CHAPTER 1.
INTRODUCTION

1.1 Historiography and Explorations in Protopalatial East Crete

More than a century has passed since Sir Arthur Evans recognized what he called the First Palace Period and divided Bronze Age Crete into Early, Middle, and Late Minoan periods, according to the stratigraphic ceramic sequence from the Palace of Knossos (Evans, 1906; 1921). This stratigraphic dating created the basis on which most Minoan archaeologists defined the Protopalatial period or Middle Minoan Bronze Age into their sites. It also spawned a number of chronological challenges and ultimately revealed variations in the development of different parts of Crete, highlighting both synchronicities and anachronisms that appear in the material at different sites, with the most prominent example being the Palace of Phaistos, based on architectural evidence and pottery distinctions, related to the presence of Kamares Pottery and its stylistic distinctions in the different periods of the Protopalatial (Fiandra 1961–1962, 125, Platon 1961–1962, 128, Zois 1965). Thus, since the beginning of this period, there is clear distinction and relation of the ceramic material with built spaces, like the Palaces. The generally accepted relative chronology of the Protopalatial period is 1925/1900 BCE–1875/1850 BCE (Middle Minoan IB), 1875/1850 BCE–1750/1700 BCE (MM II) (Manning 2010).

The appearance of the Kamares pottery has been one of the most important diagnostic aspects utilized in developing a chronological sequence for excavations in east and central Crete since the beginning of the early, twentieth–century excavations at Malia, Palaikastro (Bosanquet 1901–1902; Bosanquet and Dawkins 1902–1903; 1923), Trapeza (Pendlebury and Money–Coutts 1939; 1940), Gournia (Boyd et al. 1908; Hall 1905), Vasiliki (Seager 1905; 1907), Vrokastro (Hall 1914), and Mochlos (Seager 1909; 1912), which each included material that was similar to that of Knossos and was dated to the Protopalatial Period. Through these primary explorations and publications, the general typology for the Protopalatial ceramic material was shaped, and soon the relationships between those sites were explored based on apparent synchronicities and comparanda. Apart from the chronological data that they provide for comparisons and discussions, these first excavations also specifically laid the foundation for studying technological implications in the ceramic material, such as the primary introduction of the wheel during the beginning of the Protopalatial period (Bosanquet and Dawkins 1902–1903, 301; 1923, 15).

Since these first excavations and their subsequent printed contributions to the field of Middle Minoan studies, comparative analysis of pottery outside of the Palaces has blossomed, both amongst each site and in comparison, with the palatial Centers. Walberg created a system of chronology based on Kamares pottery found at the Palaces that included the equivalent dates from Evan's tripartite system at Knossos (1906). She also developed her studies in the material that presented polychrome decoration from the sites outside the Palaces, highlighting regionalism and creating a dichotomous relationship between Palatial and provincial pottery (Walberg 1983). A second major work that followed the early publications is Andreou's dissertation, which focused on pottery groups from the Protopalatial period in Crete (Andreou 1978). His work developed independent pottery groups for each region of Crete and underlined inter-site synchronisms and differences in the sub-periods of the Protopalatial. Further studies also related to the pottery of these earlier excavations, have focused especially on the sites around the Mirabello Gulf and their typological and stylistic characteristics.

Betancourt discusses problems in the chronology of the dark-on-light pottery on east Crete, concluding that certain Protopalatial phases last longer than at Knossos in which the transformations between sub-periods are quick and marked (1977). This observation points out the varied and perhaps asymmetrical transactions between central and eastern Crete during the Middle Bronze Age. The success of stylistic comparison toward understanding relationships and dating sequences led more researchers to create catalogs of ceramic material to expose the material for comparisons. This is true of archaeological collections such as at the University Museum of Pennsylvania, which has a surprisingly rich collection of ceramics from the Mirabello area (Betancourt 1983; Betancourt and Silverman 1991). The dating of the vessels from this collection created useful comparanda in a subsequent discussion of chronology. The aspect of regionality had also affected the analysis of the data from excavations of the late 1970's such as Myrtos Pyrgos. In the archaeological report from this site, Cadogan describes four different phases of Myrtos-Pyrgos (Pyrgos I, Pyrgos II, Pyrgos III, and Pyrgos IV), divided by the analysis of the ceramic material and the construction phases of the site. Cadogan assigns the final moment of Pyrgos II to the MM IB and Pygos III correlates to MM II (Cadogan 1977-1978). The most important contribution of this publication is the recognition that, in Myrtos-Pyrgos III, there are close similarities with the pottery of Malia's Quartier Mu, forming a region that extends from northeast-central Crete to the southern part of east Crete. It also shows an exclusion from the Cretan community farther east, since there are no similarities with sites like Palaikastro and Zakros (Cadogan 1977–78, 74).

From the 1960s to the 1980s, excavations continued to reveal more Protopalatial layers in Minoan sites and settlements. This is the case of the settlement of Zakros, where Platon revealed Protopalatial structures containing ceramic and other material that revealed intensive occupation in the Protopalatial during the Middle Minoan period (Platon 1962; 1962–63; 1968; 1969; 1970; 1971; 1972; 1973; 1975; 1977; 1979; 1981). This interest in the Protopalatial period extended to each part of east Crete with the continuous excavations at Malia conducted from the 1940s through the 1970s, which revealed a Palatial structure and several quarters of habitation, all of which were part of a large Bronze Age town. The results of these excavations have been published in various monographs and articles in journals (Demargne and Gallet de Santaire 1953; Demargne 1945l Deshayes and Dessennes 1959; Pelon 1970; 1973; Poursat 1966; 1972; Poursat et al. 1978).

In addition, the early excavation projects were foundational for later investigations in east Crete that would reveal more Protopalatial material that drew earlier work into better focus, particularly in terms of chronology. Continued comparative work and diligent publication facilitated further observations on both local and regional scales. Some of these later excavations were continuations of former campaigns. They provided better chronological sequences for east Crete, all with an eye cast toward the new studies at Knossos, which were clarifying and reconsidering Protopalatial material from Evan's excavations (MacGillivray 1998; 2007, MacDonald and Knappett 2007). Thus these new publications considered Palaikastro (Knappett and Collar 2007, Knappett and Cunningham 2012), new sites as Petras (Tsipopoulou 1990; 2002; 2012; 2016; 2017, Tsipopoulou and Hallager 2012 and Haggis 2017), Mochlos (Soles and Davaras 1996; Brogan and Koh 2011; Doudalis 2016, Doudalis 2018), Vrokastro (Hayden 2003), and Malia (Poursat and knappett 2005; Knappett and Pomadère et al. 2017) that together provided new information regarding the various sub-periods Protopalatial period especially in east Crete and their correspondence on different models of understanding the Protopalatial societies.

1.2 The Surveys in the Mirabello Gulf: Social Organization in the Protopalatial Period

Several surveys conducted in the Mirabello area and east Crete have proven invaluable for understanding the Protopalatial period and its phases. These revealed a number of important results based on settlement patterns and their fluid transformation in a local and regional social environment. Five surveys have been conducted in the Mirabello Area, those of Gournia (Watrous et al. 2012), Kavousi (Haggis, 1996; 2005), Vrokastro (Hayden et al. 2005), Pseira (Betancourt et al. 2005a), and Chryssokamino (Betancourt et al. 2005b). These surveys in the Mirabello area produced interesting results concerning the habitation of this area from the end of the Prepalatial (EM III–MM IA) through to the sub-periods of the Protopalatial (MM IB–MM II)[1].

The material from the Gournia survey indicates that the EM III–MM IA periods show a drastic decrease in the number of sites from the preceding period. It also shows that big sites such as Gournia and Vasiliki grow and two site clusters occupy the hinterland of Cha Gorge and Monastiraki (Watrous and Schultz 2012, 33–35). According to Watrous and Schultz (2012, 38–39), the societal pattern was affected by the arrival of newcomers at the end of EM IIB, who were prone to the defensive sites, while in MM IA there is an observed nucleation. Their interpretation suggests that the region was constituted of different ethnic groups that surround the Mirabello Gulf based on the analysis of the mortuary practices at Mochlos and the elite houses at Gournia and Vasiliki (Watrous and Schultz 2012, 40). They interpret the elite tombs of Mochlos, Myrtos Pyrgos, and Gournia as indicators of the diversification of elite groups from lower social classes (Watrous and Schultz 2012, 40). The material from the next period (MM IA) indicates a distinct growth of sites in the region around Gournia with the new sites clustered around those which were already created in the Prepalatial period, arranged around water sources, separated from each other by unoccupied land and arranged around a central settlement (Watrous and Schultz 2012, 42). This hypothesis employs a heterarchical system of diffused power over a single region. The differentiation of the sites between old and new may indicate the social competition between the traditional heterarchies and the people who came to occupy parts of their lands. The same clustering of sites is found in the Chrysokamino survey, in which small sites are clustered around the main one, according to Betancourt (2006, 287). The survey at Kavousi (Haggis 2005, 69–70) shows a similar pattern to that of Gournia. The number of sites in the area increased from the coastal line of Tholos to the uplands of Avgo, and the number of sites also increased in size. However, what appears around Kavousi is a distribution of farmsteads in the area that probably were related to a settlement that remains undiscovered. However, the presence of large settlements is not apparent. Sites 44 and 68 do show some monumentality indicates either that they were playing a centralized role for the community around them, or they included centralized authorities that were controlling the surrounding fertile landscape and the routes of communication (Haggis 2006, 72–73).

