

An Analysis of the Late Bronze Age Site Of Ayia Irini, Keos

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Abstract: This article provides an interpretation of the physical remains of the Late Bronze Age settlement of Ayia Irini on the island of Keos. Although geographically close to the Greek mainland, the settlement contains clear signs of Minoan hegemony -- particularly during Periods VI and VII of the Keian chronology proposed by John Caskey. At the same time, a Mycenaean monarchy was on the rise in the nearby mainland settlement of Thorikos, next to the desirable polymetallic deposits of Laurion. Included is a critical examination of the immense structure on Ayia Irini known as House A, which was probably the seat of a local potentate with close ties to the Minoans. The evidence points to a Minoan-led town with a considerable indigenous population, which probably had a tense relationship with its mainland neighbors throughout much of its existence.

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The study of Mycenaean and Minoan civilization is a study in contrasts. The ancestors of the Mycenaeans may have come in part from the Balkans or Carpathian regions, while the Minoans probably had more southerly origins. The Mycenaean kings tended to live in walled towns, often on elevated hilltops, in palaces that separated them from their subjects; the Minoan rulers were more likely to dwell in wall-less urban centers where palace and town were virtually indistinguishable. The Mycenaean artistic tradition is reminiscent of steppe art, with an emphasis on geometric motifs and abstract forms, and is rather provincial in appearance; Minoan art was refined and sophisticated, with a predilection for naturalistic scenes and weightless, ephemeral imagery. The Mycenaeans buried their monarchs in richly-provided shaft graves and impressive *tholos* tombs; the Minoans preferred communal burial, at least until the Middle Bronze Age. For these and many other reasons, these two early inhabitants of the land that would later be known as Greece were fundamentally and irreconcilably different from one another.

Yet, there is at least one feature which these two cultures did have in common: their proclivity for warfare. The prevalence of weapons and violent imagery in Mycenaean society are sure signs of their militaristic tendencies, and more recent studies of their physical remains have provided further proof. In a study of the male skeletons found in Grave Circle B at Mycenae, for example, scholars observed that despite the “large size and overall health of the males buried there,” they displayed a relatively short average life span -- “about that of the much less healthy population as a whole,” a discrepancy suggestive of unnatural causes of death. Indeed, many of the skeletons exhibited injuries which were probably caused by military activities or “chariot whiplash.”¹ Similarly, at Pylos, adult men exhibited “an unusually high mortality rate” and tended to be buried in separate cemeteries with “distinctive mortuary rituals,” all of

¹ Phoebe Acheson, “The Role of Force in the Development of Early Mycenaean Polities,” in *Polemos: Le contexte guerrier en Egée à l’âge du Bronze*, ed. Robert Laffineur (Liège: Université de Liège, 1999), 98-99.

which indicate the presence of warriors who died young and held a privileged position in this society.²

While it is true that most Cretan towns were unfortified and that individual warrior graves have not been found on the island, this should not be taken as evidence for Minoan pacifism. As Sturt Manning states, “the absence of fortifications in LMI Crete, in contrast to the contemporary Mainland,” may simply be a reflection of strength; “while the absence of individualistic warrior burials may stem from unity and the use of organized bodies of men” during combat.³ Similarly, Stefan Hiller sees evidence of a “genuine Minoan militarism” and believes that “Minoan Crete was the leading military power of the Aegean during the Middle Bronze age.”⁴ The archaeological evidence shows that, as in the case of the Mycenaeans, warfare was a fundamental part of Minoan civilization. Of the 272 bronze swords discussed in Kilian-Dirlmeier’s text *Die Schwerter in Griechenland (Außerhalb der Peloponnes), Bulgarien und Albanien*, for example, 111 have a Cretan provenance.⁵ Moreover, in K. Branigan’s book *Aegean Metalwork of the Early and Middle Bronze Age*, which catalogues EBA and MBA long daggers, 168 come from Cretan contexts, 42 from the Cyclades, and 21 from the Mainland. “It is clear,” writes Alan Peatfield, “that the conventional image of peaceable Minoans is profoundly simplistic; weaponry seems to have played a fundamental role in Minoan society throughout all phases of its history.”⁶ Minoan graves going back to Early Minoan times are known to contain weapons;⁷ and studies of the skeletons of Minoan warrior graves have discovered injuries to the right arm, which is the weapon-holding arm.⁸ Thus, warfare was a common enterprise among both Mycenaeans and Minoans. Put two belligerent and diametrically opposed cultures in close proximity to one another,

² Acheson, 99.

³ Sturt Manning, “The Military Function in Late Minoan I Crete: A Note,” *World Archaeology* Vol. 18, no. 2 (Oct. 1986): 285.

⁴ Stefan Hiller, “Pax Minoica Versus Minoan Thalassocracy. Military Aspects of Minoan Culture,” in *The Minoan Thalassocracy*, ed. R. Hägg and N. Marinatos (Stockholm: Paul Åströms Förlag, 1984), 27.

⁵ Alan Peatfield, “The Paradox of Violence: Weaponry and Martial Art in Minoan Crete,” in *Polemos: Le contexte guerrier en Egée à l’âge du Bronze*, ed. Robert Laffineur (Liège: Université de Liège, 1999), 67. These statistics are repeated in by Hiller, 27.

⁶ Peatfield, 67.

⁷ Hiller, 30.

⁸ Peatfield, 70.

and there is bound to be conflict. As Sinclair Hood states succinctly, “Might was right and was to be exercised” in the Bronze Age Aegean.⁹

The island of Keos, located 30 kilometers away from the Greek mainland and 270 kilometers from the Minoan capital of Knossos on Crete, provides an excellent case study for the interaction between these two civilizations. The archaeological site of Ayia Irini on Keos is one of the best sources of evidence we have for the development of Bronze Age culture in the Cyclades. The excavation of the site, which was begun in 1960 by John Caskey under the auspices the University of Cincinnati, uncovered the remains of a settlement that had been continuously inhabited for several centuries. Through stratigraphic analysis, Caskey and his team divided the history of the site into eight sequential periods spanning the beginning of the Early Bronze Age to the end of the Late Bronze Age.¹⁰ At the end of Period VII, sometime in the 15th century B.C., a major earthquake hit the town and caused many of its buildings -- most notably the structure now known as House A -- to collapse.¹¹ The entire contents of House A fell into the basement rooms and were left largely untouched until the excavation, creating a veritable time capsule of Bronze Age artifacts which can now be used to study this Cycladic culture and the interactions between mainland Greece, the Minoan empire, and the islands of the Aegean.¹²

Through analysis of the finds from Ayia Irini, this paper will examine the nature of the settlement at the peak of its development during the Late Bronze Age (Periods VI and VII), although earlier periods will also be discussed to provide context. How prosperous were the people of Ayia Irini, and what kind of society did they live in? What role(s) did Keos play in the wider Aegean world, and what were its relationships to the mainland, Crete, and its Cycladic neighbors? How did its location between these two opposing civilizations affect its development? Given its proximity to the mainland, we

⁹ Sinclair Hood, “A Minoan Empire in the Aegean in the 16th and 15th Centuries B.C.?” in *The Minoan Thalassocracy*, ed. R. Hägg and N. Marinatos (Stockholm: Paul Åströms Förlag, 1984), 33.

¹⁰ A chart detailing these periods and comparing developments at Ayia Irini to contemporary developments throughout the Aegean is presented at the end of this paper.

¹¹ John Caskey, “Notes on Kea and Tzia,” *Hesperia*, Vol. 50 (1981): 323.

¹² According to Jack Davis, the several volumes detailing the Keos excavations give Ayia Irini “the longest well-documented prehistoric sequence in the Cylades” (“Review of Aegean Prehistory I: The Islands of the Aegean,” *American Journal of Archaeology*, Vol. 96 (1992): 708). The virtual absence of metal vessels from the finds of House A suggests that the inhabitants had warning of the earthquake and removed their most valuable possessions before the house collapsed.

may expect it to have more in common with the Mycenaean world than with the Minoan. However, as this paper will show, the geographical location of Keos did not prevent the Cretans from asserting control over it, a fact which says much about the skill and talent of the Minoans for building an empire.

Geography, location and population:

The location and natural features of the island were critical to the development of Ayia Irini. The 30 kilometers between it and the mainland was about the distance that a Bronze Age boat could travel in one day (Fig. 1),¹³ making it a natural stopping point for people traveling to and from the mainland. On a clear day the mainland is visible from Keos, and vice versa. The rich polymetallic deposits of Laurion, to be discussed in detail below, were slightly northwest of the island. Ayia Irini -- so named after the modern church that now occupies the site -- sits on a low promontory in the sheltered bay of Ayios Nikolaos, an ideal location for a harbor (Fig. 2). A spring on the northwest side of the promontory provided fresh water to those who lived on the edge of a salty sea. With all these natural advantages, it is not difficult to see why Ayia Irini had the potential to develop into an important Bronze Age site.

In the early 1980s, J.L. Davis and J.F. Cherry investigated an area of 20 square kilometers around the site of Ayia Irini and identified finds of MC-LC II date at more than ten additional locations. These finds appeared to be secular in nature and were restricted to tripod legs from plain cooking vessels, conical cups, and fragments of pithoi and large jars. They were, perhaps, the byproducts of farming activities taking place outside of Ayia Irini. The authors conclude that these finds were not indicative of permanent settlements: "Ayia Irini was apparently the principal -- perhaps the *only* -- MC-LC II settlement in the northern part of the island."¹⁴ Southern Keos has not been thoroughly investigated, but so far there are no indications of any other significant Bronze Age settlements. Ayia Irini thus seems to have been a singular occurrence, the

¹³ Cyprian Broodbank, *An Island Archaeology of the Early Cyclades* (Cambridge: Cambridge University Press, 2002), 261.

¹⁴ Jack Davis and J. Cherry, "Spatial and Temporal Uniformitarianism in Late Cycladic I: Perspectives from Kea and Milos on the Prehistory of Akrotiri," in *Thera and the Aegean World III: Proceedings of the Third International Congress* (London: The Thera Foundation, 1990), 185-190.

sole permanently-inhabited site on the northern side of Keos -- and perhaps the whole island -- at this time.¹⁵

Ayia Irini's location tells us much about its function. As Elizabeth Schofield states, the positioning of the settlement on the northwest shore of the island is an "inefficient location . . . vis-à-vis the rest of the island and its resources." If the primary purpose of Ayia Irini were to facilitate access to or assert control over the agricultural produce and natural resources of the island, it would have been located inland, closer to the prime farm and pasture land on Keos.¹⁶ It is much more likely, Schofield says, that its location "reflect[s] the requirements of a flourishing overseas trade."¹⁷ Ayia Irini's main focus was on maritime activities and overseas trade, and not on the development of land-based resources.

At its peak, Ayia Irini had an area of approximately one hectare, or 10,000 square meters. This is approximately the size of the excavated portion of Akrotiri, although the total extent of that site has been estimated at 20 to 30 hectares.¹⁸ According to Davis and Cherry, Ayia Irini had a maximum population of 780-1,250 individuals,¹⁹ while Elizabeth Schofield doubts the number was over 500.²⁰ In comparison, the population of Knossos has been estimated at 12,000 people,²¹ Akrotiri at several thousand,²² Pylos at 2,500,²³

¹⁵ There were, however, several small settlements on Keos during the Neolithic period, most notably Kephala and Paoura. See J. Caskey, "Investigations in Keos: Part II: A Conspectus of the Pottery," *Hesperia*, Vol. 41 (1972): 358-362; J. Caskey, "Investigations in Keos: Part I: Excavations and Explorations, 1966-1970," *Hesperia*, Vol. 40 (1971): 391-92; J. Caskey, "Excavations in Keos, 1963," *Hesperia*, Vol. 33 (1964): 314-316; and the first volume of the series detailing the Keos excavations: *Kephala: A Late Neolithic Settlement and Cemetery* (Princeton: J.J. Augustin, 1977), by J. Coleman.

¹⁶ The city of Knossos, for example, about five kilometers inland from the northern shore of Crete, was in a much better position to collect and redistribute agricultural products. Elizabeth Schofield notes that in later centuries, the main settlement on Keos was "geographically central" ("The Western Cyclades and Crete: A 'Special Relationship,'" *Oxford Journal of Archaeology*, Vol. 1 (1982): 21).

¹⁷ Schofield, "The Western Cyclades and Crete," 21.

¹⁸ Malcolm Wiener, "The Isles of Crete? The Minoan Thalassocracy Revisited," in *Thera and the Aegean World III: Proceedings of the Third International Congress* (London: The Thera Foundation, 1990), 131-134.

¹⁹ Davis and Cherry, 187.

²⁰ Wiener citing personal communication with Schofield in "The Isles of Crete?" 132. At the September 13, 2008, conference at the Onassis Cultural Center on *The Minoan World: Exploring the Land of the Labyrinth*, Wiener suggested that the population of Ayia Irini was as little as 250 to 400 people.

²¹ Wiener, "The Isles of Crete?" 131.

²² Phyllis Forsyth, *Thera in the Bronze Age* (New York: Peter Lang, 1997), 52.

²³ Rodney Castleden, *Myceneans* (London: Routledge, 2005), 68.

and Phylakopi at 2,000-3,000.²⁴ The size of Ayia Irini relative to contemporary Aegean centers is made even clearer in the following chart:

Site ²⁵	Estimated Size in hectares in LBA
Knossos	75
Mallia	23 ?
Akrotiri	20 ?
Trianda	15
Mycenae	3.85
Gournia	2.5
Phylakopi	2
Pylos	2
Ayia Irini	1
Kastri	1 or less

Ayia Irini was thus a small harbor-side town with a small population, the sole center of civilization on the strategically-located island of Keos during the Bronze Age, positioned between the powerful forces of the Greek mainland and the Minoan empire. In a period when warfare and ruthless acquisition were given free rein, Ayia Irini must have been a tempting target for warriors, pirates, and other groups who sailed the Aegean.²⁶ Nevertheless, the town not only survived, but seems to have grown and prospered without any major disruption in the Middle and Late Bronze Age.²⁷ By the Late Cycladic period it had a well-planned drainage system and paved roads. Many of its houses contained detailed frescoes and fine imported pottery. The promontory was densely settled, with buildings occupying nearly every square inch of land (Fig. 3). The flourishing of this isolated town in the middle of a hostile sea warrants further investigation.

