

Introduction

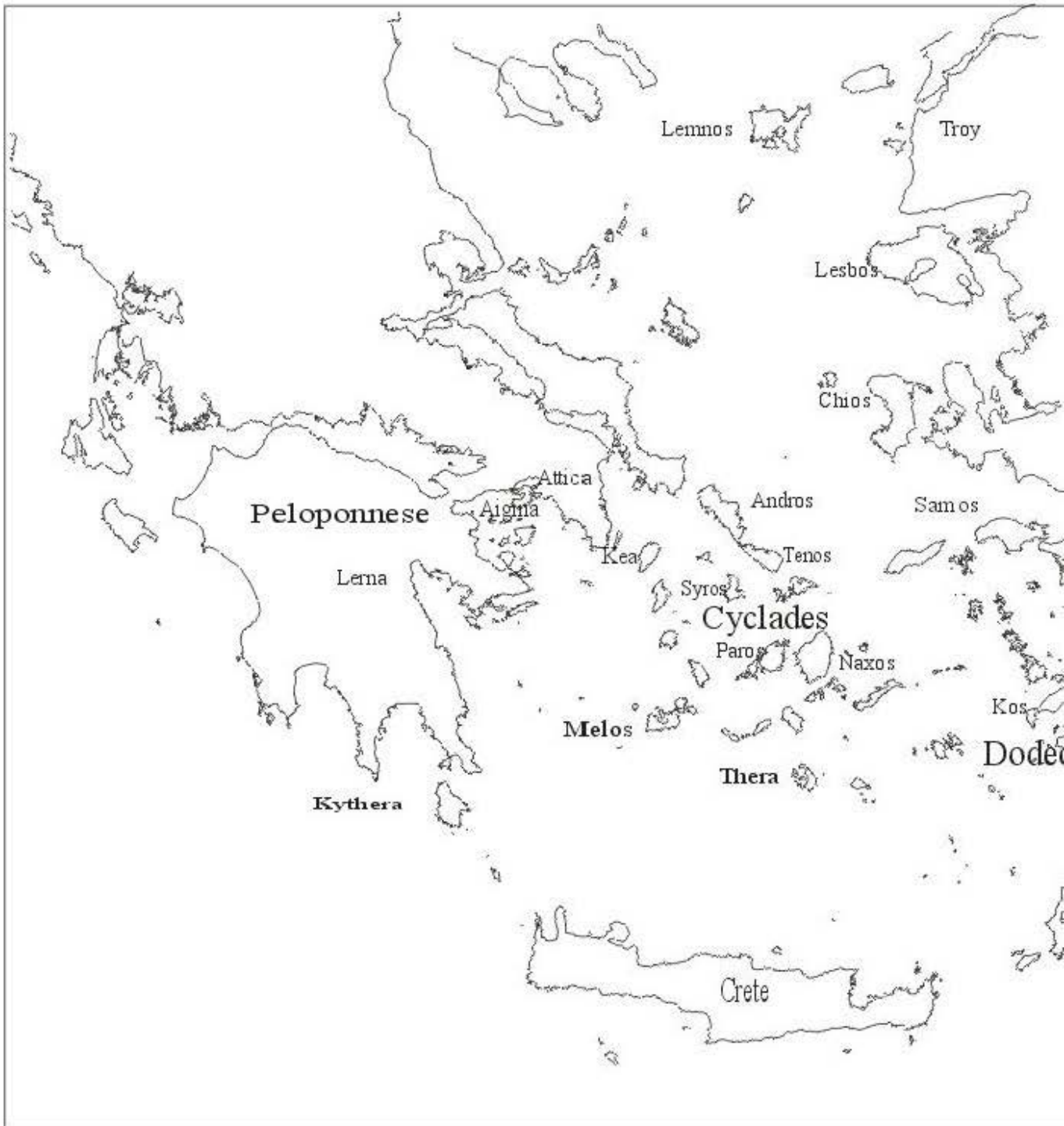
Although world-systems theory was originally formulated with our modern economic system in mind (Wallerstein 1974), it was not long before archaeologists began to apply it to ancient societies. Archaeologists and world-system theorists alike both argued that Wallerstein had disregarded evidence of interconnected, hierarchical systems in prehistoric times (Schneider 1977; Chase-Dunn & Hall 1991, 1997; Kardulias 1999a). Pailles and Whitecotton (1979) were among the first to modify world-systems theory for use in pre-capitalist settings. Since then many archaeologists have looked at data and regions with a world-systems perspective in mind (e.g. Champion 1989; Bilde *et al.* 1993; Rowlands & Larsen 1987; Kardulias 1999a). Some have attempted to map Wallerstein's theory directly onto prehistory (Kohl 1979; Whitecotton & Pailles 1986; Ekholm & Friedman 1982). Others have found the world systems model heuristically useful but lacking the analytical power needed for their prehistoric cases (Blanton *et al.* 1981; Upham 1982; Plog 1983; Alcock 1993).

Building on the assumption that ancient societies were not qualitatively, but only quantitatively, different from modern capitalist ones (Schneider 1977; Sherratt & Sherratt 1991), this study applies world systems theory to the Southern Aegean during the Middle and Late Bronze Age (ca. 2000-1550 BC).

Crete and the Southern Aegean

Prehistoric settlements in the islands of the Southern Aegean show a dramatic increase of Cretan (Minoan) imports, local imitations and the adoption of Minoan architectural, ritual, and cultural features from the Middle to the early Late Bronze Age period (ca. 2000-1550 BC.). This phenomenon has been called 'Minoanisation'. Irrespective of the reality of a political or military domination by Crete over islands in the Southern Aegean -- the so-called 'Minoan Thalassocracy' -- scholars refer to an interconnected political or economic system with Crete at its centre. Models for the observed interaction include exchange networks such as the 'Western String'¹ (Davis 1979; Cherry & Davis 1982), political domination of the sea (Wiener 1990) and religious overlordship (Marinatos 1984) by Crete. It is apparent that exchange took place between these different regions, independent of whether one polity or island was pre-eminent in this interaction or not. The commodities traded in these networks probably included foodstuff, pottery, and

prestige goods that were not available locally (Davis 1979: 147), as well as technologies, iconography and mental constructs (e.g. Marinatos 1984, 1990; Davis 1984; Hood 1990).