The survey of Vrokastro has confirmed much of the same processes as the above two other settlements. During the MM I and MM II period it shows a "population explosion" (Hayden 2005, 93). Again, there is continuation and expansion of sites from the EM III–MM IA but also the appearance of new ones located on the coast, close to the fertile valley and the uplands. This variation of size signified a societal model that included small, isolated farmsteads for nuclear families, large farmsteads for extended families that were home for hierarchies, acting as heterarchies, villages that included small communities and settlements that were the medium of the communication with the outer world (Hayden 2004, 96). What we can understand from the surveys and their interpretation is

[1] It is not our intention to describe in detail the survey processes, but we will present some of the results that came out from this analysis of the survey data for the periods of interest. Our goal is to present the results of the analysis in order to understand how Mochlos was behaving in the Middle Minoan Period.

a population growth in the uplands, lowlands, and the hills (Watrous and Schultz 2012, 44; Hayden et al. 2004, 97–98, 115, Betancourt 2005, 287–288). The settlements also experienced growth in the Gournia area (Boyd et al. 1908), Vasiliki (Zois 1992, 279), Pseira (Betancourt 2005, 286), Mochlos (Soles 1996, 426–428), and Myrtos Pyrgos (Cadogan 1977–988, 74). In terms of social organization in the Mirabello region, Watrous and Shultz suggest that the area included elite structures and common people without having a pronounced center controlling the region (Watrous and Schultz 2012, 48–49). The material from the survey at Kavousi indicates that the social picture at least at the regional level is one of the distributed heterarchies negotiating their power on both a local and regional level (Haggis 2006, 74). Those readings of the material create a dynamic environment in which multiple different social structures interact and negotiate their power in a fluid environment in which products, crafts, ideas, and people are moving and interacting. This material and the interpretations from the surveys assist us in the analysis of the local and regional interpretation of the ceramic material.

1.3 Theories of Social Organization in East Crete: Protopalatial States

Given the excavations of Protopalatial material and the disciplinary progression towards regional approaches outlined above, as well as the development and conception of the term Protopalatial, which defines the first structures below the later Palaces of Knossos, Phaistos, and Malia, created the need for a scholarship for the understanding of territories that the Palaces controlled and the nature of this control. This disciplinary necessity was borne of the existence of the palatial structures themselves, and the circulation of similar Palatial material culture in the same geographic region. These similarities are also present in the pottery material, creating the framework for the use of the term “State”.

One of the first works that considered the interplay of Palaces and territories was established at the beginning of the 1970s (Renfrew 1972, 368). The theory of Peer-Polity Interaction expresses a number of interchanges between autonomous socio-political entities that are living in close, regional proximity and which form “primary” or “secondary” states (Renfrew 1983, 1). The state or polity thus occupied a certain territory, within which the members could move and use resources freely (Renfrew 1983, 4). Cherry applied this model to Crete to understand Minoan state formation and hypothesized that it was first found in the Protopalatial period (1984) while accepting that the palatial system of Crete had its background in processes that started in the Early Minoan period as first suggested by Branigan (1970), he identifies the beginning of the first states in the Protopalatial period (Cherry 1986, 21). A primary criterion to understand the existence of polities in Crete is to identify characteristics that are similar between different entities and their differences that may have led them to compete (Cherry 1986, 24).

In an earlier paper, Cherry had already stated that Protopalatial states were a result of rapid changes that happened at the end of the Prepalatial and the beginning of the Protopalatial (1983, 38). The similar patterns he identifies among polities are the appearance of administration, the use of peak sanctuaries as places of social gatherings, the appearance of Palatializing elements, such as central courts, or palatial characteristics that are scattered inside settlements such as Malia, and the use and distribution of the Kamares ware (Cherry 1986). From the outset, discussions about the social and political organization in Protopalatial Crete involve observations regarding the production, distribution, and consumption of pottery. Cherry’s approach at this point demonstrated that there was a social hierarchy between the Palace and their settlements, in which the Palaces defined their territories according to which settlements belonged to them. The distribution of products to the peripheral settlements has also been estimated in a number of studies, following Chery’s ideas the

Protopalatial "Peer-Polities" model (Branigan 1988, 13–14; Tumasonis 1983, 303–304; Van Effenterre 1983, 63). Acceptance of political nucleation or centralization that is responsible for production, distribution, and consumption strategies occupies a large margin of theoretical literature in the 1990s, for example as it appears in the work of Yoffee (1993, 69–71) and for the Protopalatial period, the Palaces were formed and had the same functions as their descendants (Cherry 1986; Dickinson 1994; Watrous 1994).

At the same time, alternative theories were engaging with the phenomenon of state, focusing on heterarchical structures and corporate political strategies (Schoep 2002, 18, Blanton 1998, 149) of individuals that compete within the state and transform its characteristics. This heterarchical system consists of elements or agents that are either unranked or are of lower rank but have the inclination and the means to gain in social status and who aim at upward social mobility (Crumley 1995, 3). Thus, instead of the general State model society, the discussion led to the definition of different agents that interact in the established framework of the center and its periphery. In addition, the appearance of those latter theories resulted in a scaled system based on interaction and integration on the micro-, meso-, and macroscale (Parkinson and Galaty 2010, 10). The purpose of this scalar division is the exploration of different spheres of interaction, to identify social, cultural, and economic relations. This micro-, meso-, and macro-scale model can be used in the world-system theories to explain the interaction between different polities from different regions, by exploring interregional dynamics of households and settlements in a state-level system (Kardoulias 2010, 28).

The analysis of the Cretan States using the heterarchical idea led to the idea of "secondary" states, on the contrary to the "primary" states of Egypt and the Levant. At least for the Protopalatial period, the early Minoan states can be described with the term secondary, in which they are smaller than the neighboring states of the Levant and Egypt, but they all developed similar bureaucratic systems and monumental buildings with similar ground plans (Schoep 2002, 2010, 2006, 53; Parkinson and Galaty, 2007, 119). This seems to be accepted in the entire bibliography, where it is stated that there were ideological and material connections between Crete, the Levant, and Egypt from EM IIA (Panagiotopoulos 2001) to the end of the Prepalatial and the beginning of the Protopalatial, illustrated in the imitation, incorporation, and transformation, but also the adoption of techniques that were used for the creation of local expressions such as the hieroglyphic script (Olivier 1986), or the adoption of the wheel toward the elite, local pottery styles, such as Kamares pottery (Schoep 2006, 54) as well as architectural imitations (Watrous 1987; Schoep 2006, 55–58). This connection with the Levant, Egypt, and the rest of the Aegean (the Cyclades and Mainland Greece), seems to continue in the MM IA and through the duration of the Protopalatial as is evident from the distribution of Cretan-produced pottery to Egypt, the Levant, and the rest of Greece (Cherry 2010, 122–125). Models of interregional interaction that concerned adoption through knowledge between different geographic regions in the framework of political ideology relating to elites have been already expressed in the general bibliography (Kristiansen and Larsson 2005; Earl and Kristiansen, 2010, 228–230; Helms 1992, 157). However, the acceptance of different tribal groups in different regions from the Prepalatial is widely accepted in different studies of the Protopalatial Period (Cadogan 2011, 127). This interpretation accepts diverse social groups that occupied the landscape at the end of the Prepalatial period before the beginning of the Protopalatial (Haggis 1999, 70–71; 2002, 123). These tribes formed elite social structures that controlled their region through ideological practices and rituals (Haggis 1999; Schoep 2006).