²⁴ Wiener, “The Isles of Crete?” 131. For a discussion of the problems and uncertainties associated with estimating Bronze Age populations, see *ibid*, 131-33.

²⁵ All figures except those for mainland settlements come from Wiener, “The Isles of Crete?” 131. The estimated areas for Pylos and Mycenae are cited by Sing Chew in *World Ecological Degradation* (California: AltaMira Press, 2001), 53.

²⁶ As Malcolm Wiener notes, “power was apt to be exercised” in the LBA (“The Isles of Crete?” 151).

²⁷ John Caskey’s excavation reports suggest that the settlement was continuously inhabited in Periods IV through VII, and that there is no indication of any significant man-made destruction at the site during this time.

Fortifications and military presence:

We can see by the building of fortifications that Ayia Irini's existence was not a peaceful one. The first fortification wall was built at the northern end of the promontory at the beginning of Period IV, in the early MBA.²⁸ All that now remain of this fortification are the foundations of a small part of the wall and a horseshoe-shaped tower in the northwest section of Ayia Irini (Fig. 4). This tower was located close to the natural spring chamber, presumably so the town's precious water supply could be protected. As John Caskey states, the construction of this wall in the early Middle Bronze Age indicates that the town "was already prosperous enough to feel the need of defenses against marauders."²⁹

At the start of Period V another wall, known as the Great Fortification, was built (Fig. 5). As its name suggests, it was stronger and thicker than its predecessor; and it had a series of towers and bastions along its perimeter. The heavy foundations of these towers suggest that they were true watchtowers of considerable height, possibly containing staircases.³⁰ The new wall jutted out far to the north and enclosed an area approximately three times greater than that of the earlier fortification,³¹ a sign that the settlement was growing rapidly and required more space. The Great Fortification wall initially had a fairly uniform thickness of about two meters, but sections of it were later reinforced and made even thicker.³² The wall was probably at least as high as the buildings it was protecting. Jack Davis suggests that it would have been five or more meters above ground level.³³ The wall was made of large blocks of locally-available limestone, some of which weighed several tons, which could only have been quarried,

²⁸ This is significantly earlier than the building of fortifications around Phylakopi on Melos. Kolonna on Aegina may have had fortifications by the equivalent of Ayia Irini's Period V (Jack Davis, *Keos V. Ayia Irini: Period V* (Mainz: Philipp von Zabern, 1986), 104-5).

²⁹ J. Caskey, "Investigations in Keos: Part I: Excavations and Explorations, 1966-1970," 368. Similarly, the Bronze Age island settlements of Phylakopi on Melos and Kolonna on Aegina also had impressive fortifications. For a description of Phylakopi's fortifications, see Colin Renfrew and Malcolm Wagstaff, *An Island Polity: The Archaeology of Exploitation on Melos* (Cambridge: Cambridge University Press, 1982), 39-43 and 260-263.

³⁰ Davis, *Keos V*, 13, 101.

³¹ Davis, *Keos V*, 102.

³² Caskey, "Investigations in Keos: Part I: Excavations and Explorations, 1966-1970," 363.

³³ Davis, *Keos V*, 101.

transported and assembled on the promontory by means of a considerable labor force.³⁴ Its construction points to the existence of a central authority that was overseeing, directing, and probably compelling the population to engage in this massive public works project.

Work done on the wall throughout Period V shows that there was an urgent need to improve and strengthen the fortification. For example, the first inward jog in the northeastern section was reinforced by running another wall straight eastward, then along the outer face of the original extent of the wall, and finally eastward again to create the space that was to become the northeast bastion -- thus doubling the layers of protection in this area (Fig. 6). This new segment of wall was constructed on lower, softer ground and needed heavier foundations than the original line of the Great Fortification.³⁵ According to John Caskey, anyone approaching Ayia Irini by land would come from the east, around the inner end of the bay,³⁶ presumably to avoid the mountainous terrain that surrounded the town in all other landward directions. The northeast section of the wall was thus the part most vulnerable to attack. The fact that it was repeatedly strengthened and reinforced, even to the point where workers were forced to build on ground less suitable for construction, shows that the town was in real, imminent danger; and, perhaps, that it had learned from experience where its defenses were weakest.

It is unclear whether the Great Fortification originally continued all the way around the shoreline of the promontory. J.W. Shaw casts doubt on the idea, stating that the inhabitants' chief concern was probably an armed attack from the landward side.³⁷ John Caskey, however, suggests that the wall may have made a circuit around Ayia Irini.³⁸ Due to erosion, the edges of the settlement are now underwater and cannot be excavated, making it difficult to determine the true extent of the fortification.

³⁴ According to Davis, the wall "is of double thickness, one row of large blocks forming its inner face, another row its outer face. Blocks range in size up to 1.50 m. in length and up to 70 cm. in height. Some were worked into roughly rectangular shape," although most blocks "were probably used as they came from the quarries" (*Keos V*, 8).

³⁵ Caskey, "Investigations in Keos: Part I: Excavations and Explorations, 1966-1970," 374.

³⁶ Caskey, "Investigations in Keos: Part I: Excavations and Explorations, 1966-1970," 377.

³⁷ J.W. Shaw, "Bronze Age Aegean Harboursides," in *Thera and the Aegean World III: Proceedings of the Third International Congress* (London: The Thera Foundation, 1990), 423.

³⁸ Caskey, "Investigations in Keos: Part I: Excavations and Explorations, 1966-1970," 377. Davis notes that "[l]arge blocks may be seen here and there in the shallows of the periphery of the peninsula . . . but it is

Archaeological remains found on the Troullos, a hill 500 meters northwest of Ayia Irini, also point to the militaristic and defensive nature of the site. The summit of the Troullos is 65 meters above sea level and provides an excellent view of the town and surrounding ocean and, on clear days, the Greek mainland. At the top was a rectangular enclosure of 11.5 meters by 15 meters, paved with large slabs of local limestone and coarse plaster flooring; as well as two large drum-shaped structures of unknown function. Several objects, including coarse pottery, pieces of two crucibles with traces of copper, some bronze strips (razors?), obsidian chips, and stone libation tables were found at the site.³⁹ It has been debated whether the hill was used as a watchtower, a shrine, or whether its function changed over time. It seems more than likely, however, that those responsible for the building of the Great Fortification would have seen the advantage of posting sentinels on the summit of a hill with a view of the Aegean.

Yet another possible sign of the need for defense is found in the fresco fragments from the northeast bastion of the Great Fortification wall. Katherine Abramovitz has pointed out that some of these fragments show crenellated walls, an image which is “without parallel in Aegean art” (Fig. 7).⁴⁰ It is not known whether this scene represents the town of Ayia Irini, and so far crenellations have not shown up in excavation; but the inclusion of this defensive feature would fit in well with the town’s fortress-like appearance.

Malcolm Wiener has suggested at the September 13, 2008, lecture at the Onassis Cultural Center in New York City that the Great Fortification was destroyed at the end of Period V and was never fully repaired. In particular, the western sector was left exposed and a spring chamber with a staircase ascending to the town were built in this now unprotected area; and by the LM IA (Period VI), the town was “largely unfortified.” According to the archaeological reports currently available, however, there is little or no sign that the fortification walls went out of use after Period V. If anything, the walls appear to have been maintained and even strengthened. Although the walls did suffer considerable damage in late Period V -- presumably due to an earthquake -- they appear

uncertain that they belong to the fortifications. Underwater excavation might resolve this question” (*Keos* V, 15).

³⁹ Caskey, “Investigations in Keos: Part I: Excavations and Explorations, 1966-1970,” 392-94.

⁴⁰ Katherine Abramovitz, “Frescoes from Ayia Irini, Keos. Parts II-IV,” *Hesperia*, Vol. 49 (1980): 60.

to have been repaired. The southwestern part of the wall near the spring chamber, for example, “was reconstructed with a new face farther out” than the original line of the Great Fortification.⁴¹ According to Davis, this section “is at present from 60 to 70 cm. wider than the average width of the fortification wall . . . because a second facing was set as a revetment against the original.” This refacing was probably not done until Period VI or later.⁴² The northeast bastion also “show[s] evidence of rebuilding,”⁴³ and it appears that Tower ne in the northeast bastion and Tower g in the southeastern section of the wall were both built in Period VI.⁴⁴ According to Caskey, “Repairs, alterations, and additions” to the Great Fortification occurred throughout the Late Bronze Age.⁴⁵ Similarly, Jack Davis states that the fortifications “were modified considerably” in Periods VI and VII.⁴⁶

Excavations have discovered the remnants of a stairwell, probably built in Period V, leading from the Great Wall to a spring chamber in the western part of town. However, this does not mean that the fortifications were obsolete or that this stairwell left the town more vulnerable to attack. Caskey believes that, as in the case of Mycenae, Tiryns, and Athens, there would have been a cover over the stairwell, which must have been accessible through a passageway that was higher than the preserved height of the Great Fortification wall. Although evidence for this hood has not yet been found, it “would have been needed in time of siege to protect the approach to the water.”⁴⁷

By Period VII the fortification walls may not have been as crucial to Ayia Irini as they once were, as suggested by the construction of a frescoed, two-room building of unknown function outside the eastern fortification wall.⁴⁸ This structure, which may

⁴¹ Caskey, “Investigations in Keos: Part I: Excavations and Explorations, 1966-1970,” 363.

⁴² Davis, *Keos V*, 9.

⁴³ Caskey, “Investigations in Keos: Part I: Excavations and Explorations, 1966-1970,” 376.

⁴⁴ Davis, *Keos V*, 12, 15.

⁴⁵ Caskey, “Investigations in Keos: Part I: Excavations and Explorations, 1966-1970,” 363.

⁴⁶ Davis, *Keos V*, 8. It should be noted, however, that the publication of a new excavation report on Ayia Irini -- which may present a different conclusion about the condition of the Great Fortification during Periods VI and VII -- is expected in the near future, according to Dr. Wiener. This issue should thus be re-examined upon the release of this follow-up report.

⁴⁷ Caskey, “Investigations in Keos: Part I: Excavations and Explorations, 1966-1970,” 367. Also see Davis, *Keos V*, 10.

⁴⁸ According to Caskey, “This strange little building must be dated, on the evidence of the frescoes, in the time of the major settlement before the great earthquake of LMIB/LHII, but in a late phase when the fortifications no longer served an immediate military need; surely it was not placed there when it might be used as a shelter by enemies attacking the walls. . . .” The structure measured 8 by 4 meters and its walls

have been open on at least one side, would not have been built if Ayia Irini still felt vulnerable. An opposing force could too easily use the building as a hiding place and a platform from which to launch attacks. Similarly, the monumental structures of Tombs 28 and 29, to be discussed below, are also thought to date from this period. Such structures would have been built beyond the walls only when Ayia Irini's inhabitants felt confident that they would not be demolished or used in attacks by enemies.

Industry and wealth at Ayia Irini:

One question which arises from the above analysis is: why was the town of Ayia Irini threatened throughout much of its existence? What did this small settlement have that made it so attractive to others? The answer lies in large part in its proximity to Laurion, a site on mainland Greece approximately 30 kilometers away. Laurion was rich in silver, lead and copper; and researchers have found evidence for the mining of lead and silver there as early as the third millennium B.C.⁴⁹ It is clear that Ayia Irini made use of Laurion's metals. In a study by Gale, Stos-Gale and Davis, 45 metal artifacts from Ayia Irini were analyzed using lead isotope analyses. The results showed that there was a change in the source of lead and silver between Periods III and IV: during the Early Cycladic period, the origin of the metals had been equally divided between Laurion and the island of Siphnos; after this time, however, Laurion became the dominant source (Fig. 8). By the early Late Cycladic period, virtually all the lead found at Ayia Irini came from Laurion. The researchers believe that this shift occurred because the lead-silver ore on Laurion was richer and more easily accessible than that on Siphnos, and because Laurion had copper ore while Siphnos did not. There is evidence that Laurion copper was being smelted on Keos by the later Middle Bronze Age.⁵⁰

Metal-working was a flourishing industry at Ayia Irini, as illustrated by the numerous finds of crucibles, ingots, litharge, and other related instruments and byproducts. In House A, for example, approximately eleven crucibles were found in Rooms 19-21 and 25-27. Other metallurgical finds from House A include a copper ingot,

were about half a meter in thickness (Caskey, "Investigations in Keos: Part I: Excavations and Explorations, 1966-1970," 378).

⁴⁹ H.F. Mussche, et al., *Thorikos VIII. 1972/1976* (Gent: Comité des Fouilles Belges en Grèce, 1984), 151.

⁵⁰ N. H. Gale, Z. A. Stos-Gale, and J. L. Davis, "The Provenance of Lead Used at Ayia Irini, Keos," *Hesperia*, Vol. 53 (1984): 391-400.

several pieces of litharge, and a stone mould with faces for producing five different metal tools in Room 19; and a piece of copper slag in Room 26.⁵¹ Crucibles and metal waste products were found throughout Ayia Irini and on the summit of the Troullos. House L contained a courtyard with a hearth “full of bits of bronze,” and some of its rooms produced metallurgical equipment; crucibles were found in House J; and House W had a number of lead objects and pieces of litharge.⁵² The frequency with which these objects appear caused Malcolm Wiener to conclude that the entire site “specialize[d] in metallurgy.”⁵³ Similarly, Elizabeth Schofield writes that “whatever expert knowledge was required for recasting bronze . . . was shared by just about every household.”⁵⁴ It thus appears that Ayia Irini was filled with metal in both raw and finished forms -- attractive loot to marauding forces in the Aegean, and a likely source of motivation for the construction of fortification walls.

