

Minoan Palaces

At the center of Crete's rich Bronze Age culture was the palace, which had economic, political and religious functions. Studying those functions makes it possible to reconstruct Minoan society

by Peter M. Warren

How is it possible to understand the culture and social structure of a civilization that came to an end some 3,500 years ago? The most direct method would be to read and interpret the writings left behind by that civilization. In some instances, however, written information provides little help. For example, the writing of the Minoan culture of Bronze Age Crete (the script known as Linear A) has not yet been deciphered. Moreover, it is probable that the Minoan writings consist mainly of economic accounts. Even if Linear A were to be deciphered, such documents would not completely illuminate Minoan culture. Of course, nonlinguistic artifacts also yield considerable information. One of the best sources of information about the social structure and culture of Bronze Age Crete is not linguistic but architectural: the Minoan palaces.

Four Minoan palaces have been excavated so far, beginning with the discovery of the greatest of them at Knossos in 1900 by the British archaeologist Sir Arthur Evans. The four known examples share features that could serve as a definition of the palace at its height. Each palace was the main building at its site, which was generally a major Minoan town. Each palace included a central court; generally there were other courts as well. Around that central court were grouped storage facilities,

production areas, archives of inscribed tablets, rooms for ritual activity and rooms for state functions. Great power was concentrated in these elaborate structures: both the secular and the religious authorities of Minoan societies lived in them. Recent scholarly work has concentrated on the economic functions of the palace. It has been shown that the palace rulers probably had considerable control over agriculture in the region around the palace and also over the lucrative foreign trade of the society.

Since the palace had functions that extended into every area of life, a study of how the palace operated can form the basis for a reconstruction of the entire Minoan society. Bronze Age society on Crete was hierarchical but not divisive. Under the authority of the palace, the various social groups appear to have lived in relative harmony. Furthermore, the art found in the palaces reflects a vitality and humanism that distinguish Crete from contemporaneous societies such as Egypt and Assyria. The origin of the European tradition of humanism and individualism is generally attributed to the Greeks, but there is a sense in which Minoan culture can be considered the first example of a distinctively European tradition. In the absence of written documents some questions will always remain, but a study of the palaces can contribute greatly to understanding the successes of Minoan society.

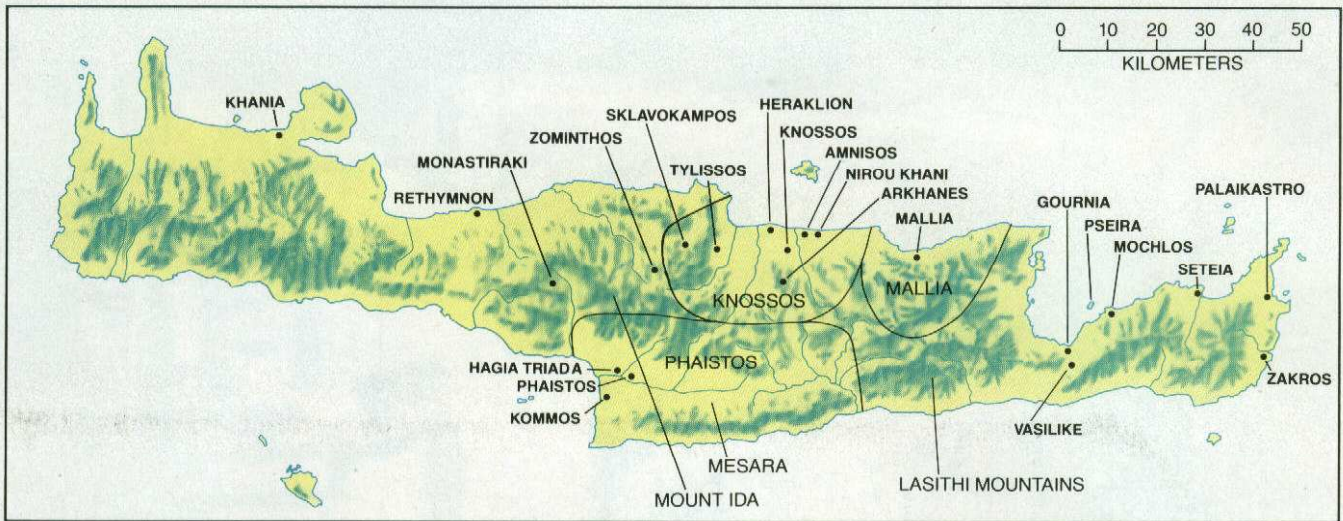
The sites of all four known palaces

share a significant common feature: they are on or near the coast. Knossos, which lies five kilometers inland from the northern coast, commands the fertile valleys of northern central Crete. In the south, Phaistos dominates the Mesara, Crete's only large plain. The palace at Phaistos was also discovered in 1900 and was excavated by workers from the Italian School of Archaeology under the direction of Luigi Pernier. Mallia, east of Knossos on the northern coast, may have included the Lasithi Mountains in its territory. The Greek archaeologist Joseph Hatzidhakis began digging at Mallia in 1915; in the 1920s a team from the French School of Archaeology took over the site and continued the work. Zakros, the site of the fourth palace, is tucked in the southeast corner of the island. Zakros is difficult to reach by land, and the Minoan site makes sense only as a major port for traffic from the east and southeast. The palace there is the most recently excavated, having been uncovered in the 1960s by a Greek team under the leadership of Nicholas Platon.