The top-down approaches that led to the creation of the model of the "peer-polity" interaction were challenged by the later scholars of the "secondary" polity model which was used to synthesize the interpretation of both old and newly excavated material. Studies of older finds alongside newer material have shown that different regions developed in different periods. Thus, studies undertaken in Malia and Knossos showed that monumental structures in the sites of Malia, Knossos, and Phaistos were established before the Protopalatial period (Schoep 2004, 244; 2010, 67; Pelon, 1999, 479). That assumption also deals with the idea of a heterarchical system in the immediately preceding Early

Minoan period, as it is shown by marked social complexity in different parts of Crete (Haggis 1999; 2002; Betancourt, 1997; 2006). In addition, the idea that hierarchical structures spawned the Palaces has also been challenged in recent scholarship. Schoep's work at Malia has shown that multiple buildings in different quarters share monumental Palatializing characteristics, showing a distribution of the 'elite' structures that were scattered around the settlement (Schoep 2002a; 2002b, 20; Schoep and Knappett 2004, 28) together with specialized functions that have been attributed to the Palaces, such as administration and craft specialization as can be seen in Quartier Mu (Schoep 2002b, 20; Poursat et al. 1978).

In addition, there are no Palatializing characteristics in the Protopalatial phase of Knossos, Phaistos, and Malia in the buildings that were located underneath the Neopalatial Palaces, such as the Minoan Hall or the Lustral Basin (Schoep 2006, 40–41). Instead, these Palatializing features appear in buildings and Quarters outside the Palaces. That was a challenge to the central elite infrastructure for all the sites that developed within a Palace, and who was ruling from the central area of the Palace, but created the idea of the scarcity of authorities around the same town expressing themselves in different ways, for example supporting and controlling specialized material such as textile, pottery, and metals (Poursat 2012, 181–183), and were probably cooperating or competing on a regional level, and possibly they did not exercise similar power (Schoep 2010, 66–77). This distribution of power that appears in the Palaces, also appears outside of them, with multiple regional sites sharing similar architectural characteristics with the main Palaces of Knossos, Phaistos, and Malia (Schoep 2006, 39; Tsipopoulou 2002).These heterarchical relationships create a dynamic and complicated top-down system between the elite or different heterarchies that lived within the periphery of the settlements, which acknowledge the status of the centers in adopting and imitating their habits and material culture (Schoep 2006, 58). These heterarchical approaches to Protopalatial Crete have been applied to the study of pottery, to understand how social relationships can be incorporated into the definitions of terms like state, and control of production, distribution, and consumption of the ceramic material. The recent excavations of Protopalatial strata on Crete have revealed new centers such as Petras, a Palace in MM IIA (Tsipopoulou 2002), illustrating that the political climate in east Crete is much more complicated than previously thought. Counting Petras and Malia, two known Centers operating in proximity in the MM IIA and MM IIB periods.

1.4 Ceramics in the State Model

The review above presented two differing ideas based on theoretical approaches to Protopalatial political organization. What has not been discussed so far and is generally accepted is the division of Crete centers and peripheries that show distinct cultural boundaries. Pottery has played an important role in the discussion about states in Crete, but another material in new studies has also been used to show distinctions between regions, such as the distribution of seals (Anastasiadou 2016). Through the distribution of seal types and styles, Anastasiadou draws a boundary between Malia and Knossos (2016, 169), the former expanding in east Crete and the latter in Central Crete. By distinguishing between the prismatic seals that appear in Malia and Petras and the region in between and the four-sided hard stoned prisms that appear in east Crete, Anastasiadou's work elucidates a different state in the far eastern part of the island (Anastasiadou, 2016, 19). However, her analysis does show influences, which do not translate into and should not be read as strict control. Other studies used geographic data to define centers and their peripheries, through computational and geographic analysis, to understand the term territoriality and reconstructing political landscapes, these studies compare geographic data and interpretations of other cultural material (Bevan 2010, 29, 38–43). In addition, recent work (Whitelaw 2018, 238–241), aimed to understand the relationship between the center and periphery through the aspects of control of the centers in the immediate territory, without

denying the aspect of influence but saying that the material culture could not be used as a safe criterion to define political territories (Whitelaw 2018, 239–240). However, what should not be overlooked is that material culture, like pottery, is a medium that communicates standardization between regions, especially in certain periods such as the Protopalatial and even if they do not show control of arable land in which different communities are situated, may assert cultural connections that could be transformed in relations in which the different heterarchies that occupy a region are related to trends that centers and their elites have set.

Pottery studies were also used for understanding state formation and social interaction. In fact, the distribution of the ceramic material was one of the main criteria for creating this model. The analysis of the production, circulation, and consumption of Kamares pottery plays a significant role, and its relation to the centers that according to Cherry was a Palatial style, for which potters in the palaces were the main producers and the palaces were the distributors and the consumers of this style and through its imitation in non-central settlements shows this extant of influence and control (Cherry 1986, 35–37). Kamares ware is a specific ware whose characteristics are composed of white and red motifs (Day and Wilson, 1999, 352) on a dark lustrous slip that requires specialist knowledge and strict control in the firing process (Betancourt 1984; Day et al. 1997). It is so named because it was found in the Kamares cave (Mariani 1895; Dawkins and Laistner 1912–1913, 13–21). Recent pottery studies in central Crete, where the majority of the Kamares Palatial ware has been found, show that the production centers of Kamares vessels were not in the Palaces but peripheral areas in the Messara and the Pediada (Rethemniotakis and Christakis 2004; Schoep 2001, 19), which shifted our understanding; rather than operating under the patronage of Palatial authority, the Palaces were consumers of a good produced in the periphery. Because of the vast distribution of the Kamares ware in different areas and contexts, it seems likely that different people had access to this specialized pottery ware, perhaps indicating that Kamares vessels were not made by workshops attached to the Palaces but from independent specialists who were not serving only the occupants of the Palaces but other upper-class social units (Van de Moortel 2002, 205). In addition, Kamares ware imitations of local manufacture have been identified outside of Central Crete, such as in the area of Malia in Quartier Mu (Poursat 1983, 278). In addition, other studies show that specialized pottery production existed before the founding of the first Palaces, thus it should not be considered that specialized pottery production was one of the main criteria for the definition of the Protopalatial state (Whitelaw et al. 1997; Day and Wilson 2002; Day et al. 1997; Kiriatzi et al. 2000; Day and Wilson 1998, 353–354).

The studies of Early Minoan and Middle Minoan Crete have shown that pottery was used to create narratives of social stratification through the production and consumption of particular pottery style**s**. Day and Wilson support that the Palaces were used as the places of performing status during the Protopalatial period, because of the discovery of large amounts of drinking wares and the specialized characteristics of the Kamares pottery. The act of feasting and drinking are media, used for transforming material culture into power (Hamilakis 1999, 40–41; Hayden 1996, Dietler 1996). Thus the "performance" of the Kamares-style vessels acted to convey the power of their owners. This is not a phenomenon that appears in the Protopalatial centers of central Crete, has been observed already from the Early Minoan period. During this period in Knossos, there were found drinking sets for feasting and drinking ceremonies (Wilson 1985) that were binding and bonding the community, but they were also used simultaneously for the status performance (Day and Wilson 2002, 149) a tradition that continued with the consumption of the Kamares ware in the Palaces (Day and Wilson 2002, 160).

Conspicuous consumption of ceramic wares in drinking and eating ceremonies has been identified also in the Palace of Phaistos, from Early to Middle Bronze Age (Todaro 2012, 229) as well as in the MM IB Lakkos deposit in Petras (Haggis 2007, 718; 2012), a dump of pottery just before the construction of the Palace at Petras in MM IIA (Tsipopoulou 2002). The Lakkos deposit consists of different kinds of tableware including cups decorated in different styles that include

polychrome, spatter ware, white-on-dark, burnished, white-slipped, and plain cups. These different cups and wares were used to distinguish the status of various participants in feasting ceremonies (Haggis 2007, 756). In addition, in the Archive area in Petras, dated to MM IIB, when it was destroyed (Tsipopoulou and Hallager 2010), a distribution of vessel types appears. The presence of a metalizing, crinkled rim kantharos alongside semi-globular, carinated, conical, and straight-sided cups lent itself to the case for clear social stratification, between the people that were operating in the same space (Tsipopoulou and Hallager 2010, 148). The same argument for status performance through drinking and eating experience depicted in drinking and serving vessels from EM to MM I–MM II periods as a continuation of rituals exercised in peak sanctuaries and the Palace area (Tsipopoulou 2012, 121–123; Tsipopoulou 2017a, 113; Tsipopoulou 2017b, 97). Pottery as a status-performer might also lend itself to the interpretation of the Mochlos ceramic material here, which aims at the comparison of multiple contemporaneous deposits.

