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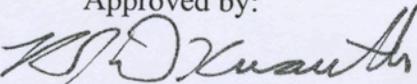
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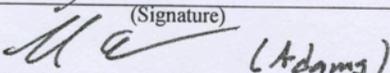
**The Bronze Age Thera Eruption: A Reconciliation of the Scientific, Archaeological and Literary Evidence of the Period**

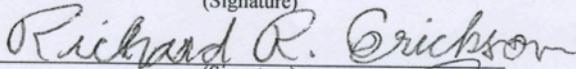
Presented to the faculty of Lycoming College in partial fulfillment of the requirements for  
Departmental Honors in Archaeology and Culture of the  
Ancient Near East and Mediterranean

by  
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April 22<sup>nd</sup>, 2014

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## **Introduction:**

*“A clash of scholarly cultures has developed. Some archaeologists simply state that the conventional interpretation of the archaeological evidence is secure and superior and that any suggestion to the contrary by science dating simply means something is wrong with the science dating or its analysis. A variety of supposed or claimed possible problems with radiocarbon dating are listed – but never demonstrated as relevant – to justify the ignoring of this evidence.”*  
 - Sturt Manning<sup>1</sup>

Sometime during the Bronze Age the people of the Mediterranean were affected by a large volcanic eruption. Originating from the island of Thera (modern-day Santorini) the volcanic blast fractured the single island into four separate islands surrounding an inner harbor, which was once the caldera. Being a hub of trade and commerce for the Aegean and greater Mediterranean region, Thera’s cataclysm surely disrupted the everyday lives and routines of those who inhabited this region. Little is known about the extent to which this cataclysm affected the lives of Mediterranean peoples, or even when exactly this disaster occurred.

For decades there has been a rift in the archaeological community regarding the appropriate dating sequence for the Bronze Age Aegean. This controversy stems from the chronological discrepancies between traditional (relative) dating and scientific (absolute) dating. This decades old controversy of high vs. low chronology surrounding the Bronze Age Thera eruption has chronological consequences of up to 100 years for the Aegean, the Near East, Egypt, and Anatolia. Aegean scholars have met three times for the First, Second, and Third Thera Conferences between 1978 and 1990. The purpose of these conferences was to gather Bronze Age Aegean specialists and attempt to solve the chronological discrepancies and other subjects pertaining to the Thera eruption. Great progress in the archaeology, geology, and volcanology of the region has been made, yet no definitive answer to the Thera question has been found. Scholars such as Christos Doumas, Spiridon Marinatos, Philip Betancourt, Paul

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<sup>1</sup> Sturt W. Manning, "Eruption of Thera/Santorini," *The Oxford Handbook of the Bronze Age Aegean* (London: Oxford University Press, 2010), 460

Åström, Sturt Manning, and Vassos Karageorghis, among others, have contributed to the ongoing debate. Scholars' opinions on archaeological theory vary from archaeological culture-historians, processualist archaeologists, and post-processualist archaeologists to scholars of the sciences, classics, and language specialists. These scholars dispute the chronology of the eruption between a high seventeenth century date and a low sixteenth century date. This divide hinders progress in both the archaeology and geology of the region. By extension, it affects our view of relations between the Aegean and the Near East. Establishing the correct dating of the Thera eruption is integral to the understanding of the chronology of the Mediterranean. If established, chronological synchronisms between the Aegean, the Near East, and Egypt will be anchored on a fixed point of absolute reference rather than several fragmented relative frameworks. This thesis intends to reconcile the evidence for the differing high and low chronologies and offer support for a high date range for the Thera eruption.

Each side of the chronological dispute marks the eruption in one of two centuries, seventeenth or sixteenth. Traditionally, the physical remains, cross examinations of ceramic imports and exports, and the minimal textual evidence of the period have been interpreted as supporting the low chronology for the eruption (c.1550-1500 BCE).<sup>2</sup> Within the past few decades, scientific methods have improved. Methods such as carbon-14 dating, core-sample analysis, dendrochronology, dendrochemistry, and tephrochronology have grown more accurate and reliable. These methods, contrary to the traditional archaeological evidence, tend to support a high chronology for the eruption. While the proposed dates for the eruption differ by about a century, scholars in support of either date seem resistant to additional information that runs

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<sup>2</sup> Sturt W. Manning, "Chronology and Terminology," *The Oxford Handbook of the Bronze Age Aegean* (London: Oxford University Press, 2010), 18.

<sup>2</sup> Spyridon Marinatos. "Excavations at Thera III: 1969 Season." In *Excavations at Thera I-III: 1967-1969 Seasons*, (Athens: The Archaeological Society at Athens, 1999), 65.

contrary to their position. This resistance has led to a lack of communication between scholars. Turning a ‘protectionist blind eye’ to new data from any discipline is inadvisable and hinders progress. Effectively, the ‘protectionist blind eye’ is the disciplinary bias as described by Thomas Kuhn in his 1962 book *The Structure of Scientific Revolutions*.<sup>3</sup> A better understanding of the chronologies and the data that supports these conclusions is needed.

A portion of the problem lies in the inability of either the traditional or the scientific data alone to address definitively all aspects of the chronological issue. A major point of contention with the archaeological dating lies in the dearth of good evidence from the Late Minoan IA (c.1700-1600 BCE) period. Manning argues that even though “a couple of LM I ( B or maybe A) or contemporary LH [Late Helladic c. 1700-1600 BCE] items and then a few agreed mature/late LM IB objects are found in Egypt in contexts of the earlier 18<sup>th</sup> dynasty,”<sup>4</sup> the evidence only allows us to pinpoint a *terminus ante quem* for the LM IA.

While the traditional sequence, of which the dating of the Thera event is based on, has been supported for decades, it seems that archaeological remains alone provide little convincing evidence in favor of a definitive low chronological date. Scientific data are often the subject of dispute regarding the way tests are conducted, whether the given samples are of scientific significance, or whether the sample sizes are adequate. However, the literary evidence from Egypt would seem to be of exceptional importance as it has the capacity to connect the scientific and archaeological data. Scholars in several fields of study have been utilizing information from multiple disciplines in order to create a better understanding for years now. Interdisciplinary efforts of this type help to ensure a positive discourse between scholars. For these reasons, the

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<sup>3</sup> As cited in Bruce G. Trigger, *A History of Archaeological Thought*. Second Edition (Cambridge: Cambridge University Press, 2006), 7; 13; 15.

<sup>4</sup> Sturt W. Manning, "Eruption of Thera/Santorini," *The Oxford Handbook of the Bronze Age Aegean* (London: Oxford University Press, 2010), 459.

**Cretan, Cycladic, Greek, and Egyptian Timeline**

Chronology High-----Low	<u>Crete</u>	<u>Cyclades</u>	<u>Greece</u>	<u>Egypt</u>
2000	MM IA	MC I	MH I	Middle Kingdom (2116-1795)
1900	MM IB	MC II	MH II	
1800	MM II			
1700	MM III	MC III	MH III	2 <sup>nd</sup> Intermediate Period (1795-1540)
1700	LM IA	LC I	LH I	
1600	LM IB	LC II	LH IIA	New Kingdom (1540-1070)
1500	LM II		LH IIB	
1400	LM IIIA1	LC III	LH IIIA1	18 <sup>th</sup> Dynasty (1540-1295)
1400	LM IIIA2		LH IIIA2	Amenhotep III 1391-1353 Akhenaten 1353-1337
1300	LM IIIB	LC III	LH IIIB	19 <sup>th</sup> Dynasty (1295-1186)
1200	LM IIIC		LH IIIC	Ramses II 1279-1213
1100				20 <sup>th</sup> Dynasty (1186-1070)
1100				Ramses III 1184-1153
1000	Subminoan		Submycenaean	

(Excerpt of a Table of Aegean Relative and Absolute Chronology as cited by Cynthia Shelmerdine)<sup>5</sup>

data of these disciplines will be reconciled.

The core of the scientific data is divided into four parts: radiocarbon dating, dendrochronology, ice-core analysis, and tephrachronological analysis. While each of these methods has their merits, alone they are insufficient. To help support this data, the archaeological remains from the site of Akrotiri on Thera, Knossos on Crete, Toumba tou Skourou in Cyprus, Avaris (modern Tell el Dab'a) in Egypt, and Tell el-Ajjul in Gaza will be reevaluated and bring into question the validity of the traditional dating sequence of the Mediterranean. Finally, an

<sup>5</sup> Cynthia W. Shelmerdine, *The Cambridge Companion to the Aegean Bronze Age* (Cambridge: Cambridge University Press, 2008), 4.

explanation of the Ahmose Stele from Egypt will connect the scientific and archaeological evidence.

### **The Eruption Revisited:**

The Thera eruption in the Bronze Age was one of the most violent volcanic eruptions in recorded human history. Geophysicists rated Thera a 6.9 on the Volcanic Explosivity Index (VEI), a scale used to measure the magnitude of volcanic eruptions. The only other documented eruptions of a similar magnitude were Tambora in 1815 (VEI 7.0) and Krakatau in 1883 (VEI 6.3).<sup>6</sup> These two modern eruptions provide points of comparison to the severity and magnitude of the Thera eruption. Over the course of an estimated 18 hour period, Thera emitted a precursor ash fall followed by the Plinian phase of the eruption, launching 20 to 30 km<sup>3</sup> of ejecta and magma approximately 30 to 35 km into the air. The displacement of earth material from the blast led to the collapse of the caldera of the volcano and the sea filled the space that remained. Most of the ejecta, the heavier and larger parts, were deposited locally on the island while volcanic aerosols, airborne tephra, ash, and dust were transported by the regional winds in a southeasterly direction. C. Doumas, S. Marinatos, P. Warren, K. Foster, R. Ritner, and B. Foster, among others, believe there to have been an earthquake component accompanying the eruption.<sup>7</sup> This is a likely possibility. Information from modern eruptions and volcanological studies demonstrate that a volcanic eruption may be preceded by an earthquake, whether volcanic or tectonic in origin. Rapid changes caused by the eruption consisted of a long period of darkness caused by airborne ash, and an overall drop in surface temperature across the region caused by

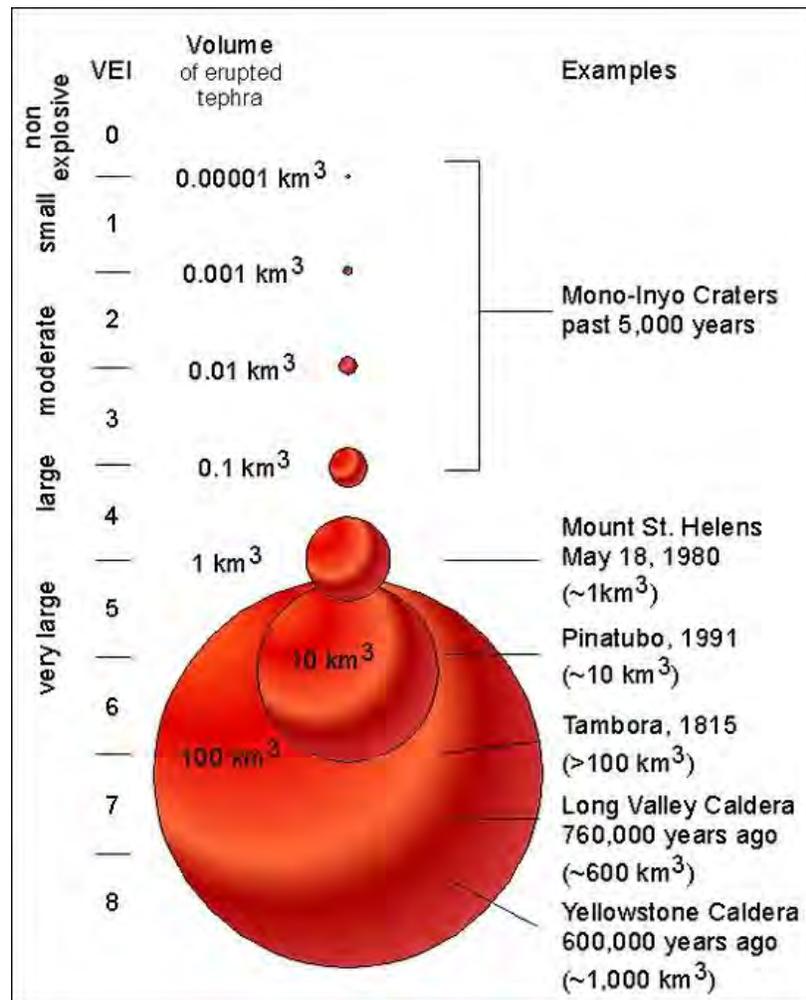
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<sup>6</sup> Sturt W. Manning, "Eruption of Thera/Santorini," *The Oxford Handbook of the Bronze Age Aegean* (London: Oxford University Press, 2010), 3.

<sup>7</sup> D.A. Hardy and Colin Renfrew (ed.), *Thera and the Aegean World III: Vol. 3 Chronology: The Thera Event and its Global Impact: Proceedings of the Third International Congress, Santorini, Greece, 3–9 September 1989* (London: Thera Foundation, 1990), 64.

volcanic aerosols reflecting UV radiation in the atmosphere.<sup>8</sup> The suspended ash particles and aerosols in the atmosphere may have “produced visually impressive atmospheric phenomena [strange atmospheric discoloration] for several years.”<sup>9</sup>

### Volcanic Explosivity Index



(Volcanic Explosivity Index Chart)<sup>10</sup>

<sup>8</sup> Karen Polinger Foster, Robert K. Ritner, and Benjamin R. Foster, "Texts, Storms, and the Thera Eruption," *Journal of Near Eastern Studies*, Vol. 55, No. 1 (1996): 4.

<sup>9</sup> *Ibid.*, 4.