There may well be Minoan palaces in addition to the four known examples. At Khania in the west on the northern coast, there was probably a fifth palace. The palace at Khania has not yet been excavated, but its existence is suggested by the discovery there of Linear A tablets, which probably form part of an archive. Several other regions of Crete may yield palatial towns, notably the Rethymnon area of western central Crete and the Seteia area in the east. In

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PALACE AT MALLIA, like the three other known Minoan palaces, consisted of many small buildings grouped around a central court (*lower right*). The roof in the central court covers an altar. The open space at the left is the west court. Between the courts lies the west wing, which included living quarters, storage magazines and rooms for religious ceremonies. Facing the west wing across the central court is the smaller east wing, where olive oil and perhaps wine were made. The circular forms at the lower left were probably granaries. At its height the palace may have covered some 9,800 square meters, or 2.4 acres. The photograph is from *Aerial Atlas of Ancient Crete*, by J. Wilson Myers, Eleanor Emlen Myers and Gerald Cadogan. An unmanned balloon served as the camera platform.



BRONZE AGE SITES on Crete are concentrated in the coastal zone. The palaces that have been excavated are at Knossos, Mallia, Phaistos and Zakros. Knossos, Mallia and Phaistos ap-

pear to have dominated large regions (solid lines). Zakros seems to have functioned mainly as a port. The finding of inscribed tablets at Khania suggests a fifth palace stood there.



PALACE AT KNOSSOS, discovered by Sir Arthur Evans in 1900, was the grandest of the four known Minoan palaces. It may have covered 17,400 square meters, or 4.3 acres. The view in the photograph is to the south. The main court is at the center; the west court is to the right. The west wing between the courts had two floors. Storage magazines and rooms for religious ceremonies occupied the ground floor; archives of inscribed tablets, a shrine treasury (containing stone ves-

sels) and state reception rooms occupied the upper floor. The east wing (far left) held the living quarters. It had at least four floors and was reached by the Grand Staircase, which is covered by the smaller roof flanking the central court. The east wing included a room for bathing and a toilet supplied with running water. Raymond V. Schoder of Loyola University, using a hand-held camera, took the photograph through the open cargo door of a DC-3.

addition, large structures dominated the center of other towns, including Gournia and Monastiraki. Although not palaces in the full architectural sense, they are large and important Minoan buildings that share some features with the palaces. The fact that all these unfortified sites are in the coastal zone raises the possibility that Crete's geographic situation was a significant factor in the development of civilization there. The island was far enough from mainland powers such as the Egyptians, the Hittites and the Mycenaean Greeks to discourage frequent attacks but not far enough to prevent sustained trade.

The Minoan palaces, which represent the highest achievement of Bronze Age culture in Crete, were the culmination of a long period of social development on the island. The Bronze Age, which lasted from about 3000 to 1000 B.C., was preceded by 3,000 years in which the Neolithic inhabitants of Crete established agriculture and animal husbandry. Neolithic achievements in farming contributed to the material basis of Minoan culture: a rich agricultural economy of cereals, olives, vines and herds. After the Neolithic period came the prepalatial Bronze Age, or Early Bronze Age, lasting from about 3000 to 1930 B.C.

In the prepalatial period three trends helped to create the social conditions needed for the establishment of the palaces. The first trend was the establishment of closely knit agricultural settlements. The excavation of several prepalatial settlements shows that early Bronze Age villages were quite dense. Many of the closely packed houses shared walls, giving the village an overall form reminiscent of a honeycomb. In such villages the early Bronze Age Cretans lived a communal life in which ties were close; there is little evidence of social ranking in the villages. The second trend was the probable development within these tightly knit communities of nuclear or extended families, which formed subunits of the village.

The third trend was the establishment of territories defined as being for the use of a particular settlement. Such territories were small regions that evolved through continuous agricultural exploitation. The farmers of the Early Bronze Age lived close together and walked to the fields to work, much as their modern counterparts on Crete do. As a result, a village's defined territory may have been limited by the distance a farmer could travel each day to the fields and back on foot. In addition to the geographic

definition, the agricultural settlements were defined socially by customary ways of living.

