

THE TRANSITION FROM BRONZE AGE TO IRON AGE IN THE AEGEAN: A  
HETERARCHICAL APPROACH

A Master's Thesis

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*To Hazell*

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## ABSTRACT

### THE TRANSITION FROM BRONZE AGE TO IRON AGE IN THE AEGEAN: A HETERARCHICAL APPROACH

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The purpose of this thesis is to examine the Bronze Age to Iron Age transition in the Aegean through a different perspective than has been used up until now, and see if heterarchy can be applied. This thesis will test to see whether heterarchy is an appropriate model, offer a view on the end of the Late Bronze Age, and explore the reasons iron technology replaced bronze technology in the Greek world.

Keywords: *heterarchy, hierarchy, Bronze Age, Iron Age, Aegean, Greece, World-Systems Theory, Cyprus, iron, bronze*

## ÖZET

### EGE'DE TUNÇ ÇAĞINDAN DEMİR ÇAĞINA GEÇİŞ: HETERARŞİ YAKLAŞIM

Enverova, Deniz

Yüksek Lisans, Arkeoloji Bölümü

Tez Yöneticisi: Jacques Morin

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Bu tezin amacı,Ege'de ki Tunç Çağından Demir Çağına farklı bir bakış açısı geçişi incelemek ve heterarşinin uygulanabilir olması. Bu tez heterarşinin uygun bir model olup olmadığının,geç bronz çağına bir bakış açısı sunar ve Yunan Dünyasında Demir teknolojisinin,Tunç teknolojisinin yerini alma nedenini araştırmaktadır.

Anahtar sözcükler: *heterarşi, hiyerarşi, Tunç Çağı, Demir Çağı, Ege, Yunan, Kıbrıs, Dünya-Sistem Teorisi, demir, tunç*

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## ABBREVIATIONS

BA	Bronze Age
C	Century
EIA	Early Iron Age
IA	Iron Age
LBA	Late Bronze Age
LC	Late Cypriot
LH	Late Helladic
LM	Late Minoan
GP	Geometric Period
MBA	Middle Bronze Age
MH	Middle Helladic
PGP	Proto-Geometric Period
PP	Palatial Period
PPP	Post Palatial Period
WS	World-System(s)
WST	World-System(s) Theory

# CHAPTER 1

## INTRODUCTION

It is my belief that the concept of the Dark Age of Greece is the product of scholarly failure to connect and explain the transition from the 13<sup>th</sup> century BC collapse of the Mycenaean palace societies to the 8<sup>th</sup> C. BC emergence of the *polis*; or one can look at it in terms of the fall of the Bronze Age and the rise of the Iron age. Whichever the case, when scholars such as Stager and Walker (1974) asked themselves, ‘what do the two have to do with each other?’ they could not answer because evidence did not allow for such a connection. Thus, the four centuries that characterized this period became a mystery: times that could provide nothing for the archaeologists and historians to ponder and to bridge the gap between the BA and the Archaic (or more specifically Late Geometric) periods. These centuries fell uncomfortably between the interests of Aegean prehistorians and Classicists. Anyone can open a few books on Greece that were written just a few generations ago and notice that their content ended with the Late Bronze Age or started with the *polis*. Recently however, it has become clear that perhaps there was nothing dark about the Dark Age<sup>1</sup>. If I were faced with the question ‘Why did the Greeks experience a Dark

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<sup>1</sup> On recent work done on the Dark Age see: Deger-Jalkotzy in Sherlmerdine, 2008; Whitley, 2001: 77-101; Morris, 1991: 37-107 and 2000: 77-106 ; and Langdon, 1997. The work by Langdon focuses on art mostly.

Age after the late 13<sup>th</sup> C. BC collapse of states all over the Aegean?' I would answer: "They did not. Archaeology did."

The Mycenaean society of LBA Greece before the 'collapse' has generally been described as one that relied on administrative palace control overseeing aspects of economy, agriculture, crafts, building projects, military protection, and support during crisis. The palace's role in the re-distribution of staple and elite commodities has attracted the most attention (Shelmerdine and Bennet, 2008: 295-298). The distribution of goods down hierarchical levels was the means by which palace rulers shaped what we perceive as the characteristic Mycenaean social structure: a highly centralized society that supported a fairly large elite population reaching numbers as high as 50% according to Dickinson (1994: 39). The burials associated with these elite are our source of information dating between the LBA and Early Iron Age. The rest of the population is represented by poor pit or cist graves, containing at most one or two vessels as gifts. But, these burials cannot be blamed alone for promoting the skewed image the discipline developed of this period. We can also turn to the contents of the Linear B texts.

Linear B tablets were the system of record-keeping that the palaces used. Such records are known at the following locations: Mycenae, Tiryns, Thebes, Pylos, as well as Knossos and Chania on Crete (Shelmerdine and Bennet, 2008: 289). In 2009, new excavations at Lacorion near the village of Xirokambi in Lakonia revealed another palace, and three Linear B tablets so far (Tarantou, 2012). Our current archive of about 5000 tablets originates mostly from Pylos, which resulted in the tendency to generalize the administration of that palace as applicable to the whole Mycenaean world. Regardless, they provide ample detail on what the palaces circulated and how,

what they stored, land they owned, the roles of some officials, and that each Mycenaean center had a king or monarch-like figure, called a *wanax*.

By filling in the gaps that archaeology alone could not, this recording system helped form an opinion about the Mycenaean role in the Aegean world-system (fig. 1). It did not take long for scholars to realize that as helpful as these tablets were, they remained misleading so that our understanding of the Late Bronze Age Greece was far from coherent. When the problem of explaining the collapse of the Aegean and Near-Eastern states at the end of the 13<sup>th</sup> century BC came under scrutiny, several hypotheses were formulated, notably the concept of the “Dark Ages” that reflected deficiencies in our understanding of a complex chain of events. We may thus say that the “Dark Ages” reflected not so much the situation of ancient times as that of the contemporary discipline.

In the past 20 years or so numerous excavations all over Aegean lands brought to light new data. At the same time, anthropologists (and archaeologists) turned increasingly towards theory and away from the description and inventory of cultural data, and proceeded to ask questions that require the development of explanatory models. These developments made it clear that almost everything that was once believed about the Dark Ages should be reconsidered. As will be discussed in detail later (see Chapter 4), the palaces that defined Mycenaean culture before the collapse were actually much more variable in their activity from state to state than was previously assumed. Their supposed strong centralizing ability began to be questioned as Linear B tablets were analyzed more closely and compared with the archaeological record. The narrow range of information they contained as well as their inability to reflect or even address the archaeological record challenged Aegean prehistorians to formulate explanations.

## **1.1. The Problem**

My intention in writing this thesis is to contribute like those before me to a way out of this darkness. By looking at the nature of the transition from the LBA to the EIA, I will offer an alternative scenario on how and why it happened. To do this however, I need to re-examine the problems surrounding our understanding of Mycenaean society.

There is an inherent predicament when one tries to explain why the Mycenaean palace-controlled states collapsed, and that is identifying the reasons behind the events. Before going into this any further, I wish to review the situation from which this issue stems and how it has influenced views on what the collapse entailed and why it happened.

The view that scholars shared of the Greek and Aegean world before the 13<sup>th</sup> century BC events, portrayed a group of strongly centralized states each led by a hierarchy centered on a palace. After the collapse, it seemed that this whole structure had disappeared. Settlement patterns changed, densely inhabited areas were abandoned, the palaces were destroyed, the Linear B tablets stopped being used, and international relations were severed. The creative and artistic material that once characterized these lands was replaced with stale, dull, and overall degraded crafts. Just over a century later, around 1070 BC (Dickinson, 2006), the first utilitarian iron objects started to appear in burial contexts, and Greece entered into the EIA. These phenomena were more or less paralleled in the Near East and other parts of the Mediterranean, and to a lesser extent in Egypt.

Several avenues were explored by archaeologists in the search for the causes of such a widespread collapse, naturally. Climate change leading to drought and

famine became a popular suggestion (Bryce, 1998; Walloe, 1999) because it could potentially account for all the regions in question. Climate studies, however, have not yet provided any evidence of such a devastating episode in the Mediterranean region, and even less so any pertaining to the time of the collapse (Riehl, 2009). Even if one accepts that food shortage and famine occurred in some places, perhaps in the Hittite Empire, this surely cannot serve as a region-wide explanation. Then, the hypothesis that the Sea Peoples caused the collapse was strongly defended, among others, by Redford (2000), Popham (1994), and Nowicki (2001). This idea originates with Ramesses III's temple inscriptions that report the Sea Peoples as an imminent threat on Egypt. This kind of hypothesis, again, could account for the region-wide chain of events if true. But archaeologically, we have no reason to attribute the destructions of the period to the Sea Peoples. Recently, in a lecture given at Bilkent University, Professor Karl Strobel (2011) from the University of Klagenfurt made a convincing argument against the existence of the Sea Peoples at the time of the transition on the basis that everything written in Ramesses III's annals was propaganda reflecting events from an earlier reign. Similarly, the Dorian, Northern Greek or barbarian invasions, that reflect efforts made to connect new material culture to invasions of new peoples, can be dismissed on the grounds, again, that evidence is either absent, scanty, or cannot be dated to the period in question (Dickinson, 2006: 44-45). Finally, we should not forget the suggestions that the palace-systems exhausted, bankrupted, or over-expanded themselves. For example, most recently as Sherratt (2001: 238) has suggested, the communication networks on which the Mycenaean palaces relied so heavily, were lost because the trade routes shifted to a southern east-west axis that excluded the Greek peninsula. I will return to this idea again in chapter 4, but though



it is true that internal economic reasons played a role in the collapse, we cannot accept them as a sole factor without stronger evidence.

My intention is not to discuss all the causes of the collapse, but I consider this inevitable if we are to understand it and the transition to the EIA. Although there was a fundamental change and the loss of the Aegean states themselves, I suggest that it is better to avoid characterizing this phenomenon as a 'collapse' *per se*, but to consider it as part of a heterarchical cycle in the Greek world. In this thesis, I will try to show that what seemed like a total breakdown of a hierarchically centralized system, was actually a sort of shift in the cycle of social organization whose roots were set in the palace societies of the Aegean centuries before the collapse happened. Because of the inconclusive attempts to explain what happened at the end of the 13<sup>th</sup> century BC and after, I would like to apply the theory and model of heterarchy, and see if I can gain a new perspective on this issue.

Heterarchy was first made popular by Carol Crumley (1995) as an alternative to the standard hierarchical analysis of every complex society. She argued that it offered a more flexible and holistic approach in studying ancient societies. Heterarchy is a structure, a condition, and a process. It allows a complex society to be examined in all forms of organization, from hierarchical to egalitarian, at different levels and aspects of a culture (fig. 2). It is then applicable vertically and horizontally as an analytical tool that can help explain shifts in power structures at different levels in a society. It is my intention and belief that if we are able to apply heterarchy to the Aegean world, we can answer many questions and solve many of the problems for which archaeologists find no satisfying solutions. In order to do this, I will test whether heterarchy can be useful by examining 1) burials, 2) international relations,

3) the LBA palatial systems and, 4) the transition from bronze to iron, while paying special attention to what role iron played and how it changed with time.

In doing so, I will evaluate whether heterarchy is a valuable analytical tool for the Aegean. If it proves to be the case, then I will be able to offer a different way of connecting the pre-collapse 13<sup>th</sup> century BC palace culture and the post-collapse 8<sup>th</sup> century BC Greek Renaissance. Heterarchy, as we will see, possesses the analytical and multi-dimensional power to explain why a society would move from a high to a low level of organization and seemingly lose its identity as part of a natural cycle. In the following chapters, I will discuss all these topics in detail, and examine whether there is a reason to use heterarchy in the analysis of the LBA- EIA transition.

In the following chapter, I will present an overview of the changes that happened in Greece but also in Cyprus, because I believe the latter to have had significant influence on Greece. This chapter will explain briefly the technological particularities of the new iron technology and the process by which it manifested itself around the eastern Mediterranean. Finally, I will explain heterarchy and why I chose it as a model. I will explore how iron fits with heterarchy in order to explain the LBA- EIA transition.

In chapter 3 I will formulate the questions that must be asked and discuss why they need to be asked when considering heterarchy as a potential model. I will identify aspects from the Greek world that could be tested archaeologically and explain the patterns that would be observed if heterarchy characterized that society. In chapter 4, I will test the hypothesis by applying the available data to the questions formulated in the previous chapter. This will enable me to recognize which features can be analyzed heterarchically and which are not relevant or contradictory to the model. In chapter 5 I will discuss these tests, and evaluate whether heterarchy is an

appropriate analytical tool for the transition from the BA to the IA and the onset of iron use. Because of the nature of my hypothesis, a negative answer is considered also as a possibility. As a conclusion, in the final chapter I will consider the implications of this thesis, and discuss the importance of this topic for the developments in later Greek history.

## **CHAPTER 2**

### **OVERVIEW**

It is important to establish the setting in terms of geography and regional developments and variation during the transition from the LBA to the EIA if we are to understand the synchronous events on the Greek mainland (fig. 3). I shall do this by concentrating primarily on the change of social structure, the transition from bronze use to iron use, and the conditions of international trade. In this way I can provide a better understanding of the hypothesis proposed in this chapter. In order to give us a Mediterranean-wide perspective, Cyprus will be dealt with here even though it is not in the Aegean but more part of Near Eastern culture. As we shall see, many events in the Aegean had their echo in Cyprus and vice versa. Then, I will discuss the technical aspects of the appearance of iron technology in the Mediterranean. Finally, I will explain in detail the thesis that will be defended here and how it offers originality on the topic.

Before I proceed, I want to mention that in the past 10 years it has become clear that the Aegean region during the BA and the EIA can no longer be confined to the mainland and Crete. Recent research on the Cycladic islands and the western Anatolian coast at sites such as Panaztepe, Liman Tepe, Çeşme Bağlararası, Miletus, and Ephesus has proved that they are now essential in understanding the true nature

of Aegean cultural variation, development, and change. Due to the limitations of this thesis, however, I will focus my hypothesis' implications on the mainland mostly. Nevertheless, I emphasize that in order to have a holistic understanding of the Aegean these regions must be included, and invite future scholarship to do so.

## **2.1. Regional Review of LBA-EIA Transition**

### **2.1.1 Cyprus**

Cyprus was a very important island for both the Near East and Aegean during the BA and later. For one, its geographical position allowed it to play the role of an intermediary between adjacent regions. A vessel traveling from the Greek mainland or from the Levant could hardly have ignored it. In this respect, in addition to mining evidence, Cyprus is considered the only undisputed producer and exporter of copper. The Uluburun shipwreck provides us with an example of the scale of copper supply that Cyprus was able to put out (Pulak, 1988). Lead Isotope Analysis shows that most of the 10 tons of copper ingots were probably of Cypriot origin (Mee, 2008: 364). That Cyprus was one stop for the vessel emphasizes just how widespread Cypriot copper was in the LBA, and emphasizes the importance of Cyprus as a transit point between the two areas.

Metals were not the only items that characterized the Cypriot role in international trade during the BA. It is clear that items such as closed jars and amphorae were traded from Cyprus to the Near East, Egypt, and the Aegean since the Early Bronze Age culminating in the LCIII (Mee, 2008: 375). Shipwrecks like Uluburun and Cape Gelidonya provide examples of the abundance of ceramics that certainly carried perishable goods which will be discussed later (see below,70). Cyprus in turn received specially produced Mycenaean open vessel types, rare on the

mainland, whose clay shows that they were made in the Argolid (Mee, 2008: 375). These ceramic types must have been considered objects of prestige in Cypriot society, for when the economic relations between Greece and Cyprus suffered at the end of the 13<sup>th</sup> century BC, the Cypriots started producing their own imitation Mycenaean pottery, mainly shallow bowls and craters. In addition, in burials of obvious elite status in Cyprus, were found unguent vessels probably containing perfumed oil used in ritual ceremonies.

Cypriot elites were able to create hierarchies based on copper circulation as early as LC I, with a noted increase in interaction after this period. During the LC II we have early evidence of mixing of cultures (Voskos and Knapp, 2008), demonstrated by an increase in objects with hybrid features. For example, the 14<sup>th</sup> century BC silver and gold bowls from Enkomi remind us of the Aegean with the floral and bull head designs, but the shape has its roots in the Cypriot White Slip Ware milk bowl (Voskos and Knapp, 2008: 664). With this intensification of overseas contact, Cypriot craftsmen absorbed foreign ideas and re-interpreted them in a local manner.

During the LCIIC- LCIIIA (1250-1125BC) period the Mediterranean experienced abandonment and destructions. A popular view holds that on Cyprus such a crisis was not felt as severely as in the Aegean (Voskos and Knapp, 2008). For example, around 1200BC Enkomi was destroyed and then re-built. Rubble masonry was replaced with ashlar masonry on sacred and public buildings while the town was enclosed with a cyclopean wall. Kition had a similar fate. However, sites such as Maroni-Vournes and Kalavassos-Ayios Dhimitrios were permanently abandoned. Easily defensible cities like Pyla-Kokkinokremos and Maa-Palaiokastro were newly occupied. Contemporary with these events, the White Painted Wheelmade III Wares

appeared and became dominant during the LCIIIA, but their existence in post-collapse contexts paved the way to the hypothesis that they represented a migration of Mycenaeans (Voskos and Knapp, 2008: 673-674).

Along the same lines Karageorghis saw larnax hearths as an Aegean influenced phenomenon, just like the appearance of the Mycenaean-like megaron hall. Voskos and Knapp take a less dramatic approach to understanding these events and consider Aegean elements superficial. For instance, they do not see the ashlar masonry as evidence of Mycenaean immigrants in Cyprus, but as a Mediterranean wide phenomenon. The horns of consecration on Cyprus are usually associated with an Aegean presence, but the scholars point out the naturalistic nature of the Aegean horns in comparison to the more stylized Cypriot ones (Voskos and Knapp, 2008: 667). We should consider that the LBA-EIA period on Cyprus was very dynamic with a marked cultural change but also plenty of regional variation and cultural mixing. Models that emphasize Mycenaean population movement as a cause of change do not reflect the diverse archaeological data on Cyprus.

### *Burials*

The LBA-EIA transitional period could also be seen in the burial record. One of the most obvious changes during the LC IIIA period was the replacement of the typical rock-cut chamber tombs with a dromos, with shaft and pit cist burials (Coldstream, 1998: 13). These changes furthered the misleading impression of Aegean migration to the island as the cause of internal social change. Manning (1998) examines the Maroni Valley cemetery and believes it to bear evidence of funerary ritual competition that began in LC I and increased during LC II. At this time, the number of elite positions had decreased and perhaps this fueled competition. As a result, burials became very elaborate with Aegean imported and local mixing vessels

that probably served in funerary feasts, such as those at the Tsaroukkas tombs (Manning, 1998: 47). Bronze weapons and other objects also played a very important role. LC IIB Vournes especially saw a rise in copper working and other craft production as the result of increase in trade relations. This can be seen in the light of Keswani's study on the connection between copper and prestige in funerary practices (2005: 394). She argues that the increase of copper based economy can be correlated with the heightened desire to create mortuary celebration and display. Even more, she interprets this as the reason Cyprus was so responsive and interactive in the international trade.

