewhat late. August is actually one of Greece’s hottest months. It seems likely that the Bronze Age seafarers began their season earlier, probably at least by the beginning of June or even May in order for them to have enough time to sail to and from their destinations. McCaslin believes that it is

⁵⁵ McCaslin, D., *Stone Anchors in Antiquity: Coastal Settlements and Maritime Trade-Routes in the Eastern Mediterranean ca. 1600-1050 BC*, Göteborg, 1980, 88.

⁵⁶ Hesiod, *Works and Days*, 663-679, trans. Wender, D., Harmondsworth, 1973, 80.

possible the sailors travelled directly from Crete to Egypt taking advantage of the favourable wind.⁵⁷ The clear nights of the season allow for basic celestial navigation, which could well have been learned by Bronze Age mariners. Certainly the Egyptians had knowledge of astronomy and some Neolithic monuments in Europe testify to some understanding of the stars. There is no reason to suppose the Minoans were ignorant in this regard. Indeed even the voyage home, which in all likelihood would have taken place along the coast of Egypt and the Levant, on to Cyprus, Rhodes, Karpathos and then to Crete, would involve some open water sailing. Traders from the Eastern Mediterranean could have travelled along the Levant coast to reach Crete and returned through direct sailing to Egypt and home (fig. 6).

Artefacts found in these areas prove that they had contact with each other. They do not however indicate the direction in which the ships were moving. This can only be ascertained through submerged finds such as wrecks or datable artefacts. Discoveries of Bronze Age wrecks are rare and generally only occur with considerable luck. Artefacts from vessels are more common, notably stone anchors, which were often discarded if caught on a reef or rocks. The anchors are roughly carved and can be allocated to different regions by their various shapes. These anchors are often found on coastal sites in secure chronological contexts. Therefore those anchors found at sea can be dated and categorised through a comparison with those found on land. It is true that lost anchors could be replaced at any port of call, meaning that for example Cypriot anchors could easily be found on Cretan ships. McCaslin suggests that anchors possibly had talismanic properties, making them sacred to their vessels.⁵⁸ Bronze Age sailors, undoubtedly very superstitious people, probably chose to keep their anchors until they arrived home or made their own on foreign soil if possible.⁵⁹

⁵⁷ McCaslin: 1978, 105.

⁵⁸ McCaslin, 1978.

⁵⁹ Appollonius of Rhodes writes of an incident where the argonauts, when their anchor was lost made their own rather than accepting the help of the natives.



Fig. 6. Trade routes from Crete to the Near East and Egypt. (Map from Sasson: 1995, Cover Page)⁶⁰

Stone anchors were used by all the seafaring nations of the Mediterranean and are still used by Aegean fishermen today. That said, finds are more common in the eastern Mediterranean than in the Aegean. Very few anchors have been found in Crete itself. This is quite possibly due to the fact that

⁶⁰ Sasson, J.M. (ed.), “Civilisations of the Ancient Near East”, Vol. III, New York, 1995, cover page.

stone anchors were only recognised as such fairly recently and were not specifically noted in archaeological reports. Two anchors have been found at Mallia in a stonemason's workshop. A third was found in the same palace in a different room. Another anchor was found by Arthur Evans at Knossos, which has been carved with an octopus relief (fig. 7). Such engraving is unusual and was perhaps a votive offering. Unfortunately no anchors have been found along the proposed Trans-Mediterranean route between Crete and Egypt, which means despite the theoretical appeal the route cannot yet be proved.

Not all routes led to Egypt and the Levant. Watrous proposes that Minoan sailors would have sailed from Crete to Asia Minor via Karpathos and Rhodes.⁶¹ Minoan artefacts from Iasos and Miletus testify to the northward routes of these merchants.⁶² There are however no indications that the Minoans travelled much further up the Anatolian coast. Contact between Crete and Troy in the Middle Minoan period is negligible, suggesting that if trade was at all conducted in between these areas it was done through a third party.



Fig. 7. Stone Anchor from Knossos, currently in the Herakleion Archaeological Museum.

(From Vasilakis: 94.)

⁶¹ Watrous: 1994, 748-749.

⁶² Excavations done as Iasos have unearthed Minoan Kamares ware, pithoi, conical cups, lamps and loomweights. MMII pottery has also been found at Miletus. Watrous: 1994, 748.

Where the trade in the East was a continuation and expansion of trade links which existed in Early Minoan times trade in the west was new to the Minoans during the Middle Minoan period. There was no evidence of imports into the Greek mainland, with the Cyclades appearing to play the main role in Aegean trade. In Middle Minoan times Crete moves to the forefront of Aegean trade with Minoan goods appearing in both the Cyclades and the mainland. Watrous suggests that there were two main routes used by Minoan sailors to reach the mainland (fig. 8).⁶³ The first went to Kythera, Agios Stephanos and from there up to Lerna and the Argolid. Vast quantities of Minoan pottery has been found at both Agios Stephanos and Lerna as well as about 200 examples of Minoanizing imitations from Lerna. Middle Minoan pottery has also been found at Mycenae and Argos, neither of which is far from Lerna. The second took a more northerly route to Attica via Thera and Melos, the so-called western string route where pottery has been found at the Island of Keos, the silver mining town of Thorikos and Athens. It is not certain at this stage how the Minoan goods entered the inland settlements such as Athens or Mycenae. It is possible that the Minoans had no contact with these people at this time and the Cretan goods found there were the result of inland trade between the various Helladic centres.

The trade routes mentioned above are not exhaustive. Middle Minoan artefacts have been found as far north as Iolkos and Pefkalia in Thessaly. There was also extensive trade being carried out throughout the Cyclades. The most well-known perhaps are those at Ayia Irini on Keos, Phylakopi at Melos and Akrotiri on Thera, which were very important trade ports for the established routes. There were many others. On Samos an MMIIa goblet and other MMII pottery has been found. Pottery beginning at MMI has also been found at Knidos. In Rhodes MMII pottery, a spindle whorl and a Minoan loom weight

⁶³ Watrous: 1994, 748-749.

have been found on the acropolis of Ialysos. Other Protopalatial pottery has been found at Naxos, Kasos and Karpathos.⁶⁴