Over the period from about 2200 to about 1900 B.C., some prepalatial centers grew in size and importance. One aspect of the increase in importance is that some communities appear to have commanded larger territories than others. Each of the larger territories, or provinces, may have been dominated by a powerful family that built and occupied what eventually became the palace. The process by which the provinces were defined and authority was established over them is not well understood. The unthreatening physical setting of the palaces, however, suggests they were built with the collective acceptance of the rest of the community. None of the palaces is in a physically commanding position, and all four of them are readily accessible from the surrounding towns.

The Age of Palaces lasted from 1930 to 1450 B.C., ending with a massive episode of destruction whose nature is still being debated. During those five centuries, continuous progress was made in architectural design. Among scholars of Minoan Crete, a division is often made between the First (or Old) Palace Period (1930 to 1700 B.C.) and the Second (or New) Palace Period (1700 to 1450 B.C.); a major episode of destruction, probably caused by an earthquake, divided the two epochs. The architectural history of the palaces is actually much more complex than such a division suggests. Each palace was probably built and rebuilt many times. In all this development no trace exists of foreign invaders; what is observed is the heightening and elaboration of the native styles.

The ultimate result of this prolonged architectural refinement was the design of the palace at its zenith in about 1450 B.C. As noted above, that design included many small buildings fringing a central court. Some elements of the design had Minoan precedents. The plan of the early palace at Phaistos clearly shows a cellular arrangement of small buildings linked by passages that resembles the honeycomb arrangement of the Early Bronze Age settlements. Other design elements do not seem to have Cretan antecedents and may have been imported. The monumentality of the palaces and the arrangement of buildings around a central court can be seen in contemporaneous Near Eastern palaces such as the one at Mari, a Mesopotamian city on the Euphrates. It is known that by 1700 B.C. the Minoans had trading links with Mari, and architectural ideas may have

been brought back to Crete along with trade goods.

Although the palaces shared a basic architectural plan, they varied considerably in grandeur. Knossos was the most splendid. If it is assumed the palaces were roughly rectangular, and if allowance is made for areas that have been lost, it is found that the buildings and central court at Knossos covered 17,400 square meters, or 4.3 acres. The corresponding area at Mallia was 9,800 square meters, at Phaistos 8,300 and at Zakros 4,250. At Knossos there were at least four upper stories in the east wing; all the palaces had at least one upper floor. More work has been done at Knossos than at any of the other palaces, but in spite of its preeminence Knossos has a significant disadvantage for a study of the pure Minoan culture. Although it was destroyed in 1450 B.C. along with the other palaces, Knossos was subsequently occupied by Mycenaean Greeks. The Greek occupiers may well have learned to write from the Minoans: Mycenaean writing, the transliteration of Greek known as Linear B, employs Minoan symbols. Thus, the largest and richest Cretan palace, and the one with the greatest number of economic records, had a final occupation controlled not by Minoans but by Greek immigrants.

The four known palaces differed not only in grandeur but also in the detailed arrangement of functional areas. There was generally a west wing extending from the central court to a western court. The ground floor of the west wing was divided into two sections: storage magazines, filled with great jars called *pithoi*, and rooms for religious ceremonies. At Mallia the ceremonial rooms were aligned with an altar in the central court. The functions of the upper floor of the west wing varied from one palace to another. At Knossos the upper floor contained a treasury (where stone vessels for a shrine were stored), an archive of tablets and a group of reception rooms for state functions. At Zakros, on the other hand, the shrine treasury and archives were on the ground floor of the west wing; the upper floor included workshops and stores of vessels for burning incense.

The other wings also varied in their details and function. At Knossos and Zakros the east wing held what are generally thought to be the living quarters of the rulers. At Knossos the residential area was reached by the Grand Staircase, a marvel of architectural engineering. The living quarters there included a room for bathing and a toi-

let supplied with running water. At Zakros there was a fine circular swimming pool. In contrast, at Mallia the main component of the eastern part of the palace was industrial: a carefully constructed system of jar stands and channels for processing oil and per-

haps also wine. At Knossos and Zakros industrial installations appear in other parts of the palace. In the northeastern section at Knossos were a stone carver's workshop and possibly a potter's workshop.

The shrine rooms opening onto the

central court at several palaces and the altar found in the court at Mallia strongly suggest that the central open area served as the site for religious ceremonies. Noting the existence of protective grills in the main court at Mallia and Phaistos, some workers have



PALACE AT PHAISTOS has the same overall plan as the other Minoan palaces but differs from them in its details. The central court is at the bottom, the west court at the upper left. As in the other palaces, the storage magazines were between the courts in the west wing. Several features of the palace at Phaistos, however, are unique: they include the large staircase ascending from the west court and the colonnaded residential rooms in the north wing (*under roofs*). The south and

east wings of the palace have been lost to erosion. Including its lost parts, the palace at Phaistos may have covered 8,300 square meters, or 2.1 acres. At the left are houses and circular storage pits from the early palace period. The photograph, like the one on page 47, is from *Aerial Atlas of Ancient Crete*. The photograph was made from a tethered, unmanned balloon; the faint diagonal line extending from the upper left to the lower right is the tether for the balloon.

contended that the central court was also the site of the famous Minoan bull sports. The unprotected cult rooms facing the main court in several palaces and the fragile altar in the court at Mallia, however, make it seem improbable that bulls cavorted in the open area. At Knossos and at Mallia bull sports may have been conducted northwest of the palace. Buildings there could have served as grandstands from which the inhabitants of the palatial town watched young athletes being tossed by the bulls.

