

CHAPTER 1

The Dawn of the Bronze Age – The Aegean in the 3rd Millennium

Throughout the Minoan period Crete remained essentially an agricultural civilisation. As the civilisation developed and the palaces were established trade took on an increasingly important role in the economy, but never superseded the role of agriculture in society. In the Early Bronze Age Minoan trade was opportunistic with no clear procedure or tradable commodities. The Neolithic period, which is dealt with briefly below, created a stable foundation for Early Minoan growth. The commodities traded at this early period would have consisted of a variety of organic goods as well as metals and pottery. Trade would undoubtedly have been based on some form of reciprocity and therein lies the fundamental problem of Early Minoan trade. Crete is woefully short of raw materials and there appears to be more evidence of imports than exports. Renfrew emphatically states that the “Mediterranean triad”, namely the olive, the vine and wheat, formed the basis of the Minoan (and Mycenaean) civilisation from Early Minoan times.¹ Although it seems very likely that these products became increasingly important in later Minoan times it is with much hesitancy that they can be placed in the forefront of early Bronze Age development.

Crete in the Neolithic Period

The island of Crete was settled some time before 6000 BC, where the earliest inhabitants appear at Knossos. They could only have been early seafarers who took to the seas quite possibly from the Levant and came via the Cyclades or Rhodes and Karpathos to Crete. Little is known of the vessels in which they arrived. Speculations range from rafts to dugout canoes. Doubtless these crafts were primitive, but they had to be large enough to transport both people and animals. The earliest

¹ Renfrew, C., *The Emergence of Civilisation*, London, 1972, 280.

inhabitants of Knossos kept pigs, cows and sheep, which they could only have brought with them. The earliest settlement at Knossos was an aceramic culture. Their dwellings were built out of mud-brick, which was not common in the Aegean, and *tauf*, which was widespread.² In addition to their animals these people planted a variety of crops including six-row barley (*Hordeum vulgare* var. *hexastichum Körn*) and bread wheat (*Triticum aestivum*).³

There are few Early Neolithic sites on Crete, of which only three have been excavated in any detail namely Knossos, the Gerani Cave and the Lera Cave. Settlements continued to be sparse until the Final Neolithic period when communities began to establish themselves more widely over the island, particularly in the west, Phaistos and the Mesara plain.⁴ The site of Knossos grew considerably in the final Neolithic phase, with evidence of more specialisation occurring. The preponderance of spindle whorls that have been found in the Final Neolithic layer could indicate the beginning of a textile industry.⁵ There are already signs of early Minoan characteristics at this Neolithic phase. Renfrew lists pottery items such as the two-handled jar and handled cup that may be prototypes for the Early Minoan designs, although he does acknowledge that these similarities could be indicative of different contemporary settlements.⁶ It is an inescapable fact that development took place at different rates throughout the island and where there is evidence of the beginnings of a Bronze Age culture in some places other areas may still be at a Neolithic stage. Another precursor of the Minoan period can also be seen in Final Neolithic architecture. The Neolithic architecture often does not appear to have any design, but rather an agglomeration of rooms surrounding a rectangular room.⁷ This fundamental, almost opportunistic design, is common in subsequent Minoan buildings.

² Renfrew: 1972, 64.

³ Trump, D. H., *The Prehistory of the Mediterranean*, Harmondsworth, 1981, 41.

⁴ Watrous, L.V., "Review of Aegean Prehistory III: Crete from Earliest Prehistory through the Protopalatial Period", *AJA*, 98, 4, 1994, 700.

⁵ Trump: 1981, 73.

⁶ Renfrew: 1972, 71-72.

⁷ Hutchinson, R.W., *Prehistoric Crete*, Harmondsworth, 1962, 49-50.

The character of Neolithic trade in Crete is difficult to ascertain. The culture was fairly advanced by the end of the period, one that would appear intent on expanding their horizons. Improvements in transport enabled them to embark on wider maritime exploration, although it would be incorrect to consider it conscientious trade at this stage. These new seafarers possibly came into contact with merchants from Egypt and the Levant. Stone maceheads which are similar to ones found in Mesopotamia make an appearance in the Cretan Final Neolithic period as do the remains of stone vases that may have originated from Egypt at the end of the Pre-Dynastic period.⁸ Yet the presence of these vases does not necessarily indicate trade with Egypt. Egyptian trade networks were already fairly wide at this stage, with evidence that they travelled frequently to Byblos. The few isolated artefacts that found their way into Crete at this time were probably private trinkets coming via the Levant. These possibly changed hands several times before arriving at the island. It is extremely unlikely that there was trade between Neolithic Crete and Egypt.

One commodity that is of particular significance in the understanding of Neolithic trade was obsidian. This mineral is both datable and traceable through a study of trace elements, providing vital clues on trade routes in the Neolithic era. It is also the earliest commodity whose movement in the Aegean can be recorded. Most of the obsidian used in the Aegean comes from the Cycladic island of Melos. Melos would appear to have been uninhabited in the early Neolithic period, however it is very clear that the island was frequently visited for the exploitation of the volcanic glass. The quarries at Adhamas and Dhemenegaki provide evidence that the stone was mined from Neolithic times well into the Bronze Age.⁹ Large flakes that have been found at the quarries but not elsewhere, would appear to be tools used to extract the obsidian. The stone was apparently transported in rough conical cores

⁸ Hutchinson: 1962, 53.

⁹ Renfrew: 1972, 442.

(Plate 4) and then crafted into tools, possibly by specialist stone workers. Evidence of such work has been found at Saliagos on the island of Antiparos, where cores and as well as flat-flaked artefacts and chipping waste have been found.¹⁰

In this primitive age the acquisition of obsidian must have been a serious undertaking. There are two conceivable ways in which the mineral was obtained. The first would be for communities to arrange an expedition to the island. This could either have been a singular undertaking where members of only one village embarked on the journey or a number of villages co-operated in arranging the expedition. It is difficult to be certain of the interaction between villages at this time and whether they could be capable of organising a united excursion for the common good. The second method could have involved actual trade where groups of individuals organised trips to the island, collected and exchanged obsidian cores with communities on Crete and the Cyclades. It is possible that there were two legs to this industry. Firstly the travellers who went to Melos and obtained the mineral. This was then traded with stoneworkers, who fashioned the stone into tools and marketed the finished product. Perhaps the village of Saliagos on Antiparos could be an example of specialist stoneworkers. As mentioned above at this site cores, finished implements and lapidary waste have been found. While most obsidian was gathered from Melos some was obtained from Antiparos itself and Giali on the Eastern Aegean. The presence of Giali obsidian is somewhat unexpected. This type fractures badly and not suitable for blades and its appearance is surprising so far away from its source. Giali obsidian was used locally, but is unknown in the rest of the Aegean aside from the Neolithic site of Saliagos on Antiparos. Likewise the obsidian from Antiparos has only been found locally.¹¹ All obsidian found on Crete was imported from Melos.

¹⁰ Renfrew: 1972, 442.

¹¹ Renfrew: 1972, 442.

Chronology and the Phases of Early Minoan Development

The first phase of the Minoan civilisation was a long period of transition and slow growth. Chronology for the period has been revised a number of times with current theory placing EMI at about 3500 BC-2900 BC. Consequently EMII, at 2900-2300/2150 BC was therefore a much longer period than originally envisioned by pioneers such as Sir Arthur Evans.¹² As can be expected the chronologies do not necessarily apply to the whole island and there are periods of uneven development. The eastern side of the island seems to have been fairly isolated and lagged behind.¹³ It appears that these early communities were for the most part insular and self-sufficient with limited contact between them. The physical terrain of Crete with its vast mountain ranges does not lend itself to much inland travel.

EMI is characterised by a dramatic increase in settlements throughout the island. They doubled in the Western Mesara and in the Agiopharango Valley in the south the number of settlements increases from two Final Neolithic sites to eleven from EM1.¹⁴ The type of settlement also changes from farmsteads to hamlet-sized dwellings. Burials, from which most evidence is obtained, took place in caves and rock shelters throughout much of the island. The Mesara in south central Crete built the first tholos tombs and the bodies were carefully prepared for burial. The stable and prosperous conditions at the end of the Neolithic period would have lent itself to population growth. The advent of the plough, proper exploitation of domestic animals such as the ability to make cheese ensured that the communities had a steady supply of food and provided the settled conditions needed to increase the island's population.¹⁵ It is also possible that groups of immigrants came into Crete during this

¹² Watrous: 1994, 698; Kemp B.J. and Merrillees, R.S., *Minoan Pottery in Second Millennium Egypt*, Mainz, 1980, 255-256.