With the last phase of the LBA, LC IIIC, this seemingly long and important tradition is abandoned. In addition, the cemeteries of the Maroni Valley are destroyed and/or abandoned with no known explanation. But, at Enkomi, which was likely the LBA center on Cyprus, no such phenomenon can be observed, and the same funerary culture continues through that period. Therefore, we cannot consider what happens in the Maroni Valley during this period as representative of Cyprus as a whole. Manning (1998: 47) argues that the destruction and abandonment of the cemetery is evidence of mortuary competition brought on by a group of elites that took over the region so that others could not compete. For instance, at Tsaroukkas in Building 1, Tomb 13's chamber was removed, leveled off, and a structure was built on top. It has been suggested that the end of the Hyksos period at this time in Egypt disturbed the east and west communication since the Avaris port controlled all of what went into Egypt before it lost its power, but benefited groups that settled on Cyprus and took control of agriculture and exploited its natural resources (Manning, 1998: 50-51). Further evidence we have that fits this interpretation is the so called "Basin Building" as part of the ashlar building that appeared right before the destructions of LC IIC. This



structure is built right over the cemetery at Vournes and can be seen as a group's claim over this region (Manning, 1998: 51-53).

It should be emphasized once again that the situation in the Maroni Valley is only one example of the occurrences at the end of the LBA in Cyprus, and is not representative of the whole island. In contrast to the Maroni Valley for example, at Enkomi we have no evidence of a single ruling group. Out of the many impressive buildings excavated, not one could be cited as administrative or having palace-like functions. Elite competition continued with its usual features of conspicuous consumption of metals and imported and local pottery, craft specialization, and religious diversity.

#### *International Relations and Society*

The evidence from LC IIIA marks a general regression of the international trade system. Cyprus lost some momentum and markets as a result, but the commercial bond with the Aegean and the central Mediterranean actually intensified. Nevertheless, the elite could no longer use the luxury goods to show their status, probably because the monopoly over such commodities was lost. This did not last long because with the onset of the EIA at the end of the 12<sup>th</sup> century BC (LC IIIB 1125-1050BC), the situation stabilized (Voskos and Knapp, 2008: 678-673).

A homogeneous cultural tradition, with roots at the end of the 13<sup>th</sup> century BC, became a feature of Cypriot society. The Proto White Painted Ware became a dominant style. The LC II nude female Base Ring Ware figurines were replaced by a goddess with raised hands (Voskos and Knapp, 2008: 674). Karageorghis considered these changes as representing Aegean elites coming from Crete into Cyprus, but we should note that these new elements were used in a typical Cypriote manner and local context. Funerary changes at Salamis during the 11<sup>th</sup> century BC provide more

evidence of new rites such as infant burials in Levantine-type jars (Voskos and Knapp, 2008: 674). New status symbols appeared such as silver jewelry, bronze vessels, Canaanite amphorae, and imported unguent vessels. Iacovou (2005: 130-131) argues that all these features of the LBA-EIA transition should be seen as the doings of foreigners so fully integrated into the culture they had become local themselves. Thus, looking at all these changes on Cyprus should not be seen as invasive presence of Aegean immigrants, as much as the progressive interaction resulting in a hybrid culture.

The LBA settlements that were re-built or continued to be used after the 13<sup>th</sup> century BC disturbances were finally abandoned for good, with the exception of Palaeopholos and Kition. The new settlements at Idalion, Salamis, and Soloi to name a few, were to become the IA kingdoms of Cyprus (Coldstream, 1998: 3). During these developments and changes, Cyprus also began to experiment with iron as a permanent alternative to bronze.

#### *Early Iron Use*

Cyprus is well known as the first to make the LBA-EIA transition and the first to develop utilitarian iron during the 12<sup>th</sup> century BC (Sherratt, 1994; Waldbaum, 1989; Snodgrass 1980). The first appearance of utilitarian iron is represented by the two-sided knife with rivets- earlier a popular tool in bronze. In the 12<sup>th</sup> century BC, the iron knives are more frequent in Cyprus than anywhere else in the East Mediterranean: 60% come from tombs and 40% come from settlements, which is significant considering the low chance of iron survival when not intentionally deposited (Sherratt, 1994:61).

Sherratt (1994) considers the important question of why Cyprus had a head start on iron. She rejects the bronze shortage hypothesis that will be discussed in more

detail a little later (see below, 79-81), and proposes that iron had an advantage over bronze. It potentially had a re-shapeable edge and harder blade making it superior to bronze in warfare. Of course, these properties of iron could only be put to use with the proper technology, that again, Cyprus was the first to employ intentionally. Sherratt emphasizes the added value of iron: the value added to a material or an object by manufacture or cultural symbolism. During the 2<sup>nd</sup> millennium BC, this was the case with iron and so the elite of Cyprus controlled its movement closely. But, with the end of the 13<sup>th</sup> century BC a contextual shift occurred, and iron began to be used as a tool (Sherratt, 1994: 64)

The 12<sup>th</sup> century BC Cypriot iron knife was a practical tool but it was also attractive, ornamental, and could be used as such to strengthen elite control and prestige. It was technologically restricting, and it appealed to the LBA-EIA prestige value system. Sherratt (1994) emphasizes that during this time in the Aegean, these iron knives were found rarely and exclusively in tombs compared to the 60% tomb and 40% settlement contexts on Cyprus. In the Aegean, iron stayed a preciousness until the 11<sup>th</sup>/10<sup>th</sup> century BC, and was found only along the Cypriot trade routes. Starting in the 11<sup>th</sup> century BC, the Levant, a major trade partner of Cyprus, showed evidence of primary iron working, such as the iron ingot found at Tel Mique, implying that it no longer needed Cypriot iron imports. Thus, Cyprus turned to the Aegean once again, helping start the iron revolution there (Sherratt, 1994: 73).

As we have seen in this short review of Cyprus during the LBA-EIA transitional period, talk of collapse followed by a Dark Age is highly doubtful. I have stressed that although the political and cultural situation changed, there was no economic regression, and actually many centers' economy continued to thrive. All over the island, a shift could be felt with the onset of LC IIC-LC IIIA in the form of

hybridization, destruction, re-building or abandonment, and change in funerary rites in some regions. All of these features crystallized in the EIA, when a new social identity took form. The newcomers were not colonist and no one tried to distinguish themselves as us vs. them. Populations had blended for centuries with the locals and by the EIA they were part of the new cultural identity on Cyprus.

The new settlements that were established gave rise to the IA kingdom-states of Cyprus after a century of cultural pause. It is in this setting that Cyprus becomes one of the first regions in the Mediterranean to experiment with iron. About a century later, the Aegean world caught on. Encouraged by the new metal and its properties, they gradually dove into an IA of their own, as will be argued later.

What I hope to have shown is that the cultural context on Cyprus is the LCIIIC-LCIII is indicative of a cultural mix between the Cypriot and Greek societies. However, this is not to de-emphasize the role of the presence of Greeks on the island. It is significant to note that the Arcado-Cypriot Greek dialect is the only language that preserved a great deal of the Mycenaean language (Iacovou, 2008), and thus we should not disregard the Greek speaking population as some insignificant presence along the native Cypriot culture, just as we should not view them as a an invasive factor that disrupted normal trajectory of social development. Acknowledging the BA-IA contacts between the Greece and Cyprus has major implications for the spread of iron technology that I will discuss in chapter 4 and 5.

### **2.1.2. The Aegean: Greece**

The heartland of Mycenaean civilization was the Peloponnese, and central Greece. Its sphere of influence, however, spread throughout most of the Aegean, creating a world with regional homogeneity and local variation (Dickinson 2006: 24) (fig. 4). Regardless of this homogeneity and the noted use of the Linear B script over

a wide geographical region for an extended amount of time, we have no basis for considering the Mycenaean state a unified kingdom: on the contrary, Mycenaean polities are comparable to the late 7<sup>th</sup> C. BC city-states. During the LBA, this civilization relied heavily on international relations for the well being of its elites. Of particular importance was the exchange and circulation of metals, focusing on the production and exchange of bronze items that aimed to preserve/enhance the status of elites. In chapter 5 we shall return to this issue and see how this was done.

#### *End of the Late Bronze Age*

The population of the bigger Mycenaean polities was comparable to that of smaller Near Eastern cities, with its main centers supporting several thousand people. This large population relied on the palaces for administrative rule that monitored some parts of the economy but left others completely untouched. Most of these palaces, with the possible exception of Pylos and Thebes, were not enclosed with a wall as were their Near Eastern counterparts. It seems that based on current evidence these cities did not invest in large temple complexes. Most ceremonial and religious events were likely carried out in the vicinity of the palaces (Dickinson, 2006).

These structures began to see their end by the last decades of the 13<sup>th</sup> century BC, or LH IIIB-IIIC (Mountjoy 1997: 117), though there is variation from site to site. Popham (1994: 281) has suggested that the impact of the destructions should not be exaggerated since 250 years elapsed between the earliest and the latest, thus they may have been unrelated instances. Whichever the case, every palace was either destroyed or abandoned by the end of the 13<sup>th</sup> century BC, characterized by burning and vandalism of the structures or change in pottery decoration.

International relations seemed severed for a while in the Aegean. Luxury items, usually Near Eastern imports, were no longer found in graves and the general

wealth of the population declined. It is thought that since the palaces were the main focus of Aegean international relations, their collapse removed the Mycenaean world from this system. Of course, private trade by merchants with individual interests must have continued since this part of the economy was not affected by the destruction of the main centers. Nevertheless, the Aegean world seemed to have entered a stage in its history characterized by relative isolation. What followed was the Postpalatial Period (1200-1070BC), the final part of the BA (Dickinson, 2006).

### *Postpalatial Period*

There is consensus that the PPP, the final part of the LBA, brought a recovery followed by a final decline at the end of the 12<sup>th</sup> or start of the 11<sup>th</sup> century BC. This period was characterized by the abandonment of several old settlements. Foundation of new settlements and the re-organization of older ones were also common. For example, at Tiryns the fortification walls were re-built, the Lower Citadel was constructed on an innovative plan and expanded into the north (Kilian 1988: 135). But, the re-building of the old palace was clearly not attempted. However, Tiryns again presents us with an interesting dilemma: at the new Building T, a throne-like installation was built and one must consider whether this is indicative of the presence of a *wanax*-like figure (Maran, 2001). But as Dickinson rightly points out, there must have been a re-arrangement or leveling down of the Third Palatial Period's hierarchy because every aspect of that system was modified in some way (2006: 61).

Another characteristic of the PPP was the noted population movement and reduction. Coldstream (1998: 6-7) suggests that the Mycenaean survivors moved to Cyprus in an optimistic venture as mentioned above. Dickinson is not as supportive of this theory and insists that since the Aegean and Cypriot relations during that time were hindered, it is unlikely that Mycenaean immigrants moved there as a colony.

Rather this process was exploratory in nature, continuous, and non-invasive to the indigenous people.

There is also evidence of movement of people within the Aegean, resulting in population clustering at sites such as Asine and Tiryns. This may represent population movement from smaller settlements to the new centers. Other supporting evidence for this interpretation is the noted increase of grave use from the northwest Peloponnese to the Alpheios Valley during the LH IIIC (Dickinson 2006: 64).

It could be concluded that mobility was a characteristic feature of this period and might explain why any attempts to sustain ruling power failed. This may account for the noted reduction of the overall Aegean population: it was dispersed and unstable. The EIA marked a period of significant population decline which must have had its roots in the PPP in which the conditions were not propitious to reproduction of the LBA levels.

#### *The Start of the Early Iron Age*

The last decades of the PPP, the second half of the 11<sup>th</sup> century BC are also the very first stage of the EIA. This was probably the most unstable period for the Greek world, characterized by not just instability, but also a struggle to move forward and hold on to the past at the same time.

Undoubtedly this period experienced a real population decline, for all the new small settlements were abandoned right before the end of the PPP, and most of the major settlements suffered the same fate never to be occupied again, with the exception of Tiryns and Mycenae, reused as sanctuaries. Even Tiryns' impressive renewals did not last beyond this period and its population dispersed into small settlements all around the citadel (Kilian 1988: 151). These events are often explained as interpersonal violence caused by instability in society. People in the surviving sites

must have had a sense of fear of what the future held, and perhaps revolts or even warfare became the natural response to such stress. The noted population movement to Cyprus and Crete by this time may therefore be explained by the mere fact that people felt more secure in larger settlements which both of the islands had. Despite this sense of identity loss, some features that continued into the later parts of the EIA can be noted (Dickinson 2006, 72)

Dickinson (2006:70-75) provides a practical summary of this phenomenon. He argues that domestic economics, house plans, and other objects of domestic use continued to be employed in this period. Previously displayed luxury items such as gold or glass beads were still produced but only as private items, lacking the same elite status as in the LBA since they were no longer displayed in the same manner. Warrior burials, characteristic of the BA increased dramatically during the EIA, but without any overt indication of elite status (see below, 42-49). This evidence may not point to the survival of members of the BA elite class, but perhaps a struggle of militarily oriented individuals trying to gain power. This hypothesis may be further supported in light of the disappearance after the LBA of tholos tombs as elite markers. The only possible exception would be the incorporation of the “megaron” as a cultic structure at Midea and Tiryns. Though it was re-modeled and used during the PPP, it was an unimposing building just like many other cultic structures identified in Crete (Dickinson, 2006: 75).

Because of these events many have defined this last phase of the PPP in the Greek world as lacking energy. As we have seen, many features from the BA were borrowed at the start of the EIA but they were modified or used differently. We are left with the impression that a culture essentially different from the Mycenaean began emerging. In this thesis I will argue that this process was not as simple as a culture



taking the place of another. I believe that without the events that took place in the LBA, the IA Greek culture would not have emerged. This was period of cultural evolution, not of extinction and replacement.

### *The Introduction of Iron*

Snodgrass (1971) provides a three step development of iron technology in the Aegean that will be applied in this thesis. In stage one iron is used but only for ornamentation, like the bronze pins with an iron globe popular all over the Greek world. This use of iron had no utilitarian value. It was seen as a decorative material or a luxury item. In stage two, utilitarian iron comes into use but bronze still dominates. Finally in stage three, iron replaces bronze as the main metal of practical use, but it never eliminates bronze. At this stage, bronze takes on a more decorative role. This is a very popular feature of IA societies: they use iron and bronze in a varied and lively way, experimenting with both metals. Stages two and three will be the main concern of this thesis.

As discussed above, Cyprus started the utilitarian iron revolution in the Mediterranean in the 12<sup>th</sup> century BC with the bronze riveted iron knives. A similar type of knife was also present in the Greek world during this time but only in burial contexts. During the 11<sup>th</sup>/10<sup>th</sup> century BC, Greece entered its stage three (Snodgrass, 1980: 346-347), characterized by its ability to produce iron objects in original forms. Flange-hilted daggers and all-iron knives were found in the same fill in the Kerameikos graves dating to the middle of the 11<sup>th</sup> century BC. A Levantine-like iron sword appeared at this time and had a very similar Cypriot version in bronze. A little later, a new type of sword with an even-tapering blade was found in Athens whose only example ever found in bronze comes from Cyprus. Snodgrass (1980: 347)

suggests that possibly the Aegean IA iron industry takes off from where the Cypriot BA bronze industry left off.

## **2.2. The Start of Iron Technology**

As we have seen, the events that occurred at the end of the 13<sup>th</sup> century BC were a major phenomenon involving most of the Old World. Though it is impossible to blame iron for the end of the BA, it is more than a coincidence that iron technology began to appear at the time it did. It is crucial to understand why the transition of working metal occurred because it signaled not only a technical change but also a social one. Many opinions and theories have been formed throughout the years of Aegean scholarship aiming to answer this question. We should now look at the leading theories in order to understand better the argument that I will be developing.

Muhly (1980) believes that the east Mediterranean holds the key to the bronze-iron transition since this region was the first to use iron in a utilitarian way. Evidence is consistent with the hypothesis that iron technology developed first in the Near East and the Levant, then in Cyprus<sup>2</sup> and finally the Aegean. Before the 12<sup>th</sup> century BC, iron was used but considered only for its decorative qualities. He considered the long held idea that the Hittites had a monopoly over iron production and technology and concluded that other than the many references to iron in the Hittite texts, there is no basis to argue for a monopoly (see below, 74-75).

For a long time, the transition from bronze to iron has been explained as a northern influence from the Balkans or Italy (Muhly, 1980; Foltiny, 1961: 285-295). This view was based on the supposed similarities between the Hallstatt culture characterizing that region and the Greek mainland's metal finds. Foltiny (1961: 291)

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<sup>2</sup> Cyprus was the first to develop carburized iron/ steel and technique of quenching

compares east Hallstatt regions with the metal finds from Athens and argues that a large part of the Athenian iron was obtained from the north.

The earliest iron working on the mainland was dated to the end of the 2<sup>nd</sup> millennium BC and utilitarian iron was introduced around 900BC, during the Protogeometric Period. Foltiny considered iron as a foreign material that had to make its place into society. Iron was mostly imported from the north and perhaps a scant amount was mined from the local mines in Attica, Boeotia, or Laconia (Forbes, 1950). Foltiny believes that in the northern regions there was a well established tradition of copper smelting that pre-disposed its inhabitants to develop iron metallurgy. Mycenaeans during the LBA must have traveled to these regions and brought back both the metal and its working techniques. In this way, they created a market for raw materials which sponsored the coming of the IA in Greece.

Today we can securely reject this explanation of how iron came to Greece. Other than the fact that the chronology is rather off, it is now accepted that iron technology was not introduced from Europe but Cyprus. Snodgrass (1965) is the leading scholar who showed not only that European iron work lagged behind the Aegean material, but also that the similarities were only superficial. What Snodgrass is even better known for is the bronze shortage theory as an explanation for the coming of iron in the Aegean.

In his important volume *The Greek Dark Age* (1971), Snodgrass surveyed the material evidence in the Aegean, and recognized a pattern. He argued that Attica took the lead in the development of iron technology, and that more “advanced” regions such as Tiryns, Mycenae, and Theotokon followed in its footsteps, and that this pattern of metalwork resembled the ceramic developments of the regions. During the very start of the PGP bronze was still the primary metal used for utilitarian purposes.