<sup>10</sup> United States Geological Survey, "VHP Photo Glossary: VEI," USA.gov. <<http://volcanoes.usgs.gov/images/pglossary/vei.php>>.

### **Scientific Data Reevaluated:**

As there are no ancient astronomical observations that would provide a fixed point of reference for the Aegean, as in the Near East, the region relies on alternative forms of absolute chronology: radiocarbon dating, dendrochronology and dendrochemistry, and tephra analysis. Radiocarbon dating allows for the analysis of organic materials such as wood, seeds, plant remains, etc. based on the amount of decay of the  $^{14}\text{C}$  atom present in the material. The half-life of a  $^{14}\text{C}$  atom is approximately 5730 years  $\pm 40$  years. The reliability of this dating method decreases the older the specimen. The period in question (LM IA), approximately 1700 BCE, is 3650 years before present (measured from the 1950 CE standard), less than one half-life of a  $^{14}\text{C}$  atom. The more  $^{14}\text{C}$  that remains in the organic material the more reliable the dating will be.

Seeds, such as those found in storage jars buried in volcanic debris at the site of Akrotiri on Thera, provide information as to when the material ceased growing and give a window of time more or less contemporaneous with the time of human abandonment of the island before the eruption as the inhabitants did not return for quite some time.<sup>11</sup> A recent  $^{14}\text{C}$  study, which used the largest dataset available, offered a window of time of 1660-1613 BCE at 95.4% probability for the volcanic destruction level (subrange 1639-1613 BCE).<sup>12</sup> Manning argues, based on this data, that the accepted low chronology (1550-1500 BCE) is incompatible. Malcolm Wiener disputes Manning's claim, stating that plants that grow near volcanic vents absorb volcanic carbon dioxide, altering readings from a radiocarbon study. This theory seems unlikely however, because there are known distal samples of plant material beyond Thera that indicate a similar date range as those on the island.<sup>13</sup> Another  $^{14}\text{C}$  study examined an olive branch found in the

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<sup>11</sup> Sturt W. Manning, "Eruption of Thera/Santorini," *The Oxford Handbook of the Bronze Age Aegean* (London: Oxford University Press, 2010), 463.

<sup>12</sup> *Ibid*, 463.

<sup>13</sup> *Ibid*, 464-465.

layer of Thera pumice. This study yielded a date range as wide as 1654 – 1597 BCE, also at 95.4% probability.

Radiocarbon dating is the most reliable and definitive method of scientific dating for this controversy.<sup>14</sup> Radiocarbon dating can provide an absolute date that is independent from biases of the relative chronological framework of the Mediterranean and the reliability of ancient astronomical observations. The organic remains, local and distant in origin, that have been studied with radiocarbon methods for Thera tend to point to a specific range of dates, the middle-late seventeenth century BCE. These findings, along with several similar studies, support a late seventeenth century date. Because of this pattern, the results do not seem arbitrary or coincidental.

Although inherently less reliable because of its inability to be sourced, dendrochronology and dendrochemistry are also useful methods of dating. Trees record annual growth in the form of tree rings. Drastic climatic shifts and seasonal differences affect the growth of the rings as the trees age. Tree rings provide chronological information as the result of abnormalities, such as periods of severe drought, periods of excess rain, or effects caused by eruptions, and are observed in the growth rings of trees.<sup>15</sup> Some scholars critique the use of dendrochronology as unreliable because an environmental change reflected in tree rings cannot be sourced. Only the effects on the growth of trees can be observed, not the source which caused the effects.

Several Irish oaks analyzed by Baille and Munro show narrow growth during the year 1628 BCE.<sup>16</sup> In addition, Kuniholm matched radiocarbon dates from Anatolian tree rings to 1641 ± 76/-22 BCE. Because of the nature of dendrochronology, there are inherent drawbacks to their

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<sup>14</sup> Colin Renfrew and Paul Bahn, *Archaeology: Theories, Methods, and Practice* (London: Thames & Hudson Ltd, 2012), 136.

<sup>15</sup> Gregory A. Zielinski and Mark S. Germani, "New Ice-Core Evidence Challenges the 1620s BC age for the Santorini (Minoan) Eruption," *Journal of Archaeological Science*, Vol. 25, (1998): 281.

<sup>16</sup> *Ibid.*

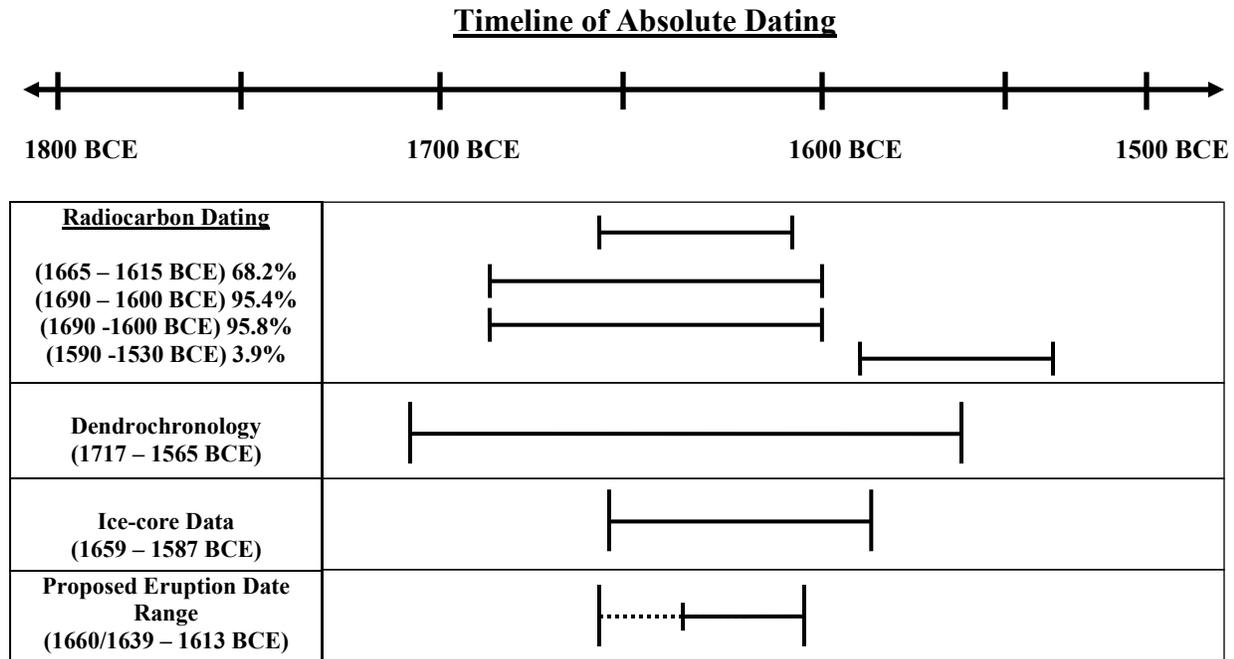
analyses. With the exception of Kuniholm's Anatolian samples, the tree ring samples were some distance from Thera. Rather than changes in growth correlating with the time of the event, as the Anatolian samples would, the distant samples may have been affected gradually by lasting effects. Therefore, it is reasonable to expect gradual change in growth over many years from the samples, caused by lasting environmental effects. Dendrochronological data should be used with caution as the source of these growth anomalies cannot be identified with a specific event. Therefore, there is no way to source any tree ring anomalies to the Thera eruption definitively. It is best to utilize dendrochronological data as complimentary to more definitive means of dating the eruption.

Zielinski compared the aforementioned dendrochronological data to the Greenland Ice-sheet Project 2 (GISP2) ice core, testing it for the presence of volcanic tephra as well as high concentrations of  $\text{H}_2\text{SO}_4$  (sulfuric acid).<sup>17</sup> The  $1623 \pm 36$  BCE  $\text{SO}_4^{2-}$  (sulfate) spike in the GISP2 ice core seems to correlate well with the present dendrochronological data. High concentrations of  $\text{H}_2\text{SO}_4$  and  $\text{SO}_4^{2-}$  can indicate volcanic activity as these two aerosols, among many others, are released during a volcanic eruption. In addition, this date range overlaps the projected date range proposed by Manning's radiocarbon date. Similarly to dendrochronology, it is impossible to source specific eruption in a given ice core for this period. Ice cores can preserve volcanic aerosols and small particles in bubbles that occur during the gradual freezing process of glacial ice. It is difficult to attribute a source for this data because volcanic eruptions produce similar aerosols and particles. The concentration of the trapped aerosols and the chemical composition of the particles differ slightly with each eruption, based on its location. Unfortunately, comparative analysis is limited to known volcanic events. Because a complete record of global volcanic

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<sup>17</sup> *Ibid*, 287.

activity does not exist for this period, the GISP2 ice core data cannot be attributed to a specific volcano.



(Comparative chart of Absolute Dating Results for Thera [composed of findings from several studies])<sup>18</sup>

Be that as it may, Zielinski's conclusions fit well with a seventeenth century date. Based on the indirect environmental evidence presented by ice core and tree ring analysis, the gradual dispersion of tephra, ash, and volcanic aerosols must have been the catalyst for delayed growth patterns in Irish and Anatolian trees and the presence of volcanic aerosols in Greenland's glacial ice. What seems most probable with the given evidence is a seventeenth century date for the eruption from 1660/1639-1613 BCE as proposed by Manning. However, such an endorsement of Manning's claim does not consider any of the archaeological or textual evidence for the period.

<sup>18</sup> Sturt W. Manning, "Eruption of Thera/Santorini." in *The Oxford Handbook of the Bronze Age Aegean* (London: Oxford University Press, 2010), 464.

<sup>18</sup> Gregory A. Zielinski and Mark S. Germani, "New Ice-Core Evidence Challenges the 1620s BC age for the Santorini (Minoan) Eruption," *Journal of Archaeological Science*, Vol. 25, (1998): 281.

<sup>18</sup> *Ibid.*

In order to reconcile the data from the different disciplines, an analysis of the archaeological data for the period must be compared with the scientific and literary evidence.

### **The Traditional Archaeological Sequence:**

Traditionally, the archaeological evidence for the Bronze Age eruption of Thera is centered on a low chronological date (c. 1550-1500 BCE). Archaeologists such as Spiridon Marinatos, Christos Doumas, and Manfred Bietak view the supporting corpus of archaeological data as clearly sixteenth century BCE. Arguably, these assessments lack a look at the ‘bigger picture’ because they fail to incorporate the newly available scientific data. The conclusions made through analysis of regional evidence, are based primarily on the relative chronological framework provided by ceramic remains accumulated from excavations over the past 130 years (or so). An eruption as powerful as Thera undoubtedly disturbed not only Aegean trade, but also trade of the entire Mediterranean. Major administrative and trade centers such as Knossos on Crete, Akrotiri on Thera, Toumba tou Skourou in Cyprus, Avaris (Tell el Dab’a) in the Nile Delta, and Tell el-Ajjul in southwest Gaza were likely to have been affected.<sup>19</sup> Evidence from these locations can be interpreted to support a high chronological date (c. 1660/1639-1613 BCE). This paper attempts to reconcile the regional ceramic diversity between the Aegean, the Near East, Egypt, and Cyprus and its chronological implications for the Thera eruption.

### **Chronology:**

In order to provide a temporal context of understanding, archaeologists utilize two types of dating: relative and absolute. Relative dating sequences are constructed by sequencing finds (mainly ceramics) based on stratigraphy of excavations, and typological sequences such as seriation, supplemented by study and analysis of linguistic change, deep-sea cores, ice-cores, and

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<sup>19</sup> D.J. Stanley and H. Sheng, “Volcanic Shards from Santorini (Upper Minoan Ash) in the Nile Delta, Egypt,” *Nature*, Vol. 320, (1986): 734.

pollen dating.<sup>20</sup> By establishing the order in which finds appear relative to one another a referential framework is developed. These methods constitute a great deal of what the archaeologist does to make sense of various finds. However, relative chronology can only provide a correct ordering of finds and not their date in calendar years. For this, absolute dating is required. This may consist of ancient “calendars and historical chronologies, tree-ring dating, and radiocarbon dating” among many other types.<sup>21</sup> When these sequences, both relative and absolute, are integrated into a multi-regional chronology, calendrical problems with synchronism arise. This is because each excavator has different information in which to sequence when building their regional chronology. Therefore, when discussing an event such as the eruption of Thera, it is important to understand the origin of the chronologies and period designations in the different regions of the Mediterranean.