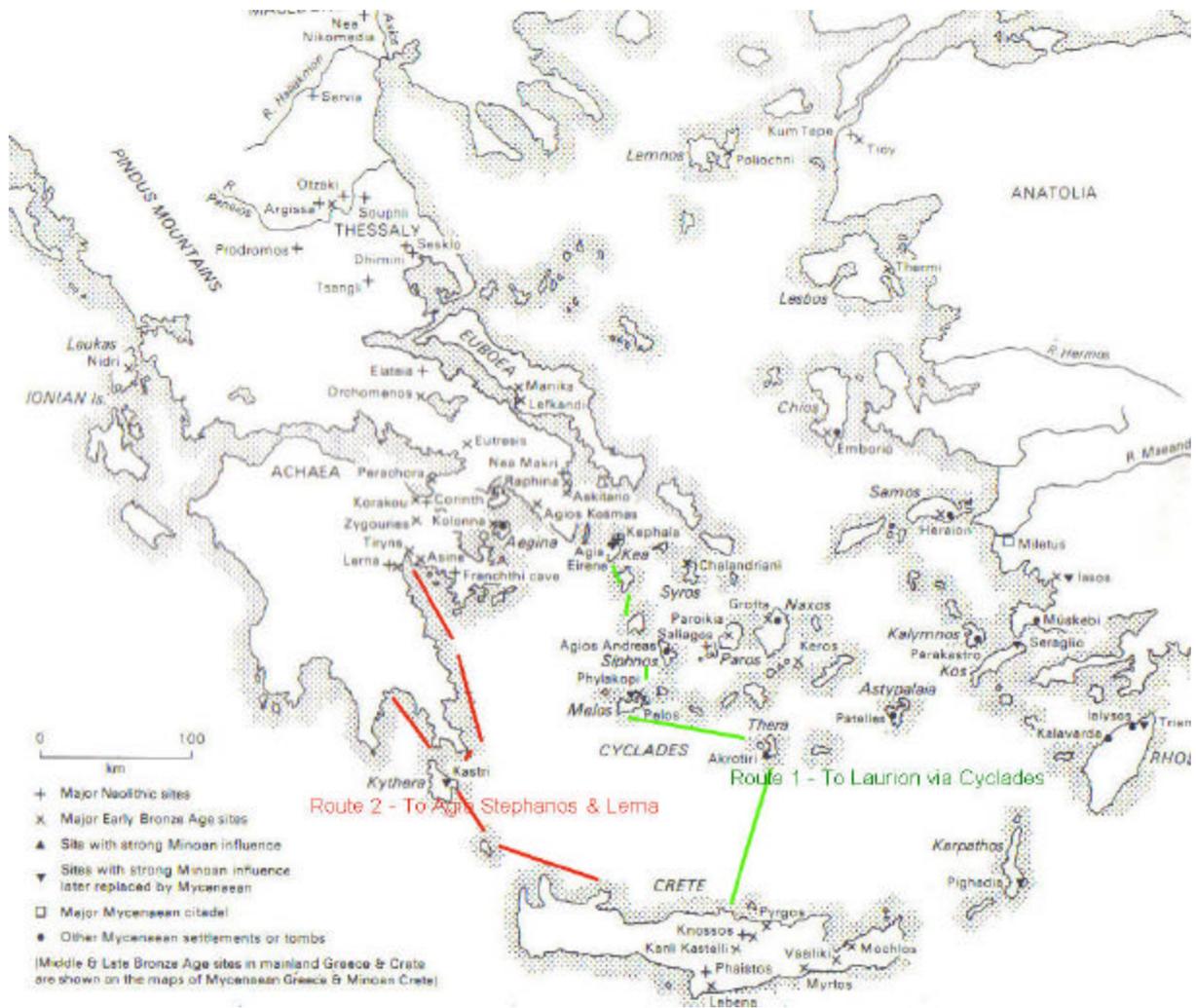


fig.8. Western trade routes to Mainland Greece.

(Map from Talbert: 1985, 2)⁶⁵

⁶⁴ Watrous: 1994, 747-748.

⁶⁵ Talbert, R.J.A., *Atlas of Classical History*, London, 1985, 2.

It is possible that the direction taken by the various ships was determined by the location of the various towns within Crete. Khania in Western Crete perhaps took a lead in the route via Kythera to the mainland and Knossos, which is more centred, focussed on reaching Attica. The drive to reach this area was the availability of silver, lead and copper from the mines at Laurion.⁶⁶ East Crete including Mallia and Zakros would have travelled to Asia Minor and probably the Levant. Phaistos in the South could possibly have attempted the suggested direct route to Egypt or travelled in an easterly direction as well. However there is limited evidence of external trade at Phaistos during the Middle Minoan period.⁶⁷ It would seem that this town had contacts with Zakros. Possibly a local trade developed between these two centres, but Zakros took the initiative of foreign trade. The idea that each palace controlled various segments of international trade seems to be at this point somewhat unbelievable. It would mean there were very close connections between the palaces of Middle Minoan Crete. While it is reasonably certain that they traded amongst each other, there is no concrete evidence of any strategic alliance or the co-operation required for co-ordinated trade. In fact it is quite the opposite with the palaces in the east (Mallia and Zakros) appearing to be of a different ethnic group from that of Phaistos.

COMMODITIES TRADED

The same difficulties in ascertaining the products traded exist in Middle Minoan times as they did in Early Minoan times. Fortunately in this period there are numerous examples of Cretan exports which were absent in the Early Minoan period. At the same time access to raw materials on the island and the Minoans' ability to export these remain limited. The Minoan craftsmen have improved and there was probably a demand for luxury goods out of Crete such as the Kamares ware, carved sealstones and finished metal goods. There is also evidence of Cretan trade in the mainland at the expense of the

⁶⁶ Watrous: 1992, 749.

⁶⁷ Branigan: 1987, 247.

Cyclades, whose merchants were active there in Early Minoan times. Perhaps the Minoans functioned as middle men or even concentrated on fine crafts and became a powerhouse of luxury items. Raw materials were imported and finished goods exported. The palaces and surrounds may have been redistributive areas for the Aegean. Specialisation in agriculture probably increased giving rise to excesses in olive oil and wine, although it would not have been sufficient to form the basis of a trading economy. Another aspect greatly overlooked is timber, which could have been exported.

Trade in Consumables – Food, Textiles and Timber

It does not seem probable that at any stage the Minoans were reliant on trade for basic survival. While it is entirely possible that they would have traded for grain with their Cycladic neighbours and the East in times of famine, the nature and seasonality of Greek trade makes a dependence on foreigners for their very livelihood unlikely. The existence of the *koulouras* suggests that the Minoans stored large quantities of grain most probably for palace and village consumption. Any surplus would have been traded, but the percentage was probably not high certainly not enough to encourage large scale trade. Therefore the grain produced in Crete probably remained there for the consumption of the local population. Society was in essence rural, possibly under the control of the various palaces, and would have been largely self-sufficient. The presence of the *koulouras* may suggest some degree of crop specialisation and therefore an excess in products, namely olive oil and wine, which the palaces could export. The number of Protopalatial pithoi found on site in three of the palaces could indicate large quantities of olive oil being consumed in the palace and possibly exported. This in turn could again suggest a growing yield of olives, possibly encouraged by the palaces. Currently there is no way of ascertaining for certain if the pithoi contained olive oil due to the breakdown of lipids over a long period. However the palaces were in a position to redistribute grain in exchange for other products and it does seem likely that this occurred even if only on a small scale at this time.