Later on, bronze was used sparingly and iron dominated the archaeological record. At the end of the PGP, bronze makes a comeback but never again comparable to the BA. Snodgrass considered the areas that used bronze during the main years of the PGP as backward and isolated.

In the Geometric Period, Snodgrass noted an increase of bronze for objects such as pins, fibulae, and finger rings. A little later, revival of bronze use in weapons such as arrowheads or spear-butts occurred. All these objects occurred in larger numbers in iron than bronze at the beginning of the PGP, but by the GP the trend inverted. These observations led Snodgrass to the conclusion that iron replaced bronze during a time of difficulty in obtaining bronze alloys, from the lack of skill in bronze technology, or both. This is related to the loss of communication that he argued the Greek world experienced from the end of the 12<sup>th</sup> to the 11<sup>th</sup> century BC, the time when experimentation with iron really took off. When international relations were revived by the middle of the 10<sup>th</sup> century BC (950BC and onward) bronze started to be used again, hence the marked rise in its occurrence at the end of the PGP (Morris, 1999: 70-73).

There are fundamental difficulties with the bronze shortage hypothesis but some scholars such as Dickinson (2006) and Waldbaum (1992) still accept it. Other scholars like Susan Sherratt (1994), as we have seen in the case of Cyprus, argue that iron was more useful and potentially superior to bronze. Snodgrass (1980) however rightly points out that iron is superior only in the right conditions and it is safe to say that with the onset of the IA these conditions did not exist. Iron is generally useless unless it is transformed into steel.

The steeling of iron is a fairly complicated process that involves chemically altering the molecular composition of the metal. As a by-product of copper production

or smelted from ore, iron is obtained as bloom. Iron bloom is a porous matrix of iron, slag, and charcoal that is hard to work with. To make this iron workable, smiths have to either hammer the bloom in order to take the charcoal and slag out of the spongy clump, or cut it up into smaller pieces and weld it. In this state, iron could be re-worked by heating, beating, and fusing different pieces. The resulting object, say a sword, would not be as strong as bronze (Tylecote, 1980: 209).

In order to strengthen it, iron needs to be carburized. This process involves re-heating in order to insert carbon into the metal. The longer it stays in the heated charcoal the stronger it gets. From there, to make iron harder, it is quenched in cold water, a process which has no effect on the strength of the metal. If the smith does not have the necessary knowledge of the process, instead of making steel he could make iron as brittle as glass (Wheeler and Maddin, 1980: 123-124).

To melt iron and cast it like bronze, either 1540° C would have to be reached in the furnace or an alloy of carbon (4.30%) and iron would have to be achieved in order to reduce the melting point to 1150° C. During the first millennium BC no one possessed this technology other than China (Tylecote, 1980: 209). This means that people in the Aegean could not cast iron the way they did bronze. Without casting, mass production of iron objects was a more tedious and slow process since the smiths had to forge every object they made individually.

As I have tried to show, the blacksmith's craft was much more complicated than that of a bronze smith's in some ways. For these reasons, appealing to the advantages of iron over bronze as a reason for abandoning bronze is fruitless. In order to create an iron tool that was superior to bronze, more than a few decades had to pass. Thus, we can discard iron's properties as being the reason that it replaced

bronze. As for Snodgrass' bronze shortage hypothesis, it deserves greater attention that will be given in the following chapters.

If not because of bronze shortage or the superiority of iron, then another reason why the Aegean made the transition from bronze to iron should be considered. It is my intention here to propose and test that perhaps this transition was due to a change in society. I want to stress and examine the implications of the fact that the commitment to bronze ended after the 13<sup>th</sup> century BC, the end of the LBA. I now turn to heterarchy as an analytical tool that will lead the following discussion.

### **2.2.3. Heterarchy: Main Hypothesis**

In 1995, Robert Ehrenreich, Carole Crumley, and Janet Levy published *Heterarchy and the Analysis of Complex Societies* as part of the AAA publication reports. This important work was the first real effort to apply heterarchy to archaeology, demonstrating the enormous potential it had in the analysis of complex societies.

Heterarchy is both a social structure and condition that represents a non-hierarchically organized but still a complex society. Carole Crumley defines heterarchy as “the relation of elements to one another when they are unranked or when they possess the potential for being ranked in a number of different ways” (Crumley, 1995: 3). This means that how we look at an individual element in a society should be considered from its context and that we need always to be aware of change. If we try to impose permanent ranking, or insist in viewing a society as a hierarchy only, we lose the ability to understand its systems.

Heterarchy could be linked to an organism's adaptive fitness, giving it the ability to accommodate itself to a new situation and stress. In terms of a society, this

would be the ability of a society's different aspects to change power-relations through time and space. This brings us to a very important aspect of heterarchy: spatial and temporal flexibility (Crumley, 1995: 3). This is a crucial property of heterarchy because it allows us to view power changes over time and space "without invoking the rhetoric of collapse" (Crumley, 1995: 4). It is in this light that I intend to look at the LBA- EIA transition in the Aegean. If heterarchy was the means of adaptation to the events that affected the Mediterranean during the second millennium BC, then iron was the tool.

I believe that in the Aegean, we have a social situation that is appropriate for a heterarchical model, and if so, I can use it as a model to analyze the LBA- EIA transition in Greece specifically. So far, it has been acceptable to view the LBA Mycenaean world as a hierarchically organized palace-system society, highly integrated into the wider Mediterranean world-system. I argue that it is at least partly because of this view that so many aspects of archaeological evidence before and after the collapse seem to contradict one another. For example, How did a literate society (at least at the administrative level) as the Mycenaean one lost its literacy all of a sudden (Sherratt, 2001)? Were international relations really severed? And back to the familiar question, why is there an element of confusion in the archaeology of the LBA, EIA, or both?

It is my intention here to propose heterarchy as the model and interpretive tool needed to explain these events in Greece, and attempt to create a clearer understanding of the transformation that took place. In the following chapters, I will do this by applying a series of tests to the different aspects of the Mycenaean society as explained in chapter one, and test if heterarchy is truly applicable. If in fact this is

an appropriate model, then I believe that I can provide an explanation for why iron replaced bronze.

In order to show heterarchy at work, we can take a case study from Europe as an example. Robert Ehrenreich (1995) gives us an example from BA and IA Wessex of how heterarchy serves as a better model that explains the events in this transition. What we are to note is the role that iron played. During the more centralized period of metalworking in the BA, we have clear evidence of two types of craft specialization in two types of bronze working: first, large quantity, high quality, and a wide range of forms, and second, small, more common, and lower quality bronzes. In addition, evidence of these bronze workshops is explicit, and their distribution definitely showed long distance involvement. Overall, it is clear that during the BA, bronze working was hierarchically organized in this society. During the Early and Middle Bronze Age, long distance communication was an important aspect of this economy. But, after 900BC/ LBA, this strong centralization begins to fall apart, the bronzes produced started to be predominantly of the lower quality, and craft specialists started to produce bronzes for local use.

During the EIA, we observe a completely different smithing tradition. Evidence for iron workshops is sparse. The iron objects themselves show little knowledge of the properties of iron, and thus it can be concluded that craft specialization was completely absent from the picture. Long distance exchange is not even attested, for there is no evidence of surplus or artifact distribution in wider regions. Instead of suggesting a collapse of the BA in Wessex, Ehrenreich proposes a more subtle interpretation.

On the first level, he suggests the standard: BA bronze working had a high level of craft specialization: a hierarchical system. But, during the IA, this hierarchy



fell apart and iron crafts functioned on a less rigid and lower level. In another point of view, this transition can be seen as the decline of a hierarchy and its re-organization as a heterarchy. Overall, this whole system is indicative of a heterarchical society because of the ability it had to re-arrange its social structure. Finally, the switch from bronze to iron in the light of heterarchy shows a natural response to the stress imposed on society. A bronze industry would not work in a self-contained and a non-hierarchically organized metallurgical society. The material change reflects the features of the new social order.

In this thesis, I will look for a parallel to the Wessex example in the Aegean. Instead of considering every aspect of the Mycenaean society as ranked in a permanent way, I want to try and apply heterarchy in all of its properties and use it as an analytical tool leading me to the IA. As for iron, I intend to eliminate any doubt of bronze shortage as being the reason that iron technology became dominant. I will argue that the switch to iron happened because it fit the new and looser social organization after the 13<sup>th</sup> century BC.

In the following chapters, I will set up the model of how and what a heterarchy should look like if it really existed in the Greek world. Based on these criteria, in the following chapter I will use all appropriate data available and apply it to the tests I had set up. Only after this is done, will I be able to evaluate if heterarchy is a suitable model for the LBA- EIA transition in the Aegean. Because I will test my hypothesis using systematic means, I leave open the possibility that I will end up with a negative result, and heterarchy may turn out to be an unsuitable theory. In either case, I would have at least attempted to examine the events at the end of the 13<sup>th</sup> century BC in Greece in a new light. If heterarchy does indeed prove useful, then I will have an

original explanation of why iron came to the Aegean world. With all these possibilities acknowledged, I proceed to examine the evidence and see what it reveals.

## CHAPTER 3

### SET UP OF CONTROL

The purpose of this chapter is to set up the experiment that will test the hypothesis presented in the previous chapter. My control will be to compare the evidence from the Aegean that will be discussed in the next chapter to the features that heterarchy exhibits in complex societies as explained below. By explaining the characteristics of heterarchy, I will be able to ask relevant questions that are, above all, testable with the available evidence.

Heterarchy's main aim is to show that complexity exists even when there is no centralization or hierarchy. Complexity in a heterarchically organized society is expressed through forms and institutions such as follows (Brumfield, 1995: 125):

1. An assortment of independent but homogenous elements. This could be agriculture or craft specialization that take the same forms but are not standardized by a central system (hierarchy), and do not depend on one another to function.
2. The membership of an element in an interaction system, whose participation is decided based on the element's or system's motives. For example, the way the ranking and status of elite goods in a trade system can change in accordance with the social situation.

3. The memberships of an element in a ranked system that may occupy different ranks in different systems. For example, the different roles attributed to a substance, like perfumed oil, in a burial ceremony and in an elite trade system.
4. Two or more unranked systems that act as equals within the same social system. For example, a non-centralized religious practice and agricultural production interacting with each other on the same level or holding the same level in the social ranking of one given society.
5. Two or more ranked systems that act as equals. For example, in a society that has a system of ranking for religious practice and agriculture, these two aspects are not ranked against each other but interact on the same level.
6. I add this category- unranked and ranked systems that act as equals. We will see examples of this type of system in the Aegean data.

Using the aforementioned features of heterarchy as the control, I will explore the following aspects of Greek Aegean society.

*Burials-* The specific features of graves in LBA and EIA Aegean Greece will be compared. A heterarchical approach predicts that the use of burial goods, rituals, and the burial types themselves should show continuous yet modified features. There would be evidence that during the LBA burial customs were not standardized. Burial customs would have been flexible in their relations to other elements of society. Evidence should show diverse ways of showing elite status in burial practices and the use of status symbols in different ways.

*The Palace-* The institution, seen as the controlling element of the Mycenaean hierarchy, is the key to understanding LBA social conditions. For the palace systems to be consistent with a heterarchical model, evidence needs to show variability in the degree of palatial control: the palace would have controlled

some features of society but have been completely excluded from others. The Mycenaean palaces would not have been a politically integrated system without strong evidence showing one palace dominating another. I am looking for evidence of homogenization in some features but also variation over the entire Mycenaean region.

*International Relations-* Again, the primary signs I am looking for are the level of centralization, palace control, and hierarchical organization in the LBA. Variability in trade involving more or less the same items will be convincing evidence of heterarchy. Likewise, the role of bronze should show the ability to act fluidly and serve more than one social level in the trade system. Evidence of centralization has to be scant and inconsistent. Finally, during the EIA we should still have evidence of attempts at international relations.

*Introduction of Iron-* The introduction of iron should be a phased, continuous process beginning in the LBA. Iron should not have been introduced in society as invasive material and so evidence that suggests this is important. For example, iron might have been used to try copying or building on bronze forms, and should demonstrate imitation of BA function and technology at the early stages of the EIA.

I believe that these features will show the nature of social organization the best and will allow me to test the heterarchy hypothesis. The questions I am asking aim to extract specific evidence demonstrating whether heterarchy existed or not and whether the concept may explain the LBA-EIA transition better than notions of collapse, discontinuity, and rebirth. To that effect, I will give special attention to bronze and iron in my account of evidence so that later I can discuss the role iron played in the LBA-EIA transition. I will look at cultural elements that have been

given different roles at any given time. I hope to get conflicting evidence between the LBA and the EIA where the culture has changed, but at the same time where it has retained some features from the BA in order to show that there was continuity and change at play that modified the old culture but did not make it extinct. Evidence should be able to convince us that instead of radical breaks (collapse), there was cultural evolution perhaps as the result of social stress. A society that was never rigidly organized during the BA would be able to re-adjust itself. For this reason, I am looking for evidence that shows the adaptive fitness of the Greek Aegean between the LBA and the EIA.

In the following chapter, all the evidence will be presented for these categories. As I have made clear, the role of iron and bronze will always be put forward in these aspects of Aegean society. Using the evidence available, if heterarchy is shown to exist, I will be able to argue in chapter 5 that iron was chosen to take over bronze technology because it was more appropriate for the new social system.

## CHAPTER 4

### LOOKING AT THE EVIDENCE

#### 4.1. The Greek Burials

The first set of evidence I want to present is that of burial customs. This aspect of Greek society has always been the main source of archaeological data in the BA, but especially the IA. Scholars have always been tempted to look at this material as the basis for every interpretation in relation to social and population status. For this reason, much of what is understood and accepted comes from burials. Here I present a summary of the evidence for burial practices in the Greek Aegean, emphasizing the differences between the LBA and the EIA, as well as between bronze and iron.

It is important to remember that when considering burial customs, a single burial pattern or trend is hard to establish for the whole Mycenaean region because every area had its originality. I will do my best to bring this out, yet still trace the changes from the BA to the IA. These shifts were by no means sudden and obvious but they are considered important as representing the changes from the Mycenaean burial practices to those after the end of the BA.

#### **4.1.1. Burial Structures**

##### *Mycenaean Period*

The BA displays a wide variety of burial types: pits, cists, and tumuli usually reserved for the lower members of society with exceptions such as Eleusis, where they gained popularity as the BA progressed (Dickinson, 2004). The other big group of burials of the BA was that of chamber tombs: one of the favorite types of tombs in which to practice communal deposition (fig. 5). Except in the earlier Mycenaean periods in the Argolid, the chamber tomb was rare everywhere in Greece even during its most popular phase in the LH IIIC (Cavanagh, 2008: 330). The other representative burial of the Mycenaean was the tholos tomb (fig. 6). It highly resembled the chamber tomb except that the chamber and its entrance gate were made from a constructed vault and were not just rock cut. This form became the main choice of elite burial in the LBA, but was quite rare at the beginning of the BA except at the Valimida cemeteries. Most of the chamber tombs were constructed during the 2nd Palatial Period and those that were constructed during the 3rd PP include the only ones found outside the mainland, including Crete. These rock cut burials became the most popular form of communal burial by the LBA, and the pit and cist graves slowly decreased in frequency but continued in places like Eleusis. These patterns were general: we must keep in mind the strong variation from one Mycenaean community to another (Dickinson, 2004: 227-228).

##### *Post Palatial Period*

The PPP generally continued the features established in the 3<sup>rd</sup> PP (Dickinson, 2006: 178-183), but the most important change that occurred after 1200BC is the cessation of the use of tholos tombs. The Perati cemetery provides us with the main source of data and is considered as representative of this period. From it we can infer



that chamber tombs continued to be used or re-used but for a lower number of individuals compared to the 3<sup>rd</sup> PP. Some regions, however, still practiced multiple communal burial. Another trend that might be misleading from Perati is that at first glance it would seem that the larger the tomb the richer its contents. In many instances, this is not the case.

The reduction of the number of people buried in a single tomb resembles an earlier tradition of the MH of having one to two burials per grave. When new chamber tombs were built on the mainland they were smaller than their Mycenaean counterparts, of poor quality, and contained fewer burials, at Elateia for example. Examples of continuing multiple burials were found in Messenia and Thessaly where small stone-built tholos like burials were found with probable LBA influence. Other examples are the LBA vaulted rectangular tombs at Dirmil in Caria, Crete, and Asarlik (Dickinson, 2006: 181-182).

At Argos and other sites we begin seeing that the last use of chamber tombs coincides with the re-appearance in the use of pits and cists with few individuals per burial. But, some regions continued the use of chamber tombs into the EIA period like central Crete and the Locris- Phocis region (Dickinson, 2006: 186). While the chamber burials fell out of favor by the end of the PPP, they were still part of these regions' local tradition. This can be compared with the total disappearance of "princely" tholos tombs, surely with important implications for the type of society that emerged after the LBA.

### *Early Iron Age*

At the very beginning of the EIA period/ end of the PPP the trends that started earlier further deepened. One of the biggest distinctions between LBA and EIA burials is that the later graves were dug closely together forming miniature cemetery

clusters (Dickinson, 2006: 185). Generally constructed tombs ceased to be made but some regional variation persisted. For example Thessaly is known for its unique use of tholoi throughout the GP with most tombs in use for generations. Out of 51 tombs, 18 featured a dromos, but in general these tholoi were not as well constructed as their Mycenaean counterparts (Georganas, 2000: 50), though they were used in much the same way as in the LBA.

The Halos cemetery in Thessaly (900 BC) offers an interesting and unparalleled example of variation on burial practices with its series of tumuli heaped over funeral pyres (Georganas, 2002: 289). Tumuli existed in Mycenaean times but were never popular. Even more interesting is that a stone covered the cremations: a ritual unknown elsewhere in the Greek world. The preponderance of the tumuli and the ritual just described have led many to believe they represented a foreign element that entered the area around 900BC. In his paper, Georganas argues for a local origin of these burials based on the features of the tumuli. He proposes that this distinct character was the way Halos inhabitants expressed their identity.

It is in this light of personal identity that we can explain variation from regions in the Mycenaean world. As we have seen, from the earliest phases of the BA to the end of the EIA burial structures changed in popularity and use a number of times. So far we have discussed these transitions in terms of structures chosen for burial. To understand better the nature of these changes and put them in context, attention needs to be given to burial rites and associated corpse treatment.