1.5 The Malia-Lasithi State: A Diachronic Approach

In the theoretical approaches to center and peripheries, the presence of the Center at Malia directed researchers to seek criteria for understanding the nature and limits of this state. Cadogan (1995, 97–99) defines the cultural region of the Malia through the pottery and other material that expanded from the Gournes and Kasteli Pedhiada to possibly Chamaizi, including the Mirabello region during MM II (Cadogan 1995, 98–99; Knappett and Schoep 2000, 365), because of the differences in the ceramic typology from Knossos, Phaistos, Palaikastro, Zakros and the existence of granodioritic vessels in Malia.

The perception of Malia as a center with territorial attachments in east Crete spurred comparative studies. Middle Minoan material from Myrtos Pyrgos and Malia, Knappett (1997; 1999a; 2012) demonstrate similarities in the fine tableware that was produced locally at both sites. Thus, he proposed a model of a decentralized and segmented state (Knappett 1999; Sofianou and Brogan 2012), in which the central settlement of Malia set the trends that were emulated by the occupants of Myrtos Pyrgos (Knappett 1999a, 615, 627; Poursat and Knappett 2005). Cadogan also adopts this model, which creates a basis on which to interpret Mochlos in meso- and macro scale, especially in the identification of shapes that show close relations with Malia during the Protopalatial period (2011). What remains unclear is the extent of ideological control and its nature. Another important question is when such a polity exists and if the formation of a Malia Lasithi-State was a relatively singular event that happened during the MM IIB period or a process that began earlier. According to Betancourt's consideration of pottery and seals, this region was politically connected with Malia during the MM IB–MM IIA period (Betancourt 2007, 216).

1.6 The Potter's Wheel

Many studies have been made to explain the elite character of the potter's wheel and attribute this technological shift to Egypt and Levant where the wheel was introduced in the Early Bronze Age, strictly connected with the wheel-made manufacture of elite Kamares Pottery (Schoep 2006, 54; Knappett 1999b, 121–129), or with the imitation between wheel-made vessels with metal prototypes (Knappett 1999b, 125–129). However, there are indications that the wheel was introduced on the small scale starting at the end of the Prepalatial period (Day and Wilson 1999, 352;), sparking a

change in the production, distribution, and consumption of pottery. The wheel-made technique was probably introduced broadly in Crete by MM IB and was connected with craft specialization, complex social structures, intensified production, as well as population growth, and extensive use of natural resources (Knappett 1999b; Doudalis 2018, 166). The expansion of the intensive use of the wheel during the MM IB period has also been related to population movements outside of Crete in the rest of the Aegean. In different islands like Kythera (Kyriatzi 2010, 692–693), Aegina (Gauss and Smetana 2007, 63; Gaus and Kyriatzi 2011, 251), Agia Eirini in Kea (Gorogianni et al. 2016, 200), and Phylakopi (Knappett and Nikolakopoulou 2005), it has been suggested that the potter's wheel was introduced during the Middle Bronze Age in these areas as a result of migrants—including potters—that came from Crete.

Since the identification of wheel-made vessels in the early days of Minoan archaeology, for example in the early excavations of Palaikastro (Bosanquet and Dawkins 1902–1903, 304; Bosanquet and Dawkins 1923), the recent studies have been focused on understanding the technology of the wheel-made vessels and the way the wheel was used for their manufacture, through traces that appeared in the vessels or the sherds (Knappett 1999b; 2004, 259; Jeffra 2013, 43), since wheel devices are rare in Crete and have not been found regularly in the Protopalatial workshops. Such devices include wheels, bats, and pivots and have been cataloged by Evely (1988). Thus Knappett and Jeffra identified the different techniques by dividing them into wheel-made, or a combination of wheel and coil, which was called "wheel-coiling" or "wheel-shaping" as parts of the *chaîne operatoire* in the construction of the vessels, in order to understand workshop choices and production and consumption practices. Techniques and fabric analysis together are the only way we can identify workshops, as there are no architectural remains for the physical establishments themselves. Since the wheel was probably introduced to east Crete from the Levant by way of Central Crete (Doudalis 2018), through relations that are depicted also in multiple cultural materials from the EM to MM period, the wheel-coiling technique was related to population movements and social changes, related to the understanding of the continual development (Roux 2013,314–317). For several researchers (Roux 2013; O'Brien and Bentley 2011, 316; Shennan 2009) continuities are related to endogenous or exogenous influence and imitation, while the term "discontinuity" is related to the natural selection of technology that changes the social picture. In the Levant, the introduction of the wheel seems to be a result of discontinuous processes, while in the Aegean if we accept the idea that the wheel came from the Levant and Egypt is possibly a result of continuities and a result of exogenous copy (Knappett 1999b; 2004).

Most of the studies concerning wheel technology in Protopalatial Crete are related with the pottery material from the sites of Palaikastro and Myrtos Pyrgos, Malia and Knossos (Knappett 1999b; 2004; Jeffra 2013; Roux and Jeffra 2015) and show that the sites contained wheel-thrown vessels, in the case of small vessels, and wheel-coiled, for those larger vessels. These similarities indicate synchronicity between sites and have been attributed to the sharing of modes of operation and techniques among potters (Berg 2015, 17; Roux and Jeffra, 171). Mentor potters probably sponsored apprenticeships, which take a serious prolonged investment of time (Roux 2017) thus requiring relocation and domicile establishment for a long time. This may indicate that the potters could immigrate, either temporarily or permanently, possibly through marriage or other ties (Berg 2015, 29).

Against this broad theoretical background, we will try to identify if the material from Protopalatial Mochlos agrees with the other sites of Crete, and we will relate it with the social conditions and developments that happened in the Mirabello Gulf through the different phases of the Protopalatial period.

1.7 Mochlos

Mochlos is located in the eastern part of the Mirabello Gulf (**Fig. 1**), isolated from the hinterland of Crete by the Ornos Mountains that encircle a small plain and the small islet where the main settlement has been excavated. The islet of Mochlos in the Bronze Age was connected with the coast of North Crete by a small Isthmus that created a safe harbor for ships, making itself a mercantile town that flourished in the Bronze Age period (Soles 2003, 1; 2005, 429). The main settlement from which the Protopalatial material comes is located on the rocky island, so certainly the settlers there were exploiting the small plain in the west and partially to the north of the settlement as is also the case in modern years (Soles 1993, 2). This exploitation of the hinterland and its characteristics allows us especially for the pottery studies to identify clay sources and distinguish local products from imported clays and even to identify local and regional workshops.

The modern exploration of Mochlos was first undertaken in the early 20th century by Richard Seager, who published some of his findings (Seager 1909; 1912). After this preliminary exploration, the site lay dormant for some years, until Soles studied the Early Minoan House Tombs in the 1970s (Soles 1992). The exploratory hiatus ended in the 1980s, and excavations have continued since then, resulting in a number of publications and reports in a series of journals and even in dissertations (Barnard, 2001), monographs dedicated in the preliminary study (Soles and Davaras 1992; 1994; 1996) and monographs that publish excavated material and from later periods, starting from the Early Neopalatial and ending in the Hellenistic times (Barnard and Brogan 2003, Soles 2003, Soles and Davaras 2004, Soles et al. 2011, Smith 2010, Vogeikoff-Brogan 2014). Since most of the focus has been on the Late Bronze and Iron Age, a project such as this Ph.D. thesis aims to fill the gap by exploring the preceding period, the Protopalatial (MM IB–MM IIB).

Figure 1. Map of central-east Crete including Knossos, Malia, Gournia, Mochlos, Petras. Retrieved from Google Maps.

A limited amount of the Protopalatial material from Mochlos had been studied previously, and the results were presented in an excavation report (Soles and Davaras, 180–184) and in a few

articles (Brogan and Koh 2011, 321–336; Doudalis 2016, 2018). In the excavation report, Soles discusses part of the material underneath House C.3, dating this deposit to the end of the Protopalatial period (Soles and Davaras 1996, 181). In the article by Brogan and Koh (2011), they discuss and present three Protopalatial deposits excavated underneath House C.7, by analyzing a selected amount of the material, making observations about production, distribution, and consumption in the broader Mirabello area during the final phase of the Protopalatial period related to different sites of the region (Brogan and Koh 2011, 334–335). These two papers on the Protopalatial material of Mochlos, however, consider a limited amount of the ceramics belonging to these deposits, offering a valuable starting point for more detailed research. In the present paper, the intensive study of the material from Mochlos considers the primarily studied material from all over the settlement (**Fig. 2**) but enriches it with the full study of these deposits, but also with the additiofin of new ones that complement the image of the settlement in the Protopalatial period.