When their economic, religious and political functions are taken into account, the palaces must be considered the chief material expression of the structure of Minoan society. A useful way to elucidate that structure is to examine the palace in three progressively wider contexts: the town, the province and the world. Each palace stood at the heart of a town. The palatial towns were large and highly developed. At Knossos, the largest palatial town, intensive settlement covered some 75 hectares (185 acres) during the time of the palaces. In contrast, Palaikastro in eastern Crete, one of the largest excavated towns that do not have a palace, probably covered between 25 and 35 hectares.

The palatial towns often included impressive private houses. The houses at Knossos were constructed of the finest dressed and neatly jointed ashlar masonry, just as the palace was. At Mallia early in the Age of Palaces, there stood a group of important buildings, not connected with the palace, that had cult rooms and family-size workshops attached to the exterior. It has been argued by Jean-Claude Poursat of the French School of Archaeology at Athens that this group of buildings housed the religious authorities of the community. If that is so, there was a division between sacred and secular authority in the early part of the Age of Palaces, since the secular rulers undoubtedly lived in the palace. It is known that in the latter part of the Age of Palaces, after the Middle Minoan buildings in question had gone out of use, both kinds of authority were concentrated in the palace. It is possible that during palace times the authority structure of Minoan society was consolidated, with the result that the authority of the palace was increased still further.

The fundamental question with respect to the towns is that of their relations with the palace. The spectrum of possibilities extends from absolute palace control to complete

town independence. The post-Minoan-Mycenaean relationship, which has been adduced from Linear B tablets, entailed a strong degree of palatial control, including a uniform system of taxation in kind throughout the kingdom. In the absence of documents containing explicit social information, the relations between town and palace in the Minoan period cannot be precisely characterized. Spatial and architectural evidence, however, suggests that the Minoan system was not as centralized as the Mycenaean one. For example, at Knossos a series of mansions stood in close proximity to the palace. The residents of the mansions must have had much contact with the rulers, including ready access to the palace. Furthermore, at Zakros there is no sharp physical or architectural boundary between the palace and the houses: the out-buildings of the palace extend into the town without a break. Such arrangements imply that the Minoan social hierarchy was accompanied by little division or conflict. The combination of hierarchy and harmonious relations is a key to understanding the success of Minoan civilization.

The second zone of economic and social organization is the dependent, or controlled, territory beyond the town. It cannot be proved that there was a formal territory for each palace, but the locations of three palaces suggest natural territories for them: northern central Crete for Knossos, southern central Crete and the Mesara plain for Phaistos and the Bay of Mallia and perhaps the Lasithi Mountains for Mallia. In an agricultural society such as that of the Minoans, territorial control would undoubtedly have entailed appropriation of a significant fraction of the region's agricultural surplus. Analysis of the storage capacity of the palaces suggests that the rulers may have received the surplus from a fairly large surrounding territory.

J. W. Graham of the University of Toronto showed that the west magazines of the palace at Knossos could have held 420 *pithoi*, each with a capacity of 586 liters. Therefore, the storage capacity of the west magazines was approximately 246,000 liters. Suppose a third of that capacity were allotted to olive oil, which may well be too small a fraction. Assuming modern yields, from 16,000 to 32,000 olive trees would have been needed to keep the jars filled. Assuming also a modern distribution of trees in the olive groves (from 10 to 20 trees per 1,000 square meters), the palace magazines could have held the yield of some 320 hectares. If the remaining two thirds of the storage ca-

capacity were taken up by cereals and wine, the land area under cultivation would have been considerably greater than 320 hectares. Major crops such as coriander and saffron would have covered additional land. Furthermore, some of the private houses in Knossos had their own storage facilities; hence, the palatial magazines would have received only part of the produce of the region. Thus, to the palatial town might have gone much of the produce from a surrounding region of about 1,000 hectares (2,500 acres). That region, which lies within the much larger natural territory of the palace, includes the Knossos valley and land to the north on the outskirts of the modern town of Heraklion.