#### **4.1.2. Body Treatment and Representation**

LBA burial customs originated at the beginning of the MH period, at which time the majority of graves were intramural pits, cists, or in pots (pithos fragments for sub-adults). These were usually found in small numbers, thought to be associated with

houses or small settlements, and were rarely re-used (Dickinson, 2004: 222). We can generalize that grave goods were not too popular, and if any were included it was rarely anything more than a pot or two. Tumuli also existed but were rare, not considered characteristic and limited mostly to Messenia, Attica, and the Argolid. While a few were constructed early in the MH, most belong to the later phases of the period. They covered large pits, cists, and pithos burials. Each grave contained several burials unlike the standard MH custom. These tumuli, though never popular in later Mycenaean times, foreshadowed the trends that the Mycenaeans adopted. In the latest stages of the MH, the tendency to elaborate, the proliferation of grave goods, and the decision to build extramural cemeteries are all evidence of an effort to differentiate status that could be seen as the emergence of formal elite. The Mycenaean Shaft Grave Circles provide one of the first such examples, although few others were as elaborate (Dickinson, 2006: 222) (fig. 7).

#### *Mycenaean Period*

The period saw a continuation of the trend to bury up to a couple of dozen individuals per tomb. By the third PP, a noted increase in child and sub-adult burials can be observed, so cemeteries seem representative of the whole population. Though cremation was not unknown, inhumation remained the main form of body treatment (Dickinson 2004, 229). Some tholoi and chamber tombs had pits, cists, built graves, and even benches added to the original burial complex in order to accommodate re-opening of tombs. The older bodies might have been moved to these benches to allow the interment of more dead. In other cases, the bones and offering were simply swept aside. Some type of a funerary rite seems to have taken place as is shown by the occasional fragments of drinking vessels.

#### *Post Palatial Period*

Continuing the pattern, the PPP took off from the fashions of the 13<sup>th</sup> century BC. However, features were applied in significantly different ways. For instance, cremation became the most popular form of burial with each tomb containing fewer individuals, although always more than one. Inhumation was still practiced and often found together with cremations, which seems to be the case into the EIA. An exception to this is at Chania where a new type of tomb was found that seems to contain exclusively pottery cremations (Catling, 1984-1985:21).

The pit and cist graves that came into use again contained only a few individuals just like in the Mycenaean period. The chamber tombs that were in full favor continued to show signs of re-opening and long term use. At Elateia we have an exceptional cemetery with a high number of pit burials with traditional Mycenaean body treatment, and two incomparable tombs that contained 160 individuals buried over a long period (Dakoronia, 2003). But as mentioned above, Dickinson (2006: 179) emphasized that overall at the most representative cemetery of the PPP, Perati, the reuse of tombs was becoming rarer with time, and burials of children were notably less frequent.

#### *Early Iron Age*

By the end of the PPP the shift to single burials and the popularity of cremation became more pronounced. Some communities made cremation the dominant rite but inhumation was never abandoned completely. It is not uncommon to find different forms of cremation such as in pots, urns, cists, etc. at the same site (fig. 8). Inurned cremations were the primary burial form at Torone and were very common in Crete, and even more as the PGP progressed. But, Torone had a local material tradition with no Mycenaean presence, and cremation was the sole rite in various forms (Dickinson, 2006: 186).

The Halos tumuli are another great example of the use of cremations. In the excavated tombs, archaeologists found 10 male and six female cremations placed in no particular manner, spanning two generations. Graves of children were placed around the cist burials found in the tumuli. The tombs contained a combination of cists, pits, pyres, and pithos burials, demonstrating the various ways cremation was manifested in this period (Georganas, 2000: 51-52; 2002: 291-293).

As the EIA progressed, there was a trend towards simplicity and less elaboration. The rich EIA Kerameikos cemetery in Athens is an exception to this trend. The lavish cemetery included female tombs with grave markers and evidence of animal sacrifice. The link between cremation and elaboration at Kerameikos cannot be generalized for the whole Greek world since we have many examples of unremarkable cremations and lavish inhumations elsewhere (Dickinson, 2006: 189-190).

Another feature to note towards the end of the EIA is that the number of child burials rose again as evidenced in Athens. A Dark Age cemetery in Erechtheion Street shows a rather high number of child burials relative to the total number of individuals. This can be compared to the low percent of child burials featured in the earlier Kerameikos (Broaskari, 1980). Morris (1987: 72) suggests that who was represented in burials and who was not was directly related to how much the burying group was depositing individuals based on rank.

#### **4.1.3. Grave Contents and Wealth**

##### *The Bronze Age*

The MH mainland was not known for its wealth. The late MH shaft graves in Mycenae are the earliest example of the Mycenaean tradition of elaborate display and wealth deposition in graves. During the first phases of the Mycenaean period the

richest tombs contained gold jewelry, seals, and male burials sometimes had elaborate weapons (Dickinson, 2006: 228). During later times at Mycenae, a couple of graves even contained rare precious vessels with ivory inlays. In Thebes some chamber tombs had frescos on the doorway (Dickinson, 2006: 229). In Crete, Knossos had rich burials such as those found at the North Cemetery. They must have been reserved for elites, considering the low number of individuals buried over four centuries and that all of the burials had similar features (Dickinson, 2006: 177). Burial customs in this cemetery and in Crete in general were similar to those on the mainland during LM II-LM IIIA.

One of the most interesting features of the BA were the warrior graves (fig. 9). They were popular during LHII-III A mostly at Knossos and in the Argolid. They usually contained nothing more than weapons, razors, pots, and were reserved for males. In contrast to their name, they were not the graves of actual warriors but a metaphor or an ideal of what males were supposed to be in life, since even children were buried in such a manner. The most significant examples of such graves were the earlier Shaft Grave Circles A and B, rich in weapons and other wealth. But the most important concentration of warrior burials was in Mycenaean Knossos, with all graves dating to 1450-1350BC. They were referenced in the Linear B tablets as a new Mycenaean ruler's military entourage at Knossos that was responsible for this LM IIC innovation in burial practices (Whitley, 2002: 222).

In the 3<sup>rd</sup> PP grave goods including pottery were common but as much as 20% of chamber tombs did not contain them (Lewartowski, 1995: 106). It is also good to remember that a high number of graves had no goods at all. Regardless, chamber tomb burials were available to as much as 50% of the population, giving the impression of a large elite group (Dickinson, 2006: 39). It seems that by the end of the

LBA, elites were no longer showing status by tomb display, but by wealth deposition in graves.

Assigning social class to tomb types remains problematic because of overlap. We are tempted to say that the bigger the tomb the richer the grave but we have many examples of such tombs that are not representative of high social status. On the same note, though it seems as if cremations were associated with a wealthy burial, this was never a rule. Finally, it could be inferred that the lower class of the society should be buried in pits and cists, but they were rare before and after the 3<sup>rd</sup> PP. Thus, we should refrain from trying to associate social class to a certain type of burial form.

Just like the other aspects of burial customs, grave goods in the PPP were for the most part a continuation from the 3<sup>rd</sup> PP practice. The Perati cemetery showed a tendency towards rich adult cremations and even warrior graves later on. But as mentioned cremations should not be associated automatically with rich graves, for in the Argolid, many cremations in tumuli were not spectacular. But, it should be noted that as the EIA approached, more and more graves with any objects in general could be noted, not just in the Aegean but in Egypt, Anatolia, and the Levent (Dickinson, 2006: 183). With the end of the 3<sup>rd</sup> PP: seal stones, figurines, and necklaces went completely out of use and steatite loomweights became rarely seen (Dickinson, 2006: 185).

### *The Early Iron Age*

As the EIA progressed, simplicity continued. There was elaboration in some tombs at the Kerameikos, including grave markers, jewelry, and sacrifices. The focus of female wealth display may have been a way for the males to show status. At Athens and in Crete unusual wealth was displayed during this period. Crete generally resembled the mainland in burial customs, and though excessive elaboration and

wealth was not a regular feature of the EIA image, Crete provides the most stunning examples of wealth in the EIA. The island can be contrasted with the mainland in that while Greece started showing explicit signs of references to the LBA material culture during the 8<sup>th</sup> century BC, Crete did so starting in the 12-11<sup>th</sup> century BC. Another distinctive feature of Crete was the diversity of ways by which it referenced the LBA. (Wallace, 2003).

In the EIA both single and multiple burials had the same goods pattern as in the PPP. Most graves had burial goods similar in number and quality, and more than that was considered a rich grave. In addition to vessels, rings and dress fasteners were popular in children and female burials and weapons were common in male ones. Morris (1997: 541) and Whitley (1991a: 181) saw this homogeneity as a sign that the Mycenaean way of life was no longer alive since elites were not trying to display status as vigorously as before. It can be argued that this pattern was not all that different from the LBA since much variation in quality, quantity, and tomb types was seen. In fact, such variation existed not only between rich and poor tombs but also between burials in the same tomb (Dickinson, 2006: 39, 185).

The warrior burials continued from the BA tradition but it is hard to describe the change between LM IIIB and LM IIIC at Knossos. The north cemetery's T 186 grave did show some hints from the BA like the "killed" swords, a custom that became representative of the EIA. T201 is a more elaborate example that dates to 1050BC. It contained a bronze armor and arms. But, the most interesting find is a four sided Cypriot stand that was broken and burnt in the middle of the funerary fire suggesting that the cauldron it once held was the focus of the funeral, an activity that became a formal ritual in the EIA (Whitley, 2002: 223). In addition to retaining the



use of cauldron and tripods, other bronzes were also found in Cretan and Argive graves.

Some of these items were considered quite old at the time of burial and thus called heirlooms, objects that had retained value and passed through families for generations. For example, at Lefkandi the Toumba Cemetery's famous Heroon dated to 950-850BC contained a male cremation and female inhumation. The male's remains were wrapped in cloth and placed in a Cypriot krater along with a "killed" sword and a spearhead. The bronze krater was around 100-150 years old at the time of deposition and could be considered a heirloom. Whitley (2002) suggests that instead we should consider that these items circulated within a certain Homeric-like aristocracy and gained their value from being part of such a restricted circle.

A unique cemetery in the EIA was the Tekke T.2 at Knossos, the wealthiest grave in the Aegean. Its high gold contents have led some scholars to think that it was the grave of a Near Eastern family of goldsmiths. Kotsonas (2006) argues that by considering context and surveying other EIA tombs at Knossos, we can better see it as the grave of a local smith who had access to imported raw materials and thus controlled their distribution in the 8<sup>th</sup> century BC. The tomb was robbed in antiquity but it still contained 19 urns, human remains, Near Eastern objects, a pendant, ostrich egg beads, and various gold items. In two pits dug into the floor a pyxis and a feeder were found each full of gold and other precious objects. Considering how much gold had survived regardless of the robbing, the tombs should be seen as representative of its original wealth.

In trying to understand why the Tekke Tomb was so exceptional, Kotsonas notices a pattern: when the Tekke tomb and workshop were occupied, there was an overall low number of tombs with gold at Knossos and when it was not, gold content

was high in other tombs. This led him to suggest that during the 8<sup>th</sup> century BC when metals and other luxury items such as amber were rare in the Aegean, the Tekke Workshop was able to establish control and sustain a supply of these items. This gave them privileged elite status that is clearly distinguished from the rest of society.

IA burial customs differ from the BA not so much by the adoption of drastically new features, but by the mixing and matching of ideas already present. Thus, regional identities came to use geographically and temporally varied mosaic of forms. There was more readiness to experiment with bronze and iron, but exotic materials were now gone. At Knossos especially, warrior burials started to be more widespread. These changes do correlate with the metal experimentation which must come as no surprise since between the LBA and EIA iron took a new role in Greek society, and it is mostly from graves that these processes can be observed.

#### **4.1.4. Bronze and Iron Use in Burials**

Metals in graves were always seen as prestigious items, and as most indicative of social standing. Metals added intrinsic value to the objects of which they were made and the graves in which they were placed. Thus, when iron started to appear more often in the PPP graves, it was surely admired mostly for its prestige value.

One of the most important ways iron and bronze in particular showcased their importance in burials was with the warrior graves. The metal objects consisted of weapons, armour and other personal items associated with war and battle. During the BA, bronze was the main choice for weapons, including daggers, spearheads, and swords. One of the most spectacular examples of these warrior burials is the Cuirass tomb at Dendra. The male was buried with bronze daggers, two swords of gold, ivory and bronze. In addition to this display of weapons he had a bronze suit of armour with a boar's tusk helmet. Other than the military gear, evidence of rich clothing was found

such as gold-plated bronze buttons and silver toggle pins (Crowley, 2008: 276). Such lavishness is not common in the EIA repertoire.

Many of the earliest iron weapons were imitations of an earlier bronze type, though none of these imitations made an attempt to reproduce the last known types of swords, spears and daggers from the 13<sup>th</sup> century BC. One of the imitations and the very first type of iron objects that initiated the EIA are the iron knives with bronze rivets already discussed (see above, 15-16). These 12<sup>th</sup> century BC iron knives are still found in contexts with the all bronze types all over the Aegean such as in LH IIIC tombs at Perati, Lefkandi, and Enkomi, and one from Hama, Syria. Some of the knives and even daggers had bronze, ivory, and bone decoration and were surely used for burial display. In contrast, other bronze weapons in burials were becoming plainer, and as the full transition to iron set in, all lavishness disappeared. Perhaps this implies that some of the earliest types of iron weapons were imported from Cyprus. (Papazoglou-Manioudaki, 1994: 181-182). However, this trend had already started in the later LBA when weapons appeared to be plainer than during the previous period. The PPP saw a revival in experimentation with ornaments and fittings on swords and grave weapons Type F and G (Dickinson, 2006: 155), so it is in this context that the bronze riveted knives should be viewed, and perhaps not dismissed as Cypriot imports. As Snodgrass (1980) pointed out, these knives differ significantly from their Cypriot predecessor in type so that their similarity is mostly artificial. Thus, we should see them mainly as locally produced.

As the EIA progressed, so did the use of iron and the ability to experiment with weapons. 10<sup>th</sup> century BC iron weapons included spears, javelins, arrowheads, spear butts, chisels, axe blades, and horse bits (Dickinson, 2006: 149). During the 9<sup>th</sup> century BC society was in the 3<sup>rd</sup> stage of iron adaptation, and iron only weapons

dominated the archaeological record. By the end of the EIA iron had established itself as fully practical but did not take the place of bronze completely. For example, bronze was still valued as an ornamental metal and though the warrior graves' weaponry was now in iron, the armor and ceremonial vessels were still made of bronze. Perhaps it was the physical appeal of bronze that allowed it to retain this decorative value.

Iron and Bronze weapons were not the only metal offerings: graves also contained implements and jewelry, important elements in evaluating a grave's wealth. Fibulae, pins, and jewelry are found in the BA-IA throughout the Aegean, providing a valuable tool in tracing behaviors and use of bronze and iron before, during, and after the transitional phase (fig. 10).

With the onset of the LPPP, we note an increase in the number of pins in graves. This was probably linked in part to the switch to single burials allowing for low disturbance and for the pins to survive longer. Mycenaean burials contained pins near the head especially the likely unpractical ones that were larger than 10cm. In contrast to the EIA, only a few were found near the shoulder with clothing attached. Though frescoes do not show dress fasteners, these images pertain only to elites in ceremonial dress (Dickinson, 2006:159). These clothing items do not represent something the Mycenaean wore every day, though we should not assume that the people were buried with everyday clothing regardless of status. Based on this evidence and the placement of the pins in graves, we have no real evidence that the Mycenaean used them as dress fasteners: they probably used them for hair decoration. During the 3<sup>rd</sup> PP burials with pins are rarely found before LH IIIB2. In the EIA female burials often did not have dress fasteners, and even the Lefkandi heroon's female inhumation had none on her body (Dickinson, 2006: 161).

During the last stage of the 3<sup>rd</sup> PP the earliest fibula made its appearance surely with European origins. In the EIA its distribution varied in the Aegean but it was rare in PG Kerameikos graves. Serving the sole purpose of a dress fastener, the fibula probably influenced the Aegean pin to be used likewise. In the PPP we begin to see the pins used to fasten funerary shrouds, shawls, and cloaks, and by the PG, graves contained pairs or large groups of pins (Dickinson, 2006: 162). This evidence may be interpreted to mean that the EIA pins and fibulae reflect the presence of an elaborate dress that needed fasteners. We should not exclude the possibility that they were an article of display, especially when we consider that fairly large pins were placed vertically, pointing down on the body: a position that would be practical only if the person was lying down.

Other forms of ornamentation present in the Aegean during the PPP, and more common than fibulae or pins, were finger rings and hair spirals made of gold or bronze. Rings seemed to gain favor in the PPP though they had been noted in the 3<sup>rd</sup> PP. These ornaments were found in a wide range of graves, even in warrior burials like those at Tiryns and Marathon (Dickinson, 2006: 165). The bronze hair or ear spirals were mostly found at Knossos and Argos, and certainly have Italian links. Many of the sheet and foil gold versions like those from the Lefkandi heroon were flimsily made though decorated, and the carefully constructed rings had unfinished attachments (Popham et al 1982: 236).

The use of iron for pins, fibulae, rings, and hair spirals started in the PPP, when the first examples of iron rings appear. Ornaments of iron on pins were found in the early levels of the Skoubris cemetery at Lefkandi. However, through the IA, the rings continued to be made mostly of bronze (Dickinson, 2006:165). Another PP burial that featured iron use early was the exceptional Moulana T.A tomb that

contained two pins with a stud of iron. In the PPP iron was not used for any fibula (Dickinson, 2006: 74).

Most early use of iron on small ornamental and standard bronze objects could be understood as experimentation with aesthetics. A bone pin with an iron stud would create color contrast plus add extra value to the object since functional iron was not yet technologically available. As the EIA progressed and smiths became more competent in smiting and willing to experiment more, greater diversity in the use of iron ornaments in graves began to be seen. Iron was still held at high status as could be interpreted from the elaboration of pins and fibulae in iron buried with other bronze items in rich graves.

By the 10<sup>th</sup> century BC when the noted rise of iron use was evident, most iron objects were weapons with the exception of a few fibula forms. More complex forms like most fibula and finger rings continued to be made out of copper and bronze and their imitation iron copies went out of favor. Pins were the only form of ornamentation that continued onto the end of the EIA, especially at Athens. This may have been due to the technological difficulties iron working presented in making such small objects since it could not be melted. But at Lefkandi, people seemed to prefer fibulae over pins, and made them in bronze (Morris, 1999: 72)

Bronze's physical superiority over iron was also a factor. Varying bronze's tin and copper content created different shades of gold to silver whereas iron was mostly metallic and dull. Iron first appeared as globes on bronze pins but by the end of the EIA, roles were inverted and bronze became the decorative element. Similarly, the fact that iron lasted as long as it did for jewelry and dress fastener decoration was linked to the desire to create color contrasts. At the end of the EIA, iron had

distinguished itself as a utilitarian metal used mostly for weapons, and bronze was mostly ornamental used for rare vessels, dress fasteners, jewelry, and armor facings.