In the Aegean, British archaeologist Sir Arthur Evans (1851-1941) created the traditional pottery divisions of the Minoan periods based on findings at his site of Knossos on Crete.<sup>22</sup> Evans, a culture-historian, was influenced by the work of Gustaf Kossinna (1858-1931). A German archaeologist, Kossinna’s work acknowledged the difference of ethnic and cultural groups based on artifact assemblages.<sup>23</sup> However, these studies lacked information based on “house types, burial customs, and rituals.”<sup>24</sup> Additionally, Evans was influenced by the work

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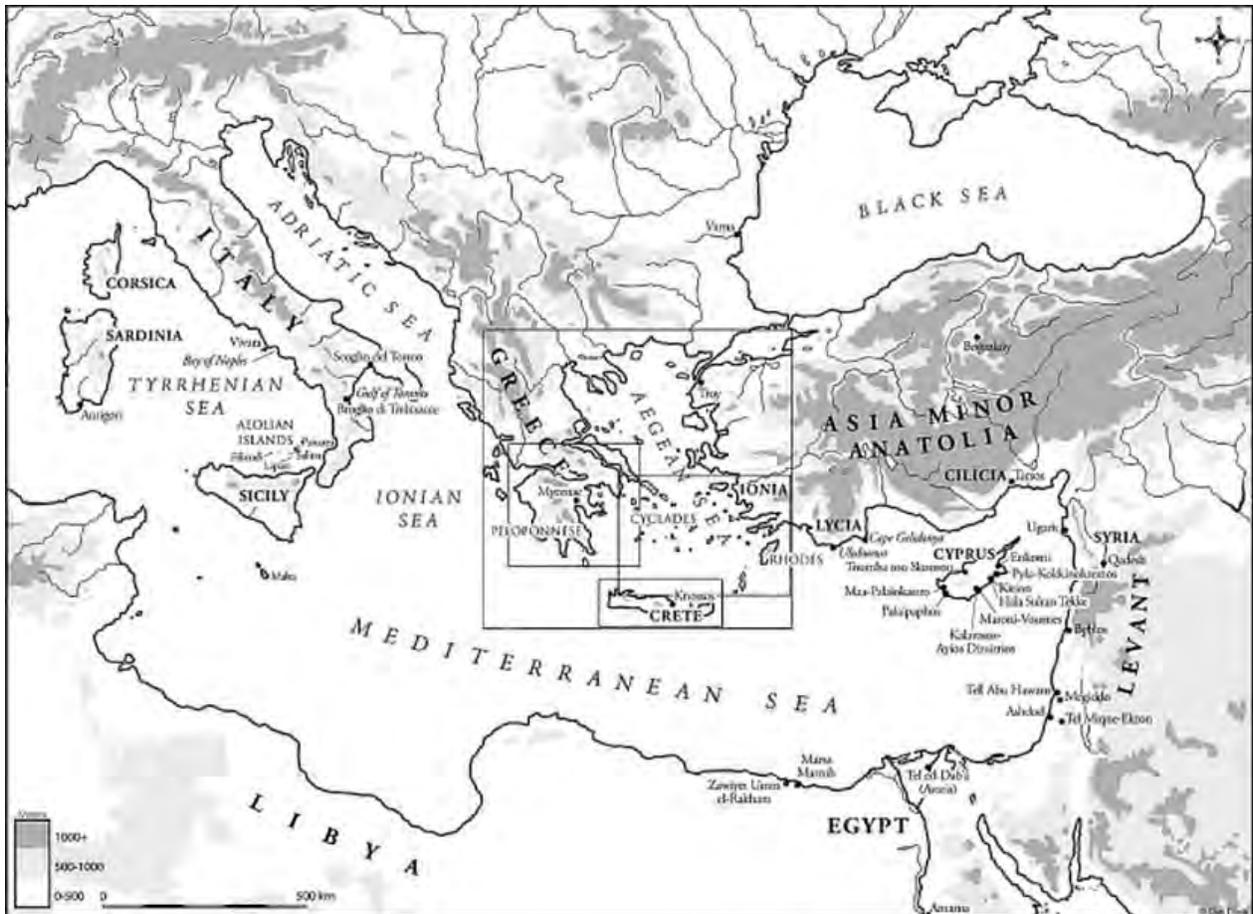
<sup>20</sup> Colin Renfrew and Paul Bahn, *Archaeology: Theories, Methods, and Practice* (London: Thames & Hudson Ltd, 2012), 122-128.

<sup>21</sup> *Ibid*, 128

<sup>22</sup> Jan Dreissen and Colin F. MacDonald, *The Troubled Island: Minoan Crete Before and After the Santorini Eruption (Aegaeum 17)* (Lige: Universit de Lige, 1997), 16.

<sup>23</sup> Bruce G. Trigger, *A History of Archaeological Thought*. Second Edition (Cambridge: Cambridge University Press, 2006), 235;239.

<sup>24</sup> *Ibid*, 239.



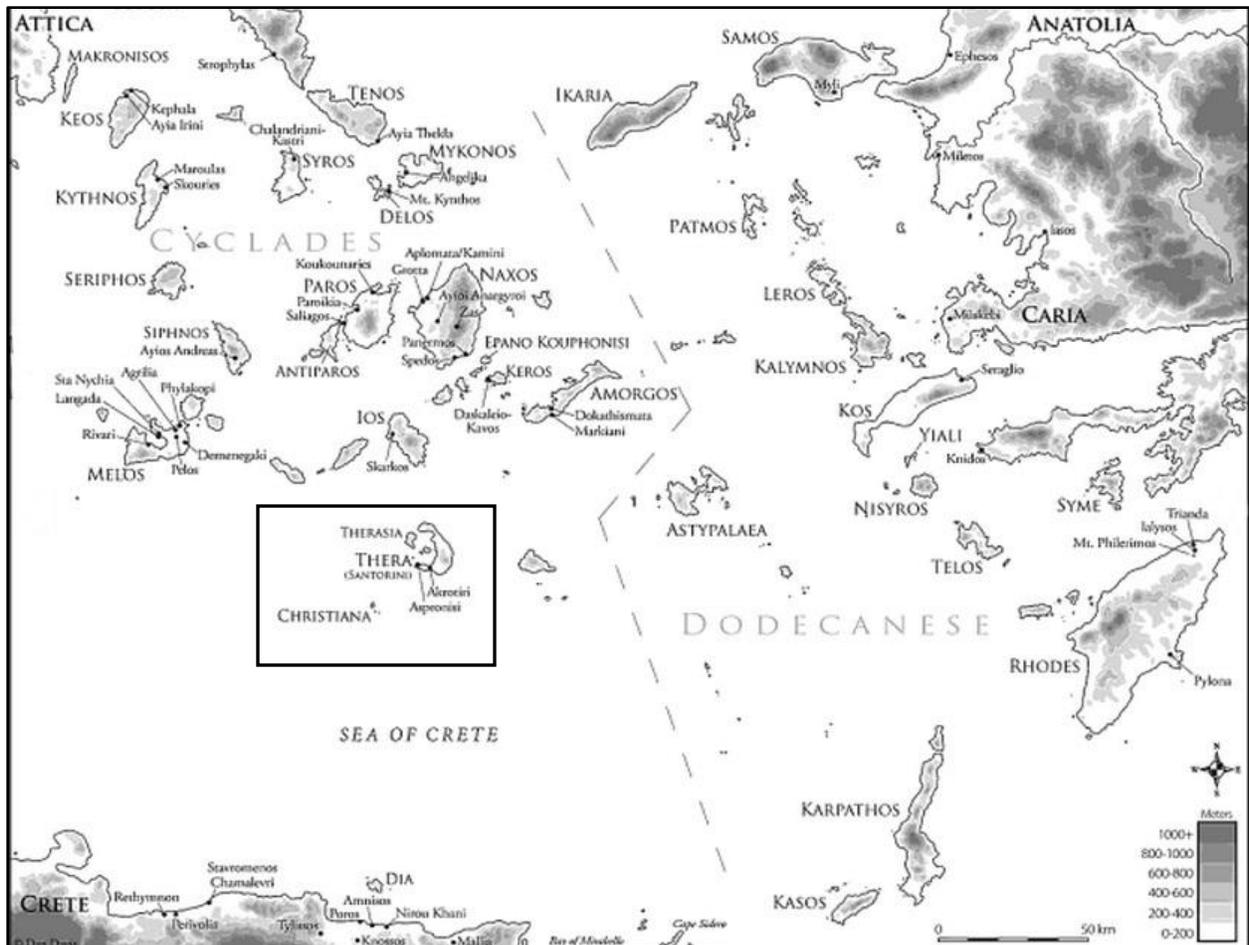
(Map of the Mediterranean as cited by Cynthia Shelmerdine)<sup>25</sup>

of his Oxford colleague, John L. Myres (1869-1954). Myres' publication, *The Dawn of History* (1911) contained two central arguments: The first was that technology spread from Egypt and Mesopotamia to Europe; the second being that "all hierarchical societies developed when politically dynamic, pastoral peoples...were forced by drought to leave their homelands and conquer and rule politically less innovative peasant societies."<sup>26</sup> As a result of the cultural influence imposed on Europe from the Near East, a "distinctive European way of life was created."<sup>27</sup> During his earlier years on Crete, Evans would understand Minoan archaeology

<sup>25</sup> Cynthia W. Shelmerdine, *The Cambridge Companion to the Aegean Bronze Age* (Cambridge: Cambridge University Press, 2008), xxx.

<sup>26</sup> *Ibid*, 241.

<sup>27</sup> *Ibid*.



(Map of the Cyclades as cited by Cynthia Shelmerdine)<sup>28</sup>

in accordance with these concepts. These views may have contributed to his poor archaeological practices at Knossos as Myers' arguments are incorrect according to modern theory.

Most Aegean specialists are in agreement that Knossos “can rarely be regarded as typical.”<sup>29</sup> In 1906, Evans and his field director, Dr. Duncan Mackenzie, defined Middle Minoan IIIB pottery styles from ceramics found in temple repositories at Knossos. These ceramics are thought to be “some of the most unhelpful pots ever cited” because of their poor quality and

<sup>28</sup> Cynthia W. Shelmerdine, *The Cambridge Companion to the Aegean Bronze Age* (Cambridge: Cambridge University Press, 2008), xxxii.

<sup>29</sup> Jan Dreissen and Colin F. MacDonald, *The Troubled Island: Minoan Crete Before and After the Santorini Eruption (Aegaeum 17)* (Lige: Universit de Lige, 1997), 16.

intentional preservation in antiquity.<sup>30</sup> After defining his finds, Evans cross-referenced his data with other excavated sites on Crete. Cross-referencing finds to other sites is a good relative chronological practice. However, Evans and Mackenzie did not always agree. Jan Driessen states that Mackenzie was the individual who relied more on stratigraphy (what little was documented and observed) and Evans more on broad historical horizons.<sup>31</sup> One of these ‘broad horizons’ is the destruction horizon traditionally assigned to the Middle Minoan IIIB – Late Minoan IA transition by Evans and Mackenzie. While generally associated with a seismic event related to Thera, Evans and Mackenzie’s designations affect our chronological perception of time in the Aegean.

In the Near East, chronologies are heavily reliant on Egyptian and Mesopotamian king lists, linked with a variety of other types of documents, monuments, and seals. Some of these include diplomatic correspondence that occasionally provides synchronisms between different cultures. However, these synchronisms are hampered by ambiguity, co-regencies, and political manipulations that result in significant gaps. Datable ancient astronomical observations can then be correlated with written records of major historical events in Egypt or Mesopotamia, providing occasional anchors for these complex sequences.<sup>32</sup> Additionally, several scientifically-based systems of dating have been introduced, such as <sup>14</sup>C, potassium argon, and others that can be applied to date secure, stratified archaeological contexts.<sup>33</sup> However, major disputes remain, especially with the general labels by which the periods are designated and the assigning of absolute dates to these periods. William G. Dever abides by the new Middle Bronze designations

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<sup>30</sup> *Ibid.*

<sup>31</sup> *Ibid.*

<sup>32</sup> James D. Muhly “Near Eastern Chronology and the Date of the Late Cypriot I Period,” in *The Archaeology of Cyprus: Recent Developments*, ed. Noel Robertson (Park Ridge, New Jersey: Noyes Press, 1975), 79.

<sup>33</sup> William G. Dever. “Chronology of the Southern Levant,” in *Near Eastern Archaeology: A Reader*, ed. Suzanne Richard (Winona Lake, Indiana: Eisenbrauns, 2003), 82.

(MB I, II, and III) as opposed to William Albright's original designations (MB IIA-C).<sup>34</sup> He states that high, middle, and low chronologies are the product of synchronisms with the Egyptian and Mesopotamian data. The period designations for the Near East are contested over a short bracket of time. However, the internal problems of Mesopotamian and Egyptian dating, such as disputes of reign lengths in Egypt, become problems for the Near Eastern chronology when they are synchronized together.<sup>35</sup>

The traditional interpretation of these chronologies has both positive and negative aspects. Excavators like Evans relied heavily on pottery for a relative sequence. Pottery is still a main tool used to date the strata from which it comes. The ceramics are cross-referenced with other pottery, texts, and inscriptions in an effort to assign earlier, contemporaneous, and later strata, just as Evans had done on Crete. Because of the amount of work conducted by previous excavators, dating back to the late nineteenth century, the traditional sequence is long standing and has been one of the strongest points of reference for modern archaeologists. However, each chronology across the Mediterranean is established regionally. These separate frameworks are then cross-referenced to pottery, texts, and inscriptions inter-regionally. Relevant documents used to substantiate these sequences include the Egyptian, Babylonian, and Hittite sources. While these records make for strong relative reference points, they have their flaws. As in the case of the writings of Manetho (c. third century BCE), the validity of his sequence is questioned as it is a source that no longer exists known only to us through secondary references. Difficulties in fitting the resulting traditional archaeological sequence with the scientific evidence concerning the eruption of Thera may be the result of correct relative sequencing but incorrect calendrical (absolute) dating for the Mediterranean because of the flaws in the chronological synchronisms.

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<sup>34</sup> *Ibid*, 84.

<sup>35</sup> *Ibid*, 85.

Previous attempts to reconcile the evidence from different disciplines has resulted in distrust by traditionalists of the scientific and archaeological evidence because of ‘supposed’ poor analyses. Rather than attempting to prove one type of data as invalid or unreliable, this paper attempts to challenge and modify the traditional sequence in order to reconcile the scientific, archaeological, and literary evidence.