One type of metal item which may have been produced at Ayia Irini is the lead weight. According to Michailidou, the site of Ayia Irini is second only to Akrotiri in the number of lead weights found.⁵⁵ These items occur in almost every building complex of Ayia Irini and appear to have been used in the weighing of goods traded throughout the Aegean, such as textiles and metals.⁵⁶ Similar types of weights have been found on Crete, Thera, Melos, and other islands in the Minoan sphere of influence. There seems to have been agreement between the weight systems used by Ayia Irini and Akrotiri: one of the lead weights from Akrotiri studied by Michailidou weighed 65.5 grams, which is exactly the basic unit of weight proposed by Caskey for Ayia Irini.⁵⁷ Michailidou sees a

⁵¹ W. Willson Cummer and Elizabeth Schofield, *Keos III. Ayia Irini: House A* (Mainz: Philipp von Zabern, 1984), 38. Litharge is a lead oxide produced by the cupellation of silver from silver-bearing ores. Droplets of lead and several fragments of litharge have also been found in MH layers at Thorikos (H.F. Mussche, et al., *Thorikos III* (Brussels: Comité des Fouilles Belges en Grèce, 1967), 20-24).

⁵² Elizabeth Schofield, “Evidence for Household Industries on Thera and Kea,” in *Thera and the Aegean World III: Proceedings of the Third International Congress* (London: The Thera Foundation, 1990), 209.

⁵³ Wiener, “The Isles of Crete?” 133.

⁵⁴ Schofield, “Evidence for Household Industries,” 209.

⁵⁵ A. Michailidou, “The Lead Weights from Akrotiri: The Archaeological Record,” in *Thera and the Aegean World III: Proceedings of the Third International Congress* (London: The Thera Foundation, 1990), 407.

⁵⁶ Schofield, “Evidence for Household Industries,” 210.

⁵⁷ J. Caskey, “Lead Weights from Ayia Irini in Keos,” *ADelt* Vol. 24 (1969): 103-4. For further analysis of the weights found at Ayia Irini, see the eighth volume in the series detailing the Ayia Irini excavations: *Keos VIII. Ayia Irini: The Balance of Weights: An Analysis of Weight Measurement in Prehistoric Crete and the Cycladic Islands* (Mainz: P. von Zabern, 1992), by Karl Petruso.

“strange coincidence” between their weight measurement scales, which strongly suggests that they were part of the same trading network.⁵⁸

Metal-working was far from the only industry practiced at Ayia Irini. As Elizabeth Schofield says, “Ayia Irini can be viewed as one big ‘workshop.’”⁵⁹ She finds evidence of many other industries in House A, including pigment-grinding, antler-working, lapidary activity, manufacture of aromatics, and textiles (Fig. 9). The large number of industrial objects found in the house point to the prominence of these activities. House A has produced, for example, over 70 loomweights; 25 pounder-grinders; 260 pieces of obsidian;⁶⁰ and more than 8,000 conical cups, which had a variety of domestic, ceremonial and/or industrial uses.⁶¹ The house was also a center for the manufacture of stone vessels, to judge by the four cores of local marble from Room 21, an unfinished rhyton from Room 16, and unfinished jar fragments from Room 14.⁶² House L contained fireboxes, materials associated with the grinding of pigments, and over a thousand conical cups. More fireboxes, conical cups, and miniature jugs were found in House W.⁶³

The working of obsidian was quite prevalent throughout the settlement, as indicated by the numerous finds of obsidian flakes and fragments.⁶⁴ The stone was not native to Keos and was probably imported from the nearby Cycladic island of Melos,⁶⁵ although a few samples appear to have come from the eastern Aegean island of Giali.⁶⁶ The presence of a thriving obsidian industry provides further evidence for Ayia Irini’s involvement in the Aegean trade network. Bone awls or scrapers found throughout Ayia

⁵⁸ Michailidou, 415. Elizabeth Schofield states that these balance-weights “may be the most powerful argument for organized trade” in the Bronze Age Aegean world (“The Western Cyclades and Crete,” 21).

⁵⁹ Schofield, “Evidence for Household Industries,” 209. Schofield notes that domestic and industrial activities seem to have taken place in the same space throughout Ayia Irini, and that it is hard to identify whether some artifacts, such as tripod vessels, had an industrial or a domestic function (201-02). The prevalence of many different types of industry throughout the site is in contrast to places such as Akrotiri, where there is more differentiation of function between various buildings. For example, the West House contains over 450 loom weights, more than half the total number from entire site; and evidence of metallurgy has been found only in Block Delta and Block Gamma and Room 4 of the West House (Wiener, “The Isles of Crete?” 134).

⁶⁰ Schofield, “Evidence for Household Industries,” 208.

⁶¹ Wiener, “The Isles of Crete?” 137. For an analysis of the uses of conical cups, see *ibid.*, 137-39.

⁶² Cummer and Schofield, 38-39.

⁶³ Schofield, “Evidence for Household Industries,” 209.

⁶⁴ For an analysis of the working of obsidian at Ayia Irini, see J. Davis, *Keos V*, 90-95.

⁶⁵ Caskey, “Investigations in Keos: Part I: Excavations and Explorations, 1966-1970,” 396.

⁶⁶ J.L. Davis, et al., “Keos and the Eastern Aegean the Cretan Connection,” *Hesperia*, Vol. 52 (1983): 361.

Irini may have been related to leather working.⁶⁷ Pounder-grinders and mortars and pestles probably had a number of domestic uses, including cooking, but were apparently also used in the grinding of pigments and other industrial activities.⁶⁸

Fireboxes are a type of pottery with a round, hollow body, usually perforated by holes on the bottom.⁶⁹ More fireboxes have been found at Ayia Irini than at any other Bronze Age site.⁷⁰ According to Hara Georgiou's book *Specialized Domestic and Industrial Pottery*, the sixth volume in the series detailing the Keos excavation, the largest number of fireboxes (19) came from House A, but they have been found in nearly every excavated part of the settlement.⁷¹ In total, the site has produced at least 90 examples. Only ten have been found at Akrotiri,⁷² while the entire island of Crete has produced approximately 130 fireboxes.⁷³ These vessels seem to have been an Aegean phenomenon, with no known examples from Egypt or the Near East and only two from mainland Greece.⁷⁴ Their precise function has been debated, with some scholars claiming that they were used in the manufacture of aromatics and others suggesting they were incense burners.⁷⁵ Georgiou's analysis of materials found inside fireboxes revealed that they were pitch-soaked burls or leaves, which would "certainly not have been very pleasant to smell."⁷⁶ It is therefore more likely that they were used for industrial purposes, in the distillation of substances to make aromatics.⁷⁷

Elizabeth Schofield suggests that the Keians would have imposed duties on exports and imports and collected transit dues, since "[t]he imposition of duties upon

⁶⁷ Schofield, "Evidence for Household Industries," 205.

⁶⁸ Schofield, "Evidence for Household Industries," 205. According to Schofield, "An unpublished mortar pestle at Ayia Irini is encrusted with red colouring matter" (205).

⁶⁹ Hara Georgiou, *Keos VI. Ayia Irini: Specialized Domestic and Industrial Pottery* (Mainz: Philipp von Zabern, 1986), 4.

⁷⁰ Schofield, "Evidence for Household Industries," 204; Georgiou, 5.

⁷¹ See Georgiou, 5-7, for a description of how many fireboxes were found in each area.

⁷² Wiener, "The Isles of Crete?" 134.

⁷³ Georgiou, 7.

⁷⁴ Georgiou, 7.

⁷⁵ Wiener, "The Isles of Crete?" 133-34; Schofield, "Evidence for Household Industries," 204.

⁷⁶ Georgiou, 11.

⁷⁷ While there seems to have been large scale production of fireboxes, some of which may have been exported, it is not clear whether Ayia Irini produced other types of pottery for trade. Cummer and Schofield refer to the "sheer nastiness" of the local clay, which would make it an unlikely product for export (Cummer and Schofield, 145); J. Davis, however, "feels that Kean clay covered with a yellow slip is not unattractive" (Wiener citing personal communication with Davis, "The Isles of Crete?" 136-7).

foreign traders is said to be almost as old as trade itself.”⁷⁸ Transit dues such as “tolls, harbour-dues, dock charges, [and] the servicing of ships’ crews” would have allowed the Keians “to derive a very substantial income” in addition to the one derived from their industries.⁷⁹ Although there was no standard of currency in the Bronze Age Aegean, these dues could have been collected in non-monetary ways, such as by taking a percentage of the goods being traded.

Some Keians were evidently prospering as early as Period IV, the time of the building of the old fortification wall. The presence of an elite class of individuals is illustrated by tombs such as Grave 24 (old number 16),⁸⁰ a cist grave containing the jar burial of a girl about twelve years of age. Among the objects found in this tomb were a gold diadem of very fine workmanship, imported pottery, and a necklace with beads of gold, carnelian, and other precious stones.⁸¹ Of the twenty-five Period IV graves found at the site, eight had metal jewelry, four had gold, and two or three had silver.⁸² According to John Overbeck, these graves appear to be richer than mainland tombs of the same period. At least two diadems, and possibly part of a third, have been found at the site. The finest of the diadems -- that of Grave 24 -- is an oval band tapering at the ends, comparable to Middle and Late Helladic diadems from Aegina (Fig. 10).⁸³ There is no reason to suppose that this diadem is not a local Cycladic product, since the repoussé and

⁷⁸ Schofield, “Western Cyclades and Crete,” 19.

⁷⁹ Schofield, “Western Cyclades and Crete,” 19.

⁸⁰ The old numbers for Ayia Irini tombs represent the original numbers assigned to them by John Caskey and his team; the tombs have since been re-numbered in publications such as John Overbeck’s *Keos VII. Ayia Irini: Period IV* (Mainz: Philipp von Zabern, 1989).

⁸¹ J. Caskey, “Excavations in Keos, 1964-1965,” *Hesperia*, Vol. 35 (1966): 367; J. Caskey, “Investigations in Keos: Part II: A Conspectus of the Pottery,” 384.

⁸² Tombs dating from later periods at Ayia Irini have not been extensively published, so it is difficult to compare the relative wealth of graves over time. In addition, relatively few adult burials from later periods have been found, and it is thought that these graves may be located further from the town, where excavations have not yet taken place. According to J. Davis, “Certainly most burials of Period V and of the Bronze Age in general remain to be discovered. The adult cemeteries may well have been located inland from the settlement in the nearby hills or fields. It is also quite possible that some burials near the settlement, for adults and infants, are now under water” (*Keos V*, 80). Tombs 28 and 29 were large, well-built chamber tombs, possibly from Periods V or VI, and probably contained a number of valuable grave goods before being robbed.

⁸³ See, for example, the descriptions of diadems found in tombs on Aegina by Imma Kilian-Dirlmeier, *Alt-Ägina IV.3: Das mittelbronzezeitliche Schachtgrab von Ägina* (Mainz: Philipp von Zabern, 1997), 54-57; and Reynold Higgins, “A Gold Diadem from Aegina,” in *The Journal of Hellenic Studies*, Vol. 107 (1987): 182.

openwork techniques used to make it were known since the Early Cycladic period.⁸⁴ As can be seen by the wealth of the graves, Ayia Irini was home to a propertied class whose goods may have been the object of raids on the settlement.

Ayia Irini thus made a tempting target in the Bronze Age Aegean. It was stocked with metals, textiles, aromatics, and many other kinds of desirable raw and finished materials. A significant number of its inhabitants were well-off and owned jewelry and other luxury items. Its proximity to the wealth of resources on the mainland and its prime position for the collection of transit dues also made it ripe for conquest. The kidnapping of individuals for use as slaves may also have been a motive. In this light, the creation and build-up of massive fortifications around the settlement makes perfect sense.

Threats to Ayia Irini:

The presence of fortifications leads to another question: whom were the Keians afraid of? Whom were the walls trying to keep out? John Caskey suggests bands of pirates who roamed the Aegean,⁸⁵ and this is certainly a strong possibility. There may have been another, larger, more organized threat to the safety of Ayia Irini, however. The site of Thorikos, just north of the mines of Laurion on the mainland, was home to a thriving community in the Middle and Late Bronze Age.⁸⁶ There is evidence of an extensive MH/LH I-II settlement on the summit and in the saddle of Velatouri Hill at Thorikos, which overlooks the Aegean and has a view of Keos.⁸⁷ A promontory on the shore, which would have been the obvious location for a harbor town, is now buried under modern industrial facilities and has not been excavated.⁸⁸

Several monumental tombs have been found between the two summits of Velatouri Hill. Tomb V is one of the earliest of these structures and was probably built by the closing stages of the MH period (Fig. 11). It consists of a rectangular pit with a

⁸⁴ Overbeck, 202-04.

⁸⁵ Caskey, "Notes on Keos and Tzia," 322.

⁸⁶ According to Nikolas Papadimitriou, "It is not improbable . . . that, during the early stages of the LBA, Thorikos provided other Mainland centres with pure metal (copper, lead and silver ready for metal-working) in return for other prestigious goods" (*Built Chamber Tombs of Middle and Late Bronze Age Date In Mainland Greece and the Islands* (Oxford: John and Erica Hedges Ltd., 2001), 99). There are signs that the metal deposits of Laurion/Thorikos were being mined as early as the Early Helladic period (see the report by P. Spitaels in Mussche, et al., *Thorikos VIII* (Gent: Comité des Fouilles Belges en Grèce, 1984)).