#### **4.1.5. Concluding Remarks**

Iron was known to appear sporadically throughout the Mycenaean period in graves but these instances were rare and probably not related to the later true introduction of iron in Greek society. It is hard to understand exactly by what means iron technology came to the Aegean, but itinerant smiths surely played a role. The exceptional iron sword from Toumba T. 14, Lefkandi close in form to the earliest bronze Type II sword at Athens may have been brought and made by such craftsmen (Dickinson, 2006: 118).

It is difficult to know how fast iron working spread in the Aegean once it was introduced technologically. In general, west Greece was slow to develop iron technology and deposit it in graves. For example the first iron find in Messenia, an iron-globed bronze pin found near Pylos, dated to just before 900BC (Snodgrass, 1980: 350). Elateia had many PGP tombs featuring few iron daggers, pins, yet bronze was still extremely common. Overall, we can conclude that the spread of iron from its initial centers in Crete and the mainland was somewhat resisted. It was not until the 9<sup>th</sup> century BC that iron became so common in graves that we can say it dominated bronze.

As mentioned before, metal in graves was seen as a form of wealth deposition. Though in the PPP iron was seen as a prestige material, slowly it lost this value and became a metal favored for utilitarian purposes, but bronze retained its precious value. The continued choice of bronze as a prestige item can be seen in its investment by the end of the EIA for grave display.

Regardless of the quantity of bronze and its value, it was not as expensive as gold or silver. Its physical appeal made it perfect for what was to become a major part of funerary tradition during the 8<sup>th</sup> century BC. Used only in the ritual sphere, the bronze tripod and its stand were the most valued items everywhere in the Aegean during the IA. Requiring the most bronze use, this vessel was surely the most obvious display of conspicuous consumption, and was often referred to in Homeric literature. Though bronze tripod stands were found in burial contexts, they are best understood as part of the increasing tendency of expenditure on the ritual sphere which reached climax in the 8<sup>th</sup> century BC. During this time, the trend resulted in the construction of bigger and better ritual buildings than ever before seen in the Aegean.

#### **4.2. The Mycenaean Palace System and Its Aftermath**

At the heart of the Mycenaean polities were the so called palaces: administrative centers whose power was technically in the hands of a *wanax*, a king like figure whose key roles included mobilizing resources in order to run the economy. The idea of the palaces originated in the early Mycenaean period when elites began displaying power through conspicuous consumption. During the LH IIIA these trends stabilized and became institutionalized in the form of the first palaces (Shelmerdine and Bennet, 2008: 290). Authority was exercised vertically through the hierarchy and horizontally through the territory of villages, hamlets, and towns. However, palatial power seemed to concern itself only with certain activities.

There were differences between the palaces themselves. It seems that not everyone had the same capacity to control and took interest in different activities. For example Linear B tablets reveal that Pylos was more centralized than Knossos (Shelmerdine and Bennet, 2008: 292). In contrast, all palaces seem to have had the



same idea of how to display power. For instance, the megaron was a monumental feature present at all the palaces that certainly served some administrative role. But the most important common feature of the Mycenaean palaces was the use of Linear B tablets. Almost everything we know about them is from the translation of these documents. And, because most tablets were found at the palace at Pylos, our understanding of the rest of the palaces is based on it.

We understand from the Linear B texts that the king was referred to as *wanax* (Shelmerdine and Bennet, 2008: 294). Though he was at the top of the hierarchy, the extent of his powers is not clearly understood. His status depended on personal prestige, kinship connections, and the execution of his role to redistribute resources through the different tiers of the economy. In addition to his responsibility to preside over the state economy, the *wanax* was also a religious leader. We have records of him in two texts from Pylos that show him in an active role. In the first, he appoints a provincial overseer and in the second he participates in a ceremony (Shelmerdine and Bennet, 2008: 293).

However, out of over 200 texts, the *wanax* is mentioned 20 times in total. An unexpected omission of the tablets is that they do not mention what, if any, role he provided as a military leader. Other officials are mentioned, for example, fig and provincial overseers, and key bearers, who have to contribute to “temple bronze” to make weapons at Pylos. Various craftsmen are also recognized in the tablets like blue glass worker, bronze smith, and textile worker, but curiously the scribe who wrote about them is never mentioned.

One of the most problematic lapses of information is that of foreign relations and trade. The only evidence we have of interaction is within Mycenaean territory. With over 5000 tablets found, I must assume that the lack of information was

intentional. Perhaps this is not that disturbing once we realize that the tablets only recorded specific information that directly concerned each palace, and at least at Pylos, the records were taken in the final days of the palace. In addition, in spite of the many varieties of cereal grains found in the archaeological record, Linear B texts mention only two. Thus, it seems that the palaces did not interfere with every aspect of the economy. This is further supported by the palaces' disinterest in the obviously extensive industry of ceramics.

From everything that was mentioned in these texts, we have learned that the palace's main role was to monitor commodities as they entered the centers in the form of taxes, gifts, trade items, and donations. It stored them and when appropriate, re-distributed them across the social hierarchy as payments, subsistence for workers, and sacrifices or offerings. The palace was also a center of industrial production, and every palace concerned itself with a different product. At Pylos, a large section of the ground floor was used for storage of jars full of oil or grain. The Northeast Building's 80 tablets revealed that it was used to produce leather work and chariot equipment. Other palaces had workshops for luxury items. At Thebes, fragments of ivory, lapis lazuli, and glass, suggest that these materials were worked into elite items. At Tiryns, Knossos, and Mycenae there is also evidence of blue glass working attested by a stone mould. Bronze working and textile production were monitored so that the end products eventually ended up in the palaces again. They re-distributed raw materials in calculated portions to workers of the palace as was the case with bronze smiths. However, seeing the palaces as a purely redistributive economy would be a mistake since there is no evidence that they provided much aid in times of need, or sustained members of society that were not attached to the palaces. It is more appropriate to see

the palaces as a wealth-finance system in which the control of palace industries was a source of power and revenue for the elites (Schon, 2010: 230).

During LH III, the role of imports changed in respect to their quantity, type and to whom they were redistributed (Schon, 2010). Bronze and certain luxuries started appearing more often outside the palace territory, reflecting a shift from luxuries to commodities. We can trace this change by following the Canaanite amphora and the faience drinking cups at Mycenae. Before the LHIII, these vessels were only found on Crete and then suddenly they flooded the Aegean trade routes, occurring in large numbers everywhere (Schon, 2010: 231-232).

The distribution of high status items to a wider range of society may explain the already noted large number of upper status individuals in the population in the late Mycenaean period. This may be considered elite-power loss, or a change in the way elites maintained power. The first seems unlikely to me since in the LHIII period society was thriving. It is more plausible that in the earlier periods the palaces hoarded high-value materials in order to maintain power. By the later phases, they began sponsoring different industries to produce status symbols, as is typical of wealth-financed economies. By distributing high status objects to a wider spectrum of the hierarchy, the palaces maintained power by securing loyalty, and the standard of living for the population at large rose.

Towards the later 13<sup>th</sup> century BC, we have archaeological evidence of some fundamental changes in the palace structure. There was the tendency at least at Pylos to convert most of the palace to a storage space and to increase effort in order to produce perfumed oil. It is thought that this foreshadowed the end of the 13<sup>th</sup> century BC. Some palaces, like Mycenae, became fortified around the same time, but as Dickinson (2006: 42) notes, it is hard to link this to the collapse since such an

architectural feat would have taken some time and could not simply be explained as a reaction to trouble.

The end of the century saw a systematic destruction of the Mycenaean palatial system. As the structures vanished, all symbolism and industries connected to them also disappeared (Sherratt, 2001). It is interesting to note that territories that were outside of the palace centers previously, like Achaea and Laconia, now came to power and prospered (Shelmerdine and Bennet, 2008: 289). A similar observation was made by Foxhall (1995) who studied the change of agricultural patterns before the collapse and after. Unlike popular belief, she argued that many components of Mycenaean settlements remained the same after the 13<sup>th</sup> century BC, but those settlements that were the furthest from the palatial centers fared the best after the latter were gone. For example, Methana and Lefkandi increased agricultural activities and exploited a wider range of agrarian landscape (Foxhill, 1995: 248). This may be understood in terms of provincial elites that were able to rise to power due to the lack of competition.

#### **4.2.1. Metals and the Palace**

The relationship the palace had with bronze production and smiths is usually assumed and thus overlooked. It is generally accepted that the palaces' role was to process and receive bronze and then supply it to smiths attached to them. Then, the smiths' finished products were returned to the palaces. Though this view is standard, I believe it has some fundamental difficulties.

Like everything else, the Pylos tablets are the most informative about bronze smiths and bronze. Interestingly, the smiths that were attached to the palace at Pylos were all named, a very unusual gesture though its significance is not understood. The tablets also mention the amounts of metal “*ka-ko*” distributed “*ta-ra-si-ja*” to those

smiths. The most common amount seems to be 1.5kg and average 3.5kg, a rather insignificant quantity (Gills, 1997: 509).

The first problem arises with *ka-ko* and what it means. It is accepted that bronze was distributed out to the smiths. It is difficult to accept *ka-ko* as meaning bronze simply because we have no evidence of bronze units in currency during the LBA. Bronze ingots did not circulate in the Aegean and there is no evidence of bronze coming in Pylos as a ready alloy (Gills, 1997: 508). The other option is that the palace acquired tin and copper, alloyed them, and then distributed the bronze out. But, we do not have any trace of bronze production, or any metal work for that matter at Pylos. It is also difficult to accept that *ka-ko* meant copper since we do not have a word for tin- it is never mentioned. Alternatively, the smiths could have provided tin themselves, or we are still missing evidence for the word tin.

A solution to this issue was proposed by Gills (1995: 509-511) by suggesting that instead of *ta-ra-si-ja* meaning rationing out or distributing, we should look at it as meaning the demand of *finished* bronze products. This would account for not having textual and archaeological evidence of tin at the palace, the missing evidence of metalworking, and why such small amounts of metal were dealt with in the tablets.

I hope to have shown by just scratching the surface of the topic how little we know about what the palaces did with bronze, and how it figured into Mycenaean society. Keeping in mind that 100% of this information comes from Pylos, we are left with a gap. What elites did with bronze, how it was acquired, utilized, and ultimately regulated is still hypothetical. That bronze production and the participation in the Mediterranean WS of trade was a vital part of society are clear. However, the mechanics and details of this process are still far from being understood.

### **4.3. International Relations**

The nature of trade between the Aegean and the Near East has been a topic of hot debate for theorists. The problem is that evidence is lacking to pinpoint how interaction was carried out in the Aegean during the BA. Though it is clear that Near East centers participated in political and diplomatic exchanges called gift-giving that will be discussed in this chapter, it is much less clear what part the Aegean centers played and whether or not they even participated in such exchanges. Due to the difficulties that scholars have faced in providing evidence for these issues, many have turned to theoretical models that could provide a tool in understanding this complex subject.

#### **4.3.1 Theoretical Approaches**

An old method of modeling BA Mediterranean interaction and trade has been to consider thalassocracies: centralized political interregional/international control. Some key candidates of thalassocracies were Egypt, Syria, and the Aegean (Knapp, 1993). Knapp proposed to “de-construct” these thalassocracies by looking at Mediterranean interaction in terms of local control, commercial trade, and gift giving together. Local control was presented in the form of a wide variety of exchange goods that traveled from coast to coast within the Aegean. Regional control made junction spots even more important for the system. Commercial trade takes this a step further, creating a tramping-like trade within the Mediterranean. This included private enterprise along with state level trade. The last and most intriguing level of trade associated with this region is gift giving.

Gift giving should not be seen as an economic activity as much as a political one. It involved communication between Great Kings, the title with which rulers in the Mediterranean were referred to in political documents. These gifts involved

precious and luxury items that were generally seen as a symbol of power for the giving side, and a gesture in showing interest in sustaining political alliance with the receiving side. Far from being gifts in the modern sense, they always required reciprocity (Cline, 1995; Knapp, 1993). Failure to reciprocate often caused problems and political strain between states.

As real and supported by evidence as this process is, it cannot account for most interaction between the Mediterranean city states. Gift giving's intention was not to create immediate profit because, as suggested from the Amarna Letters, gift exchange was separated from commercial exchange. Thus, in order to acknowledge the economic aspect of trade, a few economic models have to be considered. Some scholars like Finley adopted the primitivist view that did not see ancient economies as compatible with market economies (Kardulias, 1999: 181). The Sherratts attempted to minimize the role given to the agrarian aspect of ancient societies. They emphasized the role of conspicuous consumption as the main driver of trade, first in the production and circulation of a limited number of raw materials, then in their intensification as the demand for luxury products increased (Knapp, 1993: 340)

Similar to the Sherratts' efforts, supporters of the World Systems Theory's application to the ancient economy saw Mediterranean economies in terms of the market systems we know today. WST is defined by the existence of world empires and world economies (Wallerstein, 1974: 348). Unlike Wallerstein, Kohl (1989) believed that WST was useful in understanding ancient trade and interaction. He argued that the systems for taxing and price-fixing was very complicated, and could be understood in WS terms. Similarly Chernykh, quoted in Kohl (1992: 134), argued that the mere requirement of tin for the production of bronze in metallurgical provinces would call for a complex system of international interaction and trade.

There are problems with trying to apply the loaded concept of capitalism together with its tail globalism to ancient economies. I agree: the straight definition of WST is not appropriate, but a modified version as proposed by Chase-Dunn and Hall (1991, 1993) can solve this problem. The modifications include the adaptation of system cycles into the WST that range with variable cultural information. These cycles had high A and low B phases, that could change position of polities depending on need. Expansion and contraction of these cycles transformed social relations because they may have included or excluded territory. This process, demography, epidemiology, and nature drive cultural evolution (Frank, 1999b; 1999a: 278).

In an attempt to broaden the WST in a way that could be fitted to all types of ancient interaction, Dunn and Hall (1991: 27-30) suggested further revision to WST. They proposed four working hypotheses: 1) social hierarchies must exist in order to have inter-societal dominance 2) hierarchical organization in the core societies allows for better exploitation of the periphery in core/periphery systems 3) trade mechanisms facilitate the spread of ideas from the core to the periphery 4) semi-peripheral zones are not under direct control from the core and more often experience social innovation (Kardulias, 199:185). This model provides a tool to test basic concepts archaeologically, and fits well with their advocacy of having more case studies that apply WST in the correct time and place. An answer to their call has been formulated by Morris, interested in the 13<sup>th</sup>-11<sup>th</sup> century BC in the Aegean in terms of the WST. Morris promoted the idea that the “grand sweep” (placing interaction into a grand theory) should start with the study of small scale data (Frank, 1999a: 282). Yet, there is an aspect of contraction because the initial step to his approach is to consider the small scale system of the Aegean through the “grand sweep” of the context and time.



The discussion of core-periphery relations has in part stimulated case studies using WST in archaeology. The theory states that as a geographic region or state expands its economy, it must engulf the nearby region, or periphery. This difference between Frank's (1999b) cycles A and B, and the core, the periphery and the core-periphery models is that Frank's cycles have more of a social aspect to them that provide an economic perspective that allows scholars to trace social change.

Further variations in the core-periphery model have been used in studying Mediterranean interaction such as core-core, core-core-periphery, and semi-periphery. Core-core interaction would be a situation between Egypt and Mesopotamia for example. The regions between the core and the periphery, the semi-periphery, were most likely to experience social and cultural change. These regions are usually dominant over the periphery and have the potential to become core regions eventually. Finally, there are the marginal zones that Sherratt (1993) argues do not interact with the core area directly but supply materials that are fuel for the upkeep of the WS. Scholars who use the WST for ancient analysis have struggled with the exact place that the Aegean played in the WS, and which model we should use to describe its activities in the Mediterranean.

#### **4.3.2. The Place of the Aegean in the Mediterranean World-System**

Looking at the Aegean as part of a wider system of interaction, I believe that Sherratt's concept of conspicuous consumption can be seen as the motive behind the mechanics of exchange. The fundamental factor behind the nature of long distance exchange is the relationship between manufacture and raw materials. Thus, consumer demand resulted in the integration into the W-S in three steps: first, contact occurred, with provision of high value low bulk raw materials in exchange for high value manufactured goods or luxuries, then, transfer of ideas of lifestyle and technologies

has occurred, and finally, full linkage between the interacting regions requires reconstruction of agrarian society in order to produce and supply bulk goods for local manufacture so that it can participate in complex exchange (Sherratt and Sherratt, 1991: 358). It is in this context that I would like to view the evidence for Aegean participation in the Mediterranean WS.

As implied already, the importance the Aegean held in the Mediterranean world system is debatable. When compared to the Levant, the Aegean societies were generally not as complex in organization, smaller, agrarian, and not backed up by the urban economy of Mesopotamia and Egypt. Even at the height of Aegean wealth in the 16/15<sup>th</sup> century BC in Crete and later on the mainland, nothing could compare to the immense wealth found in the palatial store rooms of Ugarit (Sherratt and Sherratt, 1991: 355). Thus, regardless of the independent nature of Aegean societies, we must consider their growth in the context of the larger economic powers.

According to Cline (2010:163), the Aegean certainly participated in the Mediterranean WS, with the flow of most goods directed to the major palatial centers, followed by redistribution out of those centers. The interest of trade was mostly commercial and perhaps a bit diplomatic. In terms of imports, Crete was the primary recipient of Orientalia during LH/LM I-III A (17<sup>th</sup>-14<sup>th</sup> century BC) but during the LM/LH IIB-C (13<sup>th</sup>-11<sup>th</sup> century BC) it was the Greek mainland. In return, during the LBA Crete looked to the east, and the mainland to the east and west. During the late LBA Crete looked west and the mainland to the east.

But, even in the time span of six centuries during which exchange should have been flourishing, Manning and Hulin (2005) note that the data amounts to 0.5 objects exchanged per year. The problem this points to is the lack of clear data in the Aegean and in the Near East that would allow us to evaluate just how important the role of

trade was for the Aegean during the BA. Cline tried to address this concern in 1994 with the publication of *Sailing the Wine Dark Sea*, a volume that fully documents the available data we have of Aegean interaction with various regions in the Mediterranean. In order to understand the issues we face in discussing the Aegean region, I want to quickly review his findings.

To start with Mesopotamia, artifacts total 47 in the Aegean from LBA contexts. Apart from the material evidence, we do not have much textual evidence to go by. Thus, it appears that there was some sort of contact between the Aegean and Mesopotamia in LBA (Cline, 1994: 24-26). With Egypt, we have good evidence of contact in both directions. With coastal Anatolia we also have some contacts, but surprisingly with central Anatolia or the Hittite territory there is a complete absence of materials. In texts there are only three mentions of Mycenaean states as Ahhiyawa, and that is assuming that the term refers to Mycenaeans. Because it has been hard to imagine that the Hittites did not know of or interact with the Aegean, it is possible that they had imposed an embargo against Mycenaean trade (Cline, 1994).