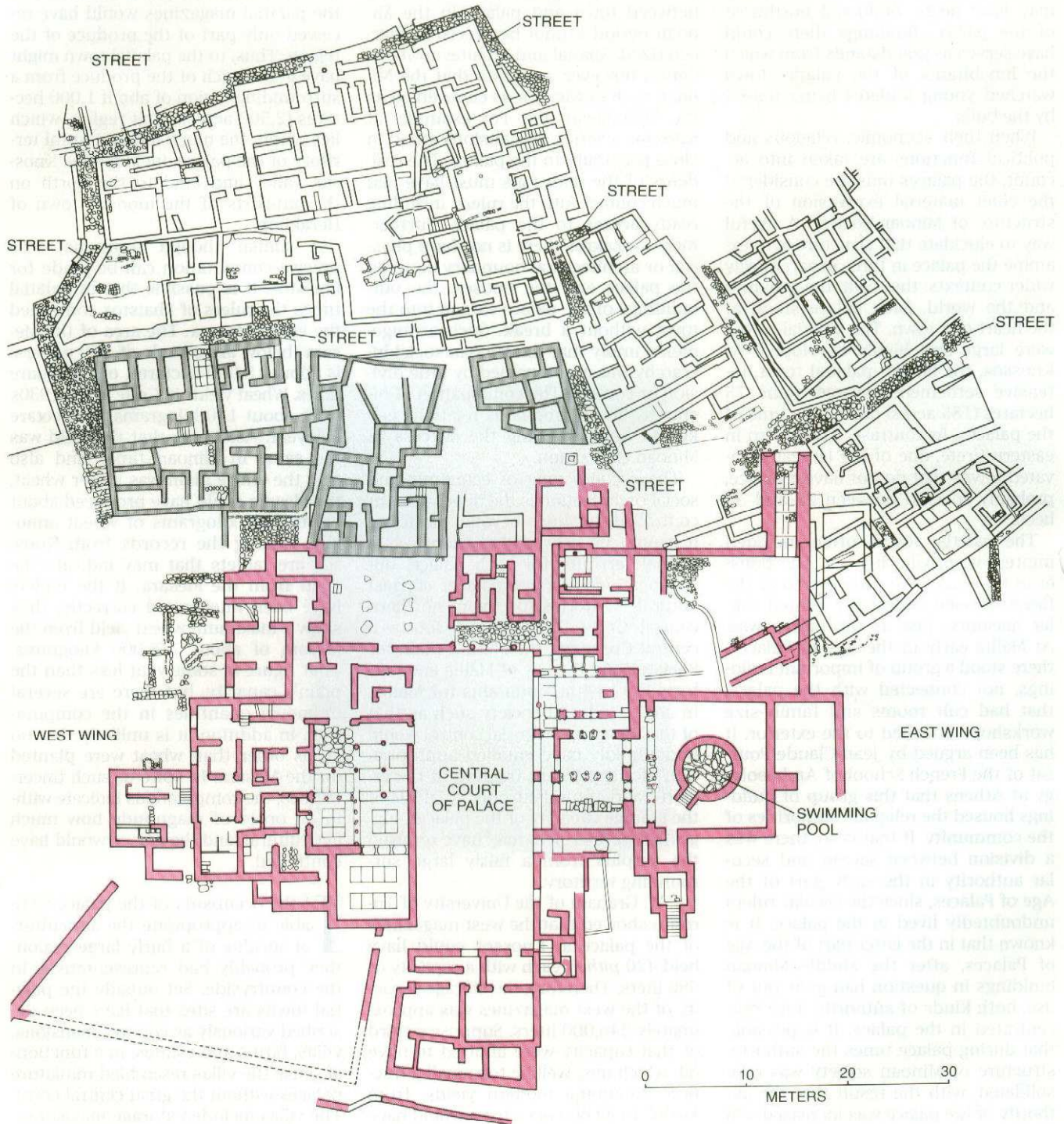
A similar though somewhat less precise computation can be made for Phaistos. It is possible that in palatial times the rulers of Phaistos controlled the entire Mesara. The area of the Mesara (below an altitude of 200 meters) is about 18,000 hectares, or 70 square miles. Wheat yields in Crete in the 1930s were about 140 kilograms per hectare per year. Assuming that the yield was the same in Minoan times and also that the entire plain was under wheat, the Mesara could have produced about 2.5 million kilograms of wheat annually. Among the records from Knossos are tablets that may indicate the yield from the Mesara. If the tablets have been interpreted correctly, they show a maximum wheat yield from the Mesara of about 775,000 kilograms. That figure is somewhat less than the plain's capacity, but there are several unknown quantities in the computation. In addition, it is unlikely that no crops other than wheat were planted on the Mesara. In spite of such uncertainties, the computations indicate within an order of magnitude how much agricultural land the palace would have controlled.

If the occupants of the palace were able to appropriate the agricultural surplus of a fairly large region, they probably had representatives in the countryside. Set outside the palatial towns are sites that have been described variously as country mansions, villas, farms and estates. In a functional sense the villas resembled miniature palaces without the great central court. The villas included storage magazines, oil and wine-making plants, weaving areas, shrines and other more imposing rooms. It cannot be assumed that the villas were palace satellites, helping to organize the collection of produce. They may have been completely independent of the palace, and the stored produce

may have been their own. A third possibility is that the villas were neither completely independent of nor completely dependent on the palace. Further work will be needed to decide among the alternatives.