⁸⁷ Papadimitriou, 91.

⁸⁸ Wiener, "The Isles of Crete?" 147.

length of 7.8 meters and width of 5.8 meters, in the center of a tumulus with a diameter of 17.5 meters and a height of up to 2 meters.⁸⁹ This tomb was built somewhat earlier than Tomb IV, an oblong tholos tomb with even larger dimensions, which may date to the LM IA period (Fig. 11). The central chamber of Tomb IV has a length of 9.3 meters, a width of 3.5 meters, and a maximum height of 5.3 meters; its stomion is 2.75 meters in length, 1.4 meters in width, and 2 meters in height; and its dromos has a length of 7 meters and a width of 3 meters. The covering mound of Tomb IV has an impressive diameter of 30 meters.⁹⁰ Both tombs were plundered in ancient times, although some fragments of grave goods have been found in Tomb IV. These items include sherds of Mycenaean vases, part of a small sword, a griffin seal, javelin points, and a number of golden objects which are strongly Mycenaean in appearance.⁹¹ Some of these golden items, such as a pendant in the form of a butterfly or bee and two pieces of jewelry with a floral motif, are virtually identical to objects found in Grave Circle A at Mycenae (Fig. 12).⁹²

A slightly later round *tholos* tomb, known as Tomb III, was also found on the summit of Velatouri. The tomb measures 9.25 meters in diameter, with a dromos that is 8.2 meters long. This tomb, which has been compared to *Tholos A* of Kakovatos in the Peloponnese, contained a gold ‘figure-eight’ shield-shaped appliqué, three stone arrowheads, a flattened golden sheath or scabbard, bronze balance pans from a scale, several lead disc weights including one large painted weight, a white marble lamp, an ivory pyxis with spiral and foliate bands, a Palace Style jar, four Psi-type figurines, and other pieces of jewelry, many of which have mainland parallels (Fig. 12).⁹³ The tomb has been dated to the end of LH I/ early LH II and contained at least five inhumations.⁹⁴

These monumental tombs on the summit of the hill attest to the presence of a powerful monarchy at Thorikos. They are of massive proportions and could only have been built by a culture for whom warfare was a way of life, and whose leaders demanded

⁸⁹ Papadimitriou, 92-93; Kilian-Dirlmeier, 88-91. Papadimitriou believes that this tomb was used for multiple inhumations and would not have been covered with the tumulus until all the burials had been completed (93).

⁹⁰ Papadimitriou, 93-94; Olivier Pelon, *Tholoi, Tumuli, et Circles Funéraires* (Athens: École française d’Athènes, 1976), 225. This tholos is listed as ‘Tholos A’ in Pelon’s book.

⁹¹ Mussche, et al., *Thorikos VIII. 1972/1976*, 17-55.

⁹² Mussche, et al., *Thorikos VIII. 1972/1976*, 47.

⁹³ H.F. Mussche, et al., *Thorikos IV-VI* (Brussels: Comité des Fouilles Belges en Grèce, 1969), 77-97.

⁹⁴ Mussche, et al., *Thorikos IV-VI*, 100.

and received total obedience. According to Jean Servais, the author of a series of reports on the excavations at Thorikos, the construction of these tombs would have required a huge amount of manpower. Their size, appearance, manner of construction, and the fragmentary remains of luxurious grave goods show without a doubt that they were royal tombs: “Tout cela révèle bien une façon de monarque.”⁹⁵ The presence of a fragmentary sword and javelin points in Tomb IV and of a golden sheath and arrowheads in Tomb III confirm that we are dealing with a militaristic culture. The *tholos* architecture of Tombs IV and III and the mainland-style grave goods found in them also prove that Mycenaean civilization was well-entrenched here. As Robin Barber states, the *tholos* tomb is a symbol of Mycenaean authority, and its presence shows the “extension of Mycenaean influence” in Bronze Age Greece.⁹⁶ Jeremy Rutter notes that the use of the *tholos* tomb on the mainland “is usually restricted in its use to members of the uppermost class in society, the kings, princes, and major ‘barons’ and their immediate families.” Thus, sites where *tholoi* are found “are to be understood as the seats of political power in the Mycenaean period.”⁹⁷

The magnitude of these structures becomes even more apparent when they are compared to the largest graves found at Ayia Irini, which are approximately contemporary with the Thorikos tombs (Fig. 13). Grave 28 (old number 40) is a chamber tomb 2.25 meters long and 1.10 meters wide, surrounded at least on one side by a curving row of small slabs set upright. The walls of the chamber are well built but bedded at different depths. There was undoubtedly a visible tumulus above the grave, with a diameter of approximately 5 meters, and Caskey suggests that there may have been a spiral ramp leading up to the top of the tumulus. Its plan is remarkably similar to that of Thorikos Tomb V, but it is about a third of the size. The grave had been robbed and only the bones of an adult male and a plain grey bowl have been found.⁹⁸ Its location next to the town’s main entrance is indicative of the great regard with which the inhabitants held

⁹⁵ Mussche, et al., *Thorikos VIII. 1972/1976*, 64-67.

⁹⁶ Robin Barber, “Hostile Mycenaean in the Cyclades?” in *Polemos: Le contexte guerrier en Egée à l’âge du Bronze*, ed. Robert Laffineur (Liège: Université de Liège, 1999), 136-137.

⁹⁷ Jeremy Rutter, “Lesson 19: Mycenaean Tholos Tombs and Early Mycenaean Settlements,” *Prehistoric Archaeology of the Aegean*, 26 June 1997, <http://projectsx.dartmouth.edu/history/bronze_age/> (1 August 2008).

⁹⁸ Papadimitriou, 134; Caskey, “Investigations in Keos: Part I: Excavations and Explorations, 1966-1970,” 378-79.

the dead man, probably an aristocratic warrior.⁹⁹ The tomb may have been built in Period V or VI but the tumulus was probably constructed later, in Period VII.

Tomb 29 (old number 58) is a large stone-built chamber, northeast of tower G, measuring 2.5 meters in length and 1.75 meters in width (Fig. 13).¹⁰⁰ It was also robbed and only ten small, non-descript pots were found inside. The tomb was accessed through a vertical shaft and was covered by large slabs of stone.¹⁰¹ Like Tomb 28, the occupant of this tomb was singled out for a display of great honor and respect, such as one would expect only for a warrior and/or a king. His tomb was also positioned near the main entranceway, on the opposite side from Tomb 28. Wiener suggests that it was surrounded by a peribolos wall, or grave circle, part of which is still visible. Like the tumulus of Tomb 28, this wall was probably built later than the tomb itself, some time in Period VII.¹⁰² Tombs 28 and 29 would have been clearly visible to anyone entering Ayia Irini, silent tributes to the bravery of the dead men, perhaps serving as guardians of the town and warnings to those who had thoughts of attacking it.¹⁰³ John Caskey speculates that they were built before the erection of the Great Fortification, but Malcolm Wiener believes both tombs are of Period VI construction based on the pottery finds.¹⁰⁴ The age of the tombs is still a matter of debate.

We are thus confronted with two sets of warrior tombs from approximately the same time period (late MBA/ early LBA), located on settlements within site of one another. The tombs of Thorikos were constructed on a much grander scale than those of Ayia Irini. The *tholoi* and their grave goods have a distinctly Mycenaean character and attest to the presence of a powerful monarchy at the mainland site. The much smaller tombs of Ayia Irini also point to the existence of an esteemed, elite class of warriors on the island. These were both warlike societies, and Thorikos was extremely close to the resources that Ayia Irini wanted -- namely, metals. The island settlement was heavily

⁹⁹ The placement of this tomb outside Ayia Irini's fortification wall next to the main gate is comparable to the positioning of the Middle Helladic shaft grave of a warrior at Aegina, as described by Kilian-Dirlmeier (13-67).

¹⁰⁰ Papadimitriou, 133.

¹⁰¹ Caskey, "Investigations in Keos: Part I: Excavations and Explorations, 1966-1970," 379; Caskey, "Investigations in Keos: Part II: A Conspectus of the Pottery," 386; Wiener, 139.

¹⁰² Wiener, "The Isles of Crete?" 139.

¹⁰³ Wiener notes that neither Grave 28 nor 29 is of Minoan type; he suggests they have more in common with mainland tombs ("The Isles of Crete?" 139).

¹⁰⁴ Wiener, "The Isles of Crete?" 138.

fortified while the mainland one, as far as we know, was not. This set of circumstances suggests that the small town of Ayia Irini felt threatened by the powerful monarchy that was developing on the mainland, and that its fortification walls were constructed at least in part to keep out warriors from Thorikos.

Minoanization at the popular level:

It thus appears that Ayia Irini was not a Mycenaean colony, despite its proximity to a formidable mainland settlement. The ability of Ayia Irini to maintain its independence from the mainlanders would have been nearly impossible if it did not have support from some other source -- a power that could compete with the resources and manpower available in and around Thorikos. The Minoan empire would be an obvious candidate for this source; and indeed, archaeological finds from the island reveal that, beginning in the later phases of Period V or early Period VI, there was a major rise in Cretan influence on Keos. One need merely look at the pottery sherds from Period V to see that the culture of Ayia Irini at that time was not yet Minoanized (Fig. 14).¹⁰⁵ Although some of the local pottery seems to have been modeled after Cretan shapes -- such as Keftiu cups¹⁰⁶ -- the vast majority of it is heavy, crude, and unadorned. The only known imports from Crete during Period V include a Cretan seal, two stone vases, and two igneous stones.¹⁰⁷

By the beginning of Period VI, however, there are signs of Cretan culture in nearly all aspects of life at Ayia Irini. Georgiou notes that there was a significant “increase in Minoan or Minoanizing imports and the adaptation of Minoan shapes into the local ceramic repertory” at this time, during the early LBA.¹⁰⁸ Malcolm Wiener observes that at Ayia Irini “in LC I the kitchen, dining and drinking vessels . . . are of standard Minoan shape,” the most common of which “are the omnipresent tripod leg, coarse-ware cooking pot and (to whatever extent it was used for eating and drinking) the conical cup.”¹⁰⁹ This trend is also seen in Davis and Cherry’s study of the area around

¹⁰⁵ See, for example, the fifth volume of the series detailing the Keos excavations, *Keos V. Ayia Irini: Period V*, by J. Davis, Plates 45-68

¹⁰⁶ Davis, *Keos V*, 86.

¹⁰⁷ Davis, *Keos V*, 103.

¹⁰⁸ Georgiou, 52.

¹⁰⁹ Wiener, “The Isles of Crete?” 135. For an analysis of these pottery types, see Davis, *Keos V*, 105.

Ayia Irini, which revealed that the “Kean hinterland . . . contains the same Minoanizing ordinary cooking, dining and storage vessels in local coarse ware as Ayia Irini itself” Minoanization of local pottery appears to have been underway in the later phases of Period V, but by “Period VI (LM IA) indigenous ceramic development [had] almost disappear[ed]. . . .”¹¹⁰ The inhabitants of Ayia Irini had incorporated Minoan ceramic types into the most basic levels of daily life, and local craftsmen were using Minoan methods of production.

Minoanization was taking place in other areas as well. In the LC I period, Ayia Irini seemed to “adapt the Minoan technique of weaving, as indicated by the appearance in large numbers of the Minoan-type discoid loom weight.”¹¹¹ Before this time, Keians had used two fundamentally different weaving methods; but now only the Minoan warp-weighted loom was being used. The prevalence of fireboxes at the settlement was another sign of Minoanization. As has been noted above, these vessels were an Aegean phenomenon, and their distribution was “limited almost entirely to Crete and Minoanized sites in the Cyclades and Dodecanese, and to the Neopalatial period.”¹¹²

The frescoes which decorated many buildings of Ayia Irini in the LBA also took on a Minoan appearance. The Bluebird fresco, fragments of which were found in Rooms 30 and 31 of House A, contained representations of over twenty birds (Fig. 15). The style of this fresco -- in which the figures of the birds are of utmost importance and occupy a long, narrow space -- belongs to the same tradition as the Caravanserai partridge painting in Knossos; and the depiction of this species of bird recalls the bluebird imagery from the House of Frescoes, also in Knossos.¹¹³

Fragments of a dolphin fresco were found in House J in the western sector of town, consisting of the figures of six to nine dolphins set against an empty background. The subject matter and style of this fresco is reminiscent of the flying fish fresco from Phylakopi, as well as the dolphin fresco from the so-called Queen’s Megaron in Knossos.

¹¹⁰ Wiener, “The Isles of Crete?” 135.

¹¹¹ Wiener, “The Isles of Crete?” 139.

¹¹² Wiener, “The Isles of Crete?” 133.

¹¹³ Katherine Coleman, “Frescoes from Ayia Irini, Keos. Part I,” *Hesperia*, Vol. 42 (1973): 293.