15 years after the publication of *Sailing The Wine Dark Sea*, Cline reviewed the data. Two new pieces of evidence might be added to the catalogue: a letter from Anatolia that perhaps mentions a Mycenaean King, and Aegean style frescos at Daba in Egypt and Kabri in Israel (Cline, 2010: 167-168). But the overall impression remains the same and problems of the evidence of trade are still present. As a maximalist, Cline argued that 0.5 objects coming in the Aegean per year as Manning and Hulin (2005) had suggested is not the correct way of looking at this situation since obviously half an object could not circulate. Statistically, the problem is approached incorrectly and should be placed in its archaeological context. For example, Parkinson argues that this number of objects is accumulated by only a

couple of contacts in those years, and not by non-stop interaction. He suggests that there would have been fewer contacts between 1450-1392BC during the reign of Amenhotep II and Thutmose IV (Cline, 2010: 165-166). It is also plausible to argue that the archaeological record is not representative of the quantity of material that circulated.

Still the problem of missing correspondence remains. In the east Mediterranean we really do not have any correspondence with the Aegean and vice versa. We must consider the possibilities. It is convenient to blame this phenomenon on poor preservation, accepting that the Mycenaeans wrote their political memoirs on a perishable material other than the clay tablets, but this is not a comfortable hypothesis since we do not have any reason to suppose that they used such materials. If that is not the case, then we should just assume that everything is missing- we can, but at most palaces such as Pylos and Knossos, where the greatest number of Linear B tablets were found, we are all out of places to look. The possibility that no such records were created must be considered. It is a fact that the Linear B tablets make no real references to foreign contacts or trade whatsoever. Thus, perhaps the Mycenaeans were not interested in keeping such records (Cline, 2010: 178). What is left is accepting that there were really no direct contacts and that scholars have been searching needlessly.

The Hittites, Egyptians, and Canaanites possibly mention the Mycenaeans, while the Minoans or Cretans are mentioned by Mesopotamian, Egyptian and Canaanite records. One must wonder why the Mycenaeans are absent from Mesopotamian texts and the Minoans from the Hittite texts. Cline proposes a theory that seems to solve this problem- since only Ugarit and Egyptian records mention both the Mycenaeans and the Minoans, maybe Mesopotamians and Hittites did not

differentiate between the two (Cline, 2010: 178). With this possibility in mind, we still have no correspondence on both sides that would give us concrete evidence of what the Aegean was to the rest of the Mediterranean WS.

Then, we move to the issue of what the Aegean contact with the Near East was like- diplomatic, commercial, private, etc. I think it is possible to argue that the absence of any named Aegean ruler in foreign texts is not a coincidence. Cline (1995) holds firm that regardless, they were still considered Great Kings, because we do find some of the usual Near East “gifts” in the Aegean. However, it must be emphasized that nothing that would be considered as a suitable Aegean gift was ever found in the Near East in the 3<sup>rd</sup> PP (Dickinson, 2006: 32). This may open the possibility that the objects exchanged between the Near East and the Aegean were not in the gift giving context as much as in the conspicuous consumption that I will now discuss.

As we have seen, it is difficult to interpret Orientalia in the Aegean, but with WST as a tool, we can do this in different ways. For example, Morris’ (1999) revision to negotiated periphery shows how the periphery that Kardulias described was not just a static and passive player in the WS: it made its own decisions and either accepted or rejected influence from the core. By participating in long distance exchange, Mycenaean elites chose to be a part of the international *koine* during the LBA. The Sherratts’ (1993) emphasis on the role of the margin, showed how subjective the system was. Although not in direct contact with the core, the margin played a crucial role in long distance exchange. For example a letter from Mari mentions Cretans in Ugarit as recipients of tin. To the Sherratts, this example showed that the margin zones had the potential to participate directly in the system of exchange. Thus, WS should be seen as highly sensitive to the political, social, personal condition of each of its parts, and not as static. For example, in the LBA, the Hittites’ attempt to capture

Cyprus may have influenced mainland-Cretan relations in something like a domino effect. In this light, I now turn to the actual objects of exchange that were the main driving force of this system.

#### **4.3.3. Conspicuous Consumption**

The climax of the palatial trading system occurred during the period 1400-1200 BC. During this time Ugarit became a major articulation point between land and sea, the Hittites took over Cilicia and northwest Syria, and Assyria dominated the Mittanians in the east. Cyprus became an independent supplier of copper (Sherratt and Sherratt, 1991: 370-371). Trade focused on elite items whose value was internationally recognized, metal in particular, so that tin and copper ingots became the driving force behind exchange in the LBA Aegean serving as a materials for both elite display and utilitarian purpose (fig. 11, fig. 12). Copper and tin ingots became a Mediterranean standard of value and weight, and the real determinants of economic power since they were convertible resources. This demand for metals shows the role of conspicuous consumption, which emphasizes the intention of Aegean participation in the WS: to acquire imports. The need for metal in the Aegean forced polities to intensify their economies and to re-organize production in order to produce exports for exchange.

The Mediterranean bronze and tin ingots were standardized units that helped regulate trade. They even had markings whose meaning is not exactly clear, but it surely played a role in this standardization. Their wide distribution all over the Mediterranean showed that they were accepted and internationally recognized. Tin, a rare metal in the Mediterranean but necessary to make a high quality bronze had value similar to that of silver (Sherratt and Sherratt, 1991: 362). This element's high reactivity makes it a rarity in the archaeological record. In fact, until the discovery of

the Uluburun wreck and the tin ingots off the coast of Haifa in Israel, tin's use in the LBA in metallic form was doubted, for the Gelidonya wreck contained no ingots or slag, but only decomposed tin paste. The discoveries were concrete evidence that during the BA, tin was added to bronze in its metallic form and not as cassiterite (Kassianidou and Knapp, 2005:224).

The absence of tin ores in the Aegean and the Near East has forced scholars to look further in Central Asia. Early 2<sup>nd</sup> millennium BC sources do suggest that tin was brought in from that direction. Karnab (Uzbekistan) and Musciston (Tajikistan) were shown to be exploited in prehistoric times by Weisgerber and Cierny (2002), suggesting that they were important suppliers to Anatolia and Mesopotamia, and perhaps the whole Mediterranean. Other doubtful tin sources include the Taurus Mountains in Turkey exploited in the EBA, and Sardinia and Tuscany in Italy. The dating for the Italian sources is not secure and concrete evidence of BA mining cannot be cited (Kassianidou and Knapp, 2005: 224-225).

The main issue in metals trade was to identify the origin of copper in Aegean bronzes and ingots, and thus conclude on who controlled trade. However, this task has proven impossible. From an archaeological standpoint, we really do not have much to go by. The only ingot mould ever found was in Syria at Ras Ibn Ham, suggesting that it produced ingots during the LBA. Another less certain evidence is a bronze stand of Kourion type dated to the 12<sup>th</sup> century BC that shows a Syrian-like figure holding a Type II ingot (Gale, 1991: 203). Another candidate has been Cyprus: it is the only place we clearly have mining activity datable to the LBA and its copper is shown to be distributed all over the Mediterranean. The Uluburun (end of 13<sup>th</sup> C BC) and Cape Gelidonya (14-13<sup>th</sup> C. BC) shipwrecks carried ingots from the Cyprus isotope field as

sourced by Lead-Isotope Analysis (LIA), but the one bun and one oxhide ingot from Uluburun seems to be from an unknown field (Gale, 1991: 230; Pulak 1998: 11).

Sardinia also has abundant copper sources. It is interesting that all of the Sardinian bronze artifacts tested were made from local copper, yet all of the ingots tested were in the Cypriot isotope field. It may be argued that the ingots were stored for their precious value, and were not seen as utilitarian objects (Melas, 1989: 395). The Mycenaean ingots Type II and III from the Paros Wall Hoard at Mycenae were shown to fall in an unknown isotope field, but all of the bronzes tested were from the Laurion field (Gale and Stos-Gale, 1982: 100; 1986; Gale, 1991: 231). Finally, an ingot from Cape Gelidonya seems to fall in the Engine, Turkey field, implying a source of copper not considered before. More recently however, consequent studies that include the isotope fields of more primary Cyprus ore sources, show that the Mainland Greek ingots at least, have Cypriot origin, while ingots from Crete clearly have a different source (Gale, 1997; Gale et.al. 1997; Mangou and Ioannou, 2000).

It is clear that there is much more to be learned about the LBA metals trade. By re-assessing recent finds since the 1980's and including more examples to test, we may be able to get a clearer picture of the source and the control of the metals trade. But, we also have to turn to the items that were exchanged in return for these metals. If the Near East and Cyprus were supplying the Aegean with most of the metal and luxury items that they relied on, the Aegean had surely something to offer in return. These were organic materials whose perishable nature could account for the absence of Mycenaean material in the Near East. But, we do have the second major bulk commodity as evidence- large Canaanite jars that likely stored the organic exports. They were distributed in large numbers all over the Mediterranean and were parts of the major cargos of the Uluburun and Gelidonya shipwrecks. Though they originate



from the Levant, it was possible that the Aegeans shipped out their own organic products using these vessels.

Items we know that the Mycenaeans produced include: figs, pomegranates, olive oil, perfume, dye, fish preserve, spices, vine, wine, and the much valued textiles. The use of the vertical loom created large waves in complex patterns, and was first established in Crete in the BA (Sherratt and Sherratt, 1991: 358). An article published by Haldane (1993) analyzed the organic cargo found on the Uluburun wreck. All these products were present on the wreck, but her study showed some unexpected results: compressed between the ingots were remains of thorny burnet weeds. These kind of plants were probably used as packing material. This generally overlooked organic material may provide evidence from where the ships originated or where they boarded the ingots. Similar analysis of other organic residues is inevitable in the future if we are to have a full picture of the Mediterranean trade routes. If we concentrate only on the metals we will get one-sided understanding.

#### **4.3.4. From Bronze to Iron and the Mediterranean World System**

The transition from LBA to EIA is difficult to explain economically, but before the end of the 13<sup>th</sup>.C. BC new patterns had already emerged, such as the decentralization of high-value materials trade (Sherratt and Sherratt, 1993). Weiner (1989: 373) argues that this might explain why the palatial systems disappeared and new ones emerged. Their end allowed for new polities to emerge and create new trade patterns. For example, Cyprus saw an increase in urbanization along its copper belt. Isolated cities like Kition and Enkomi rebounded and took over the roles of some previous core areas like Ugarit. Expansion of trade with the west eventually showed Cyprus as the first Mediterranean pioneer of iron in the 12<sup>th</sup> century BC with the introduction of the first iron knife in the Aegean.

Before 1200 BC, the Aegean had intensified its contacts with Italy, the connecting point between the Mediterranean and central Europe. Ties continued to progress even further, but by the end of the PPP, evidence of trade is scarce (Eder and Jung, 2005; Weiner, 1989: 372). At the same time, the Mycenaeans disappeared from the Levant and Egypt. They were no longer seen on Egyptian tomb paintings and Ugarit texts no longer mentioned them. Production in the Aegean was limited to lower value goods for local purposes. Thus after the 13<sup>th</sup> C. BC, the Aegean could be said to have reverted to a periphery role in the WS in comparison to Cyprus (Weiner, 1989: 372-374).

In the PPP, it is evident that trade systems had taken a toll. The exchange networks actually seem to have expanded but were lower in volume, still driven by the desire to acquire metals. Centralization was reduced, and whereas palaces monitored aspects of this trade before, private mercantile states with private interest in trade dominated after the end of the 13<sup>th</sup> century BC. It is interesting to note that while at this time the Aegean economy is seen as comparatively regional with internal developments, most of this development is measured by the presence of foreign objects (Dickinson, 2006: 197). Nevertheless, it seems that during the first stages of the EIA the Aegean fell into a state of relative isolation, for even on Cyprus its material was rare.

In the 11<sup>th</sup> C. BC the southern Levant recovered the fastest from the events because it had links to Cypriot and south Arabian trade routes. But by this time, it no longer relied on Cyprus for iron imports. The Levant became the core region of expansion in the 1<sup>st</sup> millennium BC (Sherratt and Sherratt, 1993). The Aegean began to see a trickle of its own iron objects such as the iron knife with a bronze handle mostly in the south Aegean (Dickinson, 2006; 207), and the all-iron knife was

introduced and used in burials and other contexts. At the end of the 11<sup>th</sup> and start of the 10<sup>th</sup> C.BC, iron lost its precious value and became mostly utilitarian.

At the end of the end of 11<sup>th</sup> C.BC the iron industry had gained independence in the Aegean, and it no longer relied on imports. The Aegean and Cypriot dagger and sword types were now alike (Sherratt, 1994). The 11/10<sup>th</sup> centuries BC were times of increased wealth and renewed contact with the Near East. As Snodgrass (1971) observed, by 950BC the trade network linking the Aegean with the Mediterranean was restored. As the centuries went by, the EIA included all the social features of the BA but on a larger scale. All exchange intensified and trading posts on the periphery turned into the future 8<sup>th</sup> century BC states.

The IA world system was characterized by rapid transformation and expansion, or core-shifts. It possessed long term transformational logic, alternating cycles of hegemony and anarchy/chaos, and a strong hold on power by rulers. In a sense, the IA WS resembled the modern one in that it stretched from a core to encompass a huge economic territory. This system was made possible because iron working replaced systems fundamental to the BA. This prevented the re-emergence of BA-like economies once the trade routes were restored around 950BC. In this final section, I want to discuss the process of iron introduction in the Aegean, the methods by which it replaced bronze, and the reality of bronze shortage.

#### **4.4. Coming of the Age of Iron**

The purpose of this final section is to isolate the process of the introduction of iron into the Mediterranean and especially the Aegean. I will do this by looking at technology, its history, and then explore in more detail the possibility of bronze shortage as the reason behind the transition into the IA.

#### 4.4.1. The Technological Setting

The first instance of iron in the archaeological record appears as early as the 5<sup>th</sup> millennium BC. Walbdaum's (1980) useful list features 14 iron objects before 3000 BC, and 8 between 2000-1600 BC, all of which were jewelry. Then, there is a sudden increase from 1600-1200 BC with 74 objects and 119 from 1200-1100 BC. In the 5-3<sup>rd</sup> millennium BC iron was rare and precious and without a doubt, all of the earliest iron was meteoric (Pickles and Peltenburg, 1998: 77). However, meteoric iron is a rare substance and we cannot attribute all early iron objects to this type of mineral. After the 3<sup>rd</sup> millennium BC, iron began to be produced and used as an accidental by-product of copper and lead smelting.

Some copper ores are iron rich, and when smelting them, the iron bloomery matrix produced would hold some clumps of copper that had to be extracted by beating the spongy mass. It may have happened very early on, but it took a while for bronze smiths to realize that the remaining black matrix was essentially the same material as the shiny iron-nickel alloy meteorites. The suddenly high number of iron objects in the LBA can be seen in this context. Some of the early examples of these findings are discussed by Shell (1997).

Element analysis showed that at least some of the 15-13<sup>th</sup> C. BC Mesopotamian iron finds were formed by copper smelting. A Mitannian palace shows evidence of further tempering and therefore conscious acquisition of iron. The slag found was a silicate, implying that copper was purified by silica sand and that the smelters did not just use flotation to separate the copper from the iron. An Assyrian arrowhead from the 13<sup>th</sup> C. BC is thought to have been made from accidentally produced iron (Muhly et. al. 1985: 80-81). Varoufakis (1981-1982) mentions a few Mycenaean iron objects that seem to have been smelted judging from their low nickel

content (Muhly et. al. 1985: 80). Finally, the presence of copper slag and iron but the absence of iron slag on Cyprus show that early on, iron was produced as part of copper smelting. We can conclude that after the 3<sup>rd</sup> mil. BC, attempts were made to experiment with iron in the Mediterranean. The increase of iron objects found in the LBA that Waldbaum (1980) mentions can be considered in the context of the Mediterranean entering a very advanced stage of copper production.

#### **4.4.2. Evidence of the Adoption of Iron**

The Hittites are often credited with the leading role in influencing iron industry in the Mediterranean. One of the reasons for this has been the numerous mentions in texts of the use of iron, referring to cult statues, ritual animals, vessels, weapons, etc., starting in the 16<sup>th</sup> C. BC, earlier than anywhere else in the Mediterranean. These texts further showed that the blacksmith and every other smith were notable. But, archaeologically we have no evidence of the Hittites influencing or monopolizing iron metallurgy. In fact, analysis of a piece of speiss from Boğazköy dated to around 1200BC shows that the smith had little understanding of iron smelting. Finally, no iron smelting installations have ever been found in Hittite lands (Muhly et. al., 1985: 80). For the purposes of this thesis, if any one region is to be credited with the spreading of iron technology and ideology, it would be Cyprus.

Pickles and Peltenburg (1989) believe that Cyprus was able to do this because of its abundant copper smelting activity. Cyprus' lack of strongly centralized political system, both freelance and regulated trade, urban control of production, and the high number of bronzes during the 13-12 century BC, made it the perfect society to develop a new technology, and market it out to the population at large (Pickles and Peltenburg, 1989: 86). Enkomi is one center on Cyprus, where we can see the connection between high copper production in the 13<sup>th</sup> century BC and the smelting of

iron. Sherratt (1994) explains this process in two cycles: the first one was a period of centralization and bulk production and the second one of decreasing bronze in order to increase value, as can be seen in the increase in hoarding and scrap metal trade. In order for Enkomi to meet the high metal demand, it tapped into its iron rich copper ores, and thus produced more iron (Pickles and Peltenburg, 1989: 90). With the problems of bronze production and value, the new resource was a great substitute. The 12<sup>th</sup> C Cypriot iron knives that followed were so successful because they were inserted into the already existing value system established by bronze (Sherratt, 1994).

The 12<sup>th</sup> C. BC Cypriot all-iron knife represented the earliest use of utilitarian iron in the Mediterranean, but as Snodgrass (1980: 344) notes, no other object was adopted as fast as this item, therefore we cannot say that the whole society had entered the stage of utilitarian iron use. In order to organize the information better, it will be beneficial to review Snodgrass' three stage iron adaptation: 1) iron is used for jewelry and decoration only, 2) iron is utilitarian at times but it does not dominate bronze, 3) utilitarian iron dominates bronze without replacing it. In this setting we should look at the progress of iron in the Aegean.

The period following 1200 BC witnessed a regionally variable development and experimentation of iron technology. Though its priorities lay in a different place, the Aegean too started its IA with iron knives with bronze rivets. Just like in Cyprus, during the last century and a half of the LBA, they had more all-bronze than iron knives (Snodgrass, 1980: 345). The 12<sup>th</sup> C.BC Aegean iron knives were all found in tombs with the exception of three, and were all along the Cypriot trade routes. They were still preciously valued until the 11/10<sup>th</sup> C.BC (Sherratt, 1994). The appearance of the first all-iron Aegean knife coincided with the appearance of the main 11<sup>th</sup> C.BC

dagger and the first Aegean iron sword from Athens. That same type of sword was seen earlier in the LBA at Enkomi in bronze (Snodgrass, 1980: 347).