The numerous finds of loom weights in the palace workshops are also indicative of a thriving textile industry.⁶⁸ Wool was a likely material due to the suitability of the land for rearing goats and sheep. The presence of sheep is certainly attested to in the Linear B tablets. Although this is not direct evidence of their existence in Middle Minoan times, it is highly probable that these animals made up a fair portion of the agricultural activities. The textile industry was also prominent in Early Minoan times. Large numbers of loom weights were found in EM settlements such as Myrtos. It is possible that weaving had become more than a subsistence activity. The city of Ur in Mesopotamia, like Crete, had limited resources, but had huge quantities of metals and wood passing through its borders. Archives from that city testify to an almost factory-like textile industry that enabled its citizens to trade in these goods. This was possible even though their cloth was not of the same quality as that found on the Levant, especially Syria.⁶⁹ It is true that Ur would appear to have a completely different type of political system and should not be compared directly to Crete. The large flocks of sheep recorded in Crete on the Linear B tablets and also those on the mainland from centres such as Pylos and Mycenae may suggest that the textile industry was almost as important in the Aegean (at least during Mycenaean times) as it was in Mesopotamia. Although the Linear A tablets are far less clear on the number of sheep, with the numbers suggesting that the flocks were much smaller in Minoan times than they were during the Linear B administration.⁷⁰ In addition to woven cloth leather could also have been a tradable commodity. There is no physical evidence for this except for a single leather cutter was found in a Mesara tomb. If there were large flocks of sheep and goats on the island, leather was bound to be a by-product and a tradable one at that. The Minoan textile and leather industry is given a very brief mention in the Mari texts with text ARMTXXI, 342, which discusses textiles in general, notes a pair of sandals in Minoan style.⁷¹

⁶⁸ Branigan: 1987, 247. Fourteen loom weights were found in the Phaistos pottery / weaving workshop.

⁶⁹ Hawkes: 1973, 142.

⁷⁰ See Chapter 3, 110-111.

⁷¹ Heltzer, M., "The Trade of Crete and Cyprus with Syria and Mesopotamia and their Eastern Tin-Sources in XVIII-XVII Century BC", *Minos*, 24, 1989, 14.

Timber was probably another aspect of Cretan trade, perhaps a very important one. In many ways wood was the backbone of primitive society. It was used in the construction of the buildings. All the pillars of the Minoan Palaces as well as support beams were made of timber. Evidence of worked timber has been found at from the EMII sites of Fournou Korifi and Vasiliki.⁷² Furnishings and household implements such as bowls were probably also made of wood. Emphasis has been placed on the use of pottery because this has survived, yet it is probable that wooden implements played an equal role. Timber was used to build ships, integral to all seafaring nations. Finally, and just as importantly, it was used as fuel not only for domestic use but also for the furnaces of the potters and metal smiths. The carbon monoxide produced from charcoal was an essential ingredient in creating a pure form of copper. Timber was also in short supply in Egypt and Mesopotamia and therefore a valuable commodity for those who could supply it.

The introduction of bronze does not appear to have had much effect on the community in general. Fishermen and hunters would have benefited from metal hooks, arrowheads and spearheads. Metal sickles appear in the middle bronze age, but the small number of such tools found would indicate that the metal did not have a significant impact in that segment of society. However bronze would have revolutionised the wood-working industry. Tree-fellers now had a wide selection of tools ranging from heavy working tools such as double axes, adzes and large single axes to lighter tools like saws and chisels.⁷³ Developments in carpenters' tools would also have aided shipbuilding. The result is that there would have been more timber for both construction and trade and more ships with which to conduct these exports.

⁷² Branigan: 1974, 134.

⁷³ Branigan: 1974, 133.

Although there is no direct evidence of timber exports to the Near East in the Middle Minoan period it is very reasonable to believe that it was an aspect of Minoan trade. Crete appears to have been well endowed with forests during the Bronze Age. A situation that would last until the Middle Ages when the land was denuded to build Venetian ships. Classical authors such as Theophrastus, Pliny and Strabo write about the number of cypress trees on the island. Crete also supplied cypress wood to Athens during the time of Pericles. Mainly due to these Classical references Sir Arthur Evans believed cypress to be the most widely used. However investigations done on a fragment of carbonised wood found at Knossos by Evans indicate the wood to be fir (*Abies Cephalonica*) rather than cypress. This fir would have grown in the higher altitudes but other species including cypress, pine, willow and even cedar would also have grown on the island.⁷⁴ Fir and cypress, supplemented by pine would have been used for the construction of ships and pillars. The scented wood of cedar was probably used for making shelves and chests for storage.

That Egypt imported wood is a well-known fact. Most of this timber came from Lebanon, whose vast forests were legendary throughout the Levant. When conditions were unfavourable for trade in that area she could and probably did turn to Cyprus and Crete. Crete was already in contact with Egypt, which is clearly seen from the Minoan pottery remains in the country and perishable goods such as wood could be traded and leave no trace for archaeologists. Written evidence regarding timber exports are slight. Wiener cites an Egyptian record from the annals of Thutmoses III (ca. 1479 – 1425 BC) as possible evidence of timber trade.⁷⁵

⁷⁴ Meiggs, R., *Trees and Timber in the Ancient Mediterranean World*, Oxford, 1982, 98-100.

⁷⁵ Wiener, M.H., "Trade and Rule in Palatial Crete" in *Function*, 1987, 267.

“Lo, all his Majesty’s harbours are supplied with all good things of his Majesty’s booty from Djahi, Keftiu-ships, Byblos-ships, and skt-ships of ‘s-wood being loaded with poles, floorboards together with large timber for His Majesty” great timber yards.”⁷⁶

This excerpt commemorates Egyptian victory over Lebanon and the wood loaded in the various ships is plunder rather than goods imported from Crete.⁷⁷ The text leaves some uncertainty about the ownership of these ships. Strange is probably correct in stating that they were Egyptian ships that plied the Byblos and Keftiu trade routes.⁷⁸ It is possible that these vessels belonged to the Keftiu, being used in the service of the Pharaoh, but that would imply a military alliance. This would have huge implications in our understanding of Egypto-Minoan relations, but there is nothing further in any of the texts mentioning Keftiu that would imply such a relationship. The contact between the two seems to be trade related and the above text certainly intimates that there were ongoing trade relations with the Keftiu.

The other literary reference to Cretan wood comes from an Akkadian text. The text comes from the HAR-ra = hubullu series which is dated in its final form to the first millennium BC, although its existence goes back to the old Babylonian period of the second millennium. The exact date of this extract is impossible to ascertain. The text itself gives different names of wood in both Sumerian and Akkadian. The word kaptaru is mentioned, which is possibly the wood imported from Kaptar (Crete), just as the other timber, Kullaru is from Kullar, a region near Lake Urmia.⁷⁹ Although the text is undatable and therefore cannot be considered to be contemporary with the Minoan civilisation it does

⁷⁶ From the Annals of Thutmose III at the temple of Amun at Karnak. 9th Campaign, year 34. Translated by J. Strange, 1979.