Coleman suggests that the Keian dolphin fresco, which shows little interest in naturalistic detail, is a simplified form of a design ultimately derived from Crete.¹¹⁴

Remains of another fresco were found in the rooms of the Northeast bastion of the Great Fortification. It is thought that these rooms served as military barracks for the guards stationed there. Like the bluebird and dolphin frescoes, the Northeast bastion painting shows remarkable similarities to frescoes from the Minoan empire. It represents a hillside scene with over fifty individuals, mostly men and a handful of women.¹¹⁵ The small scale of the figures resembles the Cretan miniature style. As in Minoan frescoes, the men have red skin and the women, who wear long skirts and have elaborately dressed hair, have white skin. The male figures are dressed in a combination of mainland and Cretan styles, some of them wearing Minoan loincloths and others Greek himations and chitons, an image which perhaps “reflects a mixed cultural environment” at Ayia Irini.¹¹⁶ According to Abramovitz, one man holds his hand in front of his face in what appears to be a Minoan religious gesture.¹¹⁷ As discussed above, the fresco represents a number of edifices with crenellated walls, which may or may not represent the walls of Ayia Irini (Fig. 7). A variety of activities take place in the scene: men with dogs are hunting deer; a boat with dolphin designs on its hull steers into a port; two women are dancing; men engage in a procession; and three or four men appear to be cooking something in a cauldron (Fig. 16).¹¹⁸ This painting bears an obvious similarity to the miniature frescoes in the West House at Akrotiri, which also depict processions, hunting, ships at sea, and other scenes of festivity.¹¹⁹ Based on the iconography and its similarity to Cretan and Theran imagery, Abramovitz tentatively dates the fresco to the LM IA period.¹²⁰

The incised image of a helmeted soldier on a fragmentary stone slab found at Ayia Irini provides further evidence of Minoanization (Fig. 17). The design of the

¹¹⁴ Coleman, 294-6

¹¹⁵ Abramovitz, 57.

¹¹⁶ Abramovitz, 69-70.

¹¹⁷ Abramovitz, 58-59.

¹¹⁸ For analysis of the cooking scene see J. Shaw, “Bronze Age Aegean Harboursides,” 430; and James Wright, “A Survey of Evidence for Feasting in Mycenaean Society,” *Hesperia*, Vol. 73 (2004): 156-60. Wright also notes a similarity between the representations of feasting and hunting at Ayia Irini and the later palace frescoes at Pylos (158-60).

¹¹⁹ Davis, “Review of Aegean Prehistory I,” 710.

¹²⁰ Abramovitz, 69-70. Abramovitz believes that the fresco lacks the “loving attention” to detail and variation seen in Minoan painting, however.

helmet, with its horizontal tiers and knobbed top surmounted by feathers or a horse tail, is strongly reminiscent of the helmets worn by warriors in the miniature frieze of the West House. This similarity may suggest that soldiers from the Minoan empire were involved in guarding the settlement at some point, or perhaps that local men were being supplied with armor made in the Minoan style. The incised slab was found out of context, when a modern wall near Area J was being removed, and thus we cannot assign it to any particular period or structure in the settlement.¹²¹ Perhaps it was part of the grave stela of a warrior; but this is mere speculation.

Another sign of Minoan presence at Ayia Irini is the occurrence of Linear A throughout the settlement. Linear A signs first appeared as potters' marks on local pottery during Period V.¹²² In Room 21 of House A, a sherd was found with Linear A script bearing a sign which also appears in Linear B as a unit of wine, suggesting that somebody was keeping track of House A's wine stores.¹²³ Three objects inscribed in Linear A came from Area N,¹²⁴ and a lamp with a Linear A inscription was found in an unspecified part of town.¹²⁵ The lead weights discovered in most of the building complexes, which appear to correspond to the Minoan system of measurement, are another sign of Minoanization. According to Davis, almost all of these lead weights have come from Period VI and VII contexts.¹²⁶

The massive amounts of conical cups found throughout the settlement also point to wide-spread Minoan influence. As has been mentioned, over 8,000 conical cups were discovered in House A alone, and thousands more were found in other houses. These cups probably served a variety of functions and were manufactured and used in huge numbers throughout the Minoan world. According to Coldstream and Huxley, "a super abundance of conical cups, so it appears, was essential to the well-being of any Minoan society in this period."¹²⁷

¹²¹ Caskey, "Excavations in Keos, 1964-1965," 375. Caskey's impression is that "the soldier is a Mycenaean Greek, rather than a Minoan," but he admits that this is speculation (375).

¹²² Davis, *Keos V*, 85.

¹²³ Caskey, "Excavations in Keos, 1963," 325.

¹²⁴ Caskey, "Excavations in Keos, 1964-1965," 365.

¹²⁵ Caskey, "Investigations in Keos: Part II: A Conspectus of the Pottery," 391.

¹²⁶ Davis, *Keos V*, 89.

¹²⁷ J.N. Coldstream and G.L. Huxley cited in Wiener, "The Isles of Crete?" 137.

The number of vessels imported from Crete and other parts of the Minoan empire rose dramatically in Periods VI and VII. Malcolm Wiener notes that in almost every deposit and building at Ayia Irini, “the proportion of imported, Minoanizing and local pottery in each deposit and building is similar. . .”¹²⁸ Schofield has estimated that 8-9% of the total pottery in House A from the Late Cycladic period was imported, although this figure includes Mycenaean imports as well as Minoan (Fig. 18).¹²⁹

The religion of Ayia Irini also appears to have been Minoanized. Period VI saw the beginning of the production of three-quarter life-size female terracotta statues for the Temple, located next door to House A (Fig. 19). These statues, many of which have their hands on their hips as if they are dancing, belong to the same tradition as the much smaller female figurines and so-called Snake Goddesses found throughout Bronze Age Crete. They wear Minoan-style long skirts and bodices which leave their breasts exposed, their hair is long and elaborately arranged, and their faces and postures are expressive of some form of ecstatic spirituality. By the end of Period VII, the Temple may have contained close to fifty of these statues.¹³⁰ Also discovered in the Temple was a bronze statuette of a saluting male warrior, which was surely imported from Crete no later than the LM IB period (Fig. 19).¹³¹

Further support for the integration of Ayia Irini into the Minoan empire and its trade network can be provided by the study of metals found outside of Keos. Through lead isotope analysis and other methods, Stos-Gale and Gale have shown that Laurion metal found its way to Crete, Melos, Thera, and a number of other islands. The vast majority of bronze objects analyzed from the Late Minoan Unexplored Mansion at Knossos, for example, were made of copper from Laurion.¹³² Most of the samples of lead and litharge from Akrotiri and Phylakopi also came from there.¹³³ Of the nine

¹²⁸ Wiener, “The Isles of Crete?” 137.

¹²⁹ Schofield, “The Western Cyclades and Crete,” 18.

¹³⁰ Caskey, “Notes on Keos and Tzia,” 323.

¹³¹ Caskey, “Excavations in Keos, 1963,” 328.

¹³² Z.A. Stos-Gale and N.H. Gale, “The Role of Thera in the Bronze Age Trade in Metals,” in *Thera and the Aegean World III: Proceedings of the Third International Congress* (London: The Thera Foundation, 1990), 80.

¹³³ Stos-Gale, “The Role of Thera in the Bronze Age Trade in Metals,” 87.

bronzes found at Akrotiri, six contained Laurion copper. And a significant amount of Laurion lead appears in finds from Crete, Thera and Melos.¹³⁴

Central Authority:

We thus have evidence for the spread of Minoan culture at the most basic levels of Keian society, but what about the upper levels? Were the Minoans playing an active role in the affairs of the settlement? If so, what was the degree of their involvement?¹³⁵ Who controlled Ayia Irini? We may attempt to answer these questions by looking for evidence of a central authority. Surely there must have been some governing force at work. Large scale public projects such as the construction and strengthening of the fortification walls, the creation of a city-wide drainage system, and the paving of roads in the town all point to some individual or group who could make decisions and round up laborers and raw materials. As Malcolm Wiener says, “Fortification walls and/or town drainage systems at Ayia Irini, Phylakopi . . . and Akrotiri provide evidence of communal planning.”¹³⁶

The construction of the fortification wall has already been discussed. In LC I (Period VI), a drainage system consisting of a network of stone and terracotta drains was put in place beneath the paving stones of Ayia Irini’s streets.¹³⁷ Some of these pipes were linked to upstairs rooms in Areas L and M, and at least two rooms in House A had sluices leading out into covered drains in the alleys. The drainage system was used not only for indoor plumbing but also to carry off rainwater that would otherwise flood cellars and spoil goods.¹³⁸ The presence of tablets and objects with inscriptions in Linear A, a Cretan written language that seems to have been used by administrative figures to keep track of goods, also points to the existence of a central authority.

¹³⁴ Wiener, “The Isles of Crete?” 148.

¹³⁵ J.W. Shaw, in attempting to define the nature of the Minoan ‘Thalassocracy,’ lists a range of possibilities for Minoan involvement in Bronze Age settlements: “Minoan rule over an indigenous population, simple Minoan presence (via a limited number of technicians, settlers, traders), a Minoan overlay on an indigenous population, a Minoan trading post or trading partner, a simple Minoan contact or . . . no Minoan contact at all” (Shaw, “Consideration of the Site of Akrotiri as a Minoan Settlement,” in *Thera and the Aegean World I. Papers Presented at the Second International Scientific Congress* (London: The Thera Foundation, 1978), 430).

¹³⁶ Wiener, “The Isles of Crete?” 140.

¹³⁷ Wiener, “The Isles of Crete?” 140.

¹³⁸ Caskey, “Investigations in Keos: Part I: Excavations and Explorations, 1966-1970,” 390-91.

House A is the most likely location for a central authority in Ayia Irini for a number of reasons: it was almost certainly the largest building in the town; it had the greatest number of fine imported ceramics and other luxury items; it had the most impressive architectural features, such as a lightwell, a columned hall, and flushing toilet; and its entrance was in the Plateia, or public square, directly down the road (Avenue A) from the town's main entranceway (Fig. 20).¹³⁹ This entranceway, and the road which extended from it, was nearly three meters wide and was by far the widest path in Ayia Irini.¹⁴⁰ The approach to House A from outside the walls of the town must have been an impressive sight: the visitor, first passing between the tumulus of Tomb 28 and the grave circle wall of Tomb 29, would be confronted by a wide portal with a threshold of massive stone slabs, surrounded by a high fortification wall with near-cyclopean masonry; straight ahead of him, nearly twenty meters away, was the two-storey, gargantuan structure of House A, with large stone slab steps leading up to it from the Plateia.

House A was significantly larger than most houses in Akrotiri and on Crete. This fact is even more striking when we consider that Ayia Irini was far from the center of the Minoan empire. We would expect the construction of such a large building to take place on or near Crete, where resources and labor would presumably have been more readily available -- not in a small town on a sparsely-inhabited island, where the rounding up of materials and workers would have been a much more difficult process. In addition, space for construction within the fortification walls was extremely limited, and the decision to build such a large structure could not have been taken lightly. From this we can deduce that House A was no ordinary house, but the residence of a public figure who played an important role in the affairs of Ayia Irini.

House A:

House A is an extraordinarily complex structure and was almost certainly the largest building in Ayia Irini (Fig. 20). It measures more than 37 m. long in its greatest

¹³⁹ Similarly, Cummer and Schofield state that “[t]he prominent situation, the direct entrance from the main gate of the town, and the sheer size of the building combine to mark it as the most important house of the LBA town” (41).

¹⁴⁰ Caskey, “Investigations in Keos: Part I: Excavations and Explorations, 1966-1970,” 377.

dimension from west to east, and 22 m. wide.¹⁴¹ Its area is somewhat less than 814 square meters, however, since it is a polygonal structure and tapers off on the western side. Its actual area is somewhere in the range of 600-650 square meters.¹⁴² In comparison, the West House at Akrotiri is approximately 170 square meters, while Xeste 3 is approximately 345 square meters.¹⁴³ Cummer and Schofield describe it as a mansion and state, “No other building on the site approaches [House A] in size and complexity; and indeed the number of contemporary buildings that can rival it is not large.”¹⁴⁴ The land on which House A sits had evidently been occupied since the Early Bronze Age.¹⁴⁵ The House itself, however, was built in stages beginning in Period V and ending in Period VII.¹⁴⁶

Excavators uncovered thirty-nine rooms in House A, many of which are deep basement rooms into which the upper floors and their contents had fallen during the earthquake at the end of Period VII.¹⁴⁷ Since the upper levels and their doorways are not preserved, it is sometimes unclear how rooms were connected and whether all thirty-nine belonged to one household unit. Cummer and Schofield, who wrote a book on House A as the third volume in the series detailing the Keos excavations, “consider it likely that the Western Quarter” -- that is, Rooms 1-11 -- “comprised two or three building-units separate and distinct from House A proper.”¹⁴⁸ They reach this tentative conclusion based on architectural and stratigraphic evidence and the supposed functions of the rooms. For example, Rooms 7, 8, 10 and 11 were more than half a meter below the ground floors of any of the surrounding rooms (Fig. 21). The authors suggest that these rooms formed an independent unit with a domestic shrine in Room 7, the floor of which was “riddled with unexplained holes and hollows” and which contained a number of objects -- such as a Mycenaean female figurine, a snake amphora, and several rhyta -- that may have been used for ceremonial purposes.¹⁴⁹ Rooms 1 through 4, on the western

¹⁴¹ Cummer and Schofield, 41.

¹⁴² Calculation is based on the scale diagram of House A in Cummer and Schofield, Plate 5.

¹⁴³ These measurements are based on scale diagrams provided by Forsyth, 55, 72.

¹⁴⁴ Cummer and Schofield, 1.

¹⁴⁵ Caskey, “Excavations in Keos, 1964-1965,” 371.

¹⁴⁶ See Cummer and Schofield, Plate 4, for a chart detailing the development of House A.

¹⁴⁷ Basement rooms of House A include Rooms 14-17, 19-22, 25-31, 33, and 37-38 (Cummer and Schofield, Plate 24).

¹⁴⁸ Cummer and Schofield, 1.

¹⁴⁹ Cummer and Schofield, 39.

side of House A, were the last rooms to be added to the structure and may have composed another independent unit. The evidence is far from conclusive, however, that these rooms were not connected in some way to the rest of the house.

Cummer and Schofield believe that the rest of the rooms (12-39) did function as a cohesive entity, at least in later phases of the house.¹⁵⁰ Rooms 12-18 may have originally been independent from House A, but were later incorporated into it by means of a passageway between Rooms 20 and 14, the latter of which provided access to the rest of the rooms. In the analysis below, all mentions of House A will refer to Rooms 12-39, unless otherwise stated.