### **Akrotiri through the Traditional Lens:**

Before the archaeology associated with the traditional sequence for the eruption can be challenged it is important to understand the local stratigraphy in question and what is already accepted by scholars. The layer at the Akrotiri site on the island of Thera directly beneath the volcanic destruction layer (VDL) is integral to the debate. The dating of this layer archaeologically rests on the earliest appearance of the latest ceramic style present. This provides a date after which the eruption could have occurred (a *terminus post quem*). Between 1967 and 1973 Spiridon Marinatos excavated the site of Akrotiri. During his excavations, Marinatos assigned a *terminus post quem* of the LM IA for the destruction of Akrotiri based on ceramic finds below the VDL. The abundance of mature LM IA wares across the entire settlement led Marinatos to believe this LM IA designation as valid. After three years of excavation Marinatos compiled the following sequence for the eruption:

- 1) A strong earthquake had thrown to the ground all buildings of the settlement we were excavating.
- 2) Squatters used for some time the ruins as their dwellings; but this cannot have lasted for a long time; perhaps two years, perhaps a single one, or even a few months only.
- 3) The awaking of the volcano followed. Fine corns of pumice penetrated everywhere among the ruins, even inside jars and little vases.
- 4) During the further progress of the eruption bigger pieces of pumice fell...the biggest of them having the size of a melon...a layer 4 m. thick was formed, which covered all the ruins...then began the falling of fine dusty volcanic ashes...the white shroud of the ashes covered the whole island under a layer reaching 40 to 60 m. in thickness.
- 5) All ceramic products...fall into two classes...mat-painted of purely Middle Cycladic tradition...and some are painted with lustrous colors. Some of them are imported from Crete...they reach the advanced phase of LM IA...they belong, stylistically speaking, to the end of the 16<sup>th</sup> century BC.

(Excerpt of Excavations at Thera III by Spiridon Marinatos<sup>36</sup>)

This provides a rough sequence for the Thera eruption. The latest ceramics found are assigned to the sixteenth century BCE, according to the traditional sequence. This is not to say that other types of ceramics were not present, as many MM style vessels seem to exist parallel to the LM IA vessels. But the mature LM IA style vessels are the latest style known in the pre-VDL layers. Additionally, Christos Doumas, successor to Marinatos, points out the dearth of human skeletons found during the excavations. He claims this is indicative of a period of forewarning, some precursor event that forced the inhabitants away before the awakening of the volcano.<sup>37</sup> To further this claim of forewarning, Doumas explains that “No precious objects have yet been discovered at Akrotiri.”<sup>38</sup> This combination of evidence supports the claim of an exodus of the inhabitants prior to the eruption proper.

Both Marinatos and Doumas attribute the abandonment by Thera’s inhabitants to seismic activity. Doumas claimed this event took place early in the LM I, “broadly or precisely

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<sup>36</sup> Spyridon Marinatos. “Excavations at Thera III: 1969 Season.” In *Excavations at Thera I-III: 1967-1969 Seasons*, (Athens: The Archaeological Society at Athens, 1999), 64-65.

<sup>37</sup> Christos G. Doumas, *Thera, Pompeii of the Aegean: Excavations at Akrotiri 1967-1979* (New York: Thames and Hudson, 1983), 134.

<sup>38</sup> *Ibid*, 135.

contemporary with the MM III/LM IA transition destructions in Crete.”<sup>39</sup> Jan Driessen, a supporter of the low chronology, believes that “The time between the earthquake and the eruption is crucial to the interpretation of the earthquake as volcanic or tectonic.”<sup>40</sup> What is important to consider is Doumas’ and C. Palyvou’s claim that “the time that passed between the abandonment and the eruption was a very short period.”<sup>41</sup> This may be a matter of months or years, but the span of time is known to have been short. The work of Peter Warren moreover sets a date of c. 1600 BCE for this MM IIIB – LM IA transition. This date fits well with the relative sequence of the ceramic finds on Thera, placing the eruption in the early to middle sixteenth century BCE.

There are certain key points of reference for this traditional sequence that should be considered: firstly, the work of Spiridon Marinatos and his excavations at Akrotiri and secondly, the level of certainty with which we look at the finds of the Akrotiri site on Thera. Of most concern are the questionable excavation techniques implemented by Marinatos between 1967 and 1973. It is with caution and lenience that we should view the ceramic finds in order to understand more accurately the relative chronology of the settlement. Marinatos was a culture-historical archaeologist trained in classics and did not adhere to a stratigraphic method of excavation, such as the Wheeler-Kenyon method, which would have provided detailed stratigraphy if used. Today, nearly all modern archaeologists implement this method of excavation. Archaeologists rely heavily upon recorded or visible stratigraphical information in order to make sense of shifts in occupation layers and relative dating of a site. As most early classicists, Marinatos was mostly interested in uncovering monumental architecture. His

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<sup>39</sup> Jan Driessen and Colin F. MacDonald, *The Troubled Island: Minoan Crete Before and After the Santorini Eruption (Aegaeum 17)* (Lige: Universit de Lige, 1997), 87.

<sup>40</sup> *Ibid.*

<sup>41</sup> *Ibid.*

excavation reports support this notion. For the first three years of excavation, Marinatos experimented with horizontal tunneling in order to create an underground path through the site. As the horizontal tunnels were dug, the pumice and volcanic ash dried out and cracked, creating a structural risk; this method was quickly abandoned.<sup>42</sup> Christos Doumas describes Marinatos' methodological choices as follows:

Tunneling is most unscientific; there is complete disregard for stratigraphy and sequence and finds are condemned to destruction by speedy pick... finds and features were originally plotted in relation to the well-preserved walls. Unfortunately this now means it is impossible to reconstruct the exact relationship of some of the buildings to the site overall before they were excavated.<sup>43</sup>

These methodological blunders should be considered when viewing the corpus of ceramic data at Akrotiri. Some of the first excavations, in Bronos trench 1, yielded MM polychrome and Kamares ware pottery approximately 1 m. in depth from the surface.<sup>44</sup> While Marinatos considered two early Hellenistic oil lamps found later that day to be intrusive, Marinatos also found LM IA sherds of a small vessel. He dated these sherds to c. 1550-1500 BCE and used them to assign a *terminus post quem*.<sup>45</sup> It is possible that these sherds, in addition to the early Hellenistic oil lamps, were intrusive. Perhaps the dating of the sherd was incorrect from the start as this particular example is similar to some of the S-profile teacups in P. Warren's MM IIIB – LM IA deposit (see Warren, fig. 10 A-I below), which would assign the chronological setting to c. 1600 BCE.<sup>46</sup> Later excavations of the Bronos 2 trench yielded a nipped ewer with bird motifs. Both shape and decoration are characteristic of Thera. Irene Nikolakopoulou points out that this

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<sup>42</sup> Christos G. Doumas, *Thera, Pompeii of the Aegean: Excavations at Akrotiri 1967-1979* (New York: Thames and Hudson, 1983), 29.

<sup>43</sup> *Ibid*, 29-30.

<sup>44</sup> Spyridon Marinatos. "Excavations at Thera I: 1967 Season." In *Excavations at Thera I-III: 1967-1969 Seasons*, (Athens: The Archaeological Society at Athens, 1999), 15.

<sup>45</sup> *Ibid*, 16.

<sup>46</sup> Peter M. Warren, "A New Minoan Deposit from Knossos, c. 1600 B.C., and Its Wider Relations," *The Annual of the British School at Athens*, Vol. 86 (1991): 329-330.

type of motif appears in the later part of the middle Cycladic period (fig. 21.2c).<sup>47</sup> For further classification of the period, Peter Warren's work with the ceramic remains at Knossos also should be examined.

### **Knossos and its Importance:**

Knossos was a site of major importance on Crete during the Middle and Late Minoan periods. It was an important Minoan administrative center that had close trade relations with Akrotiri, which was a major Cycladic emporium, as well as with the rest of the Mediterranean. Excavations at Knossos have been published, and the site was partially reconstructed since 1900 by Sir Arthur Evans. Peter Warren studied the stratigraphic sequence of the LM IB building known as the North house. The excavations were conducted by the Stratigraphical Museum on the island of Crete. From their findings, Warren conducted a case study. Beneath two strata, dated LM IA and MM IIIB – LM IA transition, top to bottom respectively, a fill of broken pots was found that appeared to be destruction debris.<sup>48</sup> This debris was the focus of Warren's study. He determined a relative date for the deposit based on the ceramics found within. Warren lists the important factors of the deposit as follows,

MM polychrome is all but gone, one third of the decoration is still white on dark, almost two thirds of the decoration is dark on light (half of which is tortoise-shell ripple motif), plant/reed style pottery (a hallmark of the LM IA) is extremely rare, and cups with straight sloping sides are MM.<sup>49</sup>

Warren determined from the occurrences of these ceramics and the distribution of the decorative motifs that the deposit should be dated to the MM IIIB – LM IA transition, “postdating the MM III B with its dark ground wares and ripple while preceding the pure LM I with its hallmark in

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<sup>47</sup> Irene Nikolakopoulou, “Middle Cycladic Iconography: A Social Context for ‘A New Chapter in Aegean Art,’” *British School at Athens Studies*, Vol. 18 (2010): 214-215.

<sup>48</sup> Peter M. Warren, “A New Minoan Deposit from Knossos, c. 1600 B.C., and Its Wider Relations,” *The Annual of the British School at Athens*, Vol. 86 (1991): 319-321.

<sup>49</sup> *Ibid*, 331-332; 328-329.

the plant/reed style bowl.<sup>50</sup> Warren acknowledges that the LM IA period existed prior to the 18<sup>th</sup> dynasty of Egypt, founded by pharaoh Ahmose c. 1550 BCE (according to the Egyptian middle chronology). He dates this MM IIIB – LM IA transition to c. 1600 BCE, which would fit with the traditional sequencing. He compares the finds within the deposit to other locations at Knossos: the ‘unexplored mansion’ 65 m. east, and the Magazine of the Lilies in the southwest corner of the palace.<sup>51</sup> Warren finds parallels at these locations in contemporary layers such as the straight sided cups, S-profile cups, conical cups, a flaring bowl, ripple cups, and other type 1 cups (fig 7. M; fig. 9. A-H; fig. 10. A-I).<sup>52</sup>

Warren establishes excellent parallels between the dark lily vases from the Magazine of the Lily vases at Knossos and Thera fabrics such as “the pithos with the ‘Easter Lilies’”<sup>53</sup> which is similar in shape and decoration. “It belongs to the Middle Minoan tradition, but its fabric is local” to Thera.<sup>54</sup> Warren links the Knossosian examples with the Thera vessel, arguing that because “the destruction level is characterized by imported and local material corresponding very closely to that of the S.M. [Stratigraphical Museum] site deposit and its correlates”<sup>55</sup> it may be attributed to the MM IIIB – LM IA transition. While there is room to question Marinatos’ methodological blunders, what is much harder to question is the presence of mature LM IA wares in contexts associated with the VDL. While portions of the ceramic corpus can possibly be attributed to the MM IIIB – LM IA transition, the presence of LM IA hallmarks (plant/reed style cup) is hard to argue against.

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<sup>50</sup> *Ibid*, 332.

<sup>51</sup> *Ibid*, 333-334.

<sup>52</sup> *Ibid*, 326; 328; 329.

<sup>53</sup> Spyridon Marinatos. “Excavations at Thera II: 1968 Season.” In *Excavations at Thera I-III: 1967-1969 Seasons*, (Athens: The Archaeological Society at Athens, 1999), 37; pl. 20, 1; colour pl. E 7.

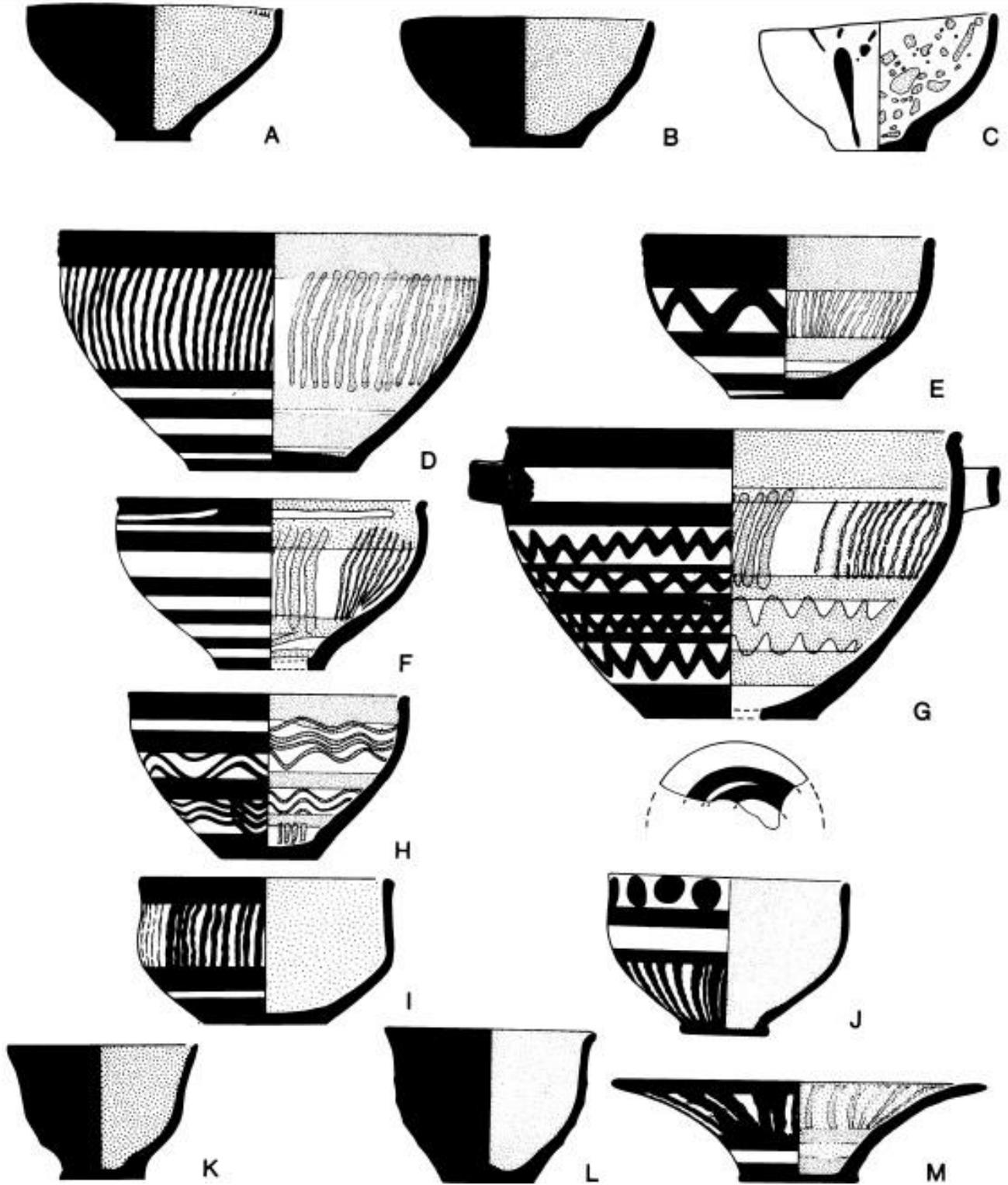
<sup>54</sup> *Ibid*, 37-38; pl. 25, 1; colour pl. E 7.