¹³ Cadogan, G., "Why Was Crete Different" in *The End of the Early Bronze Age in the Aegean*, Cadogan, G., (ed), Leiden, 1986, 154.

¹⁴ Watrous: 1994, 701.

¹⁵ Watrous: 1994, 704.

period. Some new settlements from Final Neolithic to EMI were built on easily defensible sites such as the Gortyn Acropolis or Trapeza, which might suggest newcomers. The high percentage of foreign goods found at the cemetery of Agia Photia in relation to other burial sites in the vicinity such as Pyrgos may also indicate immigrants.

As with EMI knowledge of the EMII period (ca. 2900-2300 BC) comes mainly from burial sites. These are supported by the excavations that took place at settlements such as Fournou Korifi at Myrtos by Peter Warren and Vasiliki by Antonis Zois. New excavations have also taken place at Trypeti and Hagia Triada, where two Prepalatial houses were uncovered. Burials continued in the tholos tombs on the Mesara, and cyst graves and house tombs began to be used in the north. Evidence from the tholos tombs is limited as the excavations of the few unlooted tombs have either not been published or occurred early in the 20th Century when methods were dubious and incomplete by today's standards.

The end of EMII is marked by the abandonment and destruction of a number of settlements. Much of the countryside was deserted and only resettled in MMIA (ca. 2100-2000 BC). Many of the communal tombs such as those at Hagia Triada B and Archanes Tholos A show a period of discontinuity between EMII and MMI.¹⁶ EMIII (ca. 2150-2100 BC) is a difficult period in Minoan history. Much of EMIII is considered only to be a stylistic change as it is not easy to distinguish between EMIII and the levels of EMII B and MMIA. To compound the problem there are very few examples of complete stratigraphy from EMII to MMI clearly showing the EMIII level. Vasiliki is the only site in East Crete which shows stratified levels of EMII, EMIII and MMI in their chronological sequence.¹⁷

¹⁶ Watrous: 1992, 718.

¹⁷ Watrous: 1992, 719.

Ships in the Early Bronze Age

From the very beginning Crete's destiny was tied to the sea. The first inhabitants arrived in some sort of vessel and excursions were undertaken to retrieve obsidian from Melos. It is probable that the boats in the Early Minoan period were a continuation of those Neolithic crafts. Depictions of ships are limited in Crete during the Early Bronze Age. In the Cyclades evidence of seafaring comes mainly from the so-called "frying pan" (Plate 5), a flat pottery object with slightly raised sides. These artefacts have no discernible function, although they may have been plates or have had some religious function. The "frying pans" have been found throughout the Cyclades, on the mainland and even as far afield at Alaca Huyuk in Central Anatolia. About two hundred have been found in total and are generally made of terracotta. Some stone ones have been found and the two from Anatolia are made of bronze. The "frying pans" are generally dated to ECII (ca. 2800 – 2300 BC), with little evidence of them occurring during either ECI (ca. 3300-2800 BC) or ECIII (ca. 2300-2000 BC).¹⁸ They are generally inscribed with spiral decorations, but often included illustrations of boats. In Crete depictions of boats come in the form of two early models from Palaikastro and Mochlos and seals which began to be produced at the end of the Early Minoan period (ca. 2000BC) (Plate 6). The Palaikastro vessel appears to be similar to those on the Cycladic "frying pans" with both having a high prow, low stern and powered by a single bank of oars, similar in some points to a Scandinavian longboat. The second Cretan model, found at Mochlos, looks quite different from that of Palaikastro. Both sides are of equal length and it has been interpreted by Hutchinson to be a dugout canoe which could have fished in coastal waters, but is unsuitable for inter-island trade.¹⁹

None of the illustrations from the Cyclades have any sails, although an Early Helladic vase found at Orchomenos shows a Cycladic longboat with two masts (Plate 6).²⁰ If the early Minoans made use of

¹⁸ Coleman, J.E., "Frying Pans" of the Early Bronze Age Aegean", *AJA*, 89, 1985, 193-197.

¹⁹ Hutchinson: 1962, 91.

²⁰ Vermeule: 1974, 54.

the sail it would have been fairly limited. Sails were used in Pre-Dynastic Egypt and it is possible that this innovation had spread as far as Crete. Egyptian river-craft made use of papyrus sails, which may have served on the Nile, but would not have withstood the rigours of sea travel. Therefore vessels going out to sea would probably have had a sail made of flax. Leather and wool sails would have been very heavy and possibly prohibitively expensive to produce, although these fabrics should not be excluded entirely.²¹ The sails were set in a way that made tacking virtually impossible, limiting the boat's ability to make full use of the wind. Consequently the sail could only be used with the wind and alternate means had to be found for navigating against it. In Egypt this did not prove much of a difficulty as the wind generally blows from the north. The early Egyptian sailors used the current of the Nile to bring them downstream to the Mediterranean Sea and the wind to sail upstream. In Mesopotamia oars and haulage needed to be used along with the sails navigate their rivers. If Cretan vessels did make use of the sail it would have been in conjunction with oars. Probably at no time during the Bronze Age did mariners rely on the sail alone. In their travels the seafarers would have stuck to the shoreline as often as possible. On trips that involved the crossing of open seas, such as the voyage to Melos, the journey would have been conducted in an island-hopping fashion, where the length of the sea crossing was limited.

There is some argument as to which is the front of the vessels in the illustrations. In the EMII model from Palaikastro, there is a distinctive raised end on the one side and the other has a small projection. This vessel is very similar to the boats illustrated on the Cycladic "frying pans", which have the same features. The protrusion has been interpreted by some as a battering ram similar to that used in later Greek triremes. This is extremely unlikely. There is nothing to suggest that either Crete or the Cyclades employed such devices at such an early age and the projection may have been a device to

²¹ Vermeule: 1974, 55.

stabilise the boat on the water. Evans originally proposed the idea that the raised end of the boat was the prow and it has been widely accepted.²² In support of this theory many of the Cycladic depictions include what looks like a fish incised above the highest point of the boat. The fish would undoubtedly have been swimming forward and therefore indicates the direction in which the boat was travelling. Although this has been disputed, most notably by Betts who believes that this is rather slender evidence at best and is insufficient to make an informed decision.²³

The seals give a different view of Minoan shipping. The Cretan seal industry began in earnest shortly before 2000 BC, when they were carved from bone and ivory, and were found mainly in the tombs of the Mesara. Soft stone seals followed shortly thereafter. The earliest seal depicting a ship comes from an ivory seal found at Platanos. This vessel also appears to have a high prow although not nearly as distinctive as the Cycladic illustrations or Palaikastro model, the keel seems to be more rounded which is a distinctive feature of later vessels, and there are also indications of the three-pronged arrangement found in later Minoan and classical ships.²⁴ It must be noted that the early Cycladic/Minoan type of boat is not paralleled in the middle and especially late Bronze Age.

The effectiveness of these vessels in trade is debatable. The illustrations show between 15 to 25 sets or oars per vessel. This is considerable manpower for a small village and creates a number of constraints.²⁵ Firstly the boats would only have been used at times when there was both a lull in agriculture, which would have been the village's main source of food, and a window period of good weather allowing sea travel. Secondly the shape and size of the longboat is not ideal for trade. It is too large and not cost effective for small items such as obsidian, marble and metal, unless trade only

²² Such as Hutchinson: 1965, 92.

²³ Betts, J.H., "Ships on Minoan Seals", in *Marine Archaeology*, Blackman, D.J. (ed), London, 1973, 326.

²⁴ Betts: 1973, 326. Betts notes that in the three-pronged arrangement the extension is usually found at the stern rather than prow.

²⁵ Broodbank, C., "The Longboat and Society in the Cyclades in the Keros-Syros Culture", *AJA*, 93, 1989, 332.

formed a part of the journey. It is too narrow for bulk cargo as it would restrict the rowers and is too unstable for live cargo. At this early juncture in Minoan development it does not seem likely that trade was actively sought, but rather the consequence of exploration and a spirit of adventure that prevailed at the time.