Map 1: The Southern Aegean

Kardulias, a prominent world-systems theorist, believes that interaction between the Cyclades and Crete is best described as peer-polity interaction, i.e. as an interaction between roughly equal partners (1999b). During the Middle Bronze Age, "the archaeological record", says Kardulias, "indicates a symmetrical economic relationship among many of the settlements, but there is also evidence that Crete's 'pull' [e.g. emulation or 'Versailles effect', directional exchange along the 'Western String'] created some imbalances" (1999b: 190). As trade became increasingly important to Crete in the early Late Bronze Age, bigger quantities of Minoan features infiltrated the Aegean. There is evidence for Minoanisation not only of pottery, but also of technology and artistic expression in various sites. The Minoan world system "benefited many local communities and engendered, at most, a loose confederation within which Crete was unable to exercise hegemony even though her dynamic economy and elites generated much of the demand for goods that raised production levels and stimulated trade. While certain individuals may have desired to control the system, they could not fully exploit it because of the number of middlemen, and their relative isolation on so many islands." (Kardulias 1999b: 190-191).

Wilkinson on the other hand believes in 'unequal exchange' between Crete and the Aegean islands. He states that civilisations ordinarily have one of two political structures. One is the so-called 'states system' which is described as a network of many independent states. The other system is the 'universal empire' which consists of a one-state system (1991: 116). Based on these categories, Wilkinson sets out to define systems as either one or the other. He thus sees neopalatial Crete as a 'universal empire' or 'world state'. In this he follows a long-standing and powerful school of thought which sees Crete as the ruling and dominant power at the core of Aegean exchange (e.g. Evans 1928; Pendlebury 1935; Buck 1962/63; Hood 1984; Hiller 1984; Strøm 1984; Melas 1990). Conversely, Wilkinson regards Aegean history before the neopalatial period ("pre-thalassocracy") as a 'states system', thus representing independent and roughly equal partners (1991: 119). After the collapse of the Cretan palaces, the Cretan core was succeeded by the previously semiperipheral Mainland. The Aegean islands are considered to be semiperiphery rather than periphery. This grants them limited political and economic power (Wilkinson 1991: 118-119). In comparison with the Mesopotamian world-system, Wilkinson sees the Cretan core as quite durable, lasting from ca. 2600 to 1425 BC.. "'Occasional' rather than 'frequent' core shifts seem to characterise the Aegean civilisation" (one per millennium *versus* eight per millennium in Mesopotamia, and a similar frequency for Egypt) (Wilkinson 1991: 127).

The boundaries of the regional networks within the Southern Aegean system

It is difficult to define the nature and the extent of boundaries in a pre-capitalist world-system. Depending on the viewpoint taken, boundaries can be defined by various factors, such as trade and information flow (Renfrew 1977; Schortman & Urban 1987; Chase-Dunn & Hall 1997: 52 who further subdivide this category into bulk-goods and prestige-goods networks), political/military interaction (Chase-Dunn & Hall 1997: 52), or ideological factors (Schortman & Urban 1987: 69.76). Each one of these aspects can generate changes in an interrelated system. Thus, investigations into military interaction

will probably show different boundaries from those derived from prestige-goods. There is no easy solution to this problem, but Hall's definition appears to be most practical: "...a 'world-system', or better core/periphery relations... are 'worlds' in the sense that they are far more self-contained than anything that exists outside of them." (Hall 1999: 4). In other words, interconnectedness provides the criterion for determining the external boundaries of a system, though it is not absolutely clear how much contact is enough to make the two units part of the same system.

As we have seen, assigning boundaries is a difficult task. Political, military, economic, or ideological parameters will potentially supply us with very different boundaries and spheres of interaction. Worse still, the researcher cannot always be sure which of the boundaries are visible in the material record. To circumvent this problem it becomes necessary to focus on classes of evidence which are indicative of one of the above mentioned network types (bulk-goods, prestige-goods, information, military/political or ideological networks). Unfortunately, our knowledge of the prehistoric Aegean is not detailed enough to match classes of evidence with network types and thus establish the external boundaries of the system. We can, however, gain some idea about boundaries by analysing the network outlines we get from *all* available classes of evidence. Although this procedure does not allow us to determine what the boundaries are of bulk-goods exchange or military interaction, etc., we can nevertheless use the evidence to give us a general picture of interaction in the Southern Aegean. As different kinds of evidence are interpreted together, it seems most likely that the boundaries we gain from this procedure will encompass trade, military/political, information and ideological interaction. Chase-Dunn and Hall have convincingly argued that information networks are generally the most expansive networks, whilst bulk-good ones are comparatively small (1997: 54). It seems likely that the boundaries determined by a variety of evidence will tend towards the larger side of the spectrum and might indeed be bigger than any of the individual ones since they might encompass all of them.

The most important evidence available is ceramics. Pottery has been found on every site, it is plentiful, can be provenanced and has a good chronological resolution. Ceramics were rarely traded for their own sake but served as containers or as by-products of trade. Any type of trade, military activity, religious or political event could have contributed to the distribution pattern of pottery. The ceramic evidence is complemented with other classes of evidence such as metals, stone, ivory, etc³. This procedure is designed to mirror the *total* activity in an interaction system.

Core-semiperiphery-periphery

Antiquity presents some difficulties in determining which regions are core, semiperiphery or periphery. This is because the differences and dependencies between regions are not as pronounced as in our modern world-system. It has been suggested that the 'status' of a region can be determined by the extent of its interaction links (Champion 1989; Broodbank 1993). Champion considers plurality of interactions as indicative of a core

state since cores generally have more interaction partners than peripheries (1989: 14-15). Broodbank has successfully utilised a similar concept to explain the dominance of Ayia Irini on Kea, Dhaskalio-Kavos on Keros, and Chalandriani on Syros as trading sites over other Cycladic sites in the Keros-Syros culture (ca. 2700-2300 BC); a domination based on the islands' geography and the total number of close-distance links (Broodbank 1993). Accordingly, there seems to be a link between the plurality of connections and the island's position in the world-system. The more connections and contacts an island has, the more prominent its position in an interaction network.