⁷⁷ Strange, J., *Caphtor / Keftiu, A New Investigation*, Copenhagen, 1979, 74.

⁷⁸ Strange: 1979, 74.

⁷⁹ Strange: 1979, 104.

indicate that timber exports existed at least at the beginning of the first millennium and probably earlier.

The Metals Trade

Metalwork in Crete in the Middle Minoan period appears to be very much a continuation of Early Minoan times. Most bronze, as in Early Minoan times was an alloy of arsenic and copper. Tin bronzes were scarce until the end of the Middle Minoan period.⁸⁰ The Minoans continued to import all their metals, despite having some small reserves of copper on the island. Copper oxide ingots have been discovered at a number of sites in Crete, such as Tyliossos, Mochlos and especially at Hagia Triada and Zakros.

Copper was generally not transported in an ore form, but was rather processed close to the mine to obtain the finished metal.⁸¹ Towards the end of the MBA and through the LBA much of the copper that was traded was cast in what has come to be termed ox-hide ingots. The name is derived from their apparent similarity to the hide of a skinned ox (the body and four legs). This curved shape seems to have been developed in the second millennium with most examples of the type coming from the second half. There was an early shape (type 1) where all four sides have only a slight curve. The later shape (type 2) which can be dated to Mycenaean times (which on Crete corresponds to LMIIIa – LMIIIb, ca 1430-1250 BC) has a deeper curve on the short side and the longer side is almost straight with the points projecting sharply like handles (Plate 21).⁸² They were common in the Eastern Mediterranean, with finds in Crete, mainland Greece, Cyprus and Syria. They are also seen depicted on Egyptian tomb paintings. This ingot shape was a feature in the west as well with examples having

⁸⁰ Mangou, H., & Ioannou, P.V., “On the Chemical Composition of Prehistoric Greek Copper-Based Artefacts from Crete” in *BSA*, No 93, 1998, 92.

⁸¹ Chapter 1, 18.

⁸² Platon, N., *The Discovery of a Lost Palace of Ancient Crete*, New York, 1971, 245; Gale, N., “Copper Oxhide Ingots and their Place in the Bronze Age Metals Trade in the Mediterranean”, *BA Trade*, 1991, 202-203.

been found in both Sicily and Sardinia. Their shape was designed for transport. The curved shape made them easy to carry on the back of one man and the legs made useful handles when carried by two men. They could also be stacked and tied together.

While these ingots may be uniform in shape their weight varies between 26 to 33 kg.⁸³ It is not believed that the ingots were a form of currency.⁸⁴ Their weight is fairly standard, but would still have to be weighed for bartering purposes. It is very unlikely that in a pre-monetary economy they had an exact value attached as one would expect with a currency. The merchants had no hesitation in cutting pieces off the ingots for smaller trade items. It must be noted that this was also a common occurrence in the early use of currency. Coins were cut in half for smaller change, with the value of the metal being the most important factor. The circumstances with copper ingots are somewhat different. In a monetary economy all items are valued in accordance to the currency and are traded only with that currency. In the Bronze Age copper was a commodity like any other. It was exchanged with other articles or produce. However these items could have been exchanged among each other, such as textiles for oil or oil for precious stones. Copper was not used as an exclusive form of exchange and could have been declined by merchants in the extremely unlikely event of an excess.

It has not been determined where the oxhide shape originated. It has a close association with Cyprus, with a large number of ingots having been found in a number of settlements there as well as two bronze stands with the bearers carrying offerings of ingots. Several small votive ingots have also been found on the island. However this close association with the shape seems to be dated as late as the twelfth century BC. Catling therefore proposed that the ingots were first cast in Crete for administration purposes and spread to Cyprus with the Mycenaeans. It has also been suggested that

⁸³ Platon: 1971, 245.

⁸⁴ Gale, N.H. & Stos-Gale, Z.A., "Oxhide Copper Ingots in Crete and Cyprus and the Bronze Age Metals Trade", *BSA*, 81, 1986, 81.

copper was mined in Crete and exported. There is no positive evidence that the minimal copper resources which Crete did have were utilised during the Bronze Age, much less exported. A stone mould used for casting ingots has been found fairly recently at Ras Ibn Hani in Syria. Syria has very limited copper resources and it might be possible that these ingots were cast in a different location from where they mined, which is contrary to current theories in the transportation of ores.⁸⁵

In Crete both Type 1 and Type 2 ingots have been found, although type 1 is more common, comprising of about 75% of Crete's total ingot collection. These ingots are the earliest found throughout the Mediterranean leading to the speculation that the shape originated in Crete. In total ingots (complete and fragments thereof) have been found at nine different sites, namely Kommos (1), Khania (2), Hagia Triada (3), Knossos (4), Zakros (5), Gournia (6), Tylissos (7), Palaikastro (8) and Syme (9).⁸⁶ The nine ingots found at Zakros and the nineteen from Hagia Triada have been dated to LM Ia-LM Ib, falling firmly into the Neopalatial period. Their provenance is currently unknown although they may come as far away as Afghanistan, Iran or Southern Russia.⁸⁷ There are two methods in ascertaining the origin of copper and by implication Bronze. Firstly an evaluation of the trace metals in the copper and secondly through lead isotope analyses, which measures the isotopic values of lead in artefacts. The results of these tests are then compared to metals from known mines in the Bronze Age to determine a match. Lead isotope analyses has determined that at least some of the copper from the Early Bronze Age probably came from Kythnos.⁸⁸ Copper for the later periods has an unknown origin, but it is not Cypriot.⁸⁹

⁸⁵ Gale & Stos-Gale: 1986, 84.

⁸⁶ Gale: 1991, 202.

⁸⁷ Gale: 1991, 226.

⁸⁸ Stos-Gale notes that only samples from Agia Photia and the Mesara tombs have been analysed and they should probably not be seen as representative of the whole of Crete. Stos-Gale, Z. & Macdonald, G.F., "Sources of Metals and Trade in the Bronze Age Aegean", *BA Trade*, 1991, 267.

⁸⁹ Mangou & Ioannou: 1998, 92; Gale & Stos-Gale: 1986, 87; Gale: 1991, 226.