Figure 2. Distribution of Protopalatial walls underneath the LM settlement at Mochlos (Drawing by Douglas Faulmann)

1.8 Methodology

The analysis of the Protopalatial material followed certain steps in order to produce results about the nature of the deposits and their characteristics. Since the material belonged to different contexts and different stratigraphic layers, the total amount of ceramic material was formidable. We counted, weighed, and classified 37,703 sherds, and accessioned 1038 Protopalatial sherds and vessels in statistical tables, and registered them in the Mochlos database. These accessioned objects each generated what we at the Mochlos Archaeological Project call a P–Number; these are unique identifiers that each relate to one specific object or sherd. The material was sorted, cataloged, analyzed by fabric, and quantified according to the methods of ceramic analysis described in Orton et al (1993).

The term classification (Adams 1988, 43) refers to a set of different categories that exist and complete one another in one or more similar contexts. As Smith states (2002, 98), classification involves groups, which are defined exclusively by the analyst, who creates the set of the used data through the selection of the material that is desired to be interpreted. The classification should be open to modification (Smith 2002, 98), in order to leave an open space for the introduction of different sets of data that could serve different or similar interpretations with the data that are already processed. On the other hand, the typological distinctions, which are parts of a classification system (Adams 1988,43) are made to sort different material into certain unchangeable categories, and every component should belong to only one category. In this case, typology is the allocation of an object to a definitive category that describes a type and includes all these characteristics that separate this type from others (Smith 2002, 99). That leads our analysis in the establishment of these characteristics or variables to create different ways of classification.

The process followed here distinguishes different types based on perceived function, and within that general category, variations in shapes are assigned a type (Type 1, Type 2, etc.). Second, we classify the fabric of which the vessel was made, and finally, we describe the surface treatment, such as decoration or burnishing. Fabric and decoration were used mainly for statistical purposes to further explore variations of type and to extract conclusions about preferences in the production, distribution, and consumption system.

1.9 Discussion of Typologies

The form of our typological distinctions follows a contextual pattern. This means that we discuss the ceramic material and its typology in their context. The typological references for the shapes of the vessels follow the pattern that has already been established for east-central Crete, specifically in the Mirabello Gulf (Andreou 1979; Betancourt and Silverman 1991; Nowicki 2008, Betancourt 1984) Malia (Poursat and Knappett 2005; Knappett and Pomadere 2017), Palaikastro (Knappett and Cunningham 2012; Knappett and Collar 2007), Petras (Haggis 2007, Tsipopoulou 2016), and Knossos (MacDonald and Knappett 2012; MacGillivray 1999; Momigliano 2007). These publications classify ceramic typology into their contexts from the different sites and according to their shapes and different types.

The first step for our typology was to create certain categories of vessels, according to the function that each vessel would fulfill. Thus, the categories we created included the storage, pouring, drinking, serving, and cooking vessels. These different and flexible categories were divided into different shapes, and these shapes were further divided according to morphological characteristics and constructive characteristics of these deposits. Since the Protopalatial material from Mochlos presents different stratigraphic layers and thus different chronological sequences, the typological analysis assists in recognizing continuations, disruptions, and evolutions. The basic criterion for distinguishing the different types is the way that the vessel was shaped and its form. Since in this doctoral thesis we selected objects of varying degrees of preservation, some types have been created by describing the way that the rim, the base, the handle the legs, and the spouts are formed. To understand these distinctions, we have divided the vessel's section into three parts. The first is the lower, including the base and the lower wall of the body, the second is the middle wall of the body that in some cases may include a handle or the lower attachment of a handle and the upper wall of the body that in some cases includes a shoulder, a neck, a handle or handle attachment, a spout, and a rim. Taking the section of a vessel and observing its characteristics was a primary component that allowed us to recognize and understand different vessel types within broader categories.

Storage Vessels

The storage vessels in the Protopalatial strata at Mochlos include amphorae, jars, pithoi, and lids.

The amphorae have been divided into three types: Type 1, Type 2, and Type 3. They all describe oval-mouthed amphorae with short neck and oval mouth, but the basic distinction between these three types is the way that the middle and lower wall is formed. Type 1 has a conical lower wall section. Type 2 has a piriform base, very similar to Poursat and Knappett's ovoid-concave amphorae (2006; 155). The third type has a globular profile.

The jars are divided into eight different types. Since more than one jar shape appears, it is more valuable to create different types. Including sub-types, there are fourteen total categories of jars at Mochlos. Type 1 is the carinated jar. It is small in size, with a flat base and low carination, convex middle and upper exterior wall, and a narrow mouth. Types 2 and 3 belong to fragmented examples that preserve only parts of the base and the lower wall of the body. Type 2 has a flat base and a straight, slightly conical body profile, while Type 3 has a flat base and concave narrow body profile creating a piriform base. Type 4 is the general pithoid jar category. They are large vessels, but they are smaller than the pithoi. This type is divided into subtypes: Type 4a, Type 4b, Type 4c. Most of the examples of this general type preserve part of the rim and the upper body wall. Type 4a has a rounded thick rim and a short neck. In addition, Type 4b has a very large base and conical profile, and Type 4c has a wide, flat, everted, wide mouth and a short neck. Type 5 belongs to the category of the hole-mouthed jar. It has a limited neck (when it has one at all) and a narrow mouth, which is smaller in diameter than the shoulders, and all the examples have horizontal handles. This type is divided into Type 5a, Type 5b, Type 5c, and Type 5d. Type 5a presents an everted rim, a very short neck, globular shoulder, and horizontal handles. Type 5b has an inverted rim and does not preserve a neck. In addition, Type 5c has an inverted, rounded rim and very short neck, while Type 5d, has an inverted rim, a short, ribbed neck, and a globular shoulder profile. Type 6 jars have a semiglobular profile, and there are two subtypes. Type 6a has an inverted rim and immediately semi-globular profile. Type 6b represents examples that have a flat base and semi-globular lower exterior wall. Type 7 describes the wide-mouthed jar. It is similar to the Type 4c pithoid jar, but the examples are smaller and thinner. Type 8 describes the bridge-spouted jar. It has an inverted thin rim and a bridge spout.

There are two types of pithoi. Type 1 has a short neck, an everted rounded rim, conical profile, and four rounded handles on the upper exterior wall, two on both the sides of the middle wall and four on each of the sides of the lower wall. Type 2 has an everted rim, short neck, globular profile, and four vertical ovoid handles on each of the sides of the upper exterior wall.

The lids belong in this category because they shield the rim and contents of storage vessels. Seven lid types are present. Type 1 has a flat top, convex wall, and round rim. It is divided into two different types. Type 1a has a rounded handle, and Type 1b does not preserve any trace of a handle. Additionally, Type 2 has a flat, discoid body profile and a knob handle at the middle of the top surface. Type 3 is also divided into two types. Type 3a has a flat discoid profile and rounded handle, while Type 3b has a flat discoid surface and does not preserve any handle trace. Finally, Type 4 is also divided into two types. Type 4a has a flat base, flared-rim profile, and knob handle in the center of the top surface, while Type 4b has flared rim profile and a loop handle on the middle of the upper surface.

Pouring Vessels

The pouring vessels include jugs and pitchers of surprising variety. Twenty different jug types appear in these deposits. In the case of jugs, we faced the same problem as with the jars, and that was the degree of preservation of the complete vessels. The preservation varies from less than one-quarter extant to wholly complete. Type 1 describes jugs with cutaway spouts. It is divided into Type 1a, Type 1b, into Type 1c. Type 1a has piriform to conical body profile, short neck, and cutaway spout. Type 1b has a flat base, globular profile, and cutaway spout, and Type 1c represents examples that have a flat base and conical body profile, short neck, and cutaway spout. Type 2 belongs to a trefoil-mouthed juglet. It has an upraised base, bell-shaped, lower body exterior, and a concave upper wall of the body that rises to a trefoil mouth with a vertical rounded handle. Type 3 is also divided into two types. All the examples preserve parts of the base and body, with Type 3a describing a flat base and straight, slightly conical body profile. Type 3b has a flat base with a straight, slightly globular lower body. Type 4 describes the open jug shape. It has a flat base, globular body profile, and a straight, rounded rim. Type 5 is the bridge-spouted jug and has three sub-types. Type 5a has a ribbed neck, high carination, a vertical rounded handle, and a bridge spout. The type has a short neck, globular body profile, and bridge spout. Type 5c has a flat base, conical profile, rounded shoulder, and bridge spout. Type 6 describes the "pear-shaped" jug. Type 6a has a ribbed neck, pear-shaped profile, and vertical rounded handle, while Type 6b has a tall neck, pear-shaped body profile, and a vertical rounded handle. Type 7 describes the trefoil-mouthed hemispherical jug and has two sub-types. Type 7a has a hemispherical body profile and two rounded handles on each side, while Type 7b has a trefoil mouth, a hemispherical body profile, and a vertical, rounded handle attached below the rim and the middle exterior wall. Type 8 describes the collared-neck jug category, which has a short neck and semi-globular body profile. Type 9 describes the "Chamaizi" juglet. It shows many parallels with Malia's Quartier Mu (Poursat and Knappett 2005, PL. 39, 1128, 1130). The Mochlos example has a flat base, bell-shaped lower body profile, tall neck, and flat mouth. Type 10 is another trefoil-mouthed juglet, different than Type 2, with a flat base, semi-globular body profile, and trefoil mouth that forms a spout. Type 11 describes jugs with offset bases and straight, slightly globular profiles. Type 12 illustrates instances of vessels that have a flat base and immediately globular profile. This type could have been a sub-category of the jugs with the cutaway spout, but the state of preservation does not allow us to confirm this observation. Finally, Type 13 is a unique example of a cooking jug that has a flat base, straight to slightly globular profile, and large vertical, a rounded handle attached on its upper part below the rim, and above the base.