Since our evidence is too fragmentary, I suggest a slightly modified model to determine the plurality of contacts: the plurality of individual interaction links shall be replaced by the plurality of *network* contacts. A network is hereby defined as a zone in which an island or a region has frequent and thus possibly direct trade links. To establish if exchange is direct or indirect, the number of provenanced vessels, stone, metal or ivory objects, etc. was counted⁴. Twenty was regarded as the minimum number of exchanged items necessary to demarcate direct contact between two areas in a given period. All direct exchange partners were then marked on the maps. They were then connected with one another. The resulting area is the so-called network (see Maps 2a-c)⁵.

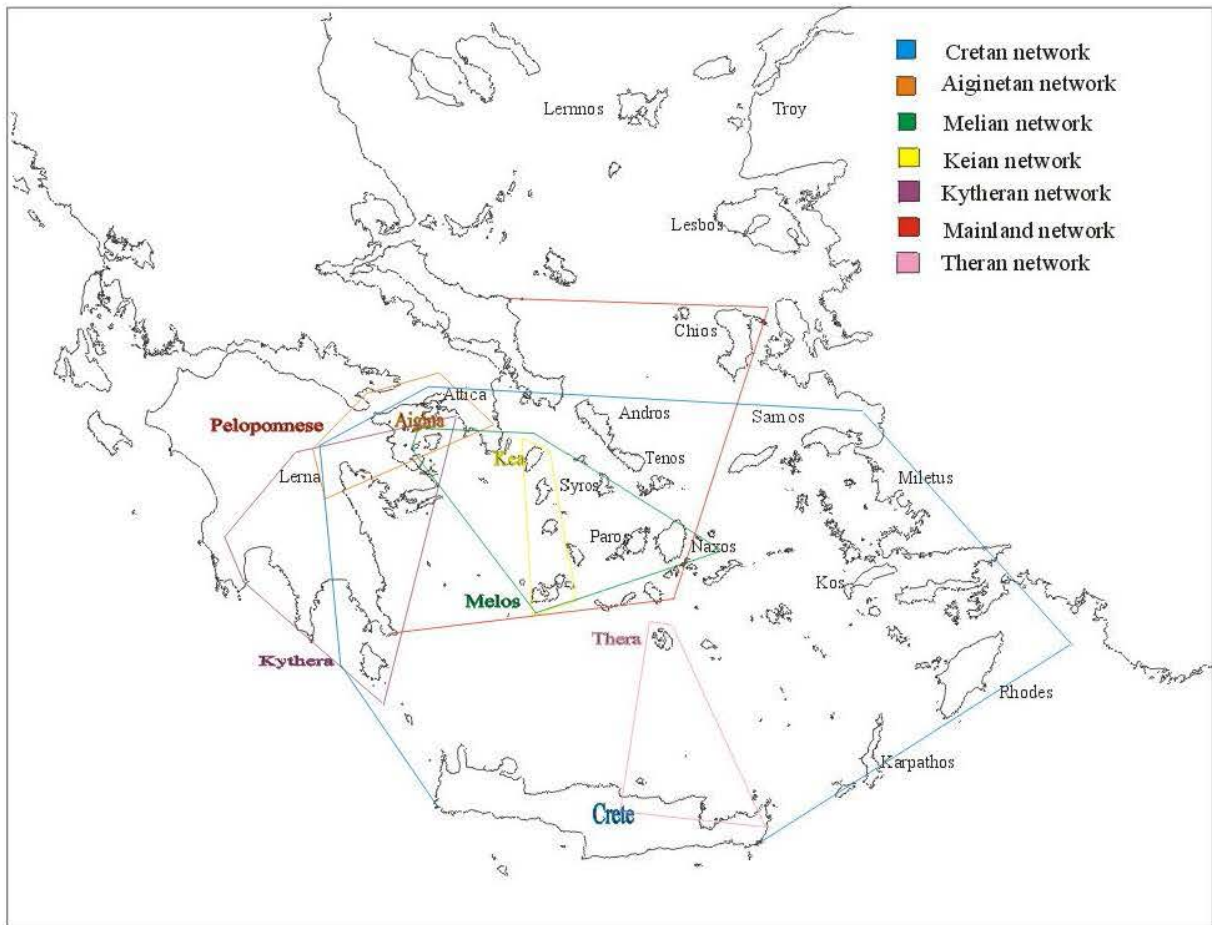
For the Middle Bronze Age we have sufficiently detailed evidence for seven separate networks: the Cretan, Melian, Mainland, Kytheran, Aiginetan, Keian, and Theran one. In Late Bronze I the Dodecanesian network has to be added to the already existing ones, and by Late Bronze II the Theran one was destroyed. Having established the network for different islands, the next step was to count the number of overlaps with other networks. This number of contact partners is given below. Interaction links with regions beyond the Southern Aegean are not taken into consideration:

Table 1: The Southern Aegean network in the Middle Bronze Age (see Map 2a)

Middle Bronze (ca. 2000-1700 BC)	# of contact partners	Late Bronze I (ca. 1700-1610 BC)	# of contact partners	Late Bronze II (ca. 1610-1550 BC)	# of contact partners
Crete:	6	Crete, Mainland:	7	Crete:	6
Mainland, Melos:	5			Mainland:	5
Aigina, Kythera:	4				

Kea:	3	Melos, Kea, Kythera, Aigina, Dodecanese, Thera;	3	Melos, Aigina, Kythera, Kea:	3
Thera:	1 (?)			Dodecanese:	1

During the Middle Bronze Age Crete has the biggest network in terms of area, volume of trade and contacts with other networks. Although the Mainland and Melos follow in second place, their networks are considerably smaller geographically. The high number of contacts for Melos is surprising and seems mainly due to the export of fine Cycladic White vases and the extensive use of obsidian in this period. Although Melos' contacts are far-reaching, the network is much smaller in terms of area and volume of trade than either the Mainland or Cretan one. Kythera, Aigina, and Kea have relatively few contacts. Thera brings up the rear. However, as the Middle Bronze Age period has not yet been investigated fully on Thera, it is likely that Thera's position within the Southern Aegean system will have to be revised when more information becomes available from the excavations. We can thus summarise that Crete is the core in the Middle Bronze Age as it has the most expansive network of all. The Mainland, Melos, Aigina, Kythera and Kea are best characterised as the semiperiphery. Thera is the tail-light but also belongs to the semiperiphery.