To understand the significance of this one must look at the role of Cyprus in the metals trade during the Bronze Age. Cyprus entered the Bronze Age in about 2300 BC, at much the same time as the destruction of Troy II and the end of the Early Minoan period. It had limited trade links with the Aegean islands including Crete as well as the east from the Early Bronze Age, however it only began to show a marked increase in its trade relations from about 1700 BC, which is the beginning of the Neopalatial period. At the same time the Mari archives mention a land known as Alashiya. The name also appears in Egyptian records. This has been identified as Cyprus, or perhaps one of the settlements, such as Enkomi, on the island. There have been objections to this identification. Firstly, while the name of Alashiya appears frequently in Hittite records there is a lack of Hittite imports on the island. There also exists a cuneiform letter written in Akkadian from Eshuwara, High Steward of Alashiya, however there is no evidence of cuneiform or knowledge of the Akkadian language on the island. Further the Egyptian Karnak Annals called on Asy (believed to be Alashiya) to deliver as tribute copper, lead and elephant tusks. Cyprus did not have elephants and could not easily supply the latter.⁹⁰ Yet there are as many points in favour of the Cypriot identification. Of the records mentioning Alashiya there is evidence of a battle between them and Hittites, which took place first at sea and then on land.⁹¹ If Alashiya was located on the mainland near Syria, a sea-battle would not have occurred. Although Strange argues that since it is indisputable that Alashiya had a navy, a naval battle would be inevitable even if the location was on the Levant. This is possibly true, but it is odd that the battle at sea occurred first. If the Hittites had launched a fleet from a mainland base it would be more likely that the two battles were fought concurrently. Unless the Hittites chose to wage a sea battle without an accompanying land invasion. An unlikely proposition given that the Hittites were generally a terrestrial nation with little seafaring abilities. There is also the ability of Alashiya to remain neutral during the conflict between Egypt and the Hittites over the control of Syria during the

⁹⁰ Catling, H.W., "Cyprus in the Neolithic and Bronze Age Periods", *The Cambridge Ancient History, Cambridge*, 1966, 60-62; Strange: 1980, 169-183.

⁹¹ The text is from the time of Shuooiluliumash II, the last king of Hatti (c. 1370-1348 BC).

fourteenth and thirteenth centuries. This could only have occurred if Alashiya was unattached to the conflict as Cyprus would have been.⁹² Most importantly, and which all scholars agree on, is the association of Alashiya with the production of copper. The Near Eastern records all concur that Alashiyan copper was very much in demand. That copper was mined in Cyprus during the Bronze Age is clear from the evidence of sites such as Enkomi, Kition, Hala Sultan Tekke and Kalavassos / Ayios Dhimitrios.⁹³ In fact it would be safe to say that towards the end of the Middle and during the late Bronze Age (c. 1700-1100 BC) copper mining and export was the keystone of the Cypriot economy. Hence the identification of Cyprus as Alashiya may be correct.

Crete and Cyprus had a degree of contact since at least EMIII-MMIIa (ca 2300-2000 BC), with fragments of an ECIII Vase having been found at Knossos.⁹⁴ An MCIII white painted jug was discovered at Zakros, Crete.⁹⁵ There are also finds on Cyprus dating from the Middle Minoan period. An MMII Kamares cup was found in an MCI tomb at Karmi and a conical cup from MMIII-LMI has been found at Ayia Irini.⁹⁶ After 1700 BC Cyprus underwent dramatic development both socially and economically. Urban centres such as Enkomi and Hala Sultan Tekke appeared on the island. There is evidence of increased trade in Cyprus, particularly in the East with Syria and Egypt via the Levant and, based on Cypriot personal names, there appears to be a close cultural link to the east as well.⁹⁷ This is inevitable due to the location of the island in relation to the mainland. This same closeness makes Cyprus a convenient and undoubtedly much used stopover point for ships both from Crete and the Greek mainland. In the Middle Bronze Age there was very little contact between the Greek

⁹² Knapp, B. A., "Island Cultures: Crete, Thera, Cyprus, Rhodes and Sardinia", *Civilisations of the Ancient Near East*, Sasson, J.M. (ed), Vol III, New York, 1995, 1435.

⁹³ Gale & Stos-Gale: 1986, 82-83.

⁹⁴ Catling, H.W. & Macgillivray, J.A., "An Early Cypriot III Vase From the Palace of Knossos", *BSA*, 78, 1983, 1-8.

⁹⁵ Catling: 1966, 43.

⁹⁶ Catling: 1966, 43 and Gale & Stos-Gale, 1986, 84.

⁹⁷ Knapp: 1995, 1435.

mainland and Cyprus, yet by the Late Bronze Age (thirteenth century) it appears to have become a Mycenaean colony, a testimony to Cyprus' importance during that age. It is therefore perplexing that despite evidence of contact with Crete the copper which is so renowned in Cyprus did not go there.

Perhaps in the Middle Bronze Age this is not that surprising. One is inclined to believe that the rise of Cypriot urbanisation and craft specialisation in 1700 BC is directly linked to the copper industry. With the export of copper, mainly to east, the island grew wealthier and advanced both politically and culturally. However this is near the end of the Middle Minoan period and prior to that perhaps Cyprus had not yet fully established her copper trade. At this time Crete probably got her copper and tin from an eastern source via Ugarit or Byblos and possibly also from Kythnos and Laurion. Dayton has suggested that trade was conducted in bronze torques from the Balkans and tin by itself was an untraded commodity.⁹⁸ This theory is easily dismissed through the occurrence of copper ingots from a number of sites around the Mediterranean as far afield as Sicily and also, to a far lesser extent, tin, indicating that these two metals were indeed traded as separate commodities.⁹⁹ In the Late Minoan period there is a distinct decrease in the trade between Crete and Cyprus. At least 13 LMI (ca. 1550 BC) vases have been excavated from the LCI layer of Toumba tou Skourou, but aside from that site no other LMI pottery has been yet been found on the island.¹⁰⁰ LMII artefacts are also limited. Very little LCI travelled into the Aegean. Some Cypriot White Slip and Base Ring pottery has been found at Knossos, Crete, but not large enough numbers to suggest large volumes of trade.¹⁰¹ Most Late Cypriot trade was focused on the Levant and Egypt to the exclusion of the lands in the west.

⁹⁸ Dayton: 1971, 49-69.

⁹⁹ Copper ox-hide ingots have been found at Hagia Triada and Zakros in Crete. The 12th Century Uluburun wreck has both copper (seemingly from Cyprus) and tin oxhide ingots as well as smaller bun-shaped tin ingots. There are also remnants of tin from the Cape Gelidonya wreck.

¹⁰⁰ Gale. & Stos-Gale: 1986, 84.

¹⁰¹ Catling: 1966, 54.