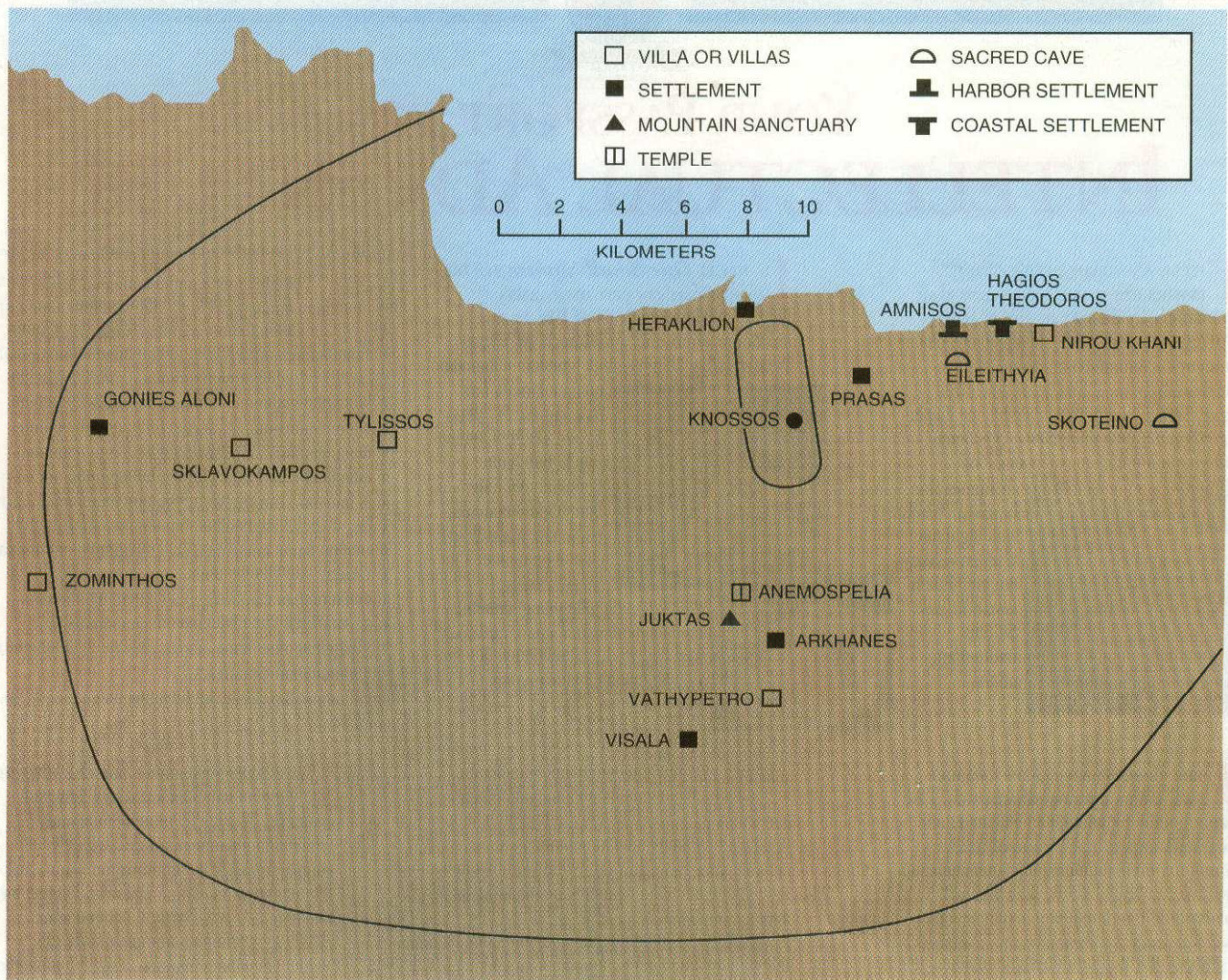
Some mansions clearly had functions unrelated to collecting produce, and some of them may have been out of the orbit of the palace altogether. The villas at Nirou Khani, Sklavokampos and the newly discovered structures at

Zominthos, which straddles a critical junction of roads on Mount Ida, may have been stations on economically significant routes. At Tylissos and Mochlos stood clusters of mansions that can be interpreted as communities com-



PALACE AND TOWN in Minoan society were closely related, as is suggested by the plan of Zakros. The palace buildings are shown in color, the town buildings in white and the buildings that cannot be assigned definitely to either category in gray. The absence of fortifications or even a clear physical boundary between the palace and the town implies that palace au-

thority was not imposed by force. The living quarters at Zakros were in the east wing of the palace and included a circular structure that served as a swimming pool. The southern part of the palace included workshops where craftsmen made perfumes and also manufactured products of bronze, stone, crystal, ivory and earthenware.