Agriculture and Trade

A fundamental aspect of any exchange system is the possession of surplus goods. Crete is an island which has very little to offer by way of natural resources and nearly all goods used in trade had to be produced through the agency of man, such as pottery, textiles or agricultural produce. In Crete agriculture was pre-eminent throughout the Bronze Age, but the nature of cultivation changed from one of basic survival, which is apparent in the Early Bronze Age, to specialisation and surplus production in the Late Bronze Age.

Cereal agriculture in Crete is a challenge even to modern farming methods. Much of the land is not arable and the threat of drought exists constantly. The climate during the Final Neolithic period in Crete appears to have been on average wetter and warmer than it is now, which is conducive for the growing of both wheat and olives.²⁶ Emmer wheat (*Triticum dicoccum*) and two-row barley (*Hordeum distichum*) were domesticated at much the same time during the initial stages of Greek agriculture. Barley is found wild in the two-row variety, with just two kernels on the head. By the end of the Neolithic period the Cretans were already planting six-row barley (*Hordeum vulgare* var. *hexastichum Körn*), where there are six kernels per head. These two varieties can be recognised in botanical remains through the slight twist in the base of the kernels of six-row barley. Two-row barley has uniform bases. It is likely that in Crete and much of Greece it was probably six-row barley that

²⁶ Moody, J., Rackham, O., Rapp, G. jr., "Environmental Archaeology of Prehisotric NW Crete", *Journal of Field Archaeology*, 23, 1996, 290.

became the dominant crop in the early Bronze Age. Wheat is a demanding crop, which requires careful cultivation, adequate rainfall and temperature. It is also susceptible to disease. Because of this there are very few areas within Greece that can successfully produce this crop. Barley on the other hand is hardy and able to grow in the thin, limestone soil which is characteristic of the region.²⁷ It is also the cereal most commonly mentioned as a staple in the Homeric epics.²⁸ Wheat, which was to become very important in the Classical era, does not appear to have had the same widespread distribution in the Bronze Age. Throughout this period it would probably have been prized among the more wealthy as a luxury due the presence of gluten and hence its ability to make a well-risen loaf. Because of this those able to cultivate it would probably have used the cereal for exchange rather than regular consumption. Barely was the staple of the common man, however, despite the difficulties involved in cultivation wheat was still grown alongside it. In Myrtos an impression of a wheat grain has been found on the ventral side of a coarse pot, although its exact species is indeterminable. An imprint of a barley kernel was found on the same pot. Barley impressions have also been found in mud plaster at Mytos, including the triple spikelets of six-row barley.²⁹

The two other commodities of Renfrew's triad, the olive and vine, are among the most important crops in Greek history. While there is little doubt that these played a vital role in the later Bronze Age economy it is debatable what position they held in Early Minoan agriculture and trade. There is very limited ethnoarchaeological evidence to suggest that the olive and the vine were very important at this time. The earliest evidence of olives in a Greek context occurs with the finding of a single olive stone at Soufli Magoula in Thessaly in the Aceramic Neolithic period. In the early Bronze Age stones become slightly more common, especially in Crete, with very limited finds at Myrtos, Knossos and

²⁷ Braun, T., "Barely Cakes and Emmer Bread" in Wilkins, J., Harvey, D. & Dobson, M. (eds), *Food in Antiquity*, Exeter, 1995, 26-27.

²⁸ *Il*: II, 500; *Il*: XI, 744; *Od*: III, 450; *Od*: XI, 30.

²⁹ Renfrew, J.M., "Appendix V: The Plant Remains" in Warren, P., *Myrtos, an Early Bronze Age Settlement in Crete*, London: The British School at Athens, 1972, 317.

Lebena. The solitary stone found at Myrtos is currently the earliest evidence of olives in Crete. This stone is thought by J.M. Renfrew to be of a cultivated variety.³⁰ Another Early Minoan find in Crete comes from tomb II at Lebena. This was a communal tomb in use throughout the Early Minoan period. The continual interference has therefore permitted only a broad chronology of EMI-MMI.³¹ On the mainland the only Early Helladic finds occur at Tsoungiza.³² While these stones might belong to cultivated olives they could just as easily come from the wild variety, which occurs naturally in the area. The stones of the wild olive are slightly smaller than the domesticated one, but none of these finds provide a numerous enough sample to be certain. The same is true of olive wood charcoal that has been found at a number of archaeological sites. There is no way of identifying wild from cultivated wood, although Rackham believes that the absence of rings in most olive wood charcoal is indicative that branches were generally burnt instead of whole trunks.³³ This might be indicative of pruning, suggesting cultivated wood. It is possible that the stones found belonged to wild trees and the fruit production of these trees was encouraged through pruning.

As seen above there are too few olive remains to ascertain how great a role they played in agriculture. The number of stones found would not suggest that they were of primary importance in the Minoan economy. It is true that the lack of finds may have a lot to do with early archaeological practices that did not employ techniques such as water sieving and it is possible that much evidence was lost. The cultivation of olives is a very labour intensive undertaking. The trees do not start producing fruit for the first fifteen years and only become productive after twenty. They require constant pruning and the ground around them must be ploughed. This type of agriculture requires a high degree of specialisation. With the existence of palaces, which probably functioned as distribution centres, it is

³⁰ Renfrew, J.M: 1972, 316-317.

³¹ Warren: 1972, 256; Renfrew, J.M: 1972, 317.

³² Hansen, J.M., "Agriculture in the Prehistoric Aegean: Data versus Speculation", *AJA*, 92, 1988, 39-52.

³³ Rackham, O, Appendix III. Charcoal and Plaster Impressions in Warren, P., *Myrtos, an Early Bronze Age Settlement in Crete*, London: The British School at Athens, 1972, 303.

possible that a degree of crop specialisation was encouraged. However before the palaces were established it is highly unlikely that the olive, which has limited nutritional value, would have been the dominant crop. It must have been grown alongside cereals in order to sustain the farmer and his village. This is demonstrated at Myrtos, which cultivated a variety of crops.

While it must be accepted this olive cultivation was extremely limited it would seem that olive oil was present in the Aegean during this time. Olive oil production has been evident in the Mediterranean since Neolithic times. Renfrew believes that the increase in cups and pouring vessels in Early Minoan times can be traced back to an increased use of liquids, such as wine or oil. Some pouring vessels have been found in a Neolithic context, but their numbers were few. The “teapot” made its appearance in Crete, and jugs, which can be stoppered, appear throughout the Aegean (Plate 7). Jugs are not known in the Neolithic age. Renfrew’s argument has some merit, although Hansen is correct in believing that it constitutes insufficient evidence to place olive and vine cultivation at the heart of the Early Bronze Age economy.³⁴ Renfrew cites a test conducted on a jug from Naxos which was found to contain olive oil to support his theory.³⁵ This has been refuted. Hansen believes that it would be virtually impossible to distinguish between different vegetable oils after such a long period and feels that this jug needs to be retested to obtain clarification. The indications are that the oleic lipid breaks down rapidly and it would be virtually impossible to identify its presence with any certainty.³⁶ At best tests can distinguish between animal and vegetable fats. An analysis on lipids from sample vessels found at Myrtos have identified some animal fats, probably from the washing and dyeing of wool. The presence of vegetable fats was undetermined. It must also be noted that the

³⁴ Hansen: 1988, 92

³⁵ Renfrew: 1972, 285. “... olive oil was reported from a jug in a grave of the Keros-Syros culture in Naxos. Soil from within this small jug, 8.5cm high, was examined for the excavator Klon Steohanos, by Professor K. Zengelis and found to contain traces of olive oil. (Stephanos 1906, 88, cf. Papathanasopoulos 1962, 118).

³⁶ Bowyer, D., Appendix X. “Chromatography Analyses for Lipids in Clay” in Warren, P., *Myrtos, an Early Bronze Age Settlement in Crete*, London: The British School at Athens, 1972, 330-331.

Naxian jug and its contents were grave offerings, possibly indicating that its contents were valuable, which is quite contrary to the belief that olive oil was freely available.