It would therefore seem that trade between Cyprus and Crete was limited despite the location of Cyprus in relation to the Levant. The copper and tin trade in the Aegean during the Middle and the beginning of the Late Bronze Age seems to have been conducted from trading settlements such as Byblos and Ugarit. Their copper and tin sources were probably the same as that of Mesopotamia. Other metals such as silver, gold and lead had another source altogether. Gold may have been imported from Egypt or in small quantities from a number of sites in the Aegean. Silver and lead appear to have come from Laurion on the Greek mainland.¹⁰²

By the end of the Middle Minoan period there appears to be substantial trade with mainland Greece. Archaeological finds have indicated not only imports of Minoan wares, but also of local imitations of Minoan pottery. This is particularly prominent at Lerna and Agios Stephanos, possibly indicating workshops centred at these two towns.¹⁰³ There is a little evidence of Minoan contact as far as Thessaly and into the mainland including Mycenae, Argos and Athens, but these quantities are not significant. It is possible that at this stage Cretan trade with the rest of mainland outside of Lerna was still largely undeveloped. One important product from the Greek mainland that did reach Crete was silver. Much of the silver found in Crete from the Middle Minoan period through to Late Minoan times originates from Laurion, the provenance of which has been determined through lead-isotope analysis. This is especially true at the end of the Middle Minoan period, although at Knossos from MMI already there are signs that Laurion was the dominant source of lead and silver.¹⁰⁴

The exact character of trade between Laurion and Crete is not clear. Middle Bronze Age pottery of Cyclado-Minoan origin has been found at Laurion, but this does not necessarily mean that there were

¹⁰² Branigan: 1974, 63; Watrous: 1994, 748; Dickinson: 1994, 243; Gale, N.H., Stos-Gale, Z.A. & Davis, J.L., "The Provenance of Lead used at Ayia Irini, Keos", *Hesperia*, 53.4, 1984, 390.

¹⁰³ Dickinson: 1994, 242.

direct trade links between Laurion and Crete. While in many cases the provenance of foreign artefacts is ascertainable it is not easy to determine how they arrived in a particular area. In Laurion the Minoan pottery could have arrived through local traders, Cycladic middlemen or Cretan merchants. It is probably fairly safe to rule out the theory of local traders for all foreign artefacts as it is unlikely that settlements on the Greek mainland initiated widespread maritime trade at that early stage. The idea of Cycladic middlemen is a possibility. The settlement of Ayia Irini on the island of Keos, which was refounded in the Middle Bronze Age, appears to have been an active trader with both Laurion, the Cyclades and Crete. Dickinson proposes that the establishment of this settlement was due to the demand of Laurion silver. This would have been brought over to Keos and then traded with the Minoans possibly via Melos to Thera.¹⁰⁵ There are Minoan finds from Keos, but they are considerably less than contemporary Helladic and Melian artefacts.

The silver trade with Laurion needs to be examined in conjunction with that of Siphnos. The Cyclades are fairly rich in silver with ores occurring in Kythnos, Syros, Seriphos, Melos and Thera among others. However there are no signs that most these sources were mined during the Bronze Age.¹⁰⁶ Siphnos is an exception and supplied a large number of settlements including Crete particularly during the Early Bronze Age. Yet by the Late Cycladic period there are few sites with Siphnos silver. There is no indication that the source dried up as silver was mined there in both Classical¹⁰⁷ and contemporary times. The artefacts found on Siphnos imply that she was not isolated from general Cycladic trade and from a Minoan viewpoint Siphnos is closer than Keos or Laurion.¹⁰⁸ It is puzzling that there was a cessation of the silver trade with the Minoans and the rest of the Aegean.

¹⁰⁴ Gale, Stos-Gale & Davis: 1984, 390.

¹⁰⁵ Dickinson: 1994, 243.

¹⁰⁶ Gale, Stos-Gale & Davis: 1984, 395.

¹⁰⁷ Herodt., III, 57.

¹⁰⁸ Schofield, E., "The Western Cyclades and Crete: A Special Relationship", *OJA*, 1, 1982, 12-13. There are also MC sherds from Agios Andreas on Siphnos.

There may be a couple of explanations to this peculiarity. Dickinson may be correct about Cycladic merchants operating out of Keos and supplying the islands to the south such as Melos, Thera and of course Crete. This is a tidy solution, but Aegean trade was probably not that simple. The only tangible sign of social organisation on a large scale in the Southern Aegean was the palaces on Crete. The result of this type of society regardless of what political system controlled it, must have been that a greater number of resources were at its disposal. The Minoans had the wealth, commodities and ships to conduct extensive trade in both the east and west. With this in mind it is difficult to imagine a situation where they would rely on Cycladic middlemen. An allowance could be made if these middlemen brought the silver to the active trading centres in the Cyclades, such as Thera or Melos, thereby removing the need to travel as far as Keos or even to the closer location of Siphnos.

The most plausible rationalisation is probably that of Gale, Stos-Gale and Davis who observe that the silver deposits at Laurion are more numerous and more readily available than those at Siphnos.¹⁰⁹ The silver from Siphnos, although of good quality, is widely interspersed with its iron-ore host, making extraction difficult. While there are seven outcrops on the island containing the ore only one of them, at Agios Sostis, is at sea level and shows signs of being mined during the Bronze Age. The other six are located inland and generally inaccessible. By contrast the Laurion silver can be found in thick veins of galena, which is a lead deposit and is globally one of the most important sources of silver. Like Agios Sostis the site of Thorikos at Laurion is at sea-level, but has far greater quantities of the metal. Davis also points out that very little slag has been found on Siphnos, which may be indicative of an off-site smelting operation due to lack of fuel on the island.¹¹⁰ Merchants may therefore have been forced to transport the ore rather than silver ingots. This was not a common mode for the

¹⁰⁹ Gale, Gale & Davis: 1984, 399.

¹¹⁰ Davis, J.L., "Review of Aegean Prehistory: The Islands of the Aegean", *AJA*, 96, 1992, 729.

transportation of metal, but one that was not unknown.¹¹¹ This was an additional and unwanted burden for any trader due to the demands it would make on the scarce storage facilities on the boats and the additional weight. On the other hand it could have been exploited by some merchants. There is evidence of litharge from Laurion ores at Ayia Irini, Phylakopi and Akrotiri. The unprocessed or semi-processed ore must have been brought to these centres for final smelting and the production of silver objects for further trade. If the ore was cheaply acquired it may have been quite a profitable exercise.

Silver in Laurion was therefore more accessible and constantly available. Gale, Stos-Gale and Davis believe there is a link between the rise of the palaces in Crete and the sudden increase in distribution of the Laurion silver. Very few silver artefacts have been found from the protopalatial period. This may create a false impression on the amount of silver consumed by the Minoans at that time. The absence of un plundered royal graves from the period has given scholars little to work with in terms of Cretan wealth. However Laurion silver has been identified as far afield as Egypt.¹¹² This could only have come through Crete as the Minoans alone had trade relations with the Near East and Egypt. The trade in silver was possibly far greater than the current evidence suggests.

In addition to the availability of silver, Laurion was also a supplier of copper.¹¹³ It is possible that some of the Cretan copper imported in the Middle and Late Minoan periods came from this source. Copper slag from the Laurion mines which can be dated to the latter end of the Middle Bronze Age has been found at Ayia Irini suggesting that the Laurion copper mines were being exploited at that time. This was also a resource that Siphnos did not have and could quite possibly have been a major factor in swinging trade in favour of Laurion.