PALACE AND PROVINCE probably formed a political and economic unit. Solid lines indicate the natural territory of Knossos and the smaller region within that natural territory from which the palace received agricultural produce. The palace magazines at Knossos were large enough to accommodate much of the agricultural surplus from the smaller regions, which includes about 1,000 hectares, or 2,500 acres. Within the territory of Knossos were several types of sites. "Villas"

were large, free-standing houses. Some of the villas may have housed the officials who organized agriculture for the palace. Others, including the ones at Nirou Khani, Sklavokampos and Zominthos, may have been stations on important routes. Most of the settlements were dominated by Knossos, but two may have possessed some independence: Arkhanes, a rich town, and Tyliissos, which may have commanded its own small territory.

manding land or sea territories. The relation of the mansion clusters to the palace is not understood, but some of them, including Tyliissos, are far enough from the palace to appear independent. In addition to mansion clusters, the region around the palace included towns. The towns varied considerably in size and in the richness of the artifacts found there. The size, form and geographic setting of some towns suggest that they were independent of the palaces. Notable among the towns in this group are Gournia, Pseira and others on Mirabella Bay.

Two towns in particular raise interesting questions about the balance of independence and dependence: Ar-

khane and Hagia Triada. Both sites were close to palaces, but both seem to have been more than satellite towns. Arkhanes is 10 kilometers south of Knossos. Rich cemeteries found there suggest the town had a long and independent history. Moreover, during the Second Palace Period, Arkhanes had fine buildings with palatial masonry and architectural elements; in one place Linear A tablets were also found. Such findings imply that Arkhanes was far more than a satellite of Knossos. The location of the town and the stylistic resemblance of artifacts found there to artifacts found at Knossos, however, indicate some degree of dependence on the palace.

Hagia Triada also combines aspects of dependence and independence. The town, three kilometers west of Phaistos, is a particularly rich site where some of the finest Minoan ritual vessels known were found along with a large store of copper ingots. These finds come from a sizable structure that some observers have maintained was a palace. Recent work, however, suggests the "palace" was actually two joined mansions. If that is so, Hagia Triada might have resembled Tyliissos as an independent mansion cluster. The proximity to Phaistos, on the other hand, strongly suggests some dependence on the palace there. It is possible that Hagia Triada had several functions, serving as a re-

ligious center and also organizing agriculture for Phaistos in the western Mesara.

The model of a capital manifesting control of its territory by acquiring and storing agricultural surplus fits what is known of Knossos, Mallia and Phaistos fairly well. The same cannot be said of Zakros. Set in a bowl of mountains on the southeastern coast of the island, Zakros does not have a natural territory in the sense that the other palatial towns do. That Zakros was a port town is clear not only from its location but also from the stores of imported ivory,

copper and semiprecious stones found in the palace. It seems likely that Zakros was an independent entity with its own ruler and administrative archives. At least two factors, however, suggest a special connection between Zakros and Knossos. First, a large group of clay-seal impressions found in one of the houses at Zakros has connections with impressions found in Knossos. Second, both the palace and the town have yielded an unusual quantity of fine pottery that almost certainly came from the workshops of Knossos. Perhaps Zakros was the eastern trading

port for Knossos: the first landfall for ships sailing from the southeastern Mediterranean. If Zakros also served as the first landfall for ships traversing the southern coast, then Phaistos may have had some say in its affairs, but the connection with Knossos seems stronger.

Zakros' status as a port has a direct bearing on the third and widest context in which the palace functioned: the world beyond Crete. Minoan society had extensive contacts with the mainland, chiefly in the form



PALACE AND WORLD BEYOND CRETE were linked by the island's rich foreign trade. Minoan Crete had an export economy. The main imports were raw materials: metals, ivory and fine stones to be carved into ceremonial vessels, and seals for making impressions in clay. Exports consisted of finished

goods, notably pottery. The influence of the Minoans extended throughout the eastern Mediterranean. The most intense contact was with the Greek mainland and the nearby islands. It is probable that trade was carried out by a semi-independent merchant class under the authority of the palace.

of peaceful trade relations. Ports were the point of entry into the web of commercial contacts. Mallia, on the northern coast, served as its own port. The harbor towns of Amnisos and Kommos stand close enough to the palaces of Knossos and Phaistos, respectively, to suggest they were the ports for those palaces. From these ports Minoan products were carried as far as Delphi on the Greek mainland, Troy, Cyprus, the Levant coast and Egypt. Closer to Crete were regions of much more intense economic and social contact, in particular the Cycladic Islands and the northeastern Peloponnese. Indeed, at some sites in the Aegean there appear to have been communities of Cretans among the local population; such overseas communities were a natural outgrowth of economic and demographic expansion that took place on Crete.