In addition to pouring vessels Renfrew also comments on the appearance of lamps in the early Bronze Age which indicates that oil was used as a fuel.³⁷ Lamps are not generally found in the Neolithic period. However a study done on LM lamps and cups from Mochlos indicates that beeswax not olive oil was burned.³⁸ Therefore the presence of lamps does not necessarily indicate the presence of olive oil. This is a widespread inference, which is derived from the use of oil in lamps during the classical period and the mention of oil in the Linear B tablets as well as the appearance of lamps in a time when oil production was supposed to be gaining momentum. Although it is probable that for the most part olive oil was burnt in lamps, it was not the only fuel source and the arrival of lamps does not necessarily indicate the widespread use of oil.

Arguments for and against the appearance of wine in the Early Bronze Age are very similar to that of the olive. Like the olive it is difficult to grow, requiring large amounts of pruning and care. The vines do not produce a yield for a number of years, although like the olive once mature they are fruitful for years. The pouring vessels which Renfrew notes are as relevant to wine as they are to olive oil. The sealable jugs would be more suitable for wine that requires stoppers. The grape skins and pips found at Myrtos have been identified by J.M. Renfrew as possibly being cultivated rather than wild.³⁹ This identification is far from certain as the grapes found appear to be immature, therefore having smaller pips, which is also an indication of wild grapes. It is uncertain as to whether these grapes were used for raisins or wine. Renfrew states, quite convincingly, that immature grapes would be unlikely to be

³⁷ Renfrew: 1972, 285.

³⁸ Evershed, R.P., Vaughan, S.J., Dudd, S.N., Soles, J.S., "Fuel for Thought? Beeswax in Lamps and Conical Cups from Late Minoan Crete", *Antiquity*, 71, 1997, 979-985.

³⁹ Renfrew, J.M.: 1972, 315-316.

used for raisins, but would have little effect on wine, and that the crushed skins containing the yeast *Saccharomyces ellipsoideus*, which is vital for viticulture, are in the early stages of fermentation. Further evidence of the vine in the area can be seen from a vine leaf impression on a sherd. Other roughly contemporary vine leaf impressions have been found on wares from Naxos and Tarsus.⁴⁰

The data on viticulture in the Early Bronze Age is as limited and tenuous as that of olive cultivation. The implications are that the so-called “Mediterranean Triad” in the Early Minoan period was in fact non-existent. Olive oil and wine can only be produced in large quantities on a specialised basis. This could not have occurred until the construction of the palaces and a change in the social system. It is possible that some form of cultivation did take place, but this would have been in such insignificant quantities, that a thriving trade would have been impossible. Wheat, due to its fastidious nature, was difficult to cultivate and barley was the staple on which the villagers depended for survival. Excesses in either would have been very small if they occurred at all. However the small surpluses and the limited production of wine and oil should be examined in the context of Early Bronze Age trade. This, as detailed below, was occasional and incidental.⁴¹ The concept of “thriving trade” during this period is a fallacy. Therefore when some form of trade did occur it probably should not be doubted that the agricultural produce at the Minoan villager’s disposal formed part of the exchange.

Textile Manufacture

Weaving had been in existence since Neolithic times, attested to by impressions on pottery or small carbonised remnants.⁴² A large number of loom weights from all stages of the Minoan era have been found throughout Crete. The significant quantity of loom weights found at Early Minoan Myrtos led

⁴⁰ Warren: 1972, 239.

⁴¹ Chapter 1, 26-36.

⁴² Barber, E.J.W., *Prehistoric Textiles: The Development of Cloth in the Neolithic and Bronze Ages*, Princeton, 1991, 312.

Warren to surmise that textile production constituted a large part of the village's economy.⁴³ The cloth woven is however uncertain. The stony, almost barren land of Crete may be unsuitable for agriculture, but it is acceptable for grazing. The Linear B tablets list cattle, sheep and goats as principal livestock. They also tabulate woollen cloth as being among their assets. There is unfortunately no surviving evidence of woollen cloth in Early Minoan times. The few cloth remnants that have been discovered appear to be linen not wool. The dangers of using late Minoan and Mycenaean evidence, such as Linear B, for information on earlier times has already been made apparent in the discussion on olive cultivation. Still the analyses on lipids from vessels at Myrtilos has shown unmistakably that animal fat was present in at least one vessel. Perhaps this was used for fulling, the process used to remove grease from wool to be used for weaving, or for dyeing wool.⁴⁴

Remnants of linen have been discovered in the Aegean but these date from the second millennium.⁴⁵ It is however probable that linen was present from the earliest days of weaving. Remains of the fabric have been found in Neolithic Egypt.⁴⁶ Wool was also taboo for the Egyptians, making it an unlikely export to that country.⁴⁷ Linen was probably their preferred fabric. There seems to have been some movement of Egyptian goods into Crete during EMII (ca 2900 – 2300 BC), but there is no evidence that the Minoans came into direct contact with Egypt at this early stage and these exotic items probably came via merchants from the Levant. Far more likely was trade with the Cyclades who would have accepted both wool and linen. It is difficult to estimate the volumes involved but it may have been sufficient to encourage or at least facilitate trade.

⁴³ Warren: 1972, 262.

⁴⁴ Bowyer: 1972, 330-331.

⁴⁵ Barber: 1991, 312.

⁴⁶ Renfrew: 1972, 351.

⁴⁷ Davisson & Harper: 1972, 16.

Metallurgy

One of the main elements of the Bronze Age is the development of metallurgy. Copper, a soft, easily worked metal, had already been in use since the Neolithic. The skills of the smith developed greatly in the Bronze Age enabling him to work with bronze, gold and silver. Throughout the Aegean in the EB 1 period (ca. 3300 – 2900 BC) there was increased use of copper, but the demand for bronze was limited and probably alloying techniques were at that stage little known. The origin of these procedures is uncertain. It is possible that they were introduced from Anatolia or even the Balkans, who had long been smelting copper. By EB 2 (ca. 2900 – 2300 BC) knowledge of bronze and metallurgy in general had become more widespread and the demand for metals increased.⁴⁸ Renfrew feels that the sudden demand for metals stems from the invention of the dagger, which first appeared at the Troy I level as well as Thermi and Poliochni.⁴⁹ This weapon was one that was not easily reproduced by Melian obsidian. Other metal tools were not necessarily greatly superior to their stone counterparts at the beginning of the Bronze Age to warrant the sudden demand for metal.

The metals worked in Early Minoan times were copper, bronze, gold and silver. Geological surveys of the Aegean show that copper is available in Crete and the Cyclades (Plate 8).⁵⁰ This study includes both oxide and sulphide ores and shows current known deposits, not necessarily those mined in the early Bronze Age. It is possible that there are more low quality deposits in existence, which may be insignificant to modern geologists, but could have been utilised by early metallurgists whose chief concern was quantity over quality. In Crete the ore found in the south is generally low grade, whereas that in the west has a fairly high percentage of copper. Oxide ore is more common in Crete and the Cyclades and is generally found on or close to the surface of the earth. Oxhide ores generally have

⁴⁸ Renfrew: 1972, 313.

⁴⁹ Renfrew: 1972, 320.

⁵⁰ Branigan, K., *Aegean Metalwork of the Early and Middle Bronze Age*, Oxford, 1974, 59-60.

lower copper yields than the sulphide variations, but its locality near the surface made it more accessible to the early Bronze Age miners.

While it is fairly easy to establish that Crete had small copper deposits it is more difficult to ascertain whether the Minoans made use of these resources. In general ores were smelted at, or very close to, the place of discovery and traded in some form of ingot. It is highly unlikely that unrefined ore was traded. Branigan makes the important observation that a number of Early Minoan settlements, such as Fournou Korifi and Knossos itself, are placed close to copper ore deposits. Branigan feels that the fire debris, burnt stones and large quantities of EM pottery found at Fournou Korifi possibly indicates ore smelting.⁵¹ In contrast Warren does not believe that the firing temperatures were high enough to smelt copper.⁵² The absence of slag and limited quantity of copper implements found at Fournou Korifi would tend to favour Warren.⁵³ Knossos has been settled since the Neolithic and it is doubtful that the presence of copper ore was instrumental in the choice of site. The lack of slag datable to the Early Minoan period is not limited to Fournou Korifi, but is not evident near any of the copper sites on the island. It would therefore seem that Crete did not make use of her copper resources in this or indeed any of the following periods of Minoan history and the metals found there were imported from the Cyclades or elsewhere.