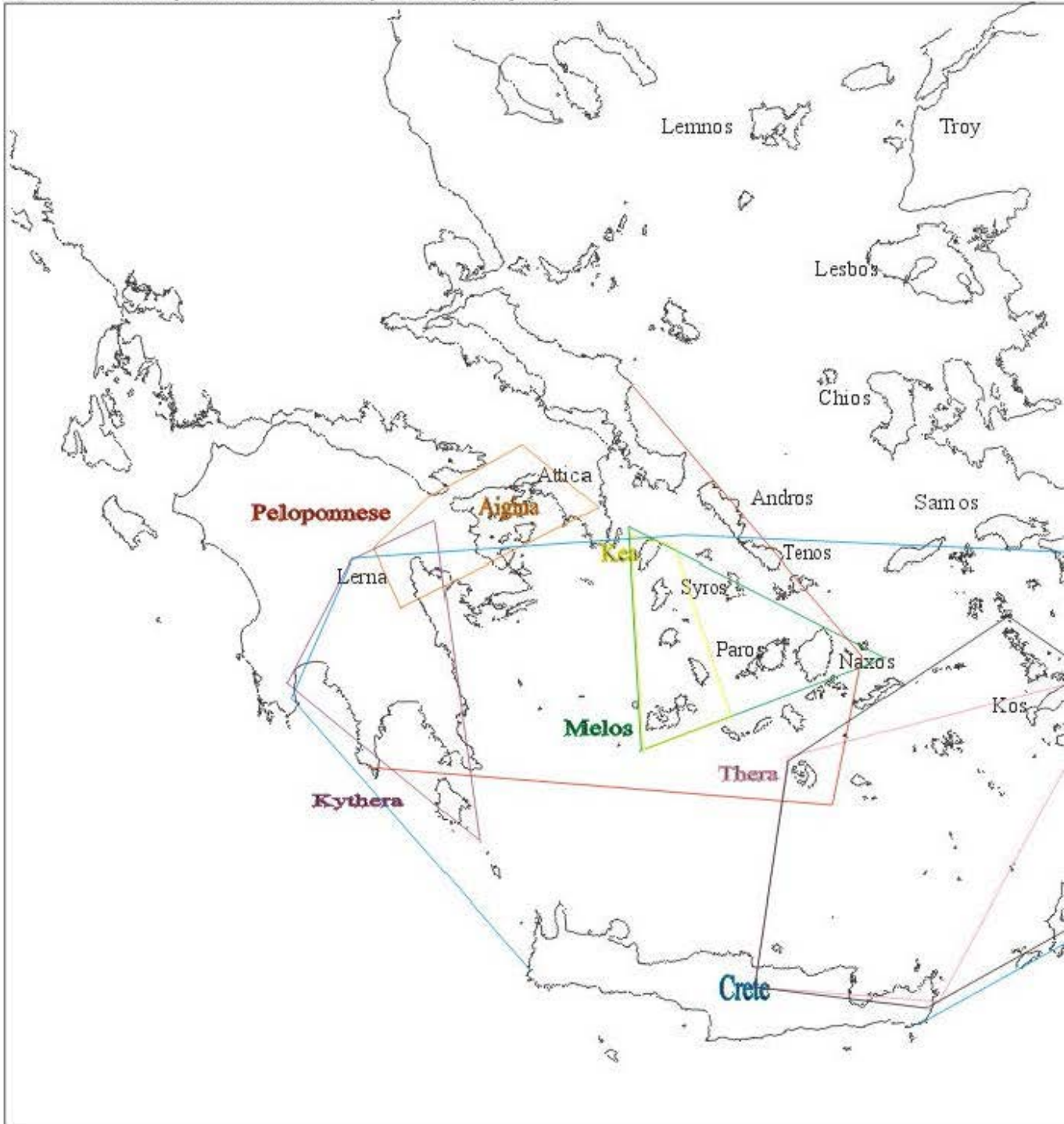
Map 2a: MC Regional Exchange Networks

Although all the networks are different in size, carry a higher or lower volume of trade and have a variety of contacts with neighbouring regions, there is no great difference between the number of contacts. The number of interactions slowly decreases by one (i.e. 6,5,4,3,1). Relationships appear to be balanced during this period: there is a wide range of semiperipheral networks in different stages of their development while Crete is the core. The fact that the Mainland network is at the top of all semiperipheral networks is an indicator of its future 'ambitions'.

The Southern Aegean network in the Late Bronze Age I (see Map 2b)

Both the Cretan and the Mainland network have the same number of contacts in this period. However, the range of their respective networks and particularly the volume of trade indicate that Crete is still more powerful and expansive and remains the core. The Mainland is beginning to flex its muscles but has not yet developed into the leading power. The Melian, Keian, Theran, Kytheran, Aiginetan and the Dodecanesian networks

have few contact partners and make up the semiperiphery.