<sup>55</sup> Peter M. Warren, “A New Minoan Deposit from Knossos, c. 1600 B.C., and Its Wider Relations,” *The Annual of the British School at Athens*, Vol. 86 (1991): 338.

Challenging Warren's MM IIIB – LM IA transition date, Sturt Manning established a radiocarbon date for this transition period of c. 1700-1675 BCE.<sup>56</sup> Manning's evidence may indicate that the relative sequence in the Aegean is ordered correctly but is not accurately placed calendrically. This possibility is not too farfetched to consider. The Minoan designations were developed by Evans at the beginning of the twentieth century based on poor ceramic evidence, and the Aegean lacks the type of fixed dating points so present in Egypt and the Near East. Manning's proposed absolute date for the MM IIIB – LM IA transition would require Aegean chronology, as it is currently understood, to be recalibrated. When Manning's transition period and the relative framework are synchronized, enough time exists for the seismic events between Crete and Thera to occur, the eruption to take place within the bracket of time c. 1660/1639-1613 BCE, while leaving the relative chronological framework proposed by Evans and Mackenzie, Marinatos, Doumas, and Warren unchanged.

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<sup>56</sup> Sturt Manning, *The Absolute Chronology of the Aegean Early Bronze Age* (Sheffield, England: Sheffield Academic Press, 1995), 200-216.



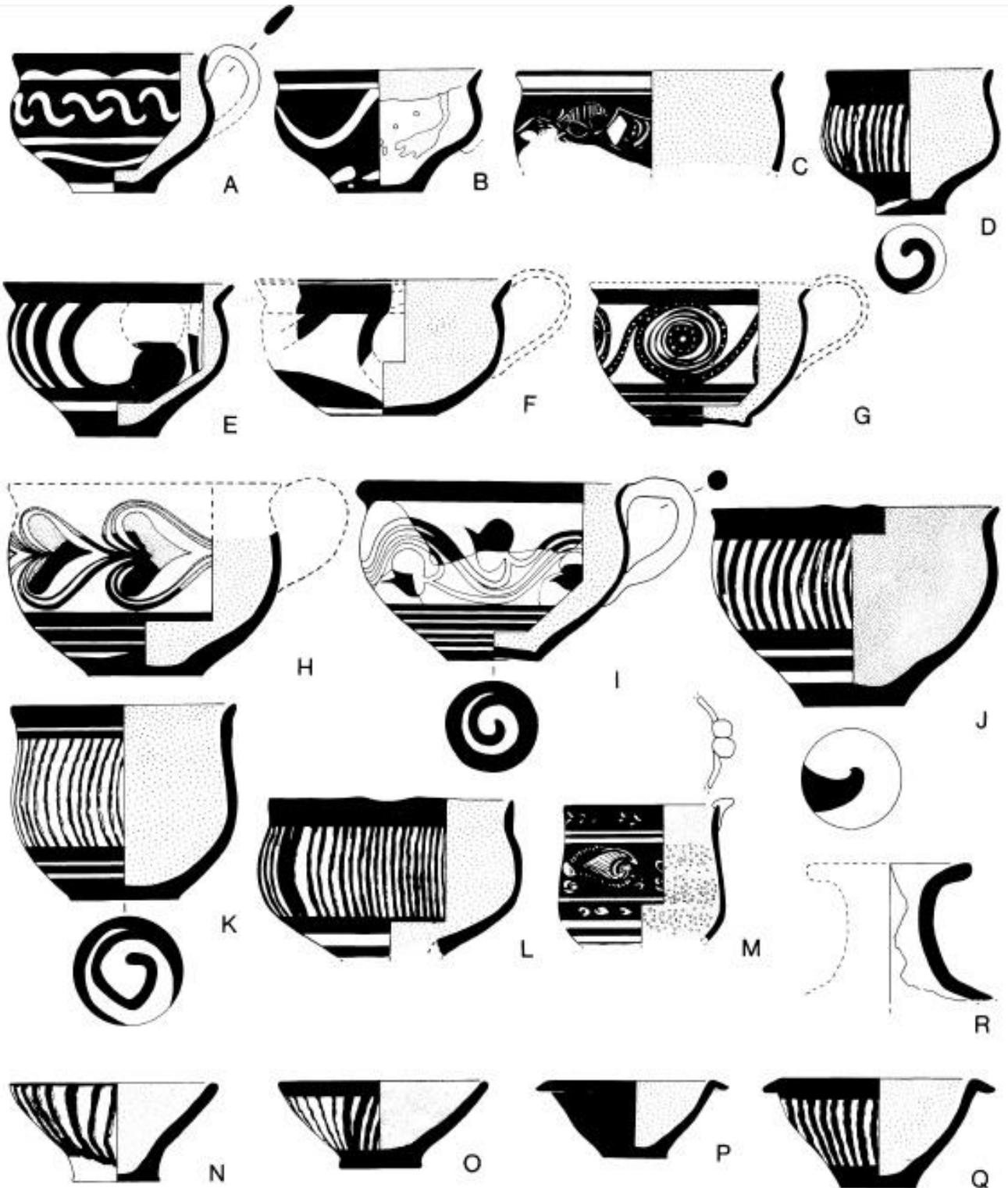
(Excerpt of diagram from Peter M. Warren: Figure 7; M. – a flaring bowl)<sup>57</sup>

<sup>57</sup> *Ibid*, 326.



(Excerpt of diagram from Peter M. Warren: Figure 9; A-H. – Basic Cup Forms)<sup>58</sup>

<sup>58</sup> *Ibid*, 328



(Excerpt of diagram from Peter M. Warren: Figure 10; A-I. – S-Profile ‘Teacups’)<sup>59</sup>

<sup>59</sup> *Ibid*, 329

### **A Discussion of Tell el-Yahudiyeh Ware:**

Because the traditional dating sequence of the Thera eruption is lacks incorporation of interdisciplinary data, some important yet controversial finds from Thera will be addressed. Among the first of these finds are three curious Tell el-Yahudiyeh ware juglets, dated c. 1650-1550 BCE, from Nic. Nomikos' collection in the Thera Museum.<sup>60</sup> These juglets are thought to have been found by Nomikos in the late nineteenth century. While their exact provenience is not known, they could be crucial to the dating of the Thera eruption. Paul Åström indicates that "one of the juglets (No. 1) [the black punctured vessel] contained pumice, [which] suggests that it came from the destruction layer...unless it is intrusive."<sup>61</sup> He continues, claiming that "if they were found in the catastrophe layer, which Prof. Marinatos dates c. 1520 or 1500 B.C., their duration may have been longer."<sup>62</sup>

Rather than perceive the juglets as having a longer duration of use, the presence of these juglets arguably points to an earlier date for the VDL. If these juglets are from the VDL they are evidence in favor of a high chronological assignment. The first juglet is an example of black punctured ware. Åström cites William Flinders Petrie stating that, "Black punctured and black burnished wares belong to Tell el-Yahudiyeh ware from a site in the delta dating mainly to the second intermediate period."<sup>63</sup> The second juglet from Thera is an example of red burnished wheel-made ware. Åström explains that these wares are common in the Near East, but are rarer in Cyprus.<sup>64</sup> The third juglet is classified as white painted wheel-made ware. Åström indicates

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<sup>60</sup> Paul Åström, "Three Tell El Yahudiyeh Juglets in the Thera Museum," in *ACTA of the 1st International Scientific Congress of the Volcano of Thera*, ed. A. Kaloyeropoyloy (Athens: F. Konstantinides – K. Michalas, 1971.), 415.

<sup>61</sup> *Ibid.*

<sup>62</sup> *Ibid.*

<sup>63</sup> *Ibid.*, 417.

<sup>64</sup> *Ibid.*, 416.

that “similar juglets...have been found at Hazor in Palestine dating from the Middle Bronze II”(c. 2000-1550 BCE).<sup>65</sup>

These finds from Thera, while lacking context and origin, can be compared to other examples of Tell el-Yahudiyeh ware from around the Mediterranean. At the site of Tell el-Dab’a, ancient Avaris in the eastern Nile delta, comparative examples of the Thera juglets can be found. The first vessel is a black polished incised juglet of biconical 1 type from tomb A/II-1/14-no.5.<sup>66</sup> While it is understood that the regional decorative traditions might differ between northern and southern Palestine, and the Nile delta, this vessel shares many parallels with the black punctured ware juglet from Thera. Both the Theran juglet and the juglet from Avaris have a biconical body, a short, narrow concave neck with an everted ring-shaped mouth, a handle from below the rim to the shoulder, and a concave button base. The main decorative feature of both juglets is the main band around the middle of the body flanked above and below by dots forming parallel chevrons. While the Theran juglet features parallel chevrons, the juglet from Avaris presents only an upper chevron.<sup>67</sup> The example from Tell el-Dab’a was found identified with stratum E/1, while also regarded as common in strata F and E/3.<sup>68</sup> The director of the excavation, Manfred Bietak, dates this stratum to c. ±1630/1610–1600/1590 BCE.<sup>69</sup> For comparison, Bietak cites other black polished incised juglets from Kerma, to the south. The Kerma vessels are found in grave K 1084 and grave K 1042 of tumulus X. These vessels parallel types found at Tell el-Dab’a, notably

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<sup>65</sup> *Ibid.*

<sup>66</sup> Manfred Bietak, *Avaris The Capital of Hyksos: Recent Excavations at Tell el-Dab’a* (London: British Museum Press, 1996), 59; pl. 23b.

<sup>67</sup> Paul Åström, “Three Tell El Yahudiyeh Juglets in the Thera Museum.” in *ACTA of the 1st International Scientific Congress of the Volcano of Thera*, ed. A. Kaloyeropoyloy (Athens: F. Konstantinides – K. Michalas, 1971.), 416.

<sup>67</sup> Manfred Bietak, *Avaris The Capital of Hyksos: Recent Excavations at Tell el-Dab’a* (London: British Museum Press, 1996), 59; pl. 23b.

<sup>68</sup> Manfred Bietak, “Problems of Middle Bronze Age Chronology: New Evidence from Egypt,” *American Journal of Archaeology*, Vol. 88, No. 4 (1984): 475.

<sup>69</sup> Manfred Bietak, *Avaris and Piramesse: Archaeological Exploration in the Eastern Nile Delta* (London: Oxford University Press, 1981), 237.

strata E/3-2.<sup>70</sup> An argument can be made that strata E/3-2 dates to after 1650 BCE, but this should be regarded with caution as the support for this claim is based on a cross-comparison of tumuli.<sup>71</sup> If these vessels are at all related, this may point to an earlier date for the VDL on Thera by almost 100 years.

The site of Toumba tou Skourou, in the Morphou region of northwest Cyprus also bears examples of Tell el-Yahudiyeh ware. The tombs at Toumba tou Skourou have a grand corpus of ceramics. Tomb V, specifically, yielded a large amount of Tell el-Yahudiyeh ware. Emily Vermeule, the site's excavator, established an internal (based on finds only from the site) Bronze Age sequence for Toumba tou Skourou. Within the internal sequence, she dates Tomb V to c. 1625-1550 BCE.<sup>72</sup> However, when the vessels from Tomb V are compared to examples from Thera and Tell el-Dab'a, Vermeule's internal sequence falls short. The upper limit is about 30-35 years too low and is not representative of wares outside of Cyprus. Juglet T V.31 from Chamber I of Tomb V is a black juglet with punctured triangles.<sup>73</sup> While crude in comparison, this vessel is similar to the Kerma juglets in shape and ornamentation, most notably the button base, the spring of the handle, and the triangular decoration with a single medial band.<sup>74</sup> T V.31 may also be an early or regionally separate form of a Tell el-Yahudiyeh juglet from stratum E/3-2 at Tell el-Dab'a.<sup>75</sup> Vessel T V.24 from chamber I of Tomb V shares a striking resemblance to two grey

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<sup>70</sup> Manfred Bietak, "Problems of Middle Bronze Age Chronology: New Evidence from Egypt," *American Journal of Archaeology*, Vol. 88, No. 4 (1984): 475.

<sup>71</sup> *Ibid.*

<sup>72</sup> Emily D. T. Vermeule and Florence Z. Wolsky, *Toumba tou Skourou, A Bronze Age Potters' Quarter on Morphou Bay in Cyprus* (London: Harvard University Press, 1990), 396.

<sup>73</sup> *Ibid.*, 386; pl. 181.

<sup>74</sup> Manfred Bietak, "Problems of Middle Bronze Age Chronology: New Evidence from Egypt," *American Journal of Archaeology*, Vol. 88, No. 4 (1984): 480.

<sup>74</sup> Emily D. T. Vermeule and Florence Z. Wolsky, *Toumba tou Skourou, A Bronze Age Potters' Quarter on Morphou Bay in Cyprus* (London: Harvard University Press, 1990), pl. 181.