There is a noticeable difference in the structure and function of the western and eastern quarters of House A (Figs. 21-22). The eastern side (Rooms 22-24 and 28-39) consisted of rooms with public, ceremonial, and/or residential functions. Included in this set of rooms was an open courtyard with benches and a large central hearth (Room 36),¹⁵¹ a columned hall (the space above basement Rooms 37 and 39), an inner courtyard (Rooms 29 and 30), a frescoed parlor (Room 31), a lightwell (Room 23), a toilet (Room 24), and a bath (Room 34). According to Cummer and Schofield, these rooms were “designed to impress,” and the “alternation of open courts and covered rooms ensured light, air, and a feeling of spaciousness. A visiting ambassador from Knossos would probably have deemed it provincial, but not inelegant; those unaccustomed to grandeur may well have thought it imposing.”¹⁵² The features of the eastern quarter will be described in greater detail below.

The western part of House A (Rooms 12-21 and 25-27) is harder to reconstruct because of later disturbances and reoccupation. However, the absence of fresco fragments and the small number of fine imported pots in Rooms 12-18 suggest that this was an unpretentious working area. The discovery of millstones, grinding basins, a saddle quern, spindle whorls and loomweights confirms that these rooms functioned largely as workplaces. Rooms 19-21 and 25-27 contained a variety of objects relating to

¹⁵⁰ Cummer and Schofield, 1.

¹⁵¹ The courtyard is the largest room of the House and has an area of approximately 33 square meters.

¹⁵² Cummer and Schofield, 38.

metallurgy and stone-working;¹⁵³ a large supply of pottery, both fine imported pieces and coarse local ware;¹⁵⁴ and a number of luxury goods such as an ivory pyxis, an ivory comb, and several boar's tusk plaques which probably came from a helmet,¹⁵⁵ indicating that they served as industrial and storage facilities for the house.

The excavations of House A revealed that it “was built gradually in clearly defined units, starting at the northeastern corner” in the beginning of Period VI.¹⁵⁶ This part of the house began as a “square keep” (Rooms 35-39) with basements, and ground-floor apartments (Rooms 25-27 and 19-21) attached on the western side. The main entrance in this phase was from the Alley AB into the southeastern corner of Courtyard 36. The principal room of the house, according to Cummer and Schofield, was the twin-columned hall above basement Rooms 37 and 39. This hall was decorated with frescoes, including a sponge pattern in red, yellow and white on a dark blue ground. The early Period VI house also featured a pair of wide doorways between the columned hall and courtyard, as well as a paved vestibule and stairs in Room 35.¹⁵⁷ The original residential quarters appear to have been the rooms to the west of the vestibule, 19-21 and 25-27. The presence of fresco fragments in the area and of a bathroom over Room 19 confirms that “these were the chief private apartments in the original house.”¹⁵⁸

Major additions were made to House A in Period VII. These included Rooms 30 and 31, an elaborate set of rooms on the ground floor of the southern corner of the House. The basement level of these rooms functioned as a kitchen and a larder, to judge by the hearths in Room 30 and the storage bins in Room 31. Also added at this time were the small inner courtyard, bath, toilet, and lightwell. The columned hall was connected to these southern additions through doorways at either end of the hall. Cummer and Schofield describe Room 31 as a “richly furnished parlor, lit by two narrow windows in

¹⁵³ As discussed above, four cores of marble came from Room 21, an unfinished rhyton from Room 16, and unfinished jar fragments from Room 14. Fragments of crucibles were found in Rooms 19-21 and 25-27; copper ingot, a multiple mould, and litharge in Room 19; and copper slag in Room 26 (Cummer and Schofield, 38-39).

¹⁵⁴ Fragments of a vessel with griffin decorations -- a fine example of Cycladic pottery -- were found in Rooms 25 and 26.

¹⁵⁵ The boar's tusk plaques and a fragment of the ivory pyxis were found in Room 21; the ivory comb came from Room 26 (Cummer and Schofield, Plate 41).

¹⁵⁶ Cummer and Schofield, 32.

¹⁵⁷ Cummer and Schofield, 31.

¹⁵⁸ Cummer and Schofield, 38.

the western wall. The Bluebird Fresco may have been placed above the doorway,” although this is not certain. The toilet in Room 24 could be entered only from the parlor. The large bath, Room 34, could be entered only from the adjacent stair landing, which made it “accessible to the household or guests without disturbing people in the inner court or the parlor.”¹⁵⁹

House A had a remarkably sophisticated plumbing and drainage system. The toilet in Room 24 had a drain encrusted with lime deposits that conducted water into the drain beneath the paving slabs of the street below. Cummer and Schofield suggest that this toilet had a flush mechanism: “A down spout from the roof probably emptied into the head of the drain, producing a strong, if seasonal, flow of water across the outlet from Room 24, perhaps rivaling the flush toilets of Knossos.”¹⁶⁰ The adjacent lightwell, Room 23, had drains which were connected to those of Room 24, to ensure the removal of rainwater. Another lime-encrusted drain was found in Room 34, the location of a large plaster-coated bath. Room 19, which was apparently the bathroom in the earlier phases of House A, before the construction of the southeastern rooms, also had a drain leading out to the public sewage system. These drains eventually met up with those coming from other parts of the town -- namely, drains from Area L and Area M, the latter of which served a bathroom located in the Northeast bastion of the Great Fortification -- before being funneled out of the town beneath the slabs of the main entranceway.¹⁶¹

Cummer and Schofield postulate that Room 31, the parlor with the bluebird frescoes, would have functioned as a small private apartment for the person whom they describe as “the local princeling.” This room, which contained a rich variety of pottery and stone vases, which had a private toilet and a fine fresco, and which was illuminated by the adjacent light-well, was “surely was the finest single room in House A or in any other part of the LBA town.”¹⁶² We can easily imagine large receptions taking place nearby, in the columned hall above Rooms 37/39 and the open courtyard in Room 36. This courtyard, with stone benches and a large central hearth, could have been used for sacrifices and libations, as well as the roasting of meat for huge feasts.

¹⁵⁹ Cummer and Schofield, 36.

¹⁶⁰ Cummer and Schofield, 4.

¹⁶¹ Caskey, “Investigations in Keos: Part I: Excavations and Explorations, 1966-1970,” 390-91.

¹⁶² Cummer and Schofield, 38.

The basement walls of House A are extremely thick, and most of the rooms which they enclosed were quite small. In some areas, these cellars extended approximately two meters below ground level, though they were often shallower. Some parts of the house rest on the walls of EBA or MBA structures that formerly occupied the site, but most of the house's foundations are embedded in earth.¹⁶³ In at least one instance, in basement Room 22, bedrock appears to have been cut to allow the construction of the room.¹⁶⁴ Some of the basement rooms must have originally been intended for storage because they were "too small, dark and damp to have served any other purpose." Basement Room 30, however, had a paved hearth with two fire pits and a low stone curb, pointing to its use as a kitchen, and would have provided "a constant fire at the center of the house during cold winter months."¹⁶⁵ In the eastern part of the basement Room 31 is a "finely built stone pillar," which must have supported the floor of the frescoed parlor above.¹⁶⁶ The thickness of these basement walls was probably due to the builders' desire to "form a solid foundation for the upper walls of the house."¹⁶⁷ This suggests that the architects intended this building to be an impressive, tall structure from the start, and wanted to make sure that the upper levels which would eventually be built would have enough support.

Most of House A was built using schist, a stone which splits easily into flat slabs; but in the LBA the walls show an increased use of a "hard blue-gray limestone of fine grain resembling marble."¹⁶⁸ In particular, the exterior walls of the northeastern corner of the house were built of "large and well-squared stones," displaying a "cyclopean masonry" comparable to that of the Great Fortification Wall.¹⁶⁹ The thickness of the wall in this section ranged from 1.60 meters to 2.0 meters. In addition, the northeast corner had a deeper foundation than the rest of the house, and the courtyard was up to a meter higher than the adjacent Temple Lane.¹⁷⁰ This added height certainly would have made it

¹⁶³ Cummer and Schofield note that houses built on earth, as opposed to bedrock, tend to be more earthquake resistant (40). It is not known whether the builders had this in mind, however.

¹⁶⁴ Cummer and Schofield, 13.

¹⁶⁵ Cummer and Schofield, 37.

¹⁶⁶ Cummer and Schofield, 15.

¹⁶⁷ Cummer and Schofield, 35. It appears that Rooms 19-21 and 25-27 had two storeys by Period VII (see Cummer and Schofield, Plates 24-26).

¹⁶⁸ Cummer and Schofield, 40.

¹⁶⁹ Cummer and Schofield, 31.

¹⁷⁰ Cummer and Schofield, 6.

more imposing and impressive to passers-by, and the construction of this residential quarter must have required a massive amount of labor and materials. In the Period VI building phase, the heavy masonry of the eastern wall was extended past Room 39 to Room 34, as though anticipating the house's southern extension; these additional rooms were not built until Period VII, however.¹⁷¹ The building of this wall out past the actual extent of the house may be an indication that the architects ran out of funds and had to wait to complete their project until Period VII.

The limestone was used as it came from the quarry; there is little or no evidence of saw or chisel marks. Both the schist and the limestone were locally available. Since limestone is heavier and required more labor to quarry and transport than schist, the increased use of limestone suggests that the builders had higher standards and acquired more resources and/or control over labor as time went on. "Several masses of crude mud brick, perhaps the remains of light partition walls or benches," were found in Rooms 18, 31 and 36, indicating that these rooms had a well-defined division of space. House A sat on a sloping plot of land and the floor of its ground-level was not even, making "a series of flat roofs the most likely solution."¹⁷² In general, the construction of House A seems to have been haphazard and improvised, with builders making the best out of the land and resources available to them, and techniques and building materials gradually improving over time.

The original entrance to House A led from Alley AB into the southeast corner of the courtyard in Room 36.¹⁷³ But in Period VII a more imposing entrance was constructed, a series of large stone slab steps leading up from the Plateia to Room 35, the vestibule at the foot of the main staircase.¹⁷⁴ From this vestibule, the visitor could either go upstairs into Rooms 19-21 and 25-27 or turn into the courtyard (Room 36), and thence on to the columned hall, the inner courtyard, and the frescoed parlor at the south end of the house. The level of access the visitor had to the interior rooms would undoubtedly have depended on his/ her social rank and relationship to the house's owner. In addition to the entrance leading from the Plateia into the vestibule of Room 35, there was also an

¹⁷¹ Cummer and Schofield, 31.

¹⁷² Cummer and Schofield, 40.

¹⁷³ Cummer and Schofield, 7.

¹⁷⁴ Cummer and Schofield, 35.

adjacent entrance with a stairway leading into the basement of Room 25. Perhaps the latter was a servants' entrance while the former was for the elite members of the household and their guests.

By Period VII, there was thus a basic division of House A into the Eastern Quarter, which was the public and residential part; the Western Quarter, which focused on industry and storage; and the independent building unit(s) attached to the far western part of the House. The residential and public part of House A was improved and expanded in stages; and as it grew, it eventually merged with Rooms 12-18, which had originally been constructed in Periods V and VI as separate houses. Rooms 12-39 -- along with Rooms 1-11, which may have continued to function independently -- formed one continuous block and was certainly an imposing structure in Ayia Irini. The northeast corner, with its cyclopean masonry and elevated foundation, would have been particularly intimidating and fortress-like.

Analysis of architecture of House A and other structures:

The layout of the Eastern Quarter of House A is remarkably different from that of nearly every other house found at Ayia Irini. The basic shape of these houses was that of a longitudinal structure composed of a series of rooms, each occupying the full width of the building (Figs. 3-4).¹⁷⁵ Cummer and Schofield, for example, describe Houses B, C and F as “rectilinear units, usually a line of several small rooms entered from one end,” which had entries from the street leading to stairways that proceeded to the basement or upper level.¹⁷⁶ We can see this model being repeated again and again in the houses located on the western side of Ayia Irini (Fig. 3). In general, these houses had cellars and ground floors, and a number of them seem to have had upper storeys as well. Remnants of staircases have been found in Houses R, L, and F. It is unclear whether these

¹⁷⁵ See, for example, John Caskey's analysis of the layout of House F in “Excavations in Keos, 1964-1965,” 373; and “Investigations in Keos: Part I: Excavations and Explorations, 1966-1970,” 384-87). This layout may be comparable to contemporary mainland houses, which consisted of “long, often single-storied spaces [that] were often used for a variety of functions, including working and living, rather than being composed of separate but interconnecting rooms devoted to specific household activities” (J.W. Shaw, “Consideration of the Site of Akrotiri as a Minoan Settlement,” 435-36).

¹⁷⁶ Cummer and Schofield, 41. Unlike the main stairway in Room 35 of House A -- which consists of a wide staircase and a space for a stair return from the upper floor (the stair return does not survive) -- the stairways of most of the other houses in Ayia Irini went in one direction only and did not have stair returns.

rectilinear building units, which lay side-by-side in the densely-settled promontory, had passageways or some other type of connection between them. John Caskey has suggested that people moved from building to building through internal doorways or by way of balconies and verandas, although there is no concrete evidence for this.¹⁷⁷

The rectilinear structure of these houses may have been determined in part by their function. Malcolm Wiener believes that some rooms would have provided housing for ships' crews and other visitors to the town, populations which fluctuated depending on the season.¹⁷⁸ According to J.W. Shaw, the buildings near the entrances of Ayia Irini were probably dedicated to the storage of ships and trade goods.¹⁷⁹ There is also ample evidence of industrial activities such as metal-working taking place throughout the town. Structures intended for use as warehouses, ship sheds, workshops and housing for laborers and temporary visitors would have been simply built, allowing for the most efficient use of space with as little planning and effort as possible. The shape of the buildings may also have been influenced by the physical nature of the promontory, in which the level of the land sloped gently down from the centrally-located ridge. This slope would have lent itself to the creation of cellars in order to even out the ground level of buildings. In addition, the space available for construction was extremely limited. The area within the Great Fortification was about one hectare, and so far there is no sign of extensive building beyond the town walls. Since the construction had to be confined to the promontory, the creation of side-by-side rectangular units allowed builders to pack in more housing than would have been possible with spread-out, independent houses with a complicated arrangement of rooms.