¹¹¹ See Chapter 2, 76.

¹¹² Gale, Stos-Gale & Davis: 1984, 398.

¹¹³ Gale, Stos-Gale & Davis: 1984, 400.

The change in the silver trade from Siphnos to Laurion probably had far reaching effects on Cycladic commerce. The Minoans, perhaps those from Knossos, perhaps changed the trade routes established during Early Minoan times in order to approach the mainland. The “Western String Route” was probably developed at this time. Some of the islands, such as Keos probably prospered because of this. It is possible that a customs charge was levied on ships en-route to Laurion. There would also have been additional trade in Cretan wares and possibly their own silver if they were processing Laurion ore, which may even have negated the need to travel on to Laurion. Whereas other islands would have suffered as they were no longer on the main trading route. The most apparent was Siphnos, who initially may have benefited from the growing demand in silver. However if she was unable to maintain continuity and Laurion was able to supply the all-important copper her importance as a trading partner declined dramatically.

While the Minoans imported all their metals it appears that they exported finished metal products in the Cyclades, Cyprus and the Levant. Cretan metallurgy was undoubtedly the finest in the Aegean. One of the best examples is the gold wasp/bee pendant found in a Protopalatial context in Mallia (Plate 22). However the most abundant exports appear to be weapons and toilet implements such as tweezers. Long swords appeared in Crete during MMII and became something of a Minoan speciality. Minoan weapons manufacture was not limited to that single type, and short swords, solid daggers and socketed spear and arrowhead were also prevalent. A number of Minoan daggers have been found in Cyprus as have tweezers and scrapers. In the Levant identification of Minoan artefacts is less certain. Branigan considers a long-sword and a scraper from Byblos and a double-axe from Meggiddo to be of Minoan origin.¹¹⁴ There is also mention of Kaptaran metalwork in the Mari tablets

¹¹⁴ Branigan: 1974, 122.

which list weapons as coming from Kaptar.¹¹⁵ In the text ARMTXXIII, No 104 which comprises of a list detailing the tools and weapons used by the king of Mari on an expedition a sack of Cretan weapons is mentioned in Line 30. Cretan weapons are again mentioned in ARMTXXI, No. 231 which refers to a Cretan lance and a Cretan weapon. A Cretan weapon, possibly a mace or a sword is described as having its top and base covered with gold and its top being mounted with lapis lazuli, is also known from ARMTXXIV, No. 98, 10.¹¹⁶

Evidence of Contact

The following catalogue lists the physical evidence of the trade which has been discussed above. This table is by no means complete and is based largely on the finds recorded by Watrous.¹¹⁷

<u>MINOAN IMPORTS</u>		
Period	Site	Imported Artefacts / Locally made wares from imported materials
MMIa	Phournou / Archanes Cemetery ➤ Tholos Γ	<ul style="list-style-type: none"> ➤ Burials begin to occur in larnakes, which indicate possible Egyptian influence. ➤ Imported ivory, probably hippopotami from the Near East, for the production of figurines (2 have been found), pendants (15 have been found), 1 ivory bead, 8 ivory seals, 1 gold, silver and ivory pin.

¹¹⁵ Dickinson: 1994, 244; Heltzer: 1989, 13-14; Strange, 1980, 91.

¹¹⁶ Heltzer: 1989, 14.

¹¹⁷ Watrous: 1994, 720-750.

	➤ Building 7	<ul style="list-style-type: none"> ➤ Obsidian blades. ➤ Locally made ivory and steatite seals. ➤ An imported Egyptian faience scarab. ➤ Locally made jewellery – ivory and gold pendants, necklaces of rock crystal*, sard amethyst, steatite and faience beads. <p>* Rock crystal is found locally in Crete, but only in small quantities. Objects made from large crystals would have been from imported rock. Small items such as beads could be from a local source.</p>
MMIa	Chrysolakkis Cemetery, near Mallia	<ul style="list-style-type: none"> ➤ The cemetery was bordered by walls topped with a rounded capping stone which only has parallels in Egypt. ➤ Flat-bottomed cups which has no Minoan precedent, but are a common shape in Egypt.
MMIa	➤ Mochlos Tomb II	<ul style="list-style-type: none"> ➤ Seal engraved with antithetical cynocephalus apes, an Egyptian motif. ➤ 5 stone vases which are imitations of Egyptian designs and are probably not earlier than the 12th Dynasty.
MMI - MMII	➤ Mochlos (general)	<ul style="list-style-type: none"> ➤ Rich finds of gold artefacts have been found in these tombs which may have parallels in Kultepe, Byblos and Egypt.

MMI	Knossos	<ul style="list-style-type: none"> ➤ Obsidian from Southern Anatolia (the Ciftlik Area). This has also been found in Tholos B at Platanos.
MMIa	The Mesara and the Tombs including Platanos, Koumasa and Hagia Triada	<ul style="list-style-type: none"> ➤ Gold diadems, beads and pendants (MMIb – MMII). ➤ Gold pendants from Platanos which have the shape of a bee and a claw appear to be Egyptian imitations (MMIa – MMII). ➤ Egyptianizing stone vases (Platanos). ➤ Two gold beads from Platanos have granulation decoration, a technique begun in the Near East about 2000BC. This can also be seen on the bee pendant from Mallia (Plate 22). ➤ Two Egyptian Scarabs (Platanos) which indicate an overlap between MMIa and the 12th Dynasty. ➤ An imported Egyptian Stone vase from the Old Kingdom, was found at Tholos A at Agia Triada, along with a number of Egyptianizing vases. ➤ A number seals from Lebena-Kaloi in South Crete show a great deal of Egyptian influence in both their material (glazed steatite) and decoration. ➤ Several daggers from the Mesara tombs show Near Eastern influence or may even be imports. ➤ Imitations of Egyptian funerary vessels appear in the tombs.

		<ul style="list-style-type: none"> ➤ The squared-off conical cup, which is common in MM1a, could be a copy of the Early Dynastic cylindrical jar.
MM1b - MMII	Mallia	<ul style="list-style-type: none"> ➤ Ceramic relief of a sphinx which is certainly inspired by the Egypt or the Near East. ➤ Stone and faience beads of Egyptian shape. ➤ A Syrian Sword. ➤ There is a distinct lack of Cycladic imports.
MM1b – MMII	Phaistos	<ul style="list-style-type: none"> ➤ The construction of the west façade using ashlar orthostates was a masonry technique which originated in Syria.
MM1b	Kommos	<ul style="list-style-type: none"> ➤ Cypriot pottery
MMII	Knossos Chamber Tomb of Mavrospelio Tomb XVII	<ul style="list-style-type: none"> ➤ Amethyst beads of 12th Dynasty type. ➤ Beads of steatite, crystal and faience.
MM1b – MMII	Platanos	<ul style="list-style-type: none"> ➤ An imported Old Babylonian cylinder seal. ➤ Three Egyptian scarabs. ➤ Gold jewellery including diadems, beads, discs, rings and pendants.
MM1b - MMII	Phourni / Archanes Cemetery	<ul style="list-style-type: none"> ➤ The artefacts for the Protopalatial period are much the same as that of MM1a – steatite, faience, obsidian blades, gold jewellery and silver rings. ➤ An imported lapis lazuli cylinder seal.