Waldbaum (1980: 83) tried to trace the coming of the age of iron by sorting types of iron objects. Military weapons appeared in the 12<sup>th</sup> C.BC in Syria, Palestine, Cyprus, the island of Naxos, and possibly in Greece, though the forms are somewhat limited. Tools are harder to analyze since they were not usually placed in graves resulting in preservation issues. The one edged knife is an exception and the most commonly found tool.

We do not have any iron tools from the 12<sup>th</sup> C.BC in purely agricultural context but many from habitation sites. Iron tools for agricultural use appeared in the 11<sup>th</sup> C.BC, but most were still bronze. At this time the knife was still the most commonly found tool. In Cyprus and Syria the iron version outnumbered the bronze one, and in contrast at Karphi, Crete, knives from non-funerary contexts are all bronze with no iron parallels. The first time iron tools dominated the bronze ones was in the 10<sup>th</sup> C.BC, although they were fewer in number in Greece, Palestine, Syria, Cyprus, Crete, and the Aegean islands. At this time, iron was still used for jewelry, and bronze was never replaced (Waldbaum, 1980: 87).

In Greece especially, iron technology was introduced in a de-centralized context and was somewhat subversive. It seems as if Greeks, especially at the former palatial centers, resisted the adoption of iron technology. Snodgrass (1980: 352) points out that most iron finds between 1200-900BC came from Athens, Tiryns, and Naxos with almost no iron finds from the west before 900BC with the exception of Messenia and Epirus where evidence of experimentation with iron might have happened around 1200BC. This predominantly eastern concentration of iron emphasizes the effort of former palatial areas to cling to bronze ideology.

It is evident that the acceptance of iron in Greece was not automatic. It entered Snodgrass' stage 3 only at around 1050BC, and the whole Greek world was considered at this stage by 900BC. Some technological restraints can be blamed for the lag in the process, but the fact remains that even when bronze was fully replaced by iron technology in the Greek world, its ideology continued circulating around iron technology (Sherratt, 1994).

Because of the attested contacts between the Cypriots and the Aegeans both in the BA and the IA, I infer that the former would have been influential in spreading the new metal and its associated technology. As will be discussed in the next section, Cyprus was not only responsible for marketing what was to become the first popular object in iron (the knives), taking the first step in turning iron from a rare luxury to a cheap and accessible metal, but it also led in the technological endeavor that was to turn iron into a superior metal. Besides the iron knives, other early weapons in iron that first appeared in Tiryns, Knossos, Athens, and Lefkandi have blade types derived from the bronze Type II sword. All of these were certainly made in Cyprus first, further emphasizing that the early EIA irons in the Aegean were influenced by the later LBA bronze tradition of Cyprus, and some of the very first samples could very well be imports (Dickinson, 2006: 147-148). Finally, all of these early iron tools in the Aegean were first found along the trade routes with Cyprus. Based on the archaeological evidence, typology, and evidence of contacts, I conclude that the Aegean's iron culture was significantly influenced from Cyprus. However, this is not to say that it was the sole player. As I have explained in chapter 2, new data regarding the eastern Aegean regions, but especially Anatolia, have come to light. New studies of the Hittite iron industry of the Black Sea coastal graves such as Karagündüz that have produced large quantities of iron, have shed new light on this issue (Yalçın,



1999; Sevin, 1999: 162). I leave the possibility open that such research may change the way this thesis perceives the development of the technological development of the EIA Aegean.

#### **4.4.3. Motives for Iron Technology**

Now that the process of iron introduction in the Aegean has been described, we have to think about what brought about this transition. I wish to begin with the technological advantages of iron. As was explained in chapter 2, forged iron bloom is a metal inferior to bronze. In order to make iron a better material than bronze, it had to be steeled: a process that is not obvious.

##### *Regional Development*

Carburization (steeling) can occur accidentally if the smith leaves an object long enough in the charcoal and it absorbs carbon. Even during smelting itself carbon can become trapped inside iron, resulting in a hardened object. Unfortunately we do not have evidence from workshops that can inform us on the advances in iron production, so we must turn to scientific analysis. In order to distinguish between intentional and accidental carburization archaeometrists search for the even distribution of 0.5% or more carbon throughout an iron object, and repeat the analysis on several similar objects (Wheeler et. al. 1981: 246).

Such analyses once again verify that Cyprus led in the developing of steel in the Mediterranean. In the 12<sup>th</sup> C.BC, all iron knives were steeled and quenched from the very start. Ironically, we lack tested objects from Greece dated before the 8-7<sup>th</sup> C.BC, so we really do not know much about their early iron technology (Snodgrass, 1980). It is logical to assume that they utilized steeling technology by the end of 11<sup>th</sup> C.BC as a result of Cypriot influence, as I discussed in the previous section.

Palestine was once considered advanced in early iron working. However, analysis shows that most iron work was done in bronze workshops, and we do not have evidence of iron workshops. Metal analysis showed that steeling was established there by the 10<sup>th</sup> C.BC (Wheeler et al. 1981, 255). Likewise, despite their reputation, Hittite tested iron objects fail to show steeling in the early centuries. Surprisingly, Egypt, a region that took the earliest interest in experimenting with iron, does not seem to venture on to steeling before 900BC. But once it did, the high variety of objects it produced was of the finest quality, showing mastery of forging, carburization, quenching and other tempering (Snodgrass, 1980: 365).

As I have tried to show, the advantages of steel cannot be cited as the reason that the Aegean adopted iron since this metal alloy was not readily available until later. Then, I must turn to social and economical changes in order to explain why bronze production on the BA scale was abandoned.

#### *Shortage Theories*

Fuel shortage was proposed by Wertime (1983) as the trigger for the IA. According to him, by the end of the LBA when demand for bronze was at its height, smiths began running out of wood supplies needed for the furnaces to smelt copper. Deforestation began to be a pressing problem, leaving no other option than to switch to a more economic metal on which to base the economy.

Subsequent studies have failed to support this hypothesis. Though deforestation may have occurred in some places in the Aegean, it occurred after the LBA-EIA transition. In a study by Waldbaum (1989), results showed that Pithekoussai experienced deforestation because of iron and not copper. Chemical evidence points in the same direction, showing that iron was even more wasteful than copper smelting since iron oxide ores require the input of much more heat. Other

experimental studies indicated that under ancient conditions, 6 tons of charcoal would be needed to make 200kg of iron- much worse than copper. (Pickles and Peltendberg, 1998: 82, 84). In order to truly assess how much energy iron or copper smelting consumed, reports from excavated sites describing condition, scale, and design of furnaces are needed, but this information is often lacking.

If fuel shortage was not the culprit for the transition to iron, then we must consider the possibility of shortage of metals. Unlike copper and tin the acquisition of which needed complex foreign relations, iron was available almost everywhere in the Aegean. Snodgrass (1971) suggested that due to the problems in interaction throughout the Aegean after 1200BC, regular supply of tin and copper became unstable and bronze shortage occurred. He noted that after 1050BC, iron became the dominant metal in graves, and was used even for jewelry. High use of scrap bronze and the tendency to hoard furthered his view that there was a problem with bronze supply.

The strength of this hypothesis is that it is highly testable. If there was a shortage then tin would have been the most impacted since it was much rarer than copper and it came from farther away. By testing the tin content of bronze objects dated to the end of the LBA, we can learn if the smiths were economizing on tin. Pickles and Peltenberg's (1998) article examines 29 objects from several sites from the Near East and the Cape Gelidonya wreck. All of the objects showed uniform results of tin that ranged between 9-13%, enough for a good quality bronze. Waldbaum (1980) also discussed bronzes dated to mostly the 12<sup>th</sup> C.BC from all over the Aegean which also showed normal tin values. Some places like Lefkandi and Nichoria are even noted for having higher contents of tin than needed, possibly to create a more silvery color (Pickles and Peltenberg, 1998: 77).

These studies are just a few examples of all the sites and objects tested, but they illustrate that tin was not in overall shortage during the transitional period. I would like to point out that the problem of bronze shortage would have been completely irrelevant for Cyprus, yet it was the first region to become involved and promote iron technology.

#### **4.4.4. Conclusions**

In this discussion I have tried to show that the iron industry grew in the shadow of the bronze industry everywhere in the Mediterranean. It must be of significance that it was only when copper production intensified that the iron industry was launched, and this happened first in places like Cyprus, where the bronze industry was thriving. Thus, iron working evolved in areas with the richest bronze technology, variety, and tradition. I hope I have been convincing in showing that bronze shortage was not an issue at all in the Aegean. In fact, we may even be dealing with the exact opposite scenario. Based on the evidence presented here, I conclude that the move from bronze to iron was due to a social change in the Greek world taking place starting at the end of the LBA. In the next chapter I will explore this hypothesis.

## **CHAPTER 5**

### **TESTING THE HYPOTHESIS**

In chapter 3 I set up the basis for heterarchy, and in chapter 4 I presented a summary of the evidence for the topics against which my hypothesis will be evaluated. In this chapter I will examine the evidence by comparing it to the categories in order to see if traits of heterarchy are present. Based on this evaluation I will decide if this concept is applicable to Greece. I will provide a discussion that brings the whole picture together and describe how the LBA proceeded, declined, and whether heterarchy properly described the emergence of the IA. Finally, if heterarchy does seem to be applicable, I will explore iron technology through that perspective.

#### **5.1. Testing the Hypothesis**

##### **5.1.1. Evidence of Heterarchy in Burials**

I had suggested earlier that if a heterarchical society existed, Greek burial customs should exhibit similar features from the BA into the IA with some modification (see above, 32). The evidence demonstrates the presence of such a process. The chamber tombs began to fall out of favor by the end of the PPP, yet some regions kept them and modified their use by burying fewer people per tomb than in the BA. Most of the time tombs were re-used but those that were newly built were

of poorer quality and smaller. Cremation was found here and there in the BA but it became a dominant feature together with inhumation starting in the PPP. This kind of data certainly pertains to the presence of a heterarchical element in burial customs, that is: the ability to pick and choose from past elements and modify them to a different use. All these features show a difference in social standing in their own time, and can be seen as the 3<sup>rd</sup> trait of heterarchy (see above, 31).

Even more obvious was the tendency to preserve certain practices as they were. The continuation of the traditional Mycenaean elite tholos burials in the Halos cemetery, the re-use of bronze objects, heirlooms, and even early imitation of bronze forms in iron, are all features of heterarchical behavior. Though I certainly cannot argue that there were any links between the MH/LH and the EIA periods, I cannot help but point out that some customs had similar origins: the Mycenaean love of grave elaboration originated from the rather rare MH tumuli burials, and in the EIA, pits and cists with fewer individuals resembled the LH custom. The fact that the Aegean population used similar elements of mortuary practice during different periods of cultural development is a heterarchical trait. This highly resembles the 2<sup>nd</sup> heterarchical feature, though in this case, the element involved is not within an interaction system but a temporal one (see above, 31). Judging from the regional variation, Aegean cultures had the ability to manipulate their cultural features in a way that would change it or create a new society: even though features from the same “variation pool” were used, the motivation to use them and apply them was different through time. This is why we cannot think of resemblance between the EIA and the MH/LH periods as the same cultural phenomenon.

It is hard to conclude what the social status of individuals was based on their manner of burial. As discussed, other than with tholos tombs, it is difficult to confine

a social class to a burial structure. For example, large tombs and even chamber tombs did not guarantee rich burials. Also tumuli, pits, and cists that were for the lower classes, show many exceptions to this general pattern. The same problem occurs with the PPP and EIA body treatment: although it is tempting to associate cremations with wealthy burials, this was not always the case. It is perhaps related that EIA graves show an overall increase in the number of items per-grave when compared to the LBA, but that characteristic architectural and burial elaboration is lacking (see above, 41, 43-45).

On the other hand amongst all this variability in status display we can also note the distinct presence of a hierarchical structure. With the MH/LH period's Shaft Graves at Mycenae and at Lerna, an effort was made to distinguish some members of society from others, a trait that continued into the Mycenaean period. However, the only exclusive burial practice that guaranteed elite standing was the tholos, an example of a hierarchical practice. This situation can be expressed through the 6<sup>th</sup> feature (see above, 32): a centralized custom (the tholos elite burials) implemented alongside all the other forms of burial that remain uncontrolled by a central authority, and form the ensemble of Mycenaean mortuary practices.

Given the evidence discussed for the Aegean burial culture, it is hard to miss how much variable, regional, and generally unspecific were the rules that governed burial (with the exception of the tholoi). I believe this variability can be understood with the 1st feature of heterarchy (see above, 31). The cremations, inhumations, burial goods, body position, and tomb type were all independent elements that interacted to form a heterogeneous system of burial culture. Neither in the BA nor in the IA were these customs dependent on a central hierarchy or on each other in order to function.

I believe I have shown evidence to conclude that a heterarchical structure I can be representative of the Aegean burial customs from the BA to the IA. In using heterarchy, the diversity of data that with which are presented can be made sense of differently than in a purely hierarchical approach. The BA and IA should not be seen as two different burial cultures where the demise of one gave rise to the other, but as a spectrum of elements which the Greeks employed differently through time.

### **5.1.2. Evidence of Heterarchy in International Relations**

The test for heterarchy here involves simply examining variable evidence of international relations and the way they functioned, and the items involved (see above, 33). The only data I can provide is that of the multiple levels of interaction.

On one side, we can be certain that during the BA the some metal ingots did or should have gone to the highest elite via trade routes used for communication with Cyprus. The Uluburun ship's cargo was surely for this purpose for it contained items of the highest value. In comparison, the Cape Gelidonya ship's cargo contained items for private trade or a traveling smith who could repair or trade in bronze scrap. Thus, trade was functional in many forms: palace controlled, merchant oriented, state sponsored, and private endeavor of interested individuals. This resulted in a widespread distribution of bronze and other metals in all type of contexts, and shows that bronze served in more than one level of trade and social system, matching the 6<sup>th</sup> category of heterarchy where ranked and unranked systems interact as equals (see above, 32).

Evidence from the BA points to a hierarchical organization in at least the palace sponsored exchanges. The fact is that the desire to acquire metals and participate in the Mediterranean WS meant that a level of centralization was achieved. Elites need stimulation and applied themselves to an international standard in a sense.



Finally, the system was centralized enough to produce surplus exported to the Near Eastern metal suppliers in payment. But an element casts doubt on this: the fact that at least Mycenae had an alternative local supplier of copper (see above, 69).

Of more concern is that we do not have evidence to confirm direct diplomatic relations with the NE. This makes me wonder how centralized Aegean trade was even at its highest level. Evidence is insufficient and the exact manner in which the palace took part of trade is unclear. I do not believe that I have enough information to make a case for or against heterarchy and I do not want to be swayed by negative evidence. Perhaps it is best to address this issue again when I discuss the palace systems (see below, 87-89).

The evidence for heterarchy is stronger during the transitional period. I believe there is a re-organization of the interaction system that keeps its fundamental aspects going yet changes its momentum. As discussed, the Aegean was not a core in the BA so we should not exaggerate the changes it saw at the end of the BA. In a way, society expressed itself differently in response to the diverse economic situations. The fact that after the 13<sup>th</sup> C.BC, the regions that fared the best were the ones that assimilated to the new trade networks, supports this. Cyprus for instance led the Mediterranean iron revolution. With its supple response to stress came the ability to replace basic bronze needs with iron within the trade networks. This adaptation can be seen as either heterarchical feature #2 or #3. In #2, BA bronze was a precious material with utilitarian value, but after the 13<sup>th</sup> C. BC it progressively lost its utilitarian role to iron. Thus, bronze had a different function in the BA than in the IA. The 3<sup>rd</sup> feature can only be applied if the situation is looked at temporally where bronze occupied one rank in the BA but another in the IA.

Overall, I conclude that while we have quite convincing evidence that hierarchy was at play in the BA Aegean international system, what it involved and how it functioned are beyond the scope of available evidence. What is clear once again is that centralized and non-centralized elements functioned in the system concurrently. Heterarchy is more evident as the BA transitioned into the IA and society reacted by re-arranging its interests and motivations to venture abroad. The fact that palace sponsored trade disappeared but less centralized networks continued is one of the strongest indicators that aspects of BA society survived and were altered in order to accommodate a new social setting.

### **5.1.3. Evidence of Heterarchy in the Mycenaean Palatial System**

The most telling evidence of the Mycenaean social structure is from its most formal institution, the palace. In chapter 3, I emphasized that in order to trace heterarchical factors in the BA, I have to understand to what degree the palaces were hierarchical. Most of the information from which I can make inferences consists of negative evidence, but I would like to start with that which I do know.

It seems that the palaces were a centralized and hierarchically organized unit of the governance. They sponsored attached craftsmen and other workers that produced surplus which the palace redistributed. A *wanax* ran the administration and employed an official script, as is shown by Linear B archives. There was monumental architecture and support of religious festivals, all features one would expect in a BA palatial society. However, there are atypical elements in these palaces when we compare them to the Near Eastern ones. They seemed to have functioned autonomously from one another without uniformity in power, for even involvement in economic activities varied from palace to palace. The fact that the *wanax* was mentioned so rarely is unusual, but the fact that he is not mentioned by foreign powers

is more telling. Assuming that this is not just due to the lack of evidence, one must wonder just how overreaching the king's powers were, at least in international politics (see above, 53-56).

I believe that the evidence we do have is representative of what negative evidence suggests: though the palaces were hierarchical systems they contained decentralized elements that functioned side by side and thus account for the information we feel is missing. Typical of a heterarchical society with feature 6, there is a harmonious co-existence of power and independence from power. If we consider the palaces individually, they can be seen as ranked units that interact as equals, or heterarchical expression 5 (see above, 32).

It is of vital importance to emphasize that when the 13<sup>th</sup> C.BC ended the palaces progressively collapsed. This had major implications for society: whatever occurred then, affected the palatial elite the worst. As seen from numerous examples, most aspects of the BA continued into the EIA, yet the palaces and associated ideology did not. Only those aspects of the economy and culture that the palaces did not control directly were left. I think this too gives validity to negative evidence: the reason we are missing some evidence of palatial involvement in society is due to the limited nature of palatial involvement.