<sup>75</sup> Manfred Bietak, *Avaris and Piramesse: Archaeological Exploration in the Eastern Nile Delta* (London: Oxford University Press, 1981), pl. 28.

<sup>75</sup> Manfred Bietak, "Problems of Middle Bronze Age Chronology: New Evidence from Egypt," *American Journal of Archaeology*, Vol. 88, No. 4 (1984): 480.

polished juglets incised with lotus designs and birds. These juglets, from stratum E/2, are dated by Bietak to c.  $\pm 1660/1630-1630/1610$  BCE.<sup>76</sup> Because some of the above examples have direct or indirect relationships to the Thera juglets, the upper date limit for Tomb V at Toumba tou Skourou may be 30-35 years too low. If Bietak's strata are dated accurately, and the Tell el-Yahudiyeh vessels from Tomb V are related to those from Tell el-Dab'a (either directly or remotely), Tomb V at Toumba tou Skourou can be dated to c. 1660-1550 BCE rather than Vermeule's c. 1625-1550 BCE. This new date range for Tomb V changes our understanding of the chronological placement of the Thera juglets by illustrating the upper limit of Vermeule's original internal sequence as 35 years too late.

#### **A Discussion of Proto-White Slip and White Slip I Wares:**

Another curious find that contributes to the Thera controversy are some sherds of a White Slip I bowl, produced in Cyprus. Found in 1870 by a French expedition to Thera, the members of the expedition claimed to have discovered these sherds below the tephra layer (VDL) of the eruption.<sup>77</sup> As in the case of the Thera juglets, the French expedition left no information as to the provenience of the sherds and no subsequent WS sherds have been uncovered on Thera. Be that as it may, the presence of WS I ware beneath the VDL at Thera does not bode well for a high chronological assignment because its creation and use is attributed to a later period. In addition, evidence from Toumba tou Skourou would appear to classify WS I wares as contemporary with LM IA wares (c. sixteenth century BCE).<sup>78</sup> Large amounts of Proto-White Slip and WS I wares are known from southern Cyprus, Syria-Palestine, and Tell el-Dab'a. Malcolm Wiener cites ten

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<sup>76</sup> Manfred Bietak, *Avaris and Piramesse: Archaeological Exploration in the Eastern Nile Delta* (London: Oxford University Press, 1981), 259; 237.

<sup>77</sup> Vassos Karageorghis, Ernst Czerny, Ian A. Todd, and Malcolm H. Wiener, *The White Slip Ware of Late Bronze Age Cyprus: Proceedings of an International Conference Organized by the Anastasios G. Leventis Foundation, Nicosia in Honour of Malcolm Wiener: Nicosia 29th-30th October 1998* (Wien: Verlag der Österreichischen Akademie der Wissenschaften, 2001), 198.

<sup>78</sup> *Ibid.*

diagnostic examples of PWS and WS I wares at Tell el-Dab'a; six of these PWS examples come from stratum D/2.<sup>79</sup> Stratum D/2 is dated by Bietak to c. ±1570-1540 BCE.<sup>80</sup> Wiener explains that WS I post-dates PWS wares. It is not plausible for this type of pottery to be present beneath the layer of volcanic tephra on Thera if the eruption occurred between 1660/1639-1613 BCE, assuming the traditional chronological framework.<sup>81</sup> PWS and WS I wares are also present at Toumba tou Skourou in northwest Cyprus. Tomb I at Toumba tou Skourou yields several examples of PWS and WS I wares. This tomb has been internally dated by Vermeule to c. 1550-1500 BCE, a date that fits well with the traditional sequence.<sup>82</sup> Tell el-Ajjul in Gaza “has yielded the largest assemblage in Canaan of both proto white slip – a ware rarely exported – and white slip I.”<sup>83</sup> These vessels are found in Tell el-Ajjul II, dated to the MB IIC, or MB III (c. 1650-1550 BCE).<sup>84</sup> While the date ranges for the Late Cypriote period and Tell el-Ajjul II span c. 1650-1550 BCE, PWS and WS I do not span the length of this period.

The traditional dating sequence cannot explain the presence of PWS and WS I wares in the seventeenth century BCE when they are dated to the sixteenth century. Wiener claims that the only feasible way for this to fit with the high chronology of the eruption is if PWS was created c. 1650 BCE followed shortly by WS I “then a period of widening use encompassing first sites in the SW, west and NW of Cyprus followed eventually by export of WS I” to Tell el-

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<sup>79</sup> *Ibid*, 197.

<sup>80</sup> Manfred Bietak, *Avaris and Piramesse: Archaeological Exploration in the Eastern Nile Delta* (London: Oxford University Press, 1981), 236.

<sup>81</sup> Vassos Karageorghis, Ernst Czerny, Ian A. Todd, and Malcolm H. Wiener, *The White Slip Ware of Late Bronze Age Cyprus: Proceedings of an International Conference Organized by the Anastasios G. Leventis Foundation, Nicosia in Honour of Malcolm Wiener: Nicosia 29th-30th October 1998* (Wien: Verlag der österreichischen Akademie der Wissenschaften, 2001), 198.

<sup>82</sup> Emily D. T. Vermeule and Florence Z. Wolsky, *Toumba tou Skourou, A Bronze Age Potters' Quarter on Morphou Bay in Cyprus* (London: Harvard University Press, 1990), 396.

<sup>83</sup> Celia J. Berghoffen, “Overland Trade in the Northern Sinai: The Evidence of the Late Cypriot Pottery,” *Bulletin of the American Schools of Oriental Research*, No. 284 (1991): 66.

<sup>84</sup> W.F. Albright, “The Chronology of a South Palestinian City: Tell El-‘Ajjul,” in *Tell El-‘Ajjul: The Middle Bronze Age Remains*, ed. H.E. Kassis (Lund: P. Åström S.v gen 61], 1974), 75.

<sup>84</sup> William G. Dever. “Chronology of the Southern Levant,” in *Near Eastern Archaeology: A Reader*, ed. Suzanne Richard (Winona Lake, Indiana: Eisenbrauns, 2003), 83.

Dab'a and Tell el-Ajjul in the Egyptian Delta and the Near East respectively.<sup>85</sup> He considers this an unlikely scenario, yet there is evidence to support it. Regional barriers in Cyprus and cultural perceptions of PWS and WS I ceramics probably affected the dispersion, not only in Cyprus, but throughout the Mediterranean. Celia Berghoffen has made it clear that these wares (and others such as Red on Black/Red on Red, type I Monochrome, and White Painted V-VI) were only of moderate value, were not prestige objects, and were used by rich and poor alike.<sup>86</sup> In addition, burials that contain these wares do not signify elevated social status.<sup>87</sup> Arguably, if these wares had little intrinsic value and there was little reason to hoard or covet them, what is to say that these particular wares would be a highly desirable good? Emily Vermeule marks a difference in WS I wares between Toumba tou Skourou and southeastern Cypriot sites.

No other site has produced so many of these early White Slip I bowls with the latticed bands and lozenge chains...southern Cypriot sites such as Hala Sultan Tekke and Enkomi yield only a few...it may be more than coincidence that Toumba tou Skourou is well situated to have been the exporter of [such] bowls to such Cycladic sites as Thera and Phylakopi.<sup>88</sup>

If we accept Wiener's claim of regionalism, that the northwest portion of Cyprus first produced these wares c. 1650, two factors could contribute to the delay or lag in diffusion of these wares: the desirability of PWS and WS I wares and the possible disruptions caused by the Thera eruption c. 1660/1639-1613 BCE. If these Cypriot wares were in fact not luxury items or items of high intrinsic value, the dispersion of these wares would be slow to begin with. Such an inherent delay was then compounded by the potential of greater disruption of trade in the wake

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<sup>85</sup> Vassos Karageorghis, Ernst Czerny, Ian A. Todd, and Malcolm H. Wiener, *The White Slip Ware of Late Bronze Age Cyprus: Proceedings of an International Conference Organized by the Anastasios G. Leventis Foundation, Nicosia in Honour of Malcolm Wiener: Nicosia 29th-30th October 1998* (Wien: Verlag der österreichischen Akademie der Wissenschaften, 2001), 201

<sup>86</sup> Celia J. Berghoffen, "Overland Trade in the Northern Sinai: The Evidence of the Late Cypriot Pottery," *Bulletin of the American Schools of Oriental Research*, No. 284 (1991): 69.

<sup>87</sup> *Ibid*, 70.

<sup>88</sup> Emily D. T. Vermeule and Florence Z. Wolsky, *Toumba tou Skourou, A Bronze Age Potters' Quarter on Morphou Bay in Cyprus* (London: Harvard University Press, 1990), 374.

of the Thera eruption. K. Erickson presents a convincing case for the chronological progression in burials at Toumba tou Skourou and the developmental progression from PWS to WS I, with an overlap only between the third and final phase of PWS with WS I.<sup>89</sup> At sites in the Near East and Nile Delta, such as Tell el-Dab'a and Tell el-Ajjul, PWS and WS I wares are generally found together in contemporaneous layers. If PWS precedes WS I, earlier layers would yield PWS without WS I, and later layers would yield both (assuming one does not replace the other). If sites like Toumba tou Skourou were exporting PWS and early WS I to the west within a fifty year span of their creation, the WS sherds at Thera would no longer conflict with a high chronological assignment. In the east, PWS and WS I arrive in the Near East and Nile Delta together, presumably from southern or south eastern Cypriot settlements such as Enkomi and Hala Sultan Tekke. Depending on how long dispersion of these goods from northwestern Cyprus to southeastern Cyprus took, and then from southeastern Cyprus to the Near East and Egypt, it is plausible to see WS sherds in the Aegean years before seeing WS sherds at settlements like Tell el-Ajjul and Tell el-Dab'a. When the evidence for delayed regional dispersion of PWS and WS I wares is integrated with Manning's dating of the MM IIIB – LM IA transition (between c. 1700-1675 BCE), PWS and WS I are still found to be contemporaneous with LM IA pottery as supported by the relative chronological framework of the Aegean.

### **Evidence of Lasting Effects:**

If the Thera eruption was as severe as the scientific and local archaeological data convey, traces of this event will exist in the contemporary archaeological record elsewhere in the Mediterranean and in later periods. Paul Åström discusses a potential correlate to this event in

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<sup>89</sup> Vassos Karageorghis, Ernst Czerny, Ian A. Todd, and Malcolm H. Wiener, *The White Slip Ware of Late Bronze Age Cyprus: Proceedings of an International Conference Organized by the Anastasios G. Leventis Foundation, Nicosia in Honour of Malcolm Wiener: Nicosia 29th-30th October 1998* (Wien: Verlag der österreichischen Akademie der Wissenschaften, 2001), 201.

Cyprus. At the site of Enkomi on the southern coast of Cyprus there are two destruction layers that are assigned to 1525 BCE and 1425 BCE.<sup>90</sup> Scholars, such as Åström and Dikaios, are inclined to synchronize the Knossian earthquake from the MM IIIB – LM IA transition and the destruction at Enkomi.<sup>91</sup> However, it seems unlikely that a seismic event in Crete would influence Enkomi, a settlement closer to Syria-Palestine than to mainland Greece. What is important to acknowledge is the regional shift during this period. Åström claims there was an abandonment of northwestern Cypriot sites that correlates with a rise in prominence of the southern Cypriot centers.<sup>92</sup> Sites in the northwest, such as Agia Irini, Stephania, and Toumba tou Skourou “were flourishing in the Late Cypriote I and were insignificant thereafter.”<sup>93</sup> This shift in importance most certainly would have affected the dispersion of any goods being produced in the northwest, namely PWS and WS I wares, by shifting the major ports in Cyprus from northwest to southeast.

Several scholars have suggested a possible tsunami component resulting from the eruption of Thera and the displacement of sea water after the caldera collapse. An event such as this has the potential to cause a major disruption to harbors and ships, hindering or even significantly disrupting trade activity. Verifying such a phenomenon is beyond the scope of this paper but would help to explain a shift in trade centers across the Mediterranean. Whatever the cause of this shift, its affects were lasting. Northwest trade centers ceased and a great majority of trade to and from Cyprus was thereafter conducted through southern Cypriot sites such as Enkomi, Kition, and Hala Sultan Tekke well into the Late Bronze Age.<sup>94</sup>

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<sup>90</sup> Paul Åström, “Traces of the Eruption of Thera in Cyprus?” in *Thera and the Aegean World I*, ed. C. Doumas (London: Thera and the Aegean World, 1978), 233.

<sup>91</sup> *Ibid.*

<sup>92</sup> *Ibid.*, 231.

<sup>93</sup> *Ibid.*, 233.

<sup>94</sup> *Ibid.*

For the Aegean, Kommos was a trading center on the southern shore of Crete. It functioned as one of the major hubs for intercultural exchange, especially between 1450 and 1200 BCE.<sup>95</sup> Kommos flourished as a trade hub because of its wide range of contacts from the Greek mainland, Kythera, Melos, possibly Naxos and Thera, southwest Anatolia, Sardinia, Egypt, various Syro-Palestinian locales, and Cyprus.<sup>96</sup> Sites in southern Cyprus and southern Crete are in high operation while sites in northern Cyprus and northern Crete do not flourish at the same time. The trend of this shift in trading centers is one of southern Cretan locale to southern Cypriot locale. The Thera eruption was one of the most influential events to occur in the Aegean during this time. The disruption of northern trade centers may have been caused by the eruption. If so, direct effects from the eruption or its aftereffects may have contributed to the shift in prominence from northern to southern trading centers on the islands of Crete and Cyprus.