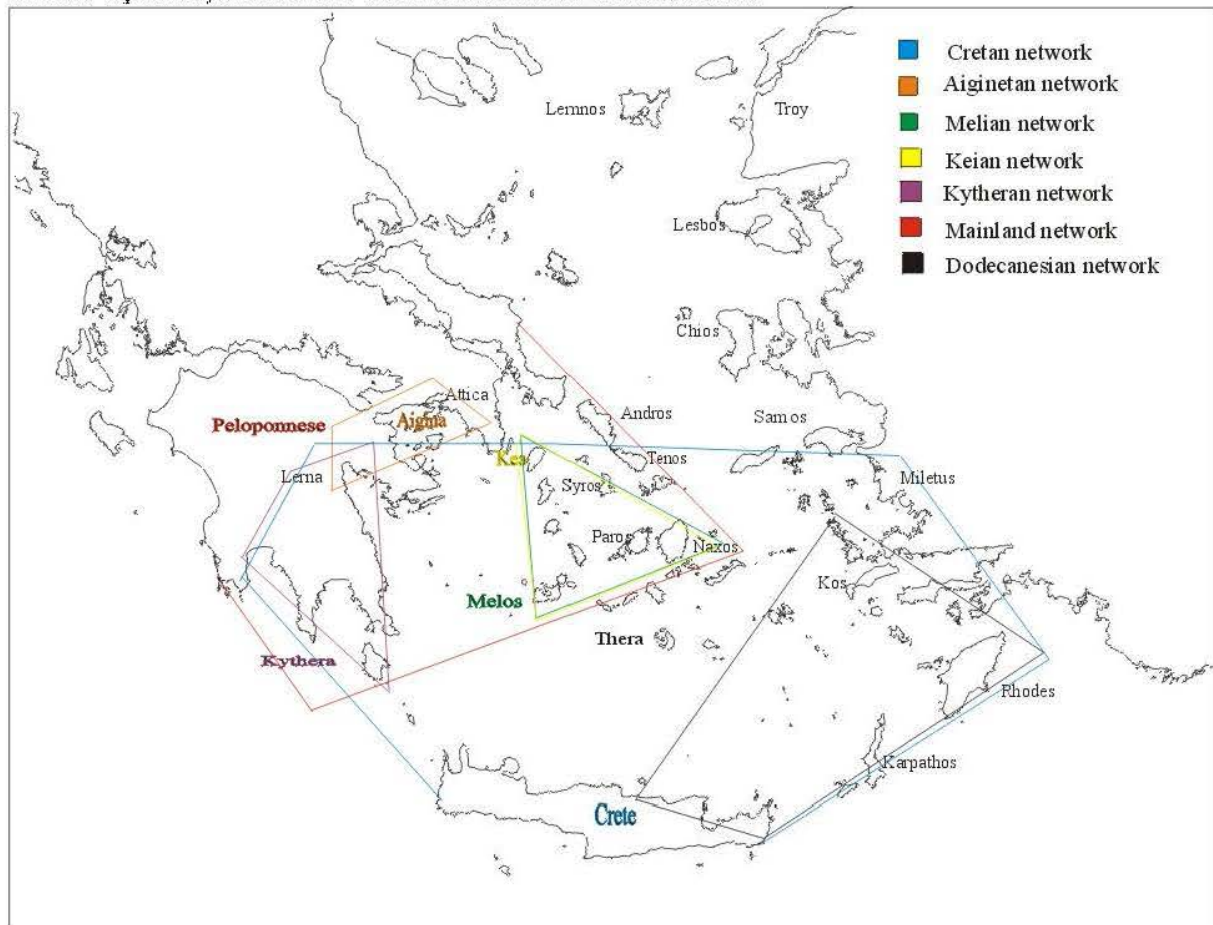
Map 2b: LCI Regional Exchange Networks

The Late Bronze I period is characterised by a dramatic change from the previous period: instead of the wide spread of semiperipheral networks of the Middle Bronze Age, a great divide between the core, Crete and the aspiring Mainland can be observed. The semiperipheral regions have all been reduced to only three contact partners. Crete and the Mainland appear to exert a lot of pressure on all the other networks forcing them towards becoming peripheral whilst carving out an ever more powerful position for themselves at the core. The change is most drastic for Melos, which loses its place as a high semiperipheral network and is now placed into a low semiperipheral position. The Theran network alone seems to profit from this shift, as it increases its contacts by two and becomes a vital harbour bridging the gap between Anatolia (with its connections to the Near East), the Mainland and Crete.

The Southern Aegean network in the Late Bronze Age II (see Map 2c)

The Cretan network remains in its privileged core position with the highest number of contacts as well as the greatest range and a very high volume of trade. The Mainland network follows in second place. Its volume of trade has now increased dramatically, in some cases even outnumbering Minoan imports (e.g. Ayia Irini on Kea and Phylakopi on Melos) (Cummer & Schofield 1984)⁴. The Melian, Keian, Kytheran and Aiginetan networks remain semiperipheral with only three contact partners each. The Dodecanesian network is in touch with Crete only. Due to the volcanic eruption at the end of the Late

Bronze I period, interaction with the island of Thera ceased.