The successful, expanding Minoan economy also required a considerable variety of imports. The island's chief needs were metals: copper, gold, lead, silver and tin. Other desirable goods included ivory and precious stones for carving into vessels and seals. The major question in relation to the trade of the Minoan economy is that of control. In contemporary Egypt, trade was controlled by the rulers. In Mesopotamia and Levantine cities such as Ugarit, on the other hand, there was a semi-independent merchant class. Did the Minoan system resemble either the Egyptian or the Mesopotamian? In the absence of written archives the question cannot be answered definitively. It is notable, however, that imported goods found in Minoan towns are not confined to the palaces: bulk imports, ivory and fine stones appear in houses. Copper ingots have also been found in houses, although the largest nonpalatial hoard, at Hagia Triada, is an ambiguous find. It would appear that a Mesopotamian-Levantine model of economic structure is more appropriate for Minoan Crete than the Egyptian one. The Mesopotamian model attributes overall control of trade to the palace but at the same time allows considerable latitude for a semi-independent merchant class.

The traverse of town, province and world forms the basis for a sketch of the groups that made up Minoan society. The sketch begins with the occupants of the palace itself. Who ruled Minoan Crete is not known with certainty. It has been argued above that the construction of the palaces was part of a process of unifying large territories. This process may have been

carried out by powerful families who established dynasties as they built the palaces. Yet little can be said of the individual Minoan rulers; not even their sex is known. The three members of the Minoan dynasty celebrated in legend are male: Minos and his shadowy brothers, Rhadamanthys and Sarpedon. Strong arguments based on iconographic evidence from the palace at Knossos, however, suggest that a chief priestess was the ruler. (Mallia, Phaistos and Zakros are archaeologically silent on the matter of the ruler's sex.) Whether or not the ruler of Minoan society was female, other findings imply that some groups of women had equality with men, or perhaps preeminence, which would have been a remarkable status in the Bronze Age.

Below the rulers of the palace in the social hierarchy there must have been high officials who organized agriculture. Such officials may have been the occupants of the mansions spread through the provincial hinterland. They may have stemmed from the ruling family or from independent families. A prominent role was also played by priests and priestesses. In addition there must have been a group who organized and carried out the critical overseas trade. As noted above, the traders may have constituted a semi-autonomous merchant class within the society. At all levels of Minoan society there must also have been craftsmen, ranging from palace dependents to those who maintained workshops in the towns. In an agricultural society such as that of Bronze Age Crete, however, most of the population would have been farmers, agricultural laborers or herders.

The hierarchical but peaceful society made up of these groups suffered a catastrophic destruction in about 1450 B.C. The immediate agent of destruction was fire. The source of the fire, however, remains in dispute. Internal strains leading perhaps to civil war or rebellion, a Mycenaean invasion and a major volcanic eruption have all been proposed. There is little trace of internal strain in the material record, and it seems unlikely that the Mycenaean newcomers present after the destruction would have ruined economically everything they had just occupied. The third possibility is perhaps the likeliest: earthquake and other effects generated by the cataclysmic eruption of the volcano on the nearby island of Thera (Santorin). It is known that the volcano erupted early in the late Bronze Age, but opinion has been divided between a date of about

1500 B.C. and one of about 1450. Recent work in Greenland on ice cores containing acidity that can be dated by its depth in the ice supports the later date, as does paleomagnetic information from Thera and Crete. The scale of destruction on Crete is compatible with the effects of a massive volcanic eruption. It is quite possible that this major debate will be settled in the foreseeable future.

Even when the end of Minoan civilization is understood, much will be left to learn. Current work on the functioning of the Minoan palaces is focused on several socioeconomic questions. Did the palaces emerge as the result of extended, incremental development, or did they arise rather suddenly after a gathering of social momentum? What was the precise form of the social hierarchy in the Bronze Age settlements? What was the status of women? What organization lay behind the successful foreign trade of the Minoan economy?

Significant as these questions may be, none of them touches on the most fundamental problem: What was the source of the relative harmony of Minoan society? At the height of the Age of Palaces in 1450 B.C., no Minoan settlement was fortified. All of the settlements were in easily accessible, scarcely defensible positions. Crete's location may account for its peaceable relations with the mainland powers, but the location cannot account for the apparent absence of armed conflict within Cretan society during the palace period. It has been suggested that the rich ritual practices of Minoan society could have served to redirect aggressive impulses. Such an observation, however, merely conceals the deeper question. At the heart of what we call civilization is the sublimation of aggressive impulses: their redirection toward higher and more abstract purposes than killing fellow beings. Why that capacity appeared in a highly developed form among the seafaring inhabitants of a small, sunbaked island in about 2000 B.C. remains a profound and intriguing mystery.

FURTHER READING

- THE PALACES OF CRETE. James W. Graham. Princeton University Press, 1969.
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