The second category of pouring vessels belongs to the pitchers. This category is divided also into two types, Type 1 and Type 2. Both have a flat base, concave lower wall, conical middle-to-high wall, and rounded shoulders that rise to an inverted rim that pulls out creating a spout. The difference between these two types is the location of the handle. Type 1 has a vertical rounded handle on one side of the vessel, while Type 2 has two horizontal handles on each side of the vessel.

A third shape that could belong in either storage or pouring vessels is the ewer. Type 1 ewers have a flat base and piriform body profile that rises to an inverted rim. Two upraised, horizontal handles are located on both sides of the shoulder of the vessel.

Drinking Vessels

This section outlines different types of cups that were present in the Protopalatial strata at Mochlos. It is the most common category of vessels, a ratio reflected in the relatively high number of accessioned objects. Ten cup categories have been identified in the different strata. These are the

carinated cups, tumblers, one-handled conical cups, straight-sided cups, semi-globular cups, conical cups/squat conical tumblers, angular cups, and the tripod cooking cup. All these shapes are divided into sub-types that together aid in the development of a chronology as well as an understanding of production and consumption strategies in the sub-periods of the Protopalatial.

Ten different carinated cup types appear in the Mochlos stratigraphic layers. Type 1 carinated cups describe a trefoil-mouthed vessel of this category. It has a flat base, semi-globular low wall profile, middle to high carination, a concave upper wall that comes to a trefoil-mouth, and a strap handle. It is a ribbed example that has shallow even grooves on the exterior surface, Type 2 describes the ribbed carinated cup without a trefoil spout. It has the same profile as Type 1, and it is divided into two sub-types, Type 2a, and Type 2b. Type 2a has middle to high carination, shallow symmetric thin grooves, and a strap handle. Type 2b has middle to low carination and deep asymmetric thick grooves above the carination. It also maintains a strap handle. Type 3 describes the tripod carinated cup, which does not maintain grooves. This type is also split into two sub-types. Type 3a has three-knob legs, a flat base, globular low body, middle carination, the concave upper wall of the body, ending to an everted rim with a vertical rounded handle. Type 3b has the same profile as Type 3a but it preserves a vertical strap handle. The Mochlos example of this type has a pulled rim spout. Type 4 is the basic carinated cup type that does not preserve grooves. It is also divided into four types, Type 4a, Type 4b, Type 4c, and Type 4d. Type 4a has a flat base, globular low body profile, middle to high carination, and concave upper body that ends at an everted rim. Type 4b has low carination, a convex upper body profile, and a straight rim. Type 4c has low carination, a concave upper body profile, and an everted rim. Type 4d has a flat base, smooth high carination, convex upper body profile rising to a straight, slightly everted rim. Finally, Type 5 has an offset--sometimes ring—base, globular low wall profile, middle carination, and straight upper wall coming to a straight slightly everted rim.

Five broad types of tumblers sometimes include different subtypes. Type 1 is the conical tumbler. It is divided into three subtypes that differ in the characteristics of the construction of the vessel, and thus its final result. Type 1a has a flat base, which is thicker than the low wall of the body exterior. The lower wall is straight and turns to conical before coming to a flaring rim. Type 1b has the same profile as Type 1a, but the base and the lower wall have the same thickness. Type 1c has the same profile as the former two sub-types but preserves a grooved upper wall. Type 2 represents the flaring tumbler example. It has a flat base, concave low exterior wall, and a flared-wall profile ending at a flaring rim. Type 3 describes the straight-sided tumbler. It is a tall example that has a flat base, straight low and middle wall that turns conical in the upper body, and an everted rim. Type 4 describes the miniature tumbler. It is small, with a flat base and straight to conical body profile and an everted rim. Finally, Type 5 is a combination of conical cup and conical tumbler. It has a flat base, larger than Type 1, 2, and 3, and a conical body profile coming to a slightly everted rim.

The third cup shape is the one-handled conical cup. It is divided into two types that are divided into different sub-types. Type 1a has a flat base and a straight low wall exterior that turns conical toward a flaring rim. The handle is vertical and rounded, and it is attached to its upper part below the rim and its lower to the middle or low exterior wall. Type 1b has the same profile as Type 1a, but the vertical rounded handle is attached on its upper part below the rim and it's lower high on the exterior wall. Type 2a has a flat narrow base, straight low wall, conical profile, and flaring rim, and it also maintains a strap handle extending from below the rim to the middle-low wall of the exterior body. Type 2b is different from the former types. It has a flat, wide base and conical profile, ending to a slightly everted rim. The upper strap handle is attached below the rim, and on its lower part, it attaches to the middle wall of the body.

The fourth cup type, the straight-sided cup, is divided into eight types that are in some cases divided into different sub-types. Type 1 describes a straight-sided cup with a beveled base. It is divided into two sub-types, Type 1a, and Type 1b. Type 1a has a beveled base and straight wall profile that turns conical to the upper wall exterior, rising to an inverted rim. Type 1b has a beveled base that creates a short angle on the low exterior wall, and a straight body profile coming to a straight, slightly

inverted rim. Type 2 describes the one-handled straight-sided cup. It has a flat base, straight to conical body profile, and a vertical rounded handle attached on its upper part below the rim and the lower part on the low wall exterior surface. Type 3 has a flat base and straight, slightly convex profile. Type 4 describes the ribbed straight-sided cup type. Type 4a has a flat base straight body profile with shallow, thin horizontal grooves on the exterior surface. Type 4b has a flat base, and thick asymmetrical horizontal grooves, and a vertical strap handle. Type 5 describes a straight-sided cup that has a straight to conical profile. It is distinct because this type belongs to examples that are made with coarse ware. Type 6 has a large base and straight body profile. Type 7 is a plain handleless cup with a straight to conical profile with examples made only in coarse ware. Type 8 preserves a ridge above the base and a straight body profile.

The fifth cup shape that is discussed in this thesis is the semi-globular cup. It is divided into four types with some of them divided into different sub-types. Type 1 is divided in Type 1a, Type 1b, Type 1c, and Type 1d. Type 1a has a flat base, semi-globular profile, and straight, slightly inverted rim. Type 1b has a semi-globular profile ending to a profound inverted rim. Type 1c has a semi-globular low wall, almost straight upper wall of the body, ending to straight, slightly inverted, rim. It also preserves a strap handle. Finally, Type 1d has a flat base, semi-globular profile, and strap handle. Type 2a describes a semi-globular cup with a flat everted rounded rim and semi-globular body profile. Type 2b has an everted rounded rim, semi-globular body profile, and strap handle. Type 3 has a conical lower wall, straight upper wall, and an inverted rim. Finally, Type 4 has a semi-globular profile, a slightly concave upper wall ending to a flaring rim and pulled rim spout.

The sixth cup shape is the conical cup/squat conical tumbler. It is a shorter version of the Type 5 tumblers but is more conical in section. This shape is divided into two types. Type 1 has a flat base, conical body profile, and everted rim that is flat towards the interior. Type 2 has a flat base, immediately straight to conical profile, and everted rim.

The seventh type that is presented in this thesis is the angular cup. Only one type of this shape appears, and it preserves a short but distinctive angle above the base and a convex body profile with a strap handle.

The eighth type is the tripod cup. Only feet have been collected as examples from this deposit, characterized as Type 1. These feet are thin, long, and have a globular section.

The ninth type of cup is the cooking cup. It has a flat base, semi-globular low wall, and concave upper body that rises to an everted rim, pulled rim spout, and a vertical rounded handle on the side of the vessel.

The last type of cup present in this deposit is that with offset base. It preserves an offset, upraised base, and conical low body profile.