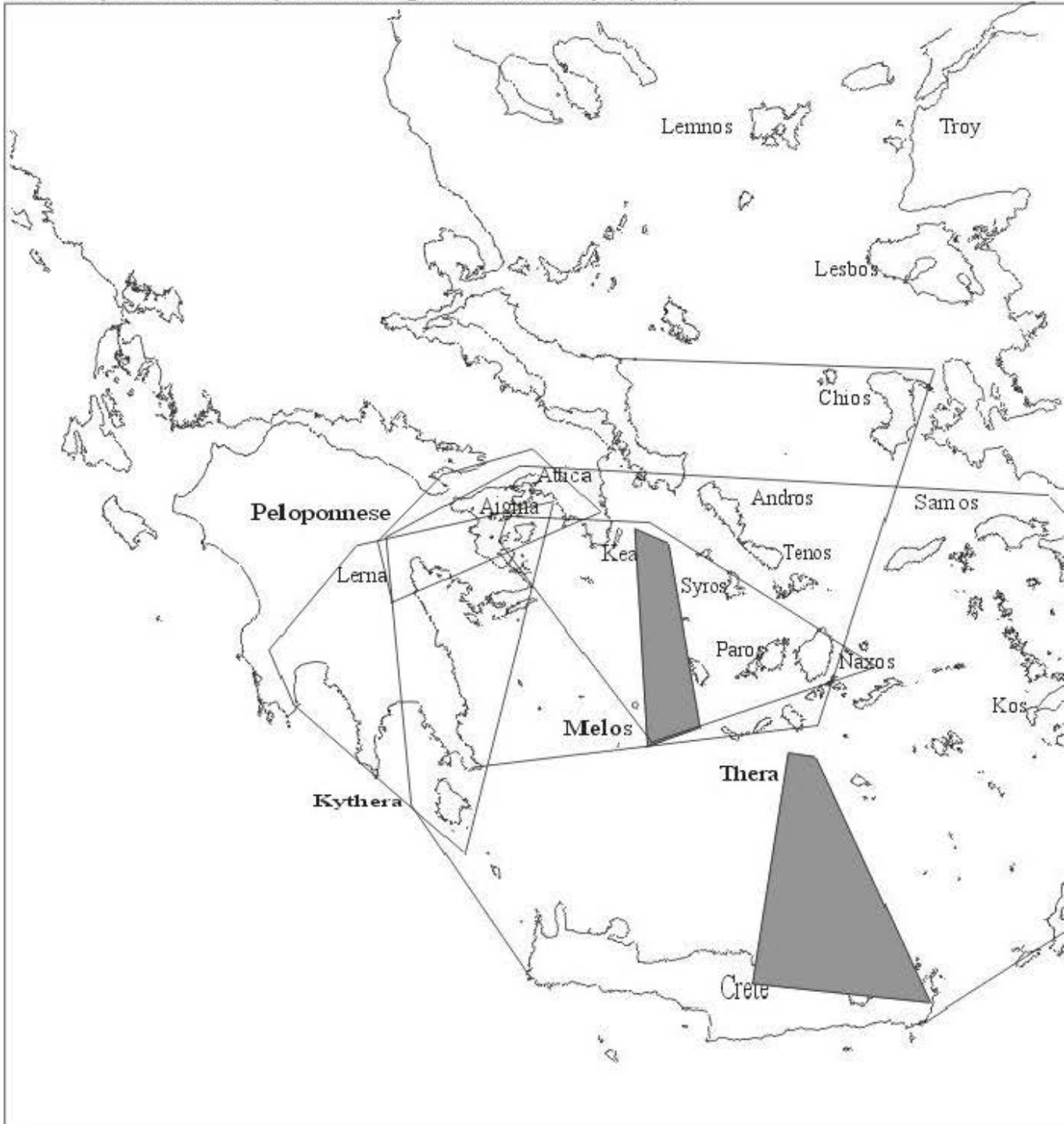


Map 2c: LCII Regional Exchange Networks

Discussion

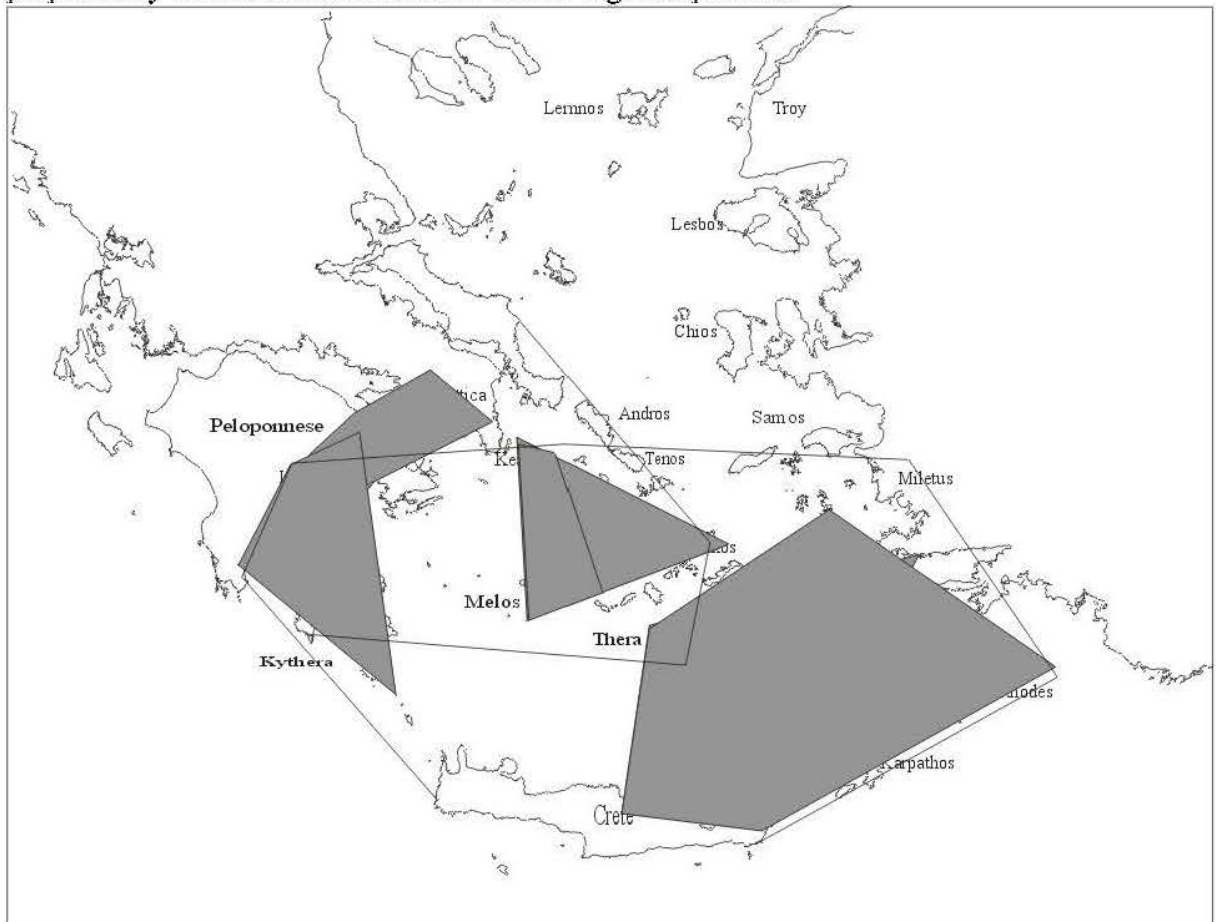
As has become clear from the above presentation, the Southern Aegean system consists of a core and a semiperiphery. No periphery could be ascertained within this region. This should not surprise us as peripheries need not be islands or regions but could be small villages on an island which were being exploited by the centre. As only relatively little is known from the internal organisation on islands, this point cannot be assessed accurately. Throughout the Middle Bronze and early Late Bronze Age, Crete is the core and its network covers most of the southern Aegean. The Mainland is beginning to flex its muscles already in Late Bronze I, although real changes are only visible in Late Bronze