Similarly, at the site of Phylakopi on the island of Melos in the Aegean, trends in trade also changed. During the Bronze Age, Phylakopi had a great deal of native Cretan (LM IA) influence in architecture, frescoes, and pottery.<sup>97</sup> In a reexamination of the pottery from the 1911 excavations, P.A. Mountjoy states that “none of the Mycenaean and Late Minoan pottery from the 1911 excavations is stratified, apart from 5 vessels...belonging to the LM IB/Late Helladic IIA destruction horizon.”<sup>98</sup> Apart from the lack of stratified finds, the classification of the ceramic data from Phylakopi has changed because of new methods of pottery classification. Interestingly, the pottery previously thought to be LM IB (Minoan fabrics) is now associated with the LH IIA (Mycenaean fabrics). What may have fooled previous excavators is what

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<sup>95</sup> Jonathan E. Tomlinson, Jeremy B. Rutter, and Sandra M. A. Hoffman, “Mycenaean and Cypriot Late Bronze Age Ceramic Imports to Kommos: An Investigation by Neutron Activation Analysis,” *Hesperia: The Journal of the American School of Classical Studies at Athens*, Vol. 79, No. 2 (2010): 194.

<sup>96</sup> *Ibid.*

<sup>97</sup> P.A. Mountjoy, “The Late Minoan II-III And Mycenaean Pottery from the 1911 Excavations at Phylakopi on Melos,” *The Annual of the British School at Athens*, Vol. 104 (2009): 73.

<sup>98</sup> *Ibid.*

Mountjoy refers to as ‘the pseudo-Minoan class.’ These vessels are near exact copies of LM IB vases but were made on the Mycenaean mainland.<sup>99</sup> Chemical analysis of the ceramic itself revealed that these vessels had “a mainland provenance; none matched the Knossos profile.”<sup>100</sup> Perhaps in the aftermath of the Thera eruption, with Akrotiri having disappeared as a trade emporium, the mainland Mycenaean attempted to meet the demand for Minoan wares now that a major distribution center had vanished. Both of these shifts point to possible long-term aftereffects of the Thera eruption that would leave a lasting memory in the minds of the inhabitants of the Mediterranean.

### **Archaeological Conclusions:**

It is clear that there is little to no issue with the relative chronological framework of the Aegean or of Cyprus. Moreover the traditional low chronology for the eruption is dependent on the relative chronological framework based on cross-comparisons of most of the ceramics. However, the low date for the eruption assigned by Marinatos (c. 1550-1500 BCE) cannot be synchronized with the scientific evidence as it is currently understood. It is for this reason that c. 1550-1500 BCE date should be challenged in favor of a higher date c. 1660/1639-1613 BCE. Manning’s assignment of the Thera eruption following his MM IIIB – LM IA transition appears to be valid. It is only the calendrical date for this transition that needs to be reconsidered (from Warren’s traditional c. 1600 BCE<sup>101</sup> to Manning’s proposed c. 1700-1675 BCE<sup>102</sup>). If the relative framework in the Aegean is held constant and synchronized to this proposed date, it is possible to have mature LM IA wares present on Thera within the window of 1660/1639-1613 BCE. In

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<sup>99</sup> *Ibid*, 81.

<sup>100</sup> *Ibid*.

<sup>101</sup> Peter M. Warren, “A New Minoan Deposit from Knossos, c. 1600 B.C., and Its Wider Relations,” *The Annual of the British School at Athens*, Vol. 86 (1991): 333.

<sup>102</sup> Sturt Manning, *The Absolute Chronology of the Aegean Early Bronze Age* (Sheffield, England: Sheffield Academic Press, 1995), 200-216.

addition, if the claim of delayed regional dispersion in Cyprus is valid, it is possible to have sherds of WS pottery in the VDL on Thera within the window of 1660/1639-1613 BCE. The presence at multiple sites of Tell el-Yahudiyeh juglets function as the constant for the period, present in Thera, Cyprus, Egypt, and the Near East. Its overall longevity spans the period of c. 1660-1550 BCE, while certain examples have been dated more specifically. As there are few fixed points of absolute reference for Aegean chronology, it is not out of the question that the relative framework of the traditional sequence is correct, but incorrectly placed calendrically. The archaeological data should not be viewed as incompatible with the scientific or literary data but as another source of information that needs to be reconciled.

### **Egyptian Literary Evidence:**

The Egyptian literary data presents another dimension to the Thera debate because there were periods of instability in several important Mediterranean regions. Unfortunately, the seventeenth and sixteenth centuries BCE lack the ‘expected’ number of historical writings from all major civilizations. Karen Foster admits that these circumstances make study difficult because “there are almost no extant historical texts from this period.”<sup>103</sup> Because there is a lack of historical documentation from these regions, scholars are left with little to work with. It is because of this dearth of information that we must define what would be of the greatest chronological value. K. Foster, R. Ritner, and B. Foster propose that texts from the late seventeenth to the end of the sixteenth centuries BCE would be the most useful.<sup>104</sup> While this is an appropriate range, texts from early fifteenth century BCE Egypt also prove to be informative. Among the sixteenth century BCE texts is the Ahmose Stele, a commemorative monument erected during the reign of the first eighteenth dynasty Pharaoh, Ahmose (1550-1525 BCE);

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<sup>103</sup> Karen Polinger Foster, Robert K. Ritner, and Benjamin R. Foster, "Texts, Storms, and the Thera Eruption," *Journal of Near Eastern Studies*, Vol. 55, No. 1 (1996): 3.

<sup>104</sup> *Ibid.*

according to Egyptian middle chronology). This text is generally understood as commemorating the restoration efforts of Ahmose after a period of disaster. The Ahmose Stele is a significant text and is most probably associated with the Thera eruption.

Before an analysis of the actual text is conducted, the greater chronological context of the stele's creation should be considered. The reign of Ahmose, according to the writings of Manetho and the Turin Canon, mark the beginning of the eighteenth dynasty and the start of the New Kingdom in Egypt. The Second Intermediate Period (c. 1650-1550 BCE, according to Egyptian middle chronology), which preceded the New Kingdom, had proven to be a time of disunity for Egyptian administration. During this period, the Hyksos, a group of Semitic foreigners, ruled in the Nile Delta with their capital at Avaris (modern Tell el Dab'a). While the Egyptian and Hyksos administrations rivaled each other politically, this proved to be a period of intercultural exchange and cooperation between the common people.<sup>105</sup> There is a considerable amount of archaeological remains from the Hyksos, but, they left no written records. This dearth of written texts makes an accurate interpretation of the Ahmose Stele of the utmost importance. However, the exact date range for the reign of Ahmose is disputed based on inconsistent, corrupted, fragmentary, and biased Egyptian texts, possible dynastic overlap because of co-regencies of unknown length, and uncertainties about chronological synchronism with fixed points of absolute reference (such as astronomical observations). Egyptian high, middle, and low chronologies for Ahmose's reign are c. 1575-1550 BCE, c. 1550-1525 BCE, and c. 1525-1500 BCE respectfully. As recently as April 2014, Robert Ritner and Nadine Moeller indicated that the suggested reign of Ahmose must lie between "1566 and 1552 B.C. (at the 1 $\sigma$ , 68% range)

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<sup>105</sup> Donald B. Redfors, "The Hyksos Invasion in History and Tradition," *Orientalia*, Vol. 39 (1970): 7.

and 1570 to 1544 B.C. (for the  $2\sigma$  range 95%).”<sup>106</sup> These conclusions were acquired by counting back the number of regnal years for Ahmose to meet the date supported by radiocarbon dates

<u>The Second Intermediate Period in Egypt:</u>	
Dynasty XIII: 60 Diospolities (i.e. Thebans)	= 453 years
Dynasty XIV: 76 Xoites	= 184 years
Dynasty XV: 6 shepherds “Hyksos”	= 260 years
Dynasty XVI: 32 shepherds “Hyksos”	=251 years
}	
Dynasty XVII: 5 Thebans (Ends with Kamose)	
Period Totaling in all:	= 1148 years

(Excerpt of Manetho as quoted by later historians, reconstructed by modern scholars, and diagramed by Amélie Kuhrt; with additions for clarity)<sup>107</sup>

obtained for the reign of Thutmose III.<sup>108</sup> This evidence best fits the high chronology. This paper has assumed the middle chronological dates for the reign of Ahmose as the safest chronological compromise, but the high chronology supported by this new evidence would only help to push the scientific, archaeological, and literary evidence even closer together.<sup>109</sup>

### **A Discussion of the Ahmose Stele:**

The Ahmose Stele is a commemorative stele erected by Ahmose, founder of the eighteenth dynasty of Egypt, in order to legitimize his reign. The stele itself is a two-sided stone slab with identical inscriptions front and back, having 18 and 21 lines respectively. The content of the inscription revolves around meteorological anomalies, disaster, and the restoration efforts

<sup>106</sup> Robert K. Ritner and Nadine Moeller, “The Ahmose ‘Tempest Stele’, Thera and the Comparative Chronology,” *Journal of Near Eastern Studies* Vol. 73, No. 1 (April 2014): 17.

<sup>107</sup> Amélie Kuhrt, *The Ancient Near East: c. 3000-330 BC, Vol. I* (New York: Routledge, 1995), 174.

<sup>108</sup> *Ibid.*, 16-17.

<sup>109</sup> Claude A.P. Vandersleyen, “Ahmose” in *The Oxford Encyclopedia of Ancient Egypt, Vol. 2* (London: Oxford University Press, 2001), 221.

<sup>108</sup> Amélie Kuhrt, *The Ancient Near East: c. 3000-330 BC, Vol. I* (New York: Routledge, 1995), 12.

initiated afterward during Ahmose's reign. Scholars dispute the meaning of the stele, using it either as evidence of a correlation between the Thera eruption and the Egyptian political sphere or as evidence to the contrary. However, the stele is an integral part in connecting the scientific and archaeological data through the Egyptian dynastic change from dynasty XVII to XVIII. The portion of the inscription referred to as "The Rainstorm," according to Wiener and Allen, is a relatively complete portion (save for a single lacuna) recounting the gods' manifestations according to Ahmose. This portion is most notable for its vivid description of meteorological phenomena.<sup>110</sup>

[Then] the gods [made] the sky come in a storm of r[ain, with dark]ness in the western region and the sky beclouded without [stop, loud]er than [the sound of] the subjects, strong[er than ... howling(?)] on the hills more than the sound of the cavern in Elephantine. Then every house and every habitation they reached [perished and those in them died, their corpses] floating on the water like skiffs of papyrus, (even) in the doorway and the private apartments (of the palace), for a period of up to [. . .] days, while no torch could give light over the Two Lands.<sup>111</sup>

From the Rainstorm passage evidence of volcanic aftereffects that influenced the Egyptians can be inferred. Everything described in detail in this portion of the stele can be likened to aftereffects from more modern volcanic eruptions such as Tambora and Krakatau.<sup>112</sup> The passage states that "the sky came in a storm of r ain, with dark]ness in the western region of the sky." This is a reasonable possibility. As airborne ash, dust, and debris remains suspended in the atmosphere, water vapor condenses upon the airborne particles. When this occurs, the particles are too heavy to remain suspended and they fall to the ground in the form of acid rain. This is a naturally occurring situation where acid rain is caused by high levels of H<sub>2</sub>SO<sub>4</sub> (sulfuric acid)

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<sup>110</sup> Malcolm H. Wiener, and James P. Allen, "Separate Lives: The Ahmose Tempest Stela and the Thera Eruption," *Journal of Near Eastern Studies*, Vol. 57, No. 1 (1998): 3.

<sup>111</sup> *Ibid.*

<sup>112</sup> Karen Polinger Foster, Robert K. Ritner, and Benjamin R. Foster, "Texts, Storms, and the Thera Eruption," *Journal of Near Eastern Studies*, Vol. 55, No. 1 (1996): 3.

and airborne particles released from volcanic eruptions; (In the modern era, humans produce the same result from factory pollution releasing sulfur dioxide into the atmosphere.)

Accompanying the heavy rains was darkness emanating from the western portion of the sky. This portion of the text is clear when read, yet perplexing when applied to reality.

According to accounts of similar eruptions, large periods of darkness, ranging from several days to weeks, would be expected. However, the inscription states that darkness approached from the west when Thera lies northwest of the temple of Karnak in Thebes, where the stele was found.

From southern Egypt, where Thebes is located, it would be logical for the darkness to approach mostly from the north. Modern regional wind patterns in the Mediterranean show a consistent southeast movement of air from the Aegean Sea towards the Nile Delta for most of the year.<sup>113</sup>

There are approximately twenty-one seasonal low-pressure depressions that travel across the sea in a southeast direction annually.<sup>114</sup> In addition, deep sea core analysis of the seafloor shows a dispersion of distal tephra from the eruption travelling in a clear southeast path emanating from the island of Thera toward the Nile Delta.<sup>115</sup> It would seem very probable that a volcanic ash cloud, as a result of an eruption on Thera, would travel in a southeasterly direction.