Serving Vessels

This category of vessels includes different types of bowls, saucers, and kalathoi. Nine types of bowls were identified in these deposits. Type 1 describes bowls with the inverted rim. Type 1a has a globular profile and an upraised loop handle high on the exterior wall. Type 1b has an inverted rim and globular section, but it does not have a handle. Type 1c has the same profile but does preserve a horizontal handle below the rim. Type 2 describes the shallow bowls with flared rim profile. It is divided into Type 2a, Type 2b, and Type 2c. Type 2a has an offset base and conical to flaring profile, rising to a flared rim. Type 2b has a flat base and is immediately conical to a flaring profile that also rises to a flared rim. Type 2c has a flat base, flared body section, and almost horizontal upper part coming to an almost flat rim. Type 3 describes the tripod shallow bowls with the flared-rim profile. They have a flat base, three ovoid legs, and flared rim profile. Type 4 illustrates a tripod deep bowl with a flat base, semi-globular body profile, and a vertical rounded handle. In addition, Type 5 describes a deep

bowl with a semi-globular body profile that ends to an everted rim. It has two vertical, rounded handles on each side of the vessel below the rim, attaching to the middle wall of the body on the exterior. Type 6 describes a deep conical bowl that has a flat base and conical profile that ends at an everted rim. Type 7 is a cooking bowl that has a conical profile ending to an inverted rounded rim. It maintains two horizontal rounded handles, attached to the rim and the upper exterior body. Type 8 is a ledge-rimmed bowl that has a convex body profile that rises to a ledge rim. Finally, Type 9 describes the carinated bowl category. It is split into two subtypes. Type 9a has a flat base, semi-globular low body, high carination, and a convex upper body profile rising to an everted rim. Type 9b has the same profile section as Type 9a, but it maintains a strap handle.

The second category of serving vessels belongs to the saucers. Protopalatial Mochlos preserved two types. Type 1a has a flat base and flaring body profile, coming to a flared rim. Type 1b has an upraised base and follows the same body section as Type 1a. Type 2 describes a tripod saucer. It has a flat base, flaring profile, and a flared rim as well as three long, thin, ovoid legs and a vertical rounded handle attached to the rim and the upper part of the body.

The kalathoi category is very rare in the Middle Minoan Mochlos deposits. One type appears, Type 1, which has a narrow base and a cylindrical profile that flares on the upper wall, rising to a flared rim.

Cooking Vessels

Three main shapes appear in the cooking vessel category: cooking dishes, trays, and cooking pots.

The cooking dishes are divided into two types, each further divided into subtypes. Type 1a has a conical profile and inverted rim, while Type 1b has the same profile as Type 1a, but with a deep ridge that divides the rim into two parts. Type 2a has a conical body section that rises to a flared rim, while Type 2b has the same body section with a ridge dividing a rim into two parts.

The trays are also divided into three different types. Type 1a has a straight wall exterior and a thick rounded rim. Type 1b has a straight to semi-globular wall exterior and a thick ridge that divides the rim into two parts. Type 1c has a flat base, straight to semi-globular body profile, and a thick, rounded rim. Type 2 is a tripod cooking tray. It has a flat base, straight to a semi-globular profile that rises to an inverted, rounded rim with horizontal rounded handles. It also has three large legs that are ovoid in section.

The complete cooking pot examples are very limited in the Mochlos Protopalatial deposits but are represented in the collection of many legs. Two types of cooking pots appear, from which Type 1 has a flat base, globular section, everted rim, and three legs with ovoid section. Type 2 shares the same profile characteristics but has legs with a globular section.

Utilitarian Vessels

This vessel category includes basins and scuttles. One type of basin is present in these deposits but is divided into two sub-types. Type 1a has a flat, everted rim, straight to conical body profile, and has incisions on the interior. Type 1b has the same profile section but it does not preserve incisions on the interior surface.

Macroscopic Fabric Analysis

Having presented the organization schema of the categorization of types, a second statistical factor is the analysis of fabrics. During the study of the Protopalatial Mochlos material, we conducted the macroscopic analysis of the fabrics that appear in these deposits, not only of the accessioned objects but of all pottery from these contexts. This macroscopic analysis was carried out during the statistical analysis of the deposits, with the assistance of a hand lens or with just the naked eye. Since the Protopalatial material is studied in its entirety by this dissertation thesis for the first time, the comparison with the Neopalatial fabrics from Mochlos (Barnard and Brogan 2003, 3–11) is instructive, as they share some of the same fabrics. In the case of this thesis our intention is not to create a detailed analysis of the fabrics, but to distinguish through macroscopic examination the relative point of origin of vessels where possible, and then to suggest that these reflect preferences in the consumption of local vs. imported material.

There are two broad categories of fabrics that have been identified in the study of the Protopalatial deposits, coarse ware and fine ware. Following the criteria that have been already established for the later material from Mochlos, the coarse ware fabrics present more than 10% of minerals in their tempered clays, while the fine ware fabrics maintain less than 10% of minerals in clays that were not tempered during the vessel formation (Barnard and Brogan, 2003, 3). In the case of the medium-fine or medium-coarse wares, and when we can really identify the inclusions, we have added the number of the sherds and their weights toward the coarse ware category. A number of fabrics have been identified in the Mochlos pottery material, but this will certainly evolve when we are able to do thin-section ceramic analysis in the Mochlos ceramic material.

Coarse Ware

Coarse Fabric Type 1 contains fine phyllite fabric, and it has been identified at the Artisans Quarter and the Chalinomouri farmstead (Barnard and Brogan 2003, 5). Importantly, it is considered local since one can still see it in Mochlos natural geological landscape in the area of Limenaria, an area that is very close in proximity to the settlement (Papastamatiou et al. 1959). Outcrops of phyllite also appear all around the east Mirabello area as indicated in the analysis of the fabrics from other areas of Mirabello, like the area of Kavousi (Haggis 2005, 51; 169–170; Haggis and Mook 1993, 273–274) and Pseira (Floyd 1998, pp. 179–180). This purple phyllitic fabric, which in the Tables are referred to as PP, includes reddish-brown, reddish-gray, or white-to-grayish phyllite inclusions which are mostly elongated, sub-angular, or rectilinear in shape. Haggis (2005,168–170; 1993, 273–274) identifies two groups of phyllite fabrics, Type I and IV, with the first being similar to that of Mochlos and the second differing in the frequency of white or grayish inclusions. However, in the terms of this thesis, we have grouped both of these fabrics in the PP group. In the Mochlos deposits, Coarse Fabric Type 1, or Fabric PP, is found in every category of vessels, and it is the most common clay fabric in the different periods of the Protopalatial.

The second fabric of local origin contains silver mica and is described as SM here. It is similar to Type 8 in the Neopalatial Mochlos typology (Barnard and Brogan 2003, 8). It preserves a combination of phyllite inclusions with large, distinctive pieces of silver biotite mica. Silver micaceous sources appear in the region above Mochlos, in the area around Myrsini and Exo Mouliana (Barnard and Brogan 2003, 8). Even though silver mica fabric in the Early and Late Neopalatial Mochlos appears mainly in cooking dishes (Barnard and Brogan 2003, 8), its appearance in the Mochlos settlement from the Early Minoan period in a variety of vessels (Brogan et al. 2018, 79), may explain its appearance at least in a large time span of the Protopalatial period in many vessel

categories, varied to storage, drinking, serving, and cooking shapes. Silver micaceous inclusions are highly reflective.

The third coarse ware fabric that appears in Mochlos Protopalatial deposits is the granodioritic fabric, here described as GD, which is related with Coarse Fabric Types 6 and 7 that have been identified in the Mochlos Neopalatial fabric analysis (Barnard and Brogan 2003, 7–8). This fabric is considered to be the most common that appears in the geological environment west of Mochlos in the western area of the Mirabello Bay between the area of Gournia, Kalo Chorio, Priniatikos Pyrgos, and Vrokastro (Haggis 2012, 136; Gessel et al. 1988, Hayden 2004) and when it appears in vessels in Mochlos, we consider them as imports from this area. This fabric contains large white-and-black granodiorite inclusions with some gold biotite mica in some cases. The color of the clay varies from buff to light, deep brown, and pink. The granodioritic fabric in the Mochlos Protopalatial deposits appears in a series of vessels and sherds. The use of vessels of GD fabric starts in the Early Bronze Age (Brogan et al. 2018), and it seems to continue to a large extent in the Protopalatial period. The distribution of vessels that contained granodioritic inclusions is large and it appears in every site in the Mirabello Gulf, including Pseira (Myer et al. 1995, 144) and sites of central-east Crete like Malia (Poursat and Knappett 2005, 24–25). In the Mochlos Protopalatial deposits, the granodioritic fabric is common in storage, cooking, pouring, and utilitarian vessels, and in some cases, it appears in cups. Some if not all the very fine ware tan clay cups may come from this fabric, but we cannot be certain without the microscopic analysis through the process of the thin section.