Bronze became prevalent from EMIII (ca. 2900 – 2300 BC). Analyses have found that a majority of the artefacts found in Crete are arsenic bronzes as opposed to tin bronze which only becomes common in the Late Minoan period.⁵⁴ Copper has a number of trace elements present in its

⁵¹ Branigan: 1974, 62.

⁵² Warren: 1972, 262 .

⁵³ Only one copper dagger, which due to its high lead content was an import possibly from the region near Lebena, South Crete, and a copper chisel have been found. (Warren: 1972, 267).

⁵⁴ Branigan, K, *Copper and Bronze Working in Early Bronze Age Crete*, Lund, 1968, 47; Branigan: 1974, 58; Renfrew: 1972, 314.

composition of which arsenic is usually one of them. Therefore a distinction has to be drawn between the arsenic which occurs naturally and that which has been deliberately added. The percentages of arsenic found in many of the bronzes seem to indicate that it was added deliberately. While it is true that the exact percentages that comprise deliberate alloying are debatable it is generally accepted that a ratio over five percent should be considered intentional.⁵⁵ The sources of arsenic are problematic. Arsenic is a brittle, grey metal that rarely occurs naturally and then only in diminutive quantities. It is usually extracted from a number of sulphide ores particularly arsenopyrite (FeAsS), orpiment (As₂S₃) and realgar (As₂S₂). Some copper sulphide ores have a very high percentage of arsenic, particularly enargite (Cu₃AsS₄). It is possible that the arsenic present in Early Minoan bronzes came from the sulphide copper ores native to the Cyclades, although sulphide ore has generally been thought to have been beyond the reach of the early Bronze Age miners due to its location deep underground. Alternatively arsenic may have been extracted from the non-cupriferous minerals of realgar and orpiment. Both these minerals are mined in modern times around the Aegean, with realgar common in Macedonia and orpiment available in both Greece and Turkey.⁵⁶ Orpiment is generally found in association with realgar.

In the Early Bronze Age there is a distinctive distribution of bronze in the Aegean. In the north, at towns such as the Troy, Thermi and Poliochni, the bronzes are more often tin bronzes with few arsenic alloys. In Crete however the quantity of arsenic bronzes far exceeds those of tin. The Cyclades show an approximate 50/50 mix (*Table 1*).⁵⁷

⁵⁵ Renfrew: 1972, 320; Branigan: 1974, 72.

⁵⁶ Russell, H., *Encyclopedia of Rocks, Minerals and Gemstones*, London, 2001, 208 & 232.

⁵⁷ Branigan: 1974, 74.

	Tin Bronzes		Arsenic Bronzes	
	EB1 – 2 ca. 3200-2400 / 2300 BC	EB3 – MB2 ca. 2300 – 2000 BC	EB1 – 2 ca. 3200-2400 / 2300 BC	EB3 – MB2 ca. 2300 – 2000 BC
Troad	43%	75%	15%	---
Cyclades	34%	83%	31%	16%
Crete	15%	33%	40%	25%

Table 1. Percentage of analysed bronze artefacts from each region in the EB1-MB2 period

(from Branigan: 1974, 74)

It is quite clear that the settlements on the Troad had a source of tin or at least had found a supplier of tin bronze. The origin of this tin remains an enigma. Branigan suggests that the tremendous wealth of Troy II stemmed from their ability to obtain and trade in tin or tin bronze.⁵⁸ This seems highly plausible. Tin was an extremely rare and precious resource throughout the Bronze Age. Any settlement that had access to this mineral would grow very wealthy very quickly. The tin content of the bronzes found at Troy II (sometimes exceeding 10%, the ideal alloy ratio) would suggest that the early Trojans had access to vast quantities of this metal. By contrast the limited tin in bronze artefacts found at Crete rarely exceed 5%.⁵⁹ Renfrew suggests that there may have been an alluvial source in the Troad region, which has since been worked out.⁶⁰ Branigan is in favour of this theory as being the

⁵⁸ Branigan: 1974, 65.

⁵⁹ Branigan: 1974, 74.

⁶⁰ Renfrew: 1972, 313.

one most plausible.⁶¹ However Dayton rejects it out of hand.⁶² He states that the existence of alluvial tin can be proved through geological research. Alluvial tin is the product of the erosion of intrusive rock carrying the ore. However since this intrusive granite rock is found below the earth's surface only the outcrops are washed into the rivers and the volcanic pipes which brought the metal to the surface will still be present. Yet none have been found, casting considerable doubt on Renfrew's theory. Dayton believes that tin probably came from the rich mines of Hungary and Spain and was transported across Europe as far as the Black Sea. Troy and the equally wealthy settlement of Poliochni on the island of Lemnos are ideally situated to be recipients of this trade. This seems plausible but there is at present no evidence of trade between these areas. Trade was in its fledgling state and the existence of organised routes across these vast areas seems unlikely in the extreme and most of Dayton's theories have been rejected.⁶³

Historical knowledge of tin in the Near East comes from cuneiform texts which mention *annaku*, which is believed to be tin, but are very ambiguous about their source of this mineral. Speculations therefore abound. A recent theory, proposed by Yener and Vandiver, suggests that the solution to the East's tin resources lies not in one large mine, but a number of small mines.⁶⁴ The Kestrel mine near Goltepe is possibly an example. Crucibles used for smelting tin can be dated to the third millennium as can pottery found at the Kestrel mine. Perhaps a similar mine is waiting to be discovered near the Troad. Still the absence of any tin source in the Aegean is disturbing. Tin artefacts with the exception of a bracelet from Thermi have not been found in the Aegean or the Middle East. The lack of finds

⁶¹ Branigan: 1974, 64. While this may be a plausible explanation, Branigan believes that it is quite possible that there never were tin sources in the Aegean just as there are none now. Although he admits that Dayton's theory is possible he is disinclined to accept it over that of Renfrew's.

⁶² Dayton, J.E., "The Problem of Tin in the Ancient World", *World Archaeology*, 3, 1971, 49-79.

⁶³ Muhly, J.D., & Wertime, J.A., "Evidence for the Sources and Use of Tin during the Bronze Age of the Near East: A Reply to J.E. Dayton", *World Archaeology*, 5, 1973, 111-122.

⁶⁴ Yener, K.A. & Vandiver, P.B., "Tin Processing at Goltepe, an Early Bronze Age Site in Anatolia", *AJA*, 97, 1993, 207-238.

has been attributed to metal's inability to survive in an unalloyed state for long periods of time. Bass's discoveries of tin in the two Late Bronze Age wrecks (the Cape Gelidonya and the Uluburun) off the coast of Turkey could counter these arguments.⁶⁵ It must be noted that given the metal's sheer rarity and value the likelihood of finding artefacts of pure tin would always be negligible. Regardless of their source of tin, Troy II undoubtedly had access to this metal or at least the final tin bronze alloy. It is also probably fairly safe to say that the seeming monopoly the Troad had on this product led to great wealth. The spread of the metal throughout the Aegean gives a fair amount of evidence regarding trade. The lack of tin bronzes in the mainland would suggest that Greece was not actively involved in trade in the Northern Aegean at that time. Crete too had only a limited number of tin bronzes, whereas those of the Cyclades were high, suggesting that these islands had much more contact with the Troad.

In addition to copper and bronze, gold was also worked during the Early Minoan period. Like copper it is malleable and a gold pendent found at Neolithic Sesklo would suggest that nuggets had been hammered into shapes since that time.⁶⁶ There is no existing evidence that gold is found in Crete. Branigan tentatively suggests that there may have been small alluvial deposits as an explanation for the quantities of gold found in Crete, but would probably not willingly argue this point. Gold it would appear was imported like other metals, quite possibly from the Cyclades who had a few deposits.

Ivory

Ivory is another foreign object that made its way into Crete from EMII. Cadogan considers the appearance of ivory as an indication of contact with the Levant "if it is really from elephants".⁶⁷ Kryszkowska has shown quite convincingly that it is not, but that does not mean that the ivory did not

⁶⁵ Bass, G.F., "A Bronze Age Shipwreck at Ulu Burun (Kas): 1984 Campaign", *AJA*, 90, 1986, 274.