House A, on the other hand, served a public function and was evidently the dwelling-place of an important and powerful individual. Its structure is far more reminiscent of Minoan architecture than the local Cycladic architecture. The presence of features such as a lightwell, indoor plumbing, a columned-hall, frescoes, and a vestibule with a wide stairway and a space for a stair return shows that the building's planners had an awareness of Minoan architectural features, which they tried to emulate to some extent. The contents of House A were also greater in number and quality than those of

¹⁷⁷ Caskey, "Investigations in Keos: Part I: Excavations and Explorations, 1966-1970," 390.

¹⁷⁸ Wiener, "The Isles of Crete?" 132.

¹⁷⁹ Shaw, "Bronze Age Aegean Harboursides," 433.

other houses. Elite objects such as a boar's tusk helmet, a finely-made pyxis, an ivory comb, and other luxury items have no equal among finds from the rest of Ayia Irini.¹⁸⁰ This house contained some of the finest examples of imported pottery in the settlement, vessels which came from Crete, the mainland, and other Cycladic islands (Fig. 18). One particularly fine example of Cycladic pottery is that of a vessel decorated with several griffins, probably modeled after a Cretan design.¹⁸¹ The bluebird fresco and decorative patterns also set House A apart, although other paintings have been found in House J and the Northeast bastion.

As Cummer and Schofield conclude, "The final plan of House A is clearly a combination of four or five rectilinear units"¹⁸² (Fig. 22). Only the eastern quarter of House A has features that can be associated with Cretan architecture. What we thus have in the case of House A is a building based loosely on Minoan architectural principles that has been attached to structures built in the local style.¹⁸³

In his article "A Typology of Minoan Neopalatial Houses," John McEnroe studied 29 Minoan houses and divided them into three architectural types on the basis of size, construction, and types of rooms. In general, Type 1 houses are larger and more complex than Type 2 and 3 houses, and are more likely to have impressive features -- such as frescoes, pier-and-door-partitions, and light-wells -- that are typically identified with palace architecture. Type 1 houses also tend to have a division of space in which residential quarters and industrial wings were located in different parts of the house, although there is evidence of some industrial activity occurring within the residential space. As we have seen, House A seems to have accomplished this division by using the western quarter for industrial purposes and the eastern quarter for residential and public functions.

¹⁸⁰ Very few items made of precious metals have been found in House A or anywhere else on the site, excluding the graves. It is assumed that the inhabitants had warning of the great earthquake that took place at the end of Period VII and fled the site with their most valuable possessions, much as seems to have happened at Akrotiri before the volcanic eruption.

¹⁸¹ See Cummer and Schofield, Plate 79.

¹⁸² Cummer and Schofield, 41.

¹⁸³ Malcolm Wiener notes that at sites such as Ayia Irini, Phylakopi, Gournia, Pseira, and Pyrgos, there always seems to be a main building "which displays some of the architectural innovations of the neopalatial 'School of Knossos', surrounded by smaller dwellings or blocks . . . lacking almost entirely these features" ("The Isles of Crete?" 134).

It is difficult, however, to attempt to fit House A into one of the categories developed for Cretan Neopalatial houses, because there are a number of essential differences. One feature that sets House A apart from typical Minoan houses is the presence of deep basements, which would have disrupted the basic Minoan building model for local architects. In Cretan houses, which typically did not have basement levels, the ground floor was often used for storage and workshop areas while the upper floor was mainly residential.¹⁸⁴ In House A, however, the basements were used for storage, cooking, and some industrial activities which did not require a great amount of light. This situation freed up the ground floor for other uses.¹⁸⁵ A number of important public, ceremonial, and residential rooms were therefore located on the ground floor of House A: the parlor, the toilet, the bath, the columned hall, and the courtyard with a central hearth. The function of the upper level, which did not extend over the full area of the building, is hard to define because it changed over time. It appears that the area over Rooms 19-21 and 25-27 served as the main residential quarters before the construction of the southeast corner of the house, but that these rooms were later used primarily for storage and industrial activities. The main residential unit was then transferred to Rooms 30, 31, and 24: the inner courtyard, the frescoed parlor, and the toilet.

House A lacks a number of important Cretan architectural elements, such as regular use of columns (although there is evidence of two in the hall over Rooms 37 and 39), pier-and-door partitions, and lustral basins. It does, however, have a lightwell, a Cretan architectural feature which the excavated portion of Akrotiri lacks. According to J.W. Shaw, a feature common to houses on Akrotiri and Crete “is that in some cases the main entrance into the building opens on to a lobby (often with a large room adjoining) and with stairs nearby leading to an upper floor.”¹⁸⁶ House A appears to obey this model.

¹⁸⁴ According to J.W. Shaw, in most of the buildings in Akrotiri, “the chief residential unit was on the upper floor(s), with many of the first floor rooms being reserved for work and/or storage” (“Consideration of the Site of Akrotiri as a Minoan Settlement,” 435-36).

¹⁸⁵ Elizabeth Schofield provides a good summary of the situation: “House A differs from Theran houses in major ways, not least in having deep cellars with one or occasionally two storeys above. The cellars share the storage and some of the industrial functions of the Theran ground-floor and semi-basement rooms; but those industrial and craft activities which require good light were almost certainly centred on ground-floor rooms, which are the equivalent of the Theran upper storey. At Akrotiri, weaving is the only craft attested on the upper floors” (“Evidence for Household Industries,” 209).

¹⁸⁶ J.W. Shaw, “Consideration of the Site of Akrotiri as a Minoan Settlement,” 435-36. Similarly, C. Palyvou writes that in Theran architecture, “The entrance . . . combined with the main staircase leading to

The vestibule of Room 35 may have functioned as a kind of lobby with a large adjoining room: the courtyard, Room 36. And there were certainly stairs nearby leading to the upper storey. As in some Cretan and Thera houses, in House A the Period VII toilet was placed on the side of the house opposite the main entrance.

According to C. Palyvou, a typical feature of Thera architecture “is the large room on the upper floor that one enters from the main staircase: it is usually, but not always, an almost square room with a column in the middle.”¹⁸⁷ Again, it is difficult to do a direct comparison between Thera and Keian architecture because the ground and upper floors take on different roles with the introduction of the basement. There does not appear to be any square room in House A with a central column in the middle, either on the ground floor or the upper level. However, Palyvou adds that the primary purpose of this room was to provide a large space, and that it did not necessarily have to be square or columned. She mentions that in Room Delta 1 in Akrotiri, this function is fulfilled by a double room connected by a *polythyron*.¹⁸⁸ In this light, we may be able to say that the courtyard and the columned hall above Rooms 37/39 performed a similar function, even though they were on the ground floor. In a personal communication with Malcolm Wiener, J. Davis suggested that “the two wide doorways between the columned hall and walled courtyard with its hearth and benches . . . , if covered with curtains, could have satisfied some of the functional requirements of a *polythyron*.”¹⁸⁹ In a house built mostly of schist, a stone which breaks into slabs, the creation of a real pier-and-door partition would have been difficult and extremely labor intensive. The Keian builders seemed to be doing the best they could with the materials at hand; or perhaps they lacked the technological expertise to design such a feature. These two rooms, though far different in appearance from those on Akrotiri or Crete, could have functioned together to provide a large space, thereby serving a similar role as the room mentioned by Palyvou.

Local architects thus showed a great deal of creativity in the design of House A. The placement of the large central hearth in an open courtyard was also a clever idea,

the upper floor, is the most typical example of architectural design based on the scheme of ‘models and variations’” (“Architectural Design at Late Cycladic Akrotiri,” in *Thera and the Aegean World III: Proceedings of the Third International Congress* (London: The Thera Foundation, 1990), 46).

¹⁸⁷ Palyvou, “Architectural Design at Late Cycladic Akrotiri,” 46.

¹⁸⁸ Palyvou, “Architectural Design at Late Cycladic Akrotiri,” 46-47.

¹⁸⁹ Wiener, “The Isles of Crete?” 141.

since it prevented the build-up of smoke that must have occurred in mainland palaces. Another display of ingenuity can be seen in the positioning of the kitchen in the basement Room 30, which provided a source of warmth for the eastern quarter of the house in winter months.

According to McEnroe, “the residential wings [in Type 1 houses] seldom differ significantly from the average of about 255” square meters.¹⁹⁰ As we have determined above, the western part of House A (Rooms 12-21 and 25-27) comprised the industrial wing, at least in the later phases; while the eastern part (Rooms 22-24 and 28-39) made up the residential quarter. If defined this way, the residential part of House A is approximately 215 square meters, making it slightly smaller than the residential quarters of McEnroe’s Type 1 houses. The overall size of House A, however, is much greater than almost every house included in McEnroe’s study. Most of the Type 1 houses range in size from 240 to 490 square meters. A single Type 1 House -- Tyliisos House A -- stands out from the rest with an area of 610 square meters,¹⁹¹ which is within the range of House A’s total area of approximately 600-650 square meters. If we exclude Rooms 1-11 from the area of House A, however, we are left with dimensions of approximately 20 meters by 17.5 meters for an area of approximately 350 square meters, a figure which fits in well with the bulk of McEnroe’s Type 1 houses.¹⁹² Thus, while the exterior of House A included all the rooms from 1-39 and would have been a massive and impressive sight, the actual sizes of the household unit and of the residential quarter within that unit were not remarkably different from the sizes of contemporary houses on Crete.

Interpretation:

It seems evident that Ayia Irini underwent a major transformation between Periods V and VI. According to Jack Davis, “No single structure within the Period V town stands out as more impressive than the others -- either in size, method of construction, or quality of portable finds.”¹⁹³ At the end of the fifth volume of the series detailing the Keos excavations, he concludes that there is no evidence “that there were

¹⁹⁰ John McEnroe, “A Typology of Minoan Neopalatial Houses,” *American Journal of Archaeology*, Vol. 86 (1982): 6.

¹⁹¹ McEnroe, 19.

¹⁹² Calculation is based on scale diagram of House A in Cummer and Schofield, Plate 5.

¹⁹³ Davis, *Keos V*, 102.

Minoans settled at Ayia Irini in Period V.”¹⁹⁴ It was only during Period VI that House A developed into the impressive structure uncovered by excavators. Other important developments, such as the production of the large terracotta statues for the Temple and the construction of the town’s drainage system, also seem to have taken place in Period VI. By this time, Ayia Irini had become a strongly Minoanized settlement. This Minoanization can be seen in all aspects of life, from the types of ceramic vessels used in everyday activities; to the proliferation of Minoan iconography in local art and religion; to the appearance of the dwelling-place of the local ruler, who was probably Minoan or whose authority was derived from Crete at the very least.

John Caskey believes that the Minoanization of Ayia Irini was non-violent. If there were Cretans there, he writes, they were probably “peaceful immigrant settlers rather than masters.”¹⁹⁵ Indeed, there is no concrete evidence of violent conquest at this time, and the Minoanization of Ayia Irini may have been relatively bloodless. Perhaps the inhabitants were overwhelmed by the Minoans’ show of force and allowed them to enter without a fight; perhaps they even embraced Minoan rule, in the hopes that it would facilitate trade and protect the town from the growing threat of Thorikos.

However, from what we know of the behavior of Bronze Age peoples, force was omnipresent and ‘might made right.’ There may be some indications of a violent invasion of the town, which Caskey took to be signs of natural disasters or random events. Excavators found evidence of destruction by fire in habitation deposits heaped against the inner face of the fortifications, possibly from the period in question.¹⁹⁶ Similarly, Jack Davis notes signs of “heavy burning” in Period V deposits in House G, a group of rooms on the eastern side of town by the Great Fortification.¹⁹⁷ Large segments of the fortification wall seem to have collapsed and been rebuilt during Period V, although this has generally been attributed to natural causes such as an earthquake.¹⁹⁸ These circumstances do not provide definitive proof of violence, but they do suggest the possibility that force was used. The original line of the Great Fortification belongs to the beginning of Period V, before the rise of Minoan influence; but it may be that the

¹⁹⁴ Davis, *Keos V*, 106.

¹⁹⁵ Caskey, “Notes on Keos and Tzia,” 323.

¹⁹⁶ Caskey, “Investigations in Keos: Part II: A Conspectus of the Pottery,” 386.

¹⁹⁷ Davis, *Keos V*, 70.

¹⁹⁸ Papadimitriou, 135-36.

massive additions to the wall, including the bastion in the northeast corner, were ordered by the new masters of Ayia Irini -- the Minoans.

Whether or not force was used by the Minoans to enter the town, it appears that the native inhabitants were not slaughtered or forcibly removed from the site. Indeed, they would have been a useful labor force for large projects such as the strengthening of the fortification, the building of House A and the drainage system, and the continuation of industrial activities. In Period VII, a tumulus and a circular wall were constructed for Tombs 28 and 29, respectively. Although the dating of the tombs has been debated, there is a strong possibility that they were built before the Minoan take-over. These graves are not Minoan in appearance, nor was it typical for the Minoans to honor individual warriors by giving them separate burials. It thus seems likely that these were the tombs of native Keian heroes. The building of monumental structures for these tombs in Period VII is a sign of the continuity of the indigenous population of Ayia Irini, who remembered their heroic dead and wished to further honor their memory.