What I hope to have shown is that the 13<sup>th</sup> C.BC collapse took away just the top most layer of Mycenaean culture, decapitating it. The Aegean palaces were not like their Near Eastern counterparts: power magnets that reached most if not every aspect of the economy, regardless of interest or ability, with their duties and purposes well defined. In contrast, though the Aegean centers controlled complex sets of activities with hierarchically organized power, they touched society inconsistently. They simply did not exercise dominant control over their societies in a way that is

typical of a fully integrated hierarchical society. Similarly, the disappearance of the palaces only affected society at the level they controlled it when intact.

#### **5.1.4. Evidence of Heterarchy at the Transition from Bronze to Iron**

The idea of including the coming of iron in this discussion is to examine the context of the process: did it happen in the setting of a “collapse” or in that of a re-arrangement of a society that was responding to stress. The process of the switch from bronze to iron is indicative of the society in which it took place.

The most important clue to remember is that iron was always present in the Mediterranean but its occurrence increased during the LBA (see above, 73). Though I do not believe that the iron revolution and the earliest iron finds were part of the same social event, both were connected to increase in bronze production. Replacing bronze with iron was a careful and calculated process and did not resemble a sudden reaction to an event. For example, iron first appeared abundantly after the 13<sup>th</sup> C.BC but only for decoration. The path to utilitarian iron was a long one and it was completed significantly later than the onset of the EIA. The iron revolution seemed to progress slower at former palatial sites than at more remote sites. After the 13<sup>th</sup> C.BC, a power vacuum was created, and at places like Athens where we find iron before 900 BC, competing elites seized power and utilized a new status symbol and eventually technology that was beneficial to the changing society. It is also significant that iron technology prospered in the setting of a bronze economy, and even imitated LBA bronze forms for a while. This suggests that society was trying to place this new metal in a familiar but changing social setting, experimenting with what worked the best.

Iron did not come about as a result of problems with bronze supply, nor was it suddenly seen as a superior metal to bronze (see above, 25-26, 73-81). Nor was it a desperate reaction to trouble but rather the tool of adaptation during cultural

evolution. Thus, I propose that the reason iron came to be used in the Aegean was because it fit the new social situation better.

Iron in itself cannot be indicative of social organization. However, by tracing the way iron made its way into society, I can examine the type of society of which it was part. Based on the evidence presented here, I conclude that the switch from bronze to iron happened in the setting of a heterarchical model. The 3<sup>rd</sup> feature of heterarchy can be seen in the way bronze and iron occupied a different rank in the BA compared to the IA (see above, 32). In the LBA iron was a metal used rarely and only for decoration while bronze was decorative and utilitarian. By the 10<sup>th</sup> C.BC, iron had assumed bronze's utilitarian role and lost most of its precious value. Thus, these two metals occupied different ranks in two systems. The coming of iron is best understood in the context of social processes in a heterarchy rather than in a hierarchy whose collapse leaves a disorganized society that has lost most of its complexity.

### **5.1. Concluding Discussion: Putting the Pieces Together**

Based on the evidence I examined, I suggest that the Greek Aegean could be seen as a heterarchically organized society. The four elements of the society that I looked at exhibited the features I expected them to, and thus represented heterarchical forms. I hope that I have shown that heterarchy is not just useful when looking at the IA, but can be a tool in understanding the whole BA to IA transition period. I had mentioned in chapter 2 that thinking of Mycenaean society as a strongly centralized system that collapsed into uncertainty and chaos, and then gave way to a new culture in the 8<sup>th</sup> C.BC, is not representative of the archaeological data. In this final section I would like to re-tell the BA-IA narrative again in the context of heterarchy as both a model and social structure.

### **5.2.1. The Processes of Heterarchy in the Aegean**

A criticism of heterarchy when applied to the study of complex societies has been that while it provides a great analytical tool, it fails to explain just how social change occurs (Galaty and Parkinson, 2007: 116). I do acknowledge the concerns expressed and think that in order to compensate for these shortcomings, concepts like elite competition, conspicuous consumption, and social stress should always be kept in mind. In addition, Frank's (1999b) cycles A and B are a useful device when examining social change in the Greek world.

As explained above cycles A and B were periods of expansion and contraction (see above, 60). If we think of Greece from the BA to the IA as a cycle, I propose that the BA was phase A and with the transitional phase and the early parts of the EIA that followed, it contracted to a cycle phase B. As the IA progressed, it expanded again to phase A fully in the 8<sup>th</sup> C.BC with the rise of the polis. In cycle phases A, hierarchy was the dominant social state while in cycle B, heterarchy was prevalent. However, in both of these phases, heterarchical and hierarchical *systems* co-existed as I have shown in numerous examples. The whole process of cycling fits a heterarchical *model*, and thus we can say that Greek society had elements of a heterarchy through time and expressed them as it saw fit.

### **5.2.2. The Aegean Bronze Age Social Context**

There have been debates on what exactly to consider Mycenaean society. Some scholars believe that Mycenaean settlements had only a couple of features that would qualify under the definition of chiefdom, let alone a state. I would not go as far as making this statement for every Mycenaean region, but there is benefit in further exploring BA social organization.

The political economy of the LBA Greek world was constituted of interlocking sectors of subsistence, trading economy, religious economy of sanctuaries, and political economy of palaces (Galaty and Parkinson, 2007:113). These structures only loosely integrated themselves into the larger political community and were not managed centrally (Small, 1995: 77; Earle, 2002: 241). The balance of these weakly connected contexts largely depended on the Near East because Greek society tended to developed through external influences of the larger Mediterranean economic powers (Sherratt, 1991: 355).

Unlike their Near Eastern neighbors, Greek societies lacked some characteristics typical of palace centered polities. For example, though ownership of agrarian land was important it was not on the level of most Near Eastern states, since we have no evidence that the Mycenaean centers supported society as a whole in times of need (Parkinson, 2007). Since Mycenaean palaces did not control much land, the surplus obtained was much less than compared to the Near Eastern centers, making it very difficult to collect surplus staple products. In fact, at Pylos where only 29% of the palace was used for storage during the LHIIIB period, it was used for storing prized goods such as wine and olive oil (Morris, 1986: 145). This may be due to the absence of stable irrigation, perhaps with the exception of Lake Kopais, making such a system quite unreliable (Earle, 2011: 242).

Thus, BA Greek society was outward looking and largely dependent on external influences. It is because of this that Mycenaean polities could not capture the existent hierarchical elements into a central and stable system. What I hope to have shown is that the non-hierarchical constituents of social organization were already there before the end of the 13<sup>th</sup> C.BC. Whatever hierarchical social structures

disintegrated, were never that stable to begin with. In this light, I would like to re-examine the LBA-EIA transition.

### **5.2.3. LBA-EIA Transition: A Heterarchical Model and Process**

Mycenaean civilization was made of first generation secondary states that formed as a result of influence from the earlier Minoan ones. Its palaces lay on the nodal points of trade networks (Parkinson and Galaty, 2007). Their elites, like their Near Eastern counterparts, felt the need to participate in the international WS. They shared a similar value system as evidenced by the interest in metals and especially bronze. Bronze and other luxury items, once in the palace, were distributed and controlled by the highest elite: a situation illustrated by the Uluburun shipwreck's cargo and its journey, but other parallel trade routes and items escaped palatial concern and it is perhaps here that the LBA system ran into trouble.

Sherratt (2000: 84-85) notes an increase of Urnfield European bronzes characteristic of the typical European extravagance by the late LBA, first making an appearance in the Uluburun wreck's cargo, such as the 6 spearheads with undivided cast circular sockets and the all in-one-cast pin. Palatial centers did not take an interest in these bronzes: however, they adorned the graves of secondary elites and were usually found along sub-palatial trade routes. At the time of the Cape Gelidonya wreck, large amounts of scrap metal that were almost non-existent at Uluburun, were trickling into the Aegean. At the same time, metal hoards on Cyprus and the mainland became a common phenomenon. Instead of these events suggesting problems with bronze supply, I believe these occurrences hint at exactly the opposite situation, and it is exactly this that disturbed the cultural patterns of many Mediterranean societies.

By the 13<sup>th</sup> C.BC, the Mediterranean metals trade was at its peak, and the elite-based Mycenaean palaces were flourishing. But, as we have seen, they did not feel the



need to interfere with every aspect of the economy and sectors of trade. Schon (2010) pointed out that throughout the LH III period, elites were even more willing to distribute high value items to a wide circle as means of securing loyalty and thus, power. However, the failure or unwillingness to fully capture power and centralize it, became a huge problem because the most important elite material, bronze, began flooding the fragile system.

When European bronzes and scrap metal began circulating freely and regularly in the trade routes, they essentially de-valued the elite system of exchange. There was simply too much bronze at this point causing inflation of the bronze currency, if we can think of it this way for the sake of analogy. Mycenaean palatial elites were clearly not able to monopolize it. Seeing that the now plentiful bronzes no longer had the value they had just a century ago, they could no longer distribute them out as a means of securing loyalty. This surely correlates with the noted high standard of living in 50% of the population, which is generally measured by the presence of metals in mortuary settings.

Trade routes directly responsible for palatial metal supply lost favor while the networks that carried the excess-bronze continued to flourish since they were not directly affected by the problems of that value system. The de-valuation of bronze was to a certain extent a Mediterranean-wide phenomenon and surely this effect was felt in many societies around the 13<sup>th</sup> C.BC. But in Greece, once the bronze based elite system ceased to be functional and the trade routes shifted north, the palaces began to be by-passed. With elites progressively losing favor, the palaces became irrelevant: they and their associations disintegrated. After progressive destruction and abandonment of sites following the end of the 13<sup>th</sup> C.BC, many aspects of Mycenaean society continued into the IA. De Fidio (2001) has argued that the palaces could not

have continued to function by this point because they were now the anti-system. It was the villages or *damoi* that were more in tune with the new system, and perhaps why areas with the least direct palatial control, such as Nichoria, Lefkandi, and Methana, recovered and flourished the fastest (Galaty and Parkinson, 2007: 15).

In the EIA, especially on mainland Greece, there were no palaces or any institutions that would imply that elites were centralizing power like in the BA. In addition, population was more dispersed and reduced compared to the BA, and not surprisingly there was almost no effort to create monumental architecture. Evidence of settlements in general is sparse and there is a sense of changing security. Refuge sites near Pefki in eastern Crete show settlements at different topographical locations, emphasizing that the population was rather mobile (Nowicki, 1994). It is accepted that the EIA population was greatly reduced but I believe that this is also due to the lack of settlement data and the tendency to move around. The mobility of the PPP and the EIA population limited the ability of elites to capture, centralize, and keep power, making society more heterarchically oriented and inward looking.

With bronze now running in most social arteries, it was no longer able to support the same system of values, some regions that were on the road to recovery seized the opportunity and introduced a new metal into a familiar value system, which was captured by the newly emerging elites. Iron became the metal of choice, partly because by the end of the LBA it was produced as a by-product of the copper smelting industry. In the 12<sup>th</sup> C.BC Cyprus employed iron for the production of the riveted knives that immediately appealed to those who could recognize their potential as a status symbol as well as a tool. From the 12<sup>th</sup> C.BC on all over the Mediterranean iron was progressively adopted for new forms and new styles, mostly because of its appeal and added value. Around the 10<sup>th</sup> C.BC in Greece, iron ceased to be a precious

material, and became a more utilitarian metal while bronze continued to be used in jewelry, ritual vessels, and other items of prestigious display. In a sense, the adoption of iron into the Aegean, allowed the value of bronze to rise again since it was now emphasized as a preciousness.

Iron was inserted into a society structured differently than that of the BA. Where it was externally influenced, the new society was more focused on internal influences. Because iron is one of the most abundant metals on the earth's surface, Greece did not have to rely on external sources for its supply. However, no mistake should be made that local access meant easy production. As we have seen, it was the technological complexities that allowed elites to monopolize iron while it was still of high value. Iron not only highlighted the value of bronze but it shifted the functionality of the society so that once stress was over and cultures recovered, society did not revert to the LBA way of life. This is because iron imposed an economy that was not compatible with the Bronze Age's. The metal was more fitted to the now primarily heterarchically organized society.

I think it can be concluded that the Greeks were somewhat reluctant to accept iron technology and always struggled to revert back to older ways: this can be seen in the PPP and in the very beginning of the EIA especially around previous palatial centers. But, when the iron industry finally dominated, most of the Greek world really prospered. At around 950BC society stabilized again and turned to international relations, and familiar luxury items reappeared. Yet, the BA bronze industry never returned. What this shows is that due to the new social setting, a bronze based economy could no longer work, and it was iron that helped the EIA culture progress into the IA Classical civilizations.

Eventually, the early EIA economy based on iron as a prestigious material lost its momentum, causing the Greeks to venture out, and the Phoenicians to come in (Morris, 1989: 154). The climax of this process in the 8<sup>th</sup> C. BC resulted in the appearance of the Greek polis. It can be asked: if iron worked better for a heterarchical system, why did not society revert to bronze again in the 8<sup>th</sup> C. BC? The short answer is that from the 8<sup>th</sup> C. BC society, though certainly primarily hierarchical, was very different from the BA one in character, and using its bronze ideology in a now significantly altered value system would be impossible. In addition, the Greek world was not as iron-oriented as the Near East until much later: the primary utilitarian material was not metal but wood (Morris, 1989).

I conclude that for the Greeks from the LBA to the EIA iron was a tool that helped guide their shift from a primarily hierarchical to a heterarchical, and again to a hierarchical society. It was integrated in society in different ways at different times, starting out as a valuable material used for intricate decoration and then a practical tool. If heterarchy is the model for the way the Greek society evolved, then iron was its tool for social adaptation. In this light, the Greek IA did not represent a change in technology as much as a change in society

## CHAPTER 6

### CONCLUSION

It has been a pressing matter to identify to what degree we can link the LBA and the “Dark Ages” that followed it, to the glamorous Greek culture of the IA. Though we can identify cultural elements from Archaic Greece and later, already in the EIA, the former seems to be a substantially different society with people who conceptualized knowledge in a dramatically unique way.

In this thesis I have shown heterarchy as a useful model with which to approach the LBA to EIA transition, and how hierarchical and heterarchical modes alternate with time to cause cultural evolution. Once the issue of connectivity is looked at from this perspective, it is more plausible to see how the LBA and EIA led into the later Greek societies. Once the end of the 13<sup>th</sup> C.BC ceases to be seen as a radical collapse, or a disruption of normal culture that was followed by a state of darkness and relative lack of ambition to achieve anything grand materially, the appearance of the thriving Greek cultures that followed can be all seen as part of a more gradual process.

It is my belief and conclusion that without the Dark Ages, the later IA cultures of Greece would not have existed: I see the transitional period and the EIA in general as their gestational period. There are many trends that flourished in the later IA that

began in the Dark Ages. As already discussed (see above, 52), the investment in resources in the religious sphere had already started in the EIA. Viniculture and olive production were already part of the BA way of life, but increased dramatically after the 8<sup>th</sup> C. BC. Waterproof plaster was discovered in the 10<sup>th</sup> C. BC, ship building was renovated, piracy became an economic tactic, and many more such innovations as discussed in detail by Stanislawski (1973), could be credited to the Dark Age. But surely, one of its greatest contributions to the Greek way of life was utilitarian iron. The metal and its economic attributes shaped the way society developed and indirectly prompted the Greeks to venture abroad and the Phoenicians to come in.

The freedom from centralization in the EIA seems to have liberated people and promoted innovation. The knowledge of the Dark Ages was later synthesized into real achievements by the Greeks who recognized it: the most radical changes were made by the sub-conscious recognition of opportunity by people who were able to think freely. In a sense, being “unorganized” promoted social change. In this view, like Whitley (1991b), I do not necessarily find contradiction between the obvious social diversity that governed the EIA and the coherent nature of Greek *polis* societies. Instead, this diversity may have been the source of vigor of the glory of Classical Greece.

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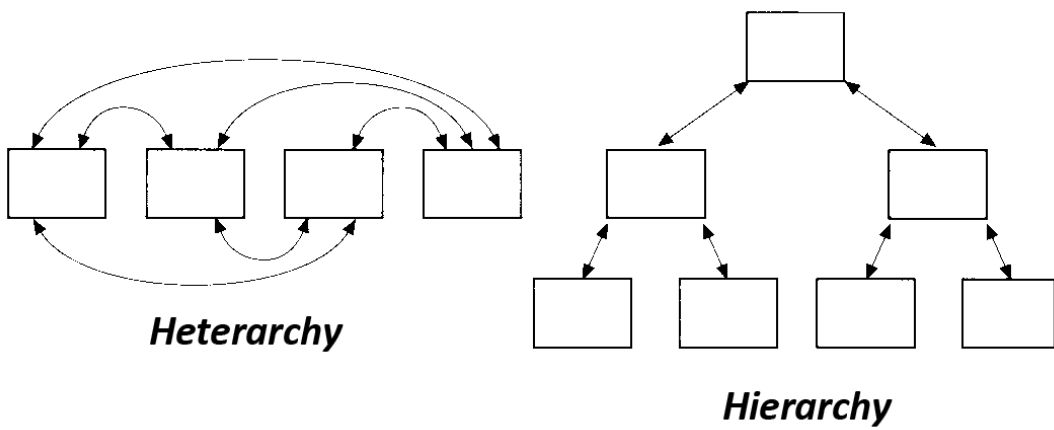
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# FIGURES



1. Map of the Aegean



2. Heterarchical model of relationships

Dates (all BC)	Historical Phases (Greece)	Pottery Sequences			
		Central Greece /Mycenaean	Crete	Cyprus	
1650-1550	Late  Bronze  Age	LHI	LM IIIA	LCIA	
1550-1450		----- LHIIA		LCIB	
1450-1375		----- LHIIA/ LHIIIB		LM IIIB	LCIIA
1375-1300		----- LHIIIA1			LCIIB
1340/1315- 1200		----- LHIIIA2/LHIIIB			LCIIC
1200-1100	Postpalatial- EIA	LHIIIC Early/	LM IIIC	LCIIIA	
1100-1050	Postpalatial- EIA (1070)	LHIIIC Middle -----		LCIIIB	
1050-1000	Early  Iron  Age	LHIIIC Late/  Submycenaean	EPG	Subminoan	CGIA
1000-950			MPG	-----	CGIB
950-900			LPG	MPG	CGII
900-750			EGI - LGIa	MG	CGIII

3. Chronology: derived from Dickinson, 2006 and Shelmerdine, 2001





 Greece in the Bronze Age. Three distinctive civilizations—Cycladic, Minoan, and Mycenaean—developed around the Aegean Sea in the third and second millennia B.C.E.

#### 4. Mycenaean *Kione*



#### 5. LBA chamber tomb at Pellena



6. LBA tholos tomb at Mycenae



7. Shaft Grave Circles at Mycenae



8. Cremation urns



9. LBA warrior burial reconstruction



10. EIA fibula and pin fragments



11. Typical LBA ox-hide copper ingot



12. LBA WS trade routes