III. The Cycladic islands, Kythera and Aigina form the semiperiphery.



Map 3a: Low-ranking Semiperipheries in MC

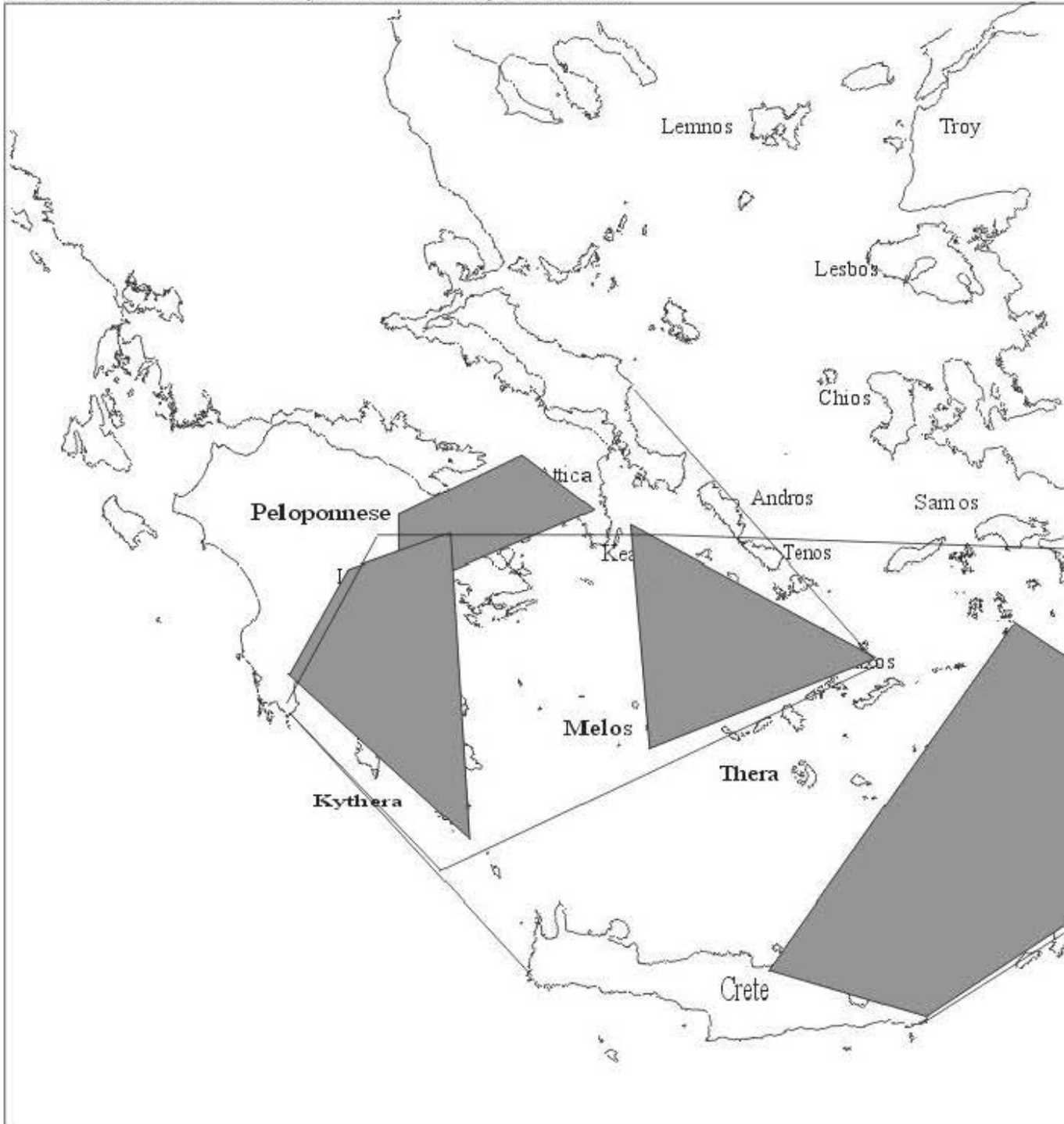
A most interesting development is indicated by the increased number of semiperipheral spheres with three contacts or less. From the Middle to the Late Bronze Age, the total number of low-ranking semiperipheral networks increases (see Maps 3a-c). The 'peripheralisation' of a region seems to be an indicator of the power of the core state. The more vigorously the core expands, the more it will take over trade and interaction between other societies and thus turn them into low-ranking semiperipheries. If this development continues the semiperipheries will be reduced to peripheries. This process can justifiably be called 'peripheral exploitation' (Shannon 1989: 30), and is comparable to processes observed in modern systems. It should be noted that the process of 'peripheral exploitation' need not be unilateral. As several scholars have emphasised (Shiple 1993: 273; Kohl 1987: 16; Schortman & Urban 1994: 403; Stein 1999: 153-154), peripheries or semiperipheries are sometimes successfully able to manipulate the core(s) to their own advantage. We therefore cannot exclude that some of the islands under discussion strove to be included in the Hellado-Cretan interregional exchange and purposefully turned their back to their former regional partners.