<u>MINOAN EXPORTS</u>		
Period	Site	Exported Artefacts
MMIb- MMII	Phylakopi, Melos	<ul style="list-style-type: none"> ➤ 2 Barbotine vases, over 36 cups, jugs, amphorae and a Minoan figurine. ➤ Palatial quality vases with parallels from Knossos and Phaistos. ➤ 3 possible cups from East Crete.
MMII	Akrotiri, Thera	<ul style="list-style-type: none"> ➤ Kamares ware. ➤ Pottery from East Crete (2 pieces).
MMIa- MMIb	Keos	<ul style="list-style-type: none"> ➤ Steadily increasing quantities of pottery including Kamares ware throughout the Middle Bronze Age.
MMIa- LMIb	Kastri, Kythera	<ul style="list-style-type: none"> ➤ An apparent colony was established in the Early Minoan period and grew in size during the Middle Minoan period. Minoan artefacts of all types, a peak sanctuary and Minoan burials can be found there until LMIb (ca 1450 BC).
MMIa – MMIII	Samos	<ul style="list-style-type: none"> ➤ MMIa goblet ➤ MMII-MMIII pottery
MMII - MMIII	Rhodes, Kasos and Karpathos	<ul style="list-style-type: none"> ➤ Minoan pottery, stone vases, a spindle whorl and a loomweight have been found at Ialysos, Rhodes. ➤ The foundation of the town of Trianda, Rhodes, which has significant Minoan influence and may have been colony, has been dated to MMII, but may have occurred as early as MMIa-MMII based on the Minoan pottery found there. ➤ MMIb-MMII pottery has been found at Kasos and Karpathos.

MMIb - MMII	Anatolia	<ul style="list-style-type: none"> ➤ Kamares ware, pithoi, conical cups, lamps and loomweights have been unearthed at Iasos in Southern Anatolia. ➤ MMII pottery has been found at Miletos. ➤ Minoan cooking pots and other pottery begin from an MMI context at Knidos.
MMIa -	Greek Mainland	<ul style="list-style-type: none"> ➤ Minoan pottery has been found at Asine, Athens Argos, Agios Stephanos, Eutresis and Mycenae. ➤ In Aegina some MMIa eggcups and a large number of MMII Kamares ware cups have been recorded. ➤ At Lerna the number of imported Minoan vessels and the Minoan imitations number over 200. ➤ Pottery has also been found at Iolkos and Pefkakia in Thessaly.
MMIa - MMIII	Cyprus	<ul style="list-style-type: none"> ➤ MMIa jar from tomb 806A at Lapithos, Northern Cyprus. ➤ MMIb – MMII pottery has been found at Karmi.
MMIb - MMIII	The Levant	<ul style="list-style-type: none"> ➤ MMIb – MMII pottery has been found at Ugarit, Qatna, Beirut and Byblos.
MMIb - MMIII	Egypt	<ul style="list-style-type: none"> ➤ MMIb – MMII fragments have been recorded at Lisht, Harageh, Kahun, Abydos and Qubbet el Hawa. ➤ Imitations of foreign metal vessels were also made by Minoan potters from Knossos and Phaistos for export. ➤ The Tod treasure, which is a collection of silver vessels is believed to be Minoan or at least have a Minoan influence.

Evidence of contact is therefore threefold. Firstly there are the direct imports such as Egyptian scarabs and vases. Secondly there are local products made of foreign materials such as ivory, gold,

silver and of course bronze. Lastly there are the indirect signs, such as the use of Egyptian or Near Eastern motifs on seals, the influence of eastern architecture and the imitations of foreign wares.

Contact is however not trade. In order for trade to occur there has to be a reciprocal exchange of goods. The above chapter has shown that not only was there a demand for imported goods, but there is sufficient evidence that Crete had the ability to export a few select raw materials such as wood as well as finished goods which ranged from textiles to high quality pottery and metalwork. In turn she acquired an appetite for the luxury goods from the East. The arrival of the palaces not only facilitated trade but created a demand for exotic goods. Imports were no longer trinkets for use in private households, but were now marketable commodities. However the actual role of the palaces in trade is difficult to determine. Storage facilities and the rise of the bureaucracy is not necessarily an indication that the palaces monopolised trade, but there is every indication that the palaces played a large role in this arena. They must have been in a position to provide ships, commodities and other resources which were well beyond the capacity of any individual. They probably also controlled the harbours such as Kommos (near Phaistos) and Amnissos (near Knossos).

It would seem that the Minoans during the Middle Bronze Age concentrated on establishing trade links with the East to the detriment of the West. Ugarit and to a lesser extent Byblos became important contacts for the Minoan traders. At the end of the Middle Bronze Age they acquired tin and copper as well as luxury goods from Ugarit, which appears to have been a gateway into Mesopotamia. At this stage it is difficult to ascertain whether they had direct contact with Egypt or if there was a direct trade route to Egypt. Egyptian goods found in Crete and Minoan goods found in Egypt from the same period must mean that these two countries had some sort of trade relations. Of course they need not have conducted their trade at either of these two countries and trade may have taken place at some intermediate station such as Byblos. Moreover there is no way of telling where

the goods who ultimately conducted the business. Still the evidence of Minoan contact throughout the Aegean, the Levant and Egypt exists in abundance. On the basis on the information given above we can be certain the Minoans were actively involved in maritime trade and probably did travel as far as Egypt for commercial means.

That is not to say the west was ignored. Melos continued to supply obsidian, despite the availability of bronze and Phylakopi as well as Akrotiri on Thera became important trading centres. Kythnos and possibly Laurion provided the copper for most of the predominantly arsenic bronze of the Protopalatial period. The colony at Kythera continued to thrive well into Late Minoan times. Silver which became an increasingly valuable commodity had its source on the Greek mainland. Largely the domain of Cycladic traders during the Early Minoan period, Greece appears to have become an active trading partner especially at Agios Stephanos, Lerna and Thorikos, Laurion. The island of Keos seems to have also benefited from Minoan trade, largely due to her location in relation to the Laurion mines. The products obtained in the West could possibly then have been traded in the East along with other Minoan goods. This would certainly explain the presence of Laurion silver in Egypt. All this points to active trade networks, which were not only exploited by the Minoans in the Middle Bronze Age but provided a solid base for the most active trading period in Minoan history, that of the Neopalatial period.