⁶⁶ Renfrew: 1972, 311.

⁶⁷ Cadogan: 1986, 158.

come from Egypt or Syria.⁶⁸ Kryszkowska has done detailed analyses on both elephant and hippopotamus ivory and has concluded that most of the ivory found in the Aegean, and in fact through much of the Levant, is from hippopotami. Elephants in Egypt seem to have been hunted to extinction by the end of the Early Dynastic Period, thus limiting their ivory sources although it is possible that they traded with southern lands for elephant tusks. However hippopotami lived in the swamps of the Nile. They also appear to have lived in similar conditions in Syrio-Palestine such as the Orontes basin and Amuq plain, possibly until the first millennium. The so-called Syrian elephant was probably the Indian elephant and does not seem to have been known in the area much before ca 2000 BC.⁶⁹ It would therefore seem that hippopotamus ivory was more freely available and hence more common.

Cretan ivory could have come from either of these sources. The earliest ivory finds date from EMII, although few come from well-stratified contexts. Those found in the tholos tombs can only be dated approximately from EMII-MMIA. Therefore there is no way of ascertaining the nature of the ivory trade. Did it come into the island in steadily increasing quantities from a humble beginning? Kryszkowska believes that on the whole ivory was probably a rare item and was only traded if it was available. As an uncommon luxury item there was probably never a lack of demand for the substance and finding a market would probably have been fairly easy. The ivory found on Crete is probably also from hippopotamus, possibly from the Egyptian Nile hippopotamus.⁷⁰ The ivory seals found in pre-palatial times lend themselves to the shape of hippopotamus incisors, being round and flat with little or no wastage or cylindrical, taking the shape of the tusk. Many of these are carved with images

⁶⁸ Kryszkowska, O., "Ivory in the Aegean Bronze Age: Elephant Tusk or Hippopotamus Ivory?" in *BSA*, 1983, 209-234.

⁶⁹ Kryszkowska: 1983, 228.

⁷⁰ Kryszkowska: 1983, 229.

of lions and apes, suggesting eastern inspiration if not the craftsmanship, which was probably Minoan.⁷¹

The Cyclades and the Aegean in the Early Bronze Age

The Cyclades are Crete's closest neighbours and due to this location were its earliest trading partners. During the Early Bronze Age the Cyclades appear to have been more active in trade than Crete. The Cyclades alone have evidence of contact with four out of the five regions of the Aegean (Crete, South Greece, the Troad and Anatolia, as well as Thrace Macedonia). The character of trade is uncertain as very few imported items have been found in the Cyclades, but their exported wares, such as pottery and marble figurines, are apparent throughout the Aegean. It is probable that they exchanged these commodities for organic goods such as cereals, wool and leather which would have left little trace. The transportation of such commodities is difficult as it requires large storage vessels and the ships to carry them. The few representations of Early Bronze Age crafts, such as those on the "frying pans" do not appear capable of transporting large bulk products. It was probably beyond the scope of Early Bronze Age transport to enable them to trade for their very livelihood.⁷² The inhabitants of the Cyclades had their own granaries and flocks and were therefore largely self-sufficient. Trade in cereals, which probably did occur, would have been incidental if it was for a staple such as barley, or if a crop such as wheat was traded it may have been considered a luxury. Trade was on the whole limited to smaller items such as metal ingots, textiles and luxury goods.

The only thing certain about the Cycladic trade in the early Bronze Age was that their goods were distributed fairly extensively throughout the Aegean. It could be that the so-called merchants were

⁷¹ Renfrew: 1972, 446. Cadogan believes that it is possible that these creatures were known by the Cretans, possibly even existent on the island, thereby minimising the eastern influence. Cadogan: 1986, 158.

⁷² Gilman, A., "The Development of Social Stratification in Bronze Age Europe", *Current Anthropology*, 22, 1981, 5.

merely explorers and trade was incidental to the voyage. This is probably only half right. The retrieval of obsidian from Melos is evidence that both the inhabitants of the Cyclades and Crete were not unused to taking to the seas to obtain the goods they desire. The increase in demand of metals in EBII (ca. 2900 – 2300 BC) and subsequent distribution thereof could suggest that some of the Cycladic islands were taking deliberate steps to trade with their neighbours. Within the Cyclades it is possible there were several trade centres such as Ayia Irini and Daskalio-Kavos that took the lead in maritime trade in the Aegean.⁷³ It is interesting that in the Early Bronze Age the mineral resources such as copper were seldom protected by nearby settlements. It may be that the sea defended those deposits and the Cycladic ability to travel large distances over water ensured that they controlled their resources and trade.

Evidence of Cycladic trade comes from items which can be placed within a chronological framework and their origin confirmed. In the Early Cycladic period much of this information comes from items such as the frying pans mentioned above and marble figurines (Plate 9). The distribution of these items is by no means uniform and it is difficult to gauge the nature of Cycladic trade through the artefacts. For example the frying pans are common in the mainland, less so in Crete and there are no documented finds from the Troad.⁷⁴ On the other hand imported marble figurines or locally made variations occur in all areas. Cycladic pottery has been found at the Troad and it is likely that the tin bronzes that abound in the Cyclades come from that region. However, it does not seem accurate to assume that the inhabitants of the Cyclades were middlemen in trade, certainly as we have come to use the term. If this were true one would expect to see a greater number of tin bronzes on the Mainland and Crete, with which there was extensive trade. However in both these areas arsenic

⁷³ Broodbank, C., "Ulysses without Sails: Trade, Distance, Knowledge and Power in the Early Cyclades", *World Archaeology*, 24, 1993, 317-325.

⁷⁴ Coleman: 1985, 202.

bronzes were more common. That said, the few tin bronzes that have been found in Early Helladic and Early Minoan contexts probably did come via the Cyclades.

Few archaeological finds point to close relationships between Crete and the Cyclades during EMI (ca. 3500 – 2900 BC), with the exception of Melian obsidian which continued to be imported well into the Bronze Age. The more common Cycladic items such as frying pans and marble figurines are absent in Crete during the EMI period. A tomb at Agia Photia, which contained a frying pan (one of only two found in Crete), probably an import, has been dated to EMI/EMII.⁷⁵ Both Renfrew and Watrous believe that there is some similarity in pottery, which indicates a level of familiarity between the two areas. Watrous considers the settlement at Agia Photia to have possibly been a Cycladic one. The pyxides, incised bottles, fruitstands and jugs found at there seem to have been influenced by the Kampos Group.⁷⁶ The metal source for bronze objects from Agia Photia would appear to be of Cycladic origin. Lead isotope analyses done on bronze objects from the Mesara tholos tombs indicate that the copper possibly comes from the island of Kythnos.⁷⁷

Early Minoan Trade in the Aegean

While the few Cycladic imports as well as the perceived Cycladic influence could just as well have been carried by Minoan mariners as by Cycladic, the evidence does seem to point to a growing Cycladic maritime enterprise. It would however be incorrect to assume that the Minoans left all trade to their Cycladic neighbours. They had retrieved obsidian from Melos for centuries and there is no reason to believe that this no longer happened. There is unfortunately very little evidence of Cretan

⁷⁵ Coleman: 1985, 202; Watrous: 1994, 702.

⁷⁶ Watrous: 1994, 701-703; Renfrew: 1972, p.257-258, The Kampos group denotes finds from the eponymous cemetery at Paros (also known as Agios Nikolaos), whose artefacts have been dated from the latter Grotta-Pelos culture (ca. 2900 – 2800 BC).