Map 3b: Low-ranking Semiperipheries in LCI

The spread of contacts shows that interaction in the Middle Bronze Age happened between relatively equal units. Although Crete is the core, it is not powerful enough to exploit its neighbours or more distant networks. The semiperipheral networks vary in the number of links and this variety within the semiperiphery indicates that no stresses have been exerted by the core state. By the Late Bronze I period, the situation has changed dramatically. We now see a strong core state closely matched by the Mainland, which is now equal to the Cretan network in terms of contacts. In contrast, most other networks have experienced a reduction in links: all of the semiperipheral networks have now been reduced to three contact partners. This development continues into the Late Bronze II period when all of the semiperipheral networks are limited to three contact partners. The reduction of contact partners for the semiperiphery cannot be totally unrelated to the high counts for Crete and the Mainland. Assuming that these tendencies are related, the attempted expansion of the Mainland and the desire by the Cretan core to remain in its privileged position must have resulted in a reduction of links for most other networks. This has to be regarded as an expression of a developing core-(semi)periphery hierarchy from the Middle Bronze Age to the Late Bronze II period. This apparent peripheral exploitation is worthy of closer investigation. Phylakopi on Melos and Ayia Irini on Kea

are the only settlements which provide sufficiently detailed data.



Map 3c: Low-ranking Semiperipheries in LC

Phylakopi on Melos² and Ayia Irini on Kea

Detailed data for Phylakopi shows that the marginalisation of the island coincides with increasing Mycenaean influence, since a jump in Mycenaean imports and an increase in wheelmade production in Late Bronze II can be observed. However, the marginalisation of the islands had already begun sometime between the Middle and early Late Bronze Age, when Mycenaean imports are relatively infrequent at most sites. We therefore have to assume that the explanation for the decrease in contact partners is not due to the Mainland trying to assert itself, but might more reasonably be sought in the ensuing competition between the Mainland and Crete over access to raw materials, exotic goods and prestige items. Phylakopi's reaction to its marginalisation is characterised by its withdrawal from interregional trade as witnessed by the almost complete lack of Minoan or Mainland imports in the Late Bronze I period.

Ayia Irini, on the other hand, became a vital point of contact between Crete and the Mainland. This is attested by the increasing quantities of both Minoan and Mainland imports. By the Late Bronze II period Ayia Irini also became a redistribution centre for other Cycladic islands as the sudden rise in Cycladic imports shows (Cummer & Schofield 1984). Not surprisingly, Kea retained its status (in terms of contacts) and did not become marginalised further. Its privileged position, however, was secured at a price. Ayia Irini turned itself into a production site which catered for Cretan and Mainland needs and has been most appropriately described as "one big workshop" (Schofield 1990: 209). Regardless of whether this development was initiated by the Keians themselves who actively sought to maximise their profits or whether it was a result of pressure exerted by Crete and/or the Mainland, this process resembles more contemporary forms of exploitation of developing countries. Although Kea was exploited in its position as a point of contact, it nevertheless profited substantially from this ongoing trade, and so can justifiably be called semiperiphery.

Summary

Our investigation into the South Aegean network shows that there was a core-semiperiphery relationship in the Middle Bronze Age but that it never developed into a hierarchical relationship. Regions and towns interacted with each other on a peer polity basis as no player was strong enough to totally subjugate other islands (cf. Kardulias 1999b). This kind of interaction has been called core-periphery differentiation and denotes interaction between societies which is not governed by exploitation but is the result of different levels of social complexity (Chase Dunn & Hall 1997: 36). This picture changes in the early Late Bronze Age when there are clear indications that the Mainland was gearing up to compete with the Cretan core. This battle between the two strongest powers resulted in the marginalisation of most other islands in the Aegean. The divide between the core and semiperipheries became very pronounced. The early Late Bronze Age is thus more accurately characterised as 'unequal exchange' and as a core-semiperiphery hierarchy (cf. Wilkinson 1991). Nevertheless, despite exploitative tendencies as a result of competition between Crete and the Greek Mainland, neither of them was able to actually politically or economically dominate any of the other islands

(Kardulias 1999b). They exerted a strong 'pull' which went well beyond simple imitations of Minoan features and led to deep-seated changes in the field of production and technology of these societies (e.g. pottery production, metallurgy, weaving) (Davis & Lewis 1985; Davis 1984; Schofield 1980).

Despite exploitative tendencies by Crete and the Greek Mainland, we should remind ourselves that the islands were by no means helpless by-standers but rather active participants in the process. Although the semiperiphery might not have gained as much from the 'arrangement', it nevertheless gained something -- it is a two-way process (Shipley 1993: 273; Kohl 1987: 16; Schortman & Urban 1994: 403). The settlements of Ayia Irini and Phylakopi reacted differently to the encroaching Cretan and Mainland influences: Ayia Irini was eager to turn itself into a workshop (Schofield 1990) to support and supply Cretan and Mainland trade. It became part of the interregional trade, whilst Phylakopi attempted to withdraw from the Hellado-Cretan trade network.

Notes

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1 Davis argued that the Minoans followed a 'Western String' route leading from Crete via Thera, Melos and Kea to Attica with the aim of bringing back metals (1979). In the process, Minoan traders would call at these islands, which lie about a day's journey apart from each other. As a result, these islands would have received more Minoan imports than other regions in the Aegean.

2 Wiener's 'Versailles effect' refers to the widespread adoption and imitation of 'fashions' coming from the court of Versailles in the 17th and 18th Century. Castles in Germany were built following French architectural models, fashion copied and imitated the French style, and French became accepted as the language of conversation in the upper circles of society (Wiener 1984: 17). The model stipulates that no political or economic gain is implied, but that cultures strive to imitate a society which they perceive to be culturally superior. In other words, societies outside Crete, recognising Crete's cultural superiority, would endeavour to imitate its culture.

3 For a detailed list of and references for all artefacts, see the Appendix in: I. Berg (1999) *The Minoanisation of the Southern Aegean: A Comparative Approach to Ceramic Assemblages*. To be submitted to the University of Cambridge toward the degree of Ph.D.

4 See note 3.

5 For a full discussion of the networks, see Chapter 6 and the Appendix in: I. Berg (1999) *The Minoanisation of the Southern Aegean: A Comparative Approach to Ceramic Assemblages*. To be submitted to the University of Cambridge toward the degree of Ph.D.

6 For a detailed discussion of Phylakopi on Melos see Chapter 4 in: I. Berg (1999) *The Minoanisation of the Southern Aegean: A Comparative Approach to Ceramic Assemblages*. To be submitted to the University of Cambridge toward the degree of Ph.D.

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