The ‘conquest’ of Ayia Irini fits in well with the Cretans’ need for a steady supply of metals. According to Malcolm Wiener, the “security, economy and prestige of Crete and its ruling elite largely depended” on the possession of bronze, on acquiring “raw materials from abroad and on the security of its trading network. . . .”¹⁹⁹ Jack Davis describes an exchange route, known as the “Western String,” in which the principal settlements on Thera, Melos, and Keos engaged in trading activities with each other and Crete. He believes that “one of the most important motives” for this exchange route “was the acquisition of metals [from the mainland] by Crete.”²⁰⁰

Once established in Ayia Irini, however, the Cretans were faced with the problem of maintaining their control over the settlement in the face of the rising Mycenaean power based in Thorikos. As we know, both Minoan and Mycenaean civilizations were militaristic societies with an extremely active warrior class, which would have been quick to assert themselves and take what they wanted by force. In addition, they were on

¹⁹⁹ Wiener, “The Isles of Crete?” 151.

²⁰⁰ Davis, “Review of Aegean Prehistory I,” 706. Davis also notes that the settlement of Ayia Irini did not expand remarkably in size during the Neopalatial period, and that the countryside remained relatively vacant. He takes this as a sign that the primary motivation for Minoan involvement on Keos was not colonization, but the desire for metal (706). For further analysis of the Western String, also see Schofield’s article “The Western Cyclades and Crete: A ‘Special Relationship.’”

opposite ends of the spectrum in terms of cultural origins, political structure, quality of life, artistic and religious traditions, and other fundamental aspects; and Thorikos possessed resources that were highly desirable to Ayia Irini and its Minoan masters. It was almost inevitable, therefore, that these two settlements would have come into conflict; and the continuous strengthening of the fortification walls around Ayia Irini confirm that its inhabitants were genuinely threatened by forces from the mainland. The fact that this isolated Minoan outpost could survive for so long a mere thirty kilometers away from a Mycenaean stronghold points to the great talent of the Minoans for building and maintaining a thalassocracy. The warriors of Thorikos probably had an advantage in terms of manpower and raw materials, which were always close at hand; while the Minoans were far from their power base on Crete. Nevertheless, the intelligent planning and centralized control of the Minoans permitted their settlement on Keos to thrive for a considerable length of time.

We can see this intelligence at work in the eastern quarter of House A, which seems to have housed what we may call the Minoan ‘governor’ of Ayia Irini. The building was enormous and formidable from the outside, with thick walls, multiple stories and a raised platform in the northeastern corner; but more refined and sophisticated on the inside, with an emphasis on the alternation between interior and exterior spaces, the use of luxury goods and frescoes, and the inclusion of technologically advanced features such as a lightwell and flushing toilet. House A would probably have intimidated the commoners and impressed elite visitors, in addition to providing a high quality of life for its permanent residents.

The Minoanization of religion may have been an attempt on the part of the new rulers to win the hearts and minds of the Keians. The three-quarter life-size statues would certainly have impressed the locals, who up to then may have been familiar only with small Cycladic and Mycenaean figurines. It seems likely that on special days of religious significance, these statues would have been taken out of the Temple with great pomp and ceremony and displayed to the town. The sight of fifty of these giant statues, which were probably painted, being paraded out of the Temple and placed in the Plateia or some other public area amidst great festivity, music, and dancing would have been a striking and compelling image. We can also imagine the Minoan ruler(s) installing the

bronze statuette of the male warrior in the Temple, perhaps encouraging or compelling the populace to worship it and embrace this new mentality which glorified the idea of service to the state.

The integration of House A with the adjacent building units, and its proximity to the other houses of Ayia Irini, may imply that relations between the populace and the ruling authority were relatively peaceful. However, this lack of physical separation could have been a matter of necessity rather than choice: the area available for construction -- the space on the promontory within the fortification walls -- was extremely limited and buildings had to be packed in together. The fortress-like appearance of House A, with its large limestone blocks and raised platform in the northeast corner, suggests that the inhabitants of the house were not always on very friendly terms with their Keian subjects.

It is evident that there was a strong military presence at Ayia Irini in the LBA, probably also Minoan. The Northeast bastion contained a two-storey structure with a toilet, facilities for storage, and a detailed miniature fresco reminiscent of that found in the West House at Akrotiri. These well-appointed military barracks would have provided comfortable lodging for a Minoan general and his staff, who meanwhile fulfilled a dual role: to keep the local population in line, and to protect the settlement from threats from beyond the walls. The fortifications of Ayia Irini made it unlike many of the other Aegean settlements under Cretan hegemony as well as Crete itself. The Minoan town of Akrotiri on the island of Thera, for example, does not appear to have had fortification walls -- although it should be noted that this site is far from fully excavated. A major reason for this discrepancy may be the relative geographical locations of the islands: Akrotiri was approximately 200 kilometers from the Greek mainland, while Ayia Irini was only 30 kilometers removed. Ships from Thorikos could have reached Keos in less than a day, while it would have taken them several times that to arrive at Akrotiri. The Mycenaeans thus posed a much more imminent threat to the inhabitants of Keos than to those of Thera. Places which were relatively close to Crete could also have been more easily protected by the Minoan navy, making fortifications unnecessary. The image of a

flotilla in the West House in Akrotiri supports the idea that the waters around Thera were being patrolled by a maritime force.²⁰¹

Although the relationship between Thorikos and Ayia Irini was likely to have been tense or openly violent, there are also indications of more peaceful interactions between the two settlements. Excavations have revealed that Cycladic and Minoan pottery had reached Thorikos by the end of the MBA. In the Late Bronze Age, the site had disk weights which may have corresponded to the standard of measurement used by Ayia Irini, Thera, Crete, and other islands of the Aegean, suggesting regular exchange with the Minoan world.²⁰² As we have seen, Tomb III on the summit of Velatouri Hill contained a number of lead weights, including one that had been decorated with paint.²⁰³ It is possible that, at least for a period of time, the leaders of Thorikos and Ayia Irini decided that trade was preferable to warfare.

By Period VII, the fortification wall of Ayia Irini seems to have lost some of its importance. As has been mentioned, the construction of a two-room structure and of the grave monuments for tombs 28 and 29 outside the Great Wall suggests that the inhabitants no longer feared an attack. Perhaps this is a sign that Ayia Irini, like Akrotiri, was now being protected by the Minoan fleet and dwelt within the relative safety of the *pax Minoica*. However, it could also be indicative of a truce between the Minoans and the Mycenaeans of Thorikos, as the appearance of lead weights and Minoan pottery on the mainland settlement seems to suggest.

After the great earthquake at the end of Period VII, Cretan rule seems to have come to an end at Ayia Irini. This suggests either that Crete was too weak to re-establish its control, or that it decided to give up on the outpost. Perhaps the Minoans realized that they could satisfy their lust for metals without relying on Laurion, located in the openly hostile Greek mainland. They may have turned to Cyprus instead. According to Stos-Gale and Gale, “Cyprus is traditionally thought to play a dominant role in copper production in the Eastern Mediterranean” in the LBA; and it is clear that “the Cypriot

²⁰¹ Malcolm Wiener thinks it likely that Neopalatial Crete possessed a considerable navy, and he examines the archaeological evidence from House A at Kato Zakros for evidence of this in the article “Present Arms/Oars/Ingots: Searching for Evidence of Military or Maritime Administration in LM IB,” in *Polemos: Le contexte guerrier en Egée à l’âge du Bronze*, ed. Robert Laffineur (Liège: Université de Liège, 1999), 411-423.

²⁰² Gale, “The Provenance of Lead Used at Ayia Irini, Keos,” 397.

²⁰³ Mussche, et al., *Thorikos IV-VI*, 81.

copper industry in the Late Bronze Age was booming.”²⁰⁴ Studies have indicated, however, that a significant amount of the copper acquired by Crete in LM I came from neither Cyprus nor Laurion, but from places such as Syria and Mesopotamia.²⁰⁵

The Mycenaeans wasted little time in asserting control over Ayia Irini in Period VIII. Warriors from Thorikos probably descended on the partially-destroyed settlement soon after the disaster struck. Like the Mycenaeans who presumably conquered Knossos and the island of Crete shortly after Minoan civilization was disrupted by the volcanic eruption on Thera, the mainlanders took advantage of the weakened state of Keos almost immediately after the earthquake. The Mycenaeans, it seems, were quick to assert their authority in the chaos following natural disasters. According to Davis, there does not seem to have been any “obvious gap in the settlement sequence at the time when Mycenaean material culture came to dominate Minoan” at Ayia Irini.²⁰⁶ Cretan pottery virtually disappeared from the settlement at this stage, to be replaced by large quantities of ceramics from the mainland. House A had almost completely collapsed in the earthquake, and no structure built in this period came close to it in terms of complexity or size. Nevertheless, there are signs that some aspects of Minoan culture lived on in Ayia Irini, and these vestiges may have carried over into Mycenaean society. Minoan ceramic types such as conical cups and tripod cooking pots continued to be made and used during this time of Mycenaean domination.²⁰⁷ The large terracotta statues were not destroyed but were apparently still worshipped and stored in the sacred space of the Temple, where they would later be found by excavators. A near life-size painted stucco face of a woman from Mycenae looks remarkably similar to the faces of the Keian statues,²⁰⁸ although it lacks the vitality and artistry of its Cycladic counterparts. Coleman, Wright and Morgan see similarities between the House A bluebird fresco and the Northeast bastion fresco and later frescoes from the palace of Pylos.²⁰⁹ Although we cannot say whether the Mycenaean face and the Pylos frescoes were based directly on Keian models, Ayia Irini

²⁰⁴ Stos-Gale, “The Role of Thera in the Bronze Age Trade in Metals,” 77.

²⁰⁵ Stos-Gale, “The Role of Thera in the Bronze Age Trade in Metals,” 80.

²⁰⁶ Davis, “Review of Aegean Prehistory I,” 707.

²⁰⁷ Davis, “Review of Aegean Prehistory I,” 710-11.

²⁰⁸ See Emily Vermeule, *Greece in the Bronze Age* (Chicago: The University of Chicago Press, 1964), Plate XL.

²⁰⁹ See Coleman, “Frescoes from Ayia Irini, Keos. Part I,” 293-94; Wright, 158-60.

contained many remnants of Minoan civilization which could and probably did have an impact on the Mycenaean world.

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TABLE 1: TIMELINE

Keos Period	Age	Periods	Keos/ Ayia Irini Chronology	Aegean Chronology
	Neo-lithic		Possible habitation of Ayia Irini. Settlements on Kephala and Paoura.	
I	EBA	EM, EH, EC	Earliest confirmed settlement of Ayia Irini.	Prepalatial Crete.
II			Habitation of area that would become House A.	
III			Abandonment of Ayia Irini (no signs of violence).	
IV	Early MBA	MM I-II, MH, MC	Ayia Irini is resettled after undetermined period of time. Earliest Cretan imports brought to Ayia Irini. Founding of the Temple. Construction of early fortifications (including Tower w). Establishment of cemeteries on eastern and western sides of settlement. Some use of potter's wheel. Earliest possible construction of Tombs 28, 29 and 24 (old numbers 40, 58 and 16, respectively). Increase in imported objects from mainland, Crete and Cyclades.	Protopalatial Crete. Old palaces at Knossos, Phaistos, Mallia. Laurion (near Thorikos) becomes dominant source of silver and lead at Ayia Irini.
V	Late MBA	MM IIB?- MM III, MH (late phase), MC (late phase)	Construction of major, or "Great," fortifications. Expansion of settlement towards the north. Intensification of building in settlement. Damage to Great Fortification wall and other structures, possibly due to earthquake. Cretan imports increase. Reinforcement of Great Fortification wall. First appearance of Linear A. Evidence of smelting of copper from Laurion. Beginning of construction of what will become House A	End of Old Palace Age on Crete. Neopalatial Crete. New palace at Knossos is begun. Grave Circle B, Mycenae. Possible construction of Thorikos Tomb V, large tumulus. Cycladic and Minoan pottery reaches Thorikos.

			(Rooms 12 and 13).	
VI	Early LBA	LM IA, LH I, LC I	<p>Construction of northeast corner of House A. Appearance of LM IA, LH I, LC wares. Damage to fortification wall, House A, and other structures, possibly due to earthquake. Construction of drainage system. Alterations/ additions to Temple. Production of giant terracotta statues for Temple begins.</p>	<p>Neopalatial Crete. Grave Circle A, Mycenae. Thera volcano erupts.</p> <p>Construction of Thorikos Tomb IV, elliptical <i>tholos</i>.</p>
VII	LBA	LM IB-II(?), LH II, LC II	<p>Enlargement of House A continues, including building of Rooms 30 and 31; building of the steps to House A in the Plateia. Introduction of Minoan bronze statuette of a youth to Temple? Creation of bluebird fresco in House A? Creation of miniature landscape fresco in NE bastion? Production of giant terracotta statues continues. Construction of tumulus over Tomb 28 (40)? Construction of small two-room structure near Tomb 28, outside walls. Mid-VII: extensive earthquake damage to House A; many cellar rooms are abandoned. Late-VII: Another earthquake, this time virtually destroying House A and bringing an end to this phase of the settlement (<i>ca.</i> mid-15th century?).</p>	<p>Marine style pottery. Destruction of Minoan sites. Destruction of palace at Knossos.</p>
VIII	LBA III	LH IIIA-C	<p>Mycenaean period; few or no signs of Cretan influence; lots of Mycenaean pottery. Traces of Mycenaean occupation in NE corner of House A. Some resettlement; restoration of Temple.</p>	<p>Expansion of Mycenaean palace civilization.</p>