⁷⁷ Gale, N., “The Provenance of Metals for Early Bronze Age Crete – Local or Cycladic?”, *Pepragmena* 1990, I, 299-316.

exports throughout the Early Minoan period, particularly during EMI (ca. 3500 – 2900 BC). Aside from the Cyclades Minoan contact with the rest of the Aegean seems negligible. It is possible that there was some interaction between Crete and Troy I. While no direct imports have been found in either area there are some pottery types which appear to have been related. The jug makes its appearance at Troy I and Crete at the EMI period. Pots with small feet are found both in Troy I and Crete, but not elsewhere in the Aegean. Pyxis covers from Troy are paralleled by those found at the Pyrgos cave. Renfrew feels that the number of parallels found is sufficient to conclude that there was contact as well as a chronological overlap between the Troy I and EMI Crete. The EMI and ECI period however ended before Troy I was destroyed. The interconnections between Troy and Crete at this point seem somewhat circumspect. If relations between the two at this time could be established beyond doubt it would create more questions than answers. If the Minoans travelled that far north to trade, why is there no evidence of Cretan wares in the Aegean at this time? If the trade was instigated by Trojan mariners there should be more signs of direct imports from there. It is possible that the traders travelled along the Anatolian coast or even inland from Troy and had a point of mutual contact, in which case there should be some evidence of this, perhaps a thriving trade centre either on a nearby island or the eastern mainland. There is also the question of why the Cyclades were not influenced in a similar manner. If there was sea trade one assumes that either party would have to come into contact with at least some of the Cycladic islands, even if they did not initiate the trade themselves, yet there is no evidence to support this. It seems more likely that the pottery connections between Troy I and EMI are coincidental or at best very loosely connected.

Cretan trade broadens in EMII (ca. 2900-2300 BC). With the exception of Kythera there are still very few Minoan finds outside of Crete.⁷⁸ There are still signs of interaction within the Aegean cultures. As in EMI much of the data come from tombs although several EMII settlements have been

⁷⁸ See Chapter 1, 30 for details on the Minoan settlement on Kythera.

excavated. An example is the site of Fournou Korifi at Myrtos, which has provided invaluable information on EMII-MM1a society. One of the main features of this period throughout the Aegean was the eruption of metalwork and the subsequent need for metals. Metallurgy, still at a fledgling stage in EMI had reached new heights by EMII. As mentioned above it is unlikely that international trade revolved around the necessity of food.⁷⁹ Communities had to be largely self-sufficient and trade links were exploited for exotic goods and exotic knowledge. Obsidian the previous mineral par excellence was useful but not necessarily vital. Copper and bronze proved to be different, they became essential.⁸⁰ The growth in the desire for metal meant there was a reason to trade. As a result trade became more widespread. The settlement of Troy II flourished, almost certainly due to its ability to obtain tin bronze. Yet this had little bearing on Minoan trade as the bronzes found in Crete are mainly an arsenic alloy. It would seem that as in the EMI period, EMII copper seems to have been imported from the Cyclades.⁸¹ This was probably true of gold and silver as well. Gold especially was becoming more common with some finds coming from the tombs. Most of the tombs have been plundered and it is therefore impossible to know the extent of the precious metal trade.

Cycladic influence can be more clearly seen in ceramics. The two frying pans which are of Cycladic origin or at least copies of Cycladic originals have been found at this level.⁸² Other objects of undoubted Cycladic influence are marble figurines (Plate 9). A number of “folded-arm” figurines,

⁷⁹ Chapter 1, 15.

⁸⁰ Obsidian was prized for its ability to chip cleanly and maintain a keen edge. While it was a desirable material local minerals could suffice when obsidian was not available. Metals however could be cast into tools which enhanced the skills of both craftsmen and warriors. As mentioned on page 17 early copper tools were not vastly superior to their stone counterparts. Daggers which began to appear in the EM period was a form stone could not emulate and soon became vital in both warfare and self-defence. As technology advanced and instruments began to be forged in bronze rather than copper, weapon quality improved as did tools, which soon replaced stone implements in wealthier segments of society. In some societies stone tools continued to be used well into the Bronze Age.

⁸¹ Watrous: 1994, 712.

⁸² Coleman: 1985, 216. The Cycladic frying pans appear to have an origin in ECII. One Cretan frying pan was found at Agia Photia in an EMI/EMII context. The other is a part of the Giamalakis Collection and the context is less certain.

which can be identified as direct Cycladic imports have been found in Crete. There are also a great number of copies made from local marble, which was freely available.⁸³ The exact point of origin of the imported figurines is almost impossible to ascertain due to the similarities in marble types found in the Cyclades, Crete, the Greek mainland and western Anatolia.⁸⁴ However there are stylistic differences, with the Cretan versions being thinner and flatter with their heads only separated from their necks with a slight incision.⁸⁵ A series of vessels made of green chlorite, many of them having spiral or cross-hatched patterns are found in a number of Keros-Syros contexts in the Cyclades, most particularly Keros, as well as Naxos, Amorgos, Syros and Melos. Similar stone vessels from EMII are of the same material and style. The exact origin of these containers is uncertain, but they show clear links between the two cultures.⁸⁶ There are other incidental Cycladic finds and similarities at a number of Minoan sites. For example an ECII sauceboat was uncovered from the West Court House at Knossos, footed cups from Gournia and the Pyrgos Cave resemble Cycladic ones from Pyrgos on the islands of Paros and Syros respectively.⁸⁷

An interesting aspect of trade occurs within Crete itself at this time. There is evidence of ceramic trade between the Mesara in the south and Knossos. Inland trade intensified at this time with greater number of objects making their way through the island than in the preceding Neolithic and EMI period. Pottery which probably originated from the Mesara has been found at Myrtos. Vasiliki ware from East Crete, which has only been found in an EMII context, has also been found at the Ierapetra peninsula as well as in the tholos tomb of Agia Kyriaki. A well-known design of a stone pyxis lid with a dog has been found at Agia Triada, Zakros and Mochlos. These lids are almost certainly from

⁸³ Renfrew: 1972, 199.

⁸⁴ Renfrew, C., "The Development and Chronology of the Early Cycladic Figurines", *AJA*, 73, 1969, 9.

⁸⁵ Renfrew: 1972, 199.

⁸⁶ Renfrew: 1972, 200.

⁸⁷ Watrous: 1994, 709; Renfrew: 1972, 200.

the same workshop.⁸⁸ Trade within the island is not surprising as it would seem to be a natural development from the earlier village trade that undoubtedly must have existed. However the appearance of high quality pottery from the Mesara in the north is important. For the first time it seems that specialised ceramics are being traded for their own sake, rather than as storage vessels. Minoan pottery was prized in the palatial periods. Unfortunately this ceramic trade appears to cease with EMIIb (ca. 2650 – 2300 BC), making it difficult to gauge a precedent if indeed there is one.

One of the more significant features of EMII foreign relations is the establishment of a colony at Kastri on Kythera. EMII architecture is absent with only the cemetery having been discovered. This could indicate that the settlement was a perennial one only, a situation that is not unusual as a good number of Early Minoan settlements would seem to be of a seasonal nature. It would seem that the Kythera colonists came from western Crete, based on the discoveries of straight-sided jars only found in that area.⁸⁹ There is a wide range of different wares that have origins at Knossos and Vasiliki. The exact purpose of the settlement is uncertain, with theories ranging from fishing to overpopulation in Crete. None of these factors can be discounted and quite possibly it was a combination of these and similar issues which led to the migration.

One of the suggestions concerning the establishment of the colony was trade with the Greek mainland. On the surface this seems to be highly probable given the location of Kythera in relation to the mainland. Unfortunately there is no evidence of trade between the Minoan settlement at Kastri and that of the mainland. In fact it would seem that the EMII settlers displaced a group of Early Helladic inhabitants who had settled about 100m away some time earlier.⁹⁰ There is no apparent

⁸⁸ Watrous: 1994, 712.

⁸⁹ Coldstream, J.N., "Kythera: the change from Early Helladic to Early Minoan", in *Bronze Age Migrations in the Aegean*, Crossland, R.A. and Birchall, A. (eds), London, 1973, 34-35.

⁹⁰ Coldstream: 1973, 34-35.

interaction between these two communities, which would have been unlikely if these two communities had lived together peacefully. It is possible that the Helladic settlement was abandoned before the arrival of the Minoan one, although there is no discernible reason why this would have happened. Coldstream speculates that it is more likely that the Cretan immigrants ousted the Helladic inhabitants. He further tentatively suggests that it may have caused some political tension between the Minoan and Helladic cultures. There is certainly a lack of Helladic finds in Crete at this time. Although to assume political tension is to also presuppose a fairly advanced political structure with a stratified community and quite possibly some form of political unity between settlements. There is insufficient evidence to come to such a conclusion.⁹¹ Both Minoan and Helladic cultures were more individual communities than political units governed by wealthy elites. It is possible that these separate entities joined forces in ventures which required larger manpower such as maritime trade or war. There was probably a settlement or even a group of people that took the lead in such undertakings, but there is nothing to suggest that a complex hierarchy existed at this time.