A fourth coarse ware fabric contains phyllite combined with white metamorphic material and appears in the tables as PP/White Meta. It is quite rare in the Mochlos deposits and is similar to Type 4 of the Neopalatial Mochlos fabrics (Barnard and Brogan 2003, 6). This fabric consists of dark gray, brown, and black and white to light gray rounded, metamorphic inclusions. This fabric barely appears in the Mochlos and we cannot find any standardized category of vessels that have been made in large quantities from this particular fabric.

The fifth fabric that appears in Mochlos material is also rare; the calcite-tempered fabric was recorded in very few examples, mainly in the statistical forms, as such. This fabric is common in the Pre-palatial period and appears in different sites in east Crete and beyond (Haggis and Mook 1993, 273). This fabric consists of large calcareous inclusions in a dark red to deep brown clay core. Its rarity perhaps has to do with the mixture of some Pre-palatial vessels inside the Protopalatial strata.

A sixth fabric that is also quite rare and appears only in two examples is the South Coast fabric. It consists of semi-coarse to coarse buff clay and includes angular igneous inclusions of variable colors. In the case of Mochlos, it has first been identified by Brogan (Brogan and Koh 2011, 330). According to Knappett (Poursat and Knappett 2005, 21–23), the sources of this fabric are located between the area of Myrtos Pyrgos and Mesara. Only two vessels, a jug (P 7087) and a flared-rim bowl (P 7104) have been identified as made with this clay fabric. The seventh fabric comes from Palaikastro, and it is either buff to reddish with a dark core (Smith 2010, 131) or similar to Nodarou's Fabric 10, having pinkish clay and occasionally dark core (Nodarou 2010, 80; Smith et al. 2010).

Fine Ware

Fine ware fabrics also appear in this deposit, and they are divided into fine orange, fine buff tan, and fine pink clays, depending on the color. In the case of the fine ware fabrics, the large inclusions have already been removed during the process of the clay cleaning. A small number of inclusions can be observed in some of the vessels, which is estimated to account for less than 10% of the clay paste, according to the study of the pottery of the Neopalatial Mochlos (Barnard and Brogan 2003, 4) and can also be applied to the Mochlos Protopalatial deposit. Even though the medium-fine wares in the general statistical analysis have been considered in the category of coarse wares to create narratives

between local and imported products, these wares could also be considered as fine wares, especially for categories of vessels as cups to define distinctions and differentiations between decorated and undecorated examples. Only drinking, pouring, and serving examples are made with fine ware fabrics and they provide the ground for several different decorative schemata.

1.10 Statistical Analysis

Two sets of data have been analyzed separately in this Ph.D. thesis. The first set is the fragmentary material, in other words, all of the potsherds that came from the excavation and were consisted of different categories as they are represented in statistical forms. We can identify some categories of material that appear in all deposits, but each deposit has unique elements that are categorized separately. For every category of material, we have recorded the number of sherds in unique tables that included eleven columns describing: the vessel type, the fabric, and each different part of the vessels, such as rim, base, body, spout, handle, leg, or otherwise undiagnostic. The final two columns summarize the number of sherds and their weight. The final row totals the number of sherds and their total weight.

The second set of data consists of the collection of sherds and vessels that become accessioned into the catalog from each deposit. This collection includes only diagnostic sherds that are considered representative of the types and their relative frequency within a given deposit. The extent of the selected ceramic objects differs from less than one-quarter to complete, and every example has been counted and weighed with the rest of the context. The manipulation of these data according to their weight allows us to extract information about the percentages of the fabrics in every defined context.

The information was combined to give aggregate data describing the percentage of total material by weight of vessel types that belonged to storage, pouring, drinking, serving, cooking, and utilitarian categories, as well as identifiable and unidentifiable fragments designated as open and closed vessels that were collected from every different context. These percentage calculations were performed for each locus or cluster of loci independently. The method we used to create these percentages is described below.

Each fragment of pottery in this collection was weighed in grams and classified according to different characteristics that included vessel type, when possible, decoration, vessel part, and fabric. Since the collected material has been accumulated, washed, and if it was necessary, conserved in the laboratory with the use of different elements than pottery, such as plaster, we needed to invent a mathematic formula through which we could extract information about the fabric percentages, from the total weights, but also by eliminating the amount of plaster used for the consolidation of some of the vessels. Pottery fragments that were previously consolidated by plaster to form a whole or partially reconstructed vessel were handled in the following way. To weigh the fragment without the attached plaster, we measured the density of both the pottery and plaster by immersing sample pieces of each into a narrow cylinder and measuring water displacement. This procedure was conducted quickly to avoid the absorption of liquid into the material. The densities were found to be $\sigma_1 = 1.27$ grams per cubic centimeter for the pottery and $\sigma_2 = 1.75$ grams per cubic centimeter for the plaster. A visual inspection of each of these fragments assigned a percentage *p* corresponding to the amount of pottery. Naturally, the percentage corresponding to the plaster is $1 - p$. If the entire plaster-pottery assemblage weights W grams, we can use the following formula:

$$\sigma_1 pV + \sigma_2(1-p)V = W.$$

Here V represents the unknown volume of the entire assemblage. The term $\sigma_1 pV$ is the weight W_1 of the pottery piece, and $\sigma_2(1-p)V$ is the weight W_2 of the plaster piece. However, if we know σ, σ_2, p and W, we can solve for the entire volume V:

$$V = \frac{W}{\sigma_1 p + \sigma_2(1-p)}$$

The value of V can be reinserted to find the weights of each portion. In particular, the weight of the pottery portion is

$$W_1 = \frac{\sigma_1 pW}{\sigma_1 p + \sigma_2(1-p)}$$

and the weight of the plaster portion is

$$W_2 = \frac{\sigma_2(1-p)W}{\sigma_1 p + \sigma_2(1-p)}$$

The weight W_1 is recorded and W_2 is discarded.

As an example, a vessel that after conservation included both plaster and pottery is weighed to be W = 50 grams. Visual inspection estimates that $p_1 = 20\%$ is made of pottery and $1 - p_1 = 80\%$ is made of plaster. Recall that $\sigma_1 = 1.27$ and $\sigma_2 = 1.75$. Therefore, the weight of the pottery portion is given by

$$W_1 = \frac{1.27 \cdot 0.2 \cdot 50}{127 \cdot 0.2 + 1.75 \cdot 0.8} = 7.67 \text{ grams.}$$

It should be noted that the recording of the sherd number should be deprecated. Over time, a vessel can break into two pieces or twenty pieces. Unless one wants to study fracture mechanics and the durability of materials, the sherd number does not give much information. However, sherd weight is invariant under breakage. If the fragment has collected liquid, it can be dried to restore its original density. Calculating the weight generally allows us to understand the volume of manufacturing over time and also the likely clay sources that can accommodate these volumes. Apart from the calculation of the data according to their weight and the extraction of the percentages of fabrics used for the construction of vessels in each of the deposits, we also made the statistical analysis of the different vessels into the selected data.

A large percentage of identified decorated and undecorated vessels have been collected, and as we have already noted, they have been divided into different vessel categories, which included different shapes of different types. All examples have been examined macroscopically and divided into their fabrics and the treatment of the surface, which divides the vessels between decorated and undecorated. Thus, in every deposit, we have taken each category of the vessel and created percentages, examining the distribution of types, fabrics, and decorations, to understand changes or synchronicities in the consumption of the different types in the periods that the different contexts describe. The methodology is quite simple and is outright numerical, and it refers to the sampled data from each deposit. In this case, we were not concerned with weight because those statistics do not refer to the entirety of the deposits but only to the selected material, which allows us to define the numbers of vessels and their distribution in the general categories.

1.11 Research Questions

Multiple research questions are put forth in this introduction to evaluate the data that will be presented in the next section of this work. Chief among the questions regards the date of the deposits. The main question is if there are homogenous deposits that can be securely dated to certain chronological sequences within the Protopalatial according to the comparanda from the different sites of north-central and east Crete and their chronological distinctions. When the chronological sequence is clarified, the broader question of the character of Protopalatial Mochlos itself, its local environment (micro-scale), its regional ties with the Mirabello Gulf (meso-scale), and its macro-scale long-distance relationships, referring here to settlements in east and central Crete. Thus, the primary goal of this thesis is to establish the chronological sequence at Mochlos as well as to explore patterns of production, distribution, and consumption, both locally and regionally. The final work will set the stage for considering Mochlos in its broad social environment, and even its idiosyncrasies in terms of the development of state-level society in east Crete.