Early Minoan Contact with the East

EMII (ca. 2900 – 2300 BC) trade in the Aegean seems to be restricted mainly to the Cyclades as in the preceding period. Contact with the Greek mainland was limited with very few Helladic finds occurring in an EMII context.⁹² However there does seem to be some interaction between Crete and the eastern Mediterranean. Here Crete's unique position within the Aegean comes into play, with her location giving her access to civilisations not reached by the rest of Aegean. Contact with the east was virtually non-existent during the Final Neolithic and EMI phases of development. The few stone vases which were found in a Final Neolithic context may have had an Egyptian influence or may have

⁹¹ Watrous: 1994, 712-717.

⁹² A few sauceboats which might have come from the mainland have been found at Knossos; Platyvola, West Crete and Khania. A seal which is probably Minoan has been found at Ayios Kosmos in Attica. Cadogan: 1986, 158; Coldstream: 1973, 36

been of Egyptian manufacture, but this is far from certain. In EMI there do not appear to be any connections at all. Although evidence is only marginal for the EMII period it is apparent that both Minoans and sailors from the Levant came into contact at this time. These foreigners in the Aegean may have stopped at Crete with very limited evidence to suggest they traded further north into the Cyclades. This is very odd indeed and surely had little to do with geography. Perhaps there was little in the Aegean to entice the more advanced sailors from the Levant. Troy II was wealthy and did possess bronze, but if trade was conducted between the Troad and the Levant it was possibly overland through a number of intermediaries. One could also speculate that contact was initiated by the Minoans who travelled east, possibly via Cyprus, rather than the other way around.

There are few EMII finds which indicate trade with the east, but some artefacts do merit consideration. The first is a stone vase with the cartouche of User-Kaf of the 5th Dynasty found at Kastri. Coldstream feels that this vase, which can be dated to ca. 2487-2478 BC, can provide an approximate date for the first Minoan settlement on Kythera as well as suggest that there was significant contact with the East in Pre-Palatial times. There is no way of proving that the vase entered Kythera soon after it was made and therefore its use in establishing chronology is minimal, a point Coldstream himself concedes.⁹³ Still it does indeed indicate some kind of connection between the settlers on Kythera and the Near East. While the artefact may be Egyptian it cannot automatically be assumed that its presence indicates direct contact with Egypt. The cartouche is also not necessarily a reflection on Cretan trade as the cartouche may have been traded directly with the inhabitants of Kythera and may not have entered the settlement via Crete. Kythera has a number beaches which could supply good landings for ships. The presence of the vase could be explained away as a chance meeting. It is possible that it arrived as part of an intentional voyage, although if there was more trade between these two areas perhaps there should be more finds. At the same time one must remember

⁹³ Coldstream: 1973, 35, Cadogan: 1986, 158.

that finds at Kythera (and the Early Minoan period in general) are limited to grave goods which do not give a clear view of day to day society and trade.

Egyptian artefacts found in Crete itself are even more limited. Warren lists a total of 32 Egyptian bowls which can be dated from the Predynastic to First Intermediate periods.⁹⁴ Unfortunately only three have been found in Minoan contexts that correlate with the Egyptian date. The others have been found in much later contexts. Of those three only a Dyorite pyxis from the Agia Triada tholos can be plausibly dated to EMII. The other two seem to have a Final Neolithic or possibly EMI date.⁹⁵ Other finds of undoubted eastern influence is the faience and cylinder seal found at Mochlos. The faience was found in tomb VI. It is possible that this was of local manufacture which had become more common, however the technique must surely have been learnt in the east, possibly Northern Syria. Faience has also been found at Troy and it is possible that the skill may have come by way of Anatolia.⁹⁶ The Syrian cylinder seal from Mochlos was another chance find and its presence indicates contact between the two areas, but the exact nature of this interaction cannot be ascertained from the article itself. It may have been a trade item or simply a trinket that had changed hand a number of times before arriving on Crete.

EMII perhaps could be viewed as the time in which Crete and the east made the most basic contact with each other and trade at this stage was probably purely incidental. There appears to have been some trade between Crete and the Cyclades and between the Cyclades and the rest of the Aegean. The end of EBII (ca. 2300 BC) was marked by devastation and abandonment throughout the Aegean. Large-scale upheaval occurred at sites in the north, with the destruction of Troy II as one of the

⁹⁴ Warren, P.M., "The First Minoan Stone Vases and Early Minoan Chronology", *Kretika Chronika*, 19, 1965, 7.

⁹⁵ Renfrew: 1972, 214.

⁹⁶ Renfrew: 1972, 448.

results. The effects of this agitation were felt on the mainland, the Cyclades and Crete. This was also possibly the time when the first Greeks moved into the mainland. The development of the north was pushed back and recovery was slow.

Crete was not unaffected by these changes. Evidence of fire has been found at a number of settlements, such as Fournou Korifi, Pyrgos/Myrtos and Mallia. This is coupled with indications of depopulation at these and other major settlements. Smaller sites were deserted completely. The rural areas were poorly populated as well. Knossos and Vasiliki appear to have been the only centres relatively undisturbed and show EMIII settlement levels. The communal tombs in the south show signs of disuse during this period as well. Trade, such as it was, became stagnant. No finds link Crete to the mainland, the east or even the Cyclades.⁹⁷ Chronology for this period is also notoriously difficult. There is very little definition between EMIIb, EMIII and MM1a and the EMIII period may have merely been a stylistic change.

Crete was however more fortunate than her northern neighbours in that she managed to recover fairly quickly. This possibly had something to do with her isolation from the main centres of agitation, her self-sufficiency and her links with the east that enabled her culture to continue developing when the rest of the Aegean declined. Sir Arthur Evans once considered the Early Minoan civilisation to be an offshoot of the Egyptian one. From the lack of evidence of Egyptian contact at this early period it would seem that this theory incorrect,⁹⁸ but Crete's recovery in MM1a and the subsequent establishment of the palaces probably had much to do with eastern influence.

⁹⁷ Watrous: 1994, 718.

⁹⁸ Chapter 1, 31-33.

It is particularly difficult to reach an understanding of Early Minoan trade. Very little archaeological evidence remains of these early settlements and most of what has been discovered comes from tombs. The cemeteries of the north were singular cist graves. The Tholos tombs which appeared in the south from EMII were communal tombs and used until Middle Minoan times, making it almost impossible to distinguish between the periods. To compound the problem most tombs have been plundered. Those that remained intact were excavated at the turn of last century without the methodology in place at present.

At no time during the Early Minoan period can we talk of thriving, deliberate trade. With no social hierarchy and limited craft specialisation, Crete was not equipped to embark on wide trading expeditions. In EMI contact was generally confined to the Cyclades. However the improved ships of EMII saw an intensification of trade and lasting, if intermittent, contact with the east. The commodities traded become more of a problem from a Cretan perspective. Very few Minoan artefacts have been found outside Crete. The olive and vine industry, which was to become important in the Late Bronze Age, does not seem to have been well developed in this early period. The desire for metals grew during EMI and was particularly important during EMII, but Crete did not use her own copper reserves and imported the metal from the Cyclades. The few towns from that period seem to have been self-sufficient and probably their limited trade would have been confined to the small surpluses they were able to generate. A settlement such as Fournou Korifi may have had a textile industry, but one cannot imagine that at the stage they produced significant volumes. The cereal trade probably existed, but in small quantities. It does not seem likely that any of the Aegean settlements focused on staples as trade items.

The solution to the problem is that the Minoans probably traded in a little of everything. More than likely Early Minoan settlements supplied perishables to foreign sailors who reached their shores.

Their own sailors probably put to sea and travelled to the Cyclades and even Cyprus and the Levant, expanding their knowledge of foreign lands and returning with a few trinkets which have subsequently been excavated. It was a time of foundation, for establishing trade links and laying the groundwork for the commodities which would be traded in later periods.