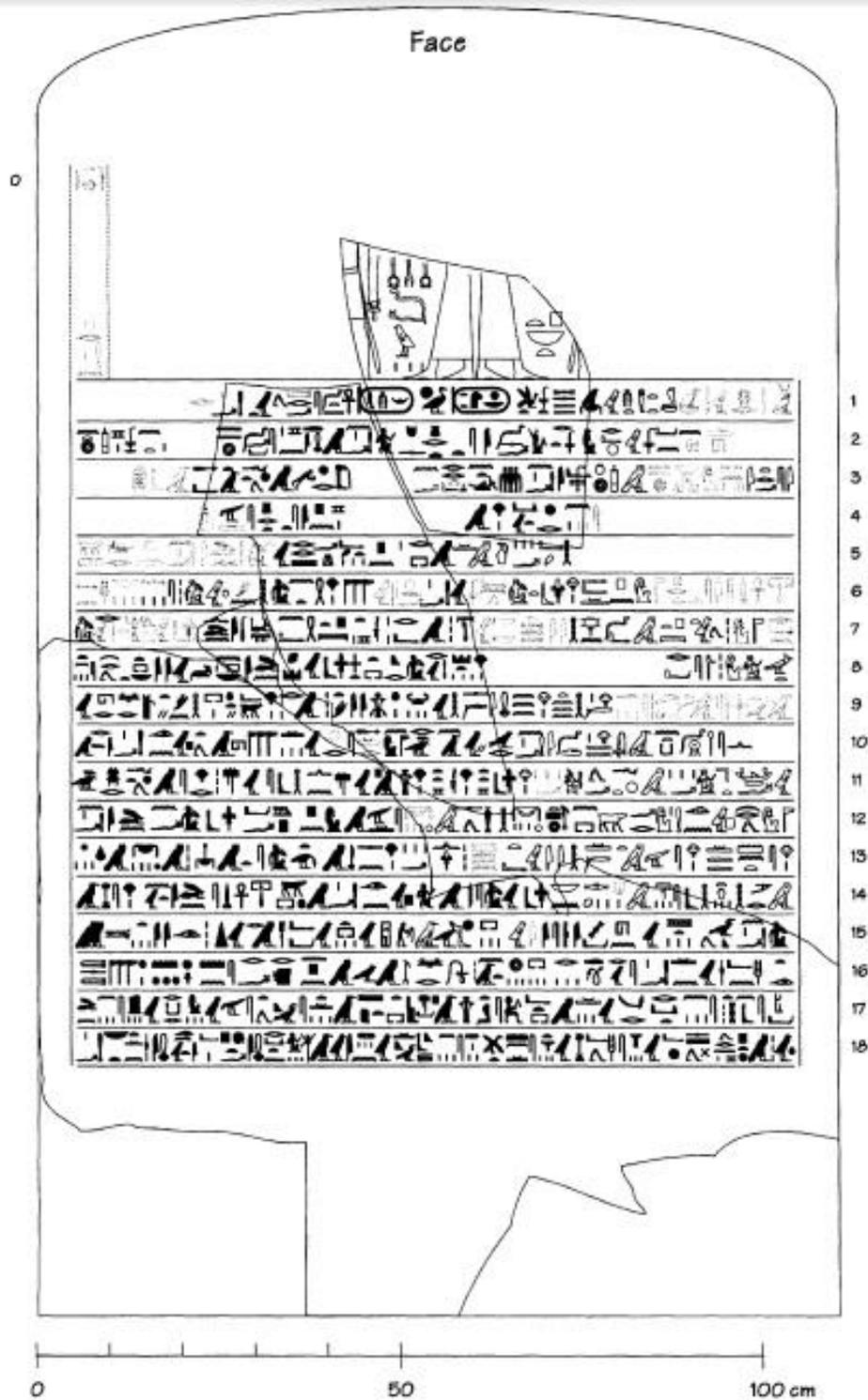
Consequently, many have questioned the validity of the stele as a correlate for the eruption based on the directional origin of the darkness described. However, if the stele was not commissioned shortly after the event itself the true directional origin of the darkness may have been forgotten or progressively skewed over the course of years. The directional origin may have symbolic

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<sup>113</sup> P. Jordan and T.C. Harrison, *Mediterranean Pilot Volume V: Coasts of Libya, Egypt, Israel, Lebanon, and Syria, South Coasts of Greek islands from Kriti to Ródos and Turkey with the Island of Cyprus: Ninth Edition* (The United Kingdom: The United Kingdom Hydrographic Office, 2005), 31.

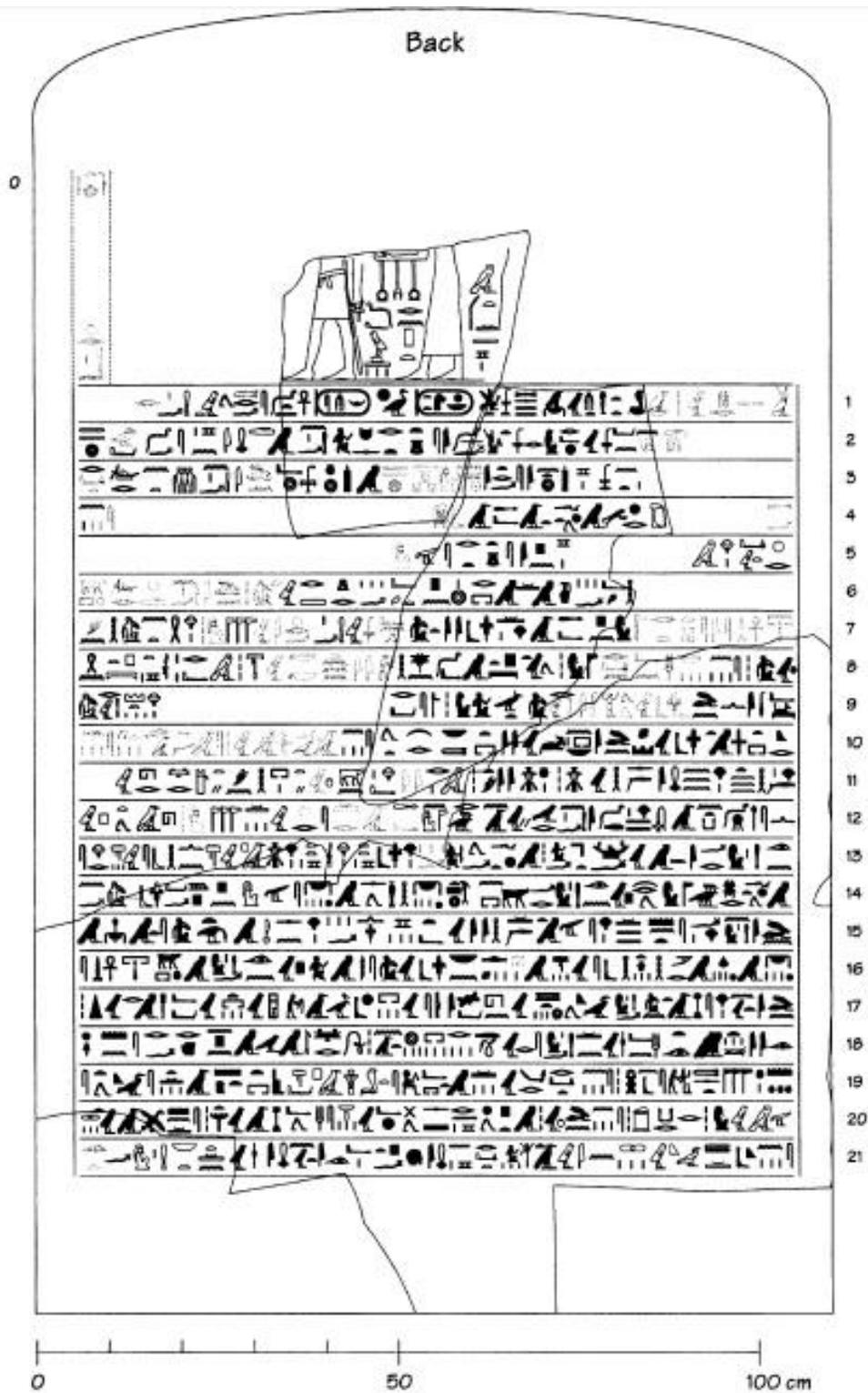
<sup>114</sup> *Ibid.*, 28.

<sup>115</sup> D.A. Hardy and Colin Renfrew (ed.), *Thera and the Aegean World III: Vol. 3 Chronology: The Theran Event and its Global Impact: Proceedings of the Third International Congress, Santorini, Greece, 3–9 September 1989* (London: Thera Foundation, 1990), 59; 61.



(A Reconstruction of the Ahmose Stele: Front)<sup>116</sup>

<sup>116</sup> Malcolm H. Wiener and James P. Allen, "Separate Lives: The Ahmose Tempest Stela and the Theran Eruption," *Journal of Near Eastern Studies*, Vol. 57, No. 1 (1998): 4.



(A Reconstruction of the Ahmose Stele: Back)<sup>117</sup>

<sup>117</sup> *Ibid.*, 5.

implications, as the western side of the Nile is associated with death. Tephra analysis provides an additional means by which the directional origin of the darkness can be ascertained.

The presence of an ash layer and tephra deposits in Lake Manzala in the Eastern delta provide a lone example of evidence for the transport of volcanic matter from Thera to Egypt.<sup>118</sup> The presence of Theran ash in the delta is a point of contention among scholars; Wiener and Allen remain resistant to these tephrochronological data because of the scarcity of ash and tephra in the delta region, as well as the lack of tephrochronological studies conducted there. However, it is in the nature of a river delta to experience constant change. As evidenced by the clear pattern of settlement in the delta itself, archaeological remains of settlements such as Tell El-Dab'a (Avaris) and Pi Ramesses show a varied lateral occupation. This pattern is thought to exist because of attempts to avoid (or follow) the ever-changing and encroaching paths of the distributaries that lead to the Mediterranean Sea. It is the work of the waters of the Nile that moves tons of silt and debris into the delta and eventually to the sea. Over a 3500 year period, one should expect to only find trace amounts of an ash layer from the eruption when accounting for the instability of the soil layers in the delta. This contention also allows for a more widespread darkness as this ash may have settled farther upstream and then washed into the northern-most reaches of the delta.

The Ahmose stele goes on to describe sounds that are "...loud]er than [the sound of] the subjects, strong[er than ... howling(?)] on the hills more than the sound of the cavern in Elephantine."<sup>119</sup> Reports from both the Tambora and Krakatau eruptions collected from "journals, ships' logs, and letters described such phenomena as midday darkness two days later and 500 km

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<sup>118</sup> D.J. Stanley, and H. Sheng, "Volcanic Shards from Santorini (Upper Minoan Ash) in the Nile Delta, Egypt," *Nature*, Vol. 320, (1986): 734.

<sup>119</sup> *Ibid*, 3.

distant; and] detonations heard 1600 km away.”<sup>120</sup> This reference from the stele, coupled with the other effects mentioned such as darkness and rains, all point to descriptions of volcanic aftereffects. Wiener and Allen attempt to refute this idea based on the vague character of the description, attributing it instead to seasonal monsoons of a more local character.<sup>121</sup> This hypothesis, however, does not account for the relationship between the Egyptians, their environment, and seasonal weather patterns of the region.

The original publication and translation of the stele by C. Vandersleyen has been challenged by many modern scholars. His translation favored certain word choices and interpretations that differ from other translations. These choices reflect Vandersleyen’s interests and convictions as an Egyptologist. One such instance is explained by Karen Foster in using Robert Ritner’s translation. Line 12 of “The Rainstorm” shows the difference of word choice:

Line 12 [*n shd.n tk3 hr t3. wy*]

Ritner: “while a torch could not be lit in the Two Lands”

Vandersleyen: “sans qu’on puisse allumer de torche nulle part”

Davis: “with no one able to light the torch anywhere”<sup>122</sup>

Where Ritner translates “in the Two Lands,” both Vandersleyen and Davis (another Egyptologist) chose to interpret the end of the passage to mean “anywhere,” despite the fact that “*hr t3. wy*” is not a standard Egyptian phrase for “anywhere.”<sup>123</sup> Vandersleyen chose to interpret the phrase figuratively whereas Foster and Ritner chose a more literal interpretation of “in the Two Lands.” This distinction introduces the question of scope of the darkness. Vandersleyen’s interpretation was influenced by his knowledge of Egyptian weather patterns. He knew from personal observation that local storms could cause such effects as those described in the stele.

<sup>120</sup> Karen Polinger Foster, Robert K. Ritner, and Benjamin R. Foster, “Texts, Storms, and the Thera Eruption,” *Journal of Near Eastern Studies*, Vol. 55, No. 1 (1996): 3.

<sup>121</sup> Malcolm H. Wiener and James P. Allen, “Separate Lives: The Ahmose Tempest Stela and the Thera Eruption,” *Journal of Near Eastern Studies*, Vol. 57, No. 1 (1998): 21; 24; 28.

<sup>122</sup> Karen Polinger Foster, Robert K. Ritner, and Benjamin R. Foster, “Texts, Storms, and the Thera Eruption,” *Journal of Near Eastern Studies*, Vol. 55, No. 1 (1996): 5.

<sup>123</sup> *Ibid*, 5.

Wiener and Allen also note that “such monsoon related storms create the darkened skies along the Nile and the noise that the Stela describes.”<sup>124</sup>

Although storms of this nature are known to pass through Egypt, the fact that these phenomena were written about in such great detail (or at all) raises some important questions. The Nile River and its annual inundation provided the sorely needed floodplain for agriculture. Naturally, the Egyptians would have possessed a great deal of knowledge of the common and seasonal weather patterns of their region, at minimum for successful crop yields and continued longevity. Had they not adapted to the annual pattern of flood and drought Egyptian society might not have flourished at all. If the Egyptian people were aware of what was normal and expected of their climate zone, what would be the impact of documenting these normal occurrences upon a commemorative stele? With this in mind, what is important to acknowledge is the type of inscription that the Ahmose Stele is, and what its intended impact was. A major theme throughout the text is one of restoration from a period of chaos. This ‘restoration of order’ genre is well known among Egyptian historical texts.

It seems unlikely that such a regular, almost mundane, event would be worth capturing in such detail in this genre of text. An event that is not regular or expected, perhaps coincidentally exhibiting similar effects to those of seasonal monsoons, is more appropriate for a restoration of order genre text. Wiener and Allen point out that Ahmose’s response to the storm indicates that the gods are understood as the agents of its occurrence. This storm had “surpass ed] the thought and intention of the gods,” further corroborating the understanding of this event as uncommon and more severe than expected.<sup>125</sup>

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<sup>124</sup> Malcolm H. Wiener and James P. Allen, "Separate Lives: The Ahmose Tempest Stela and the Theban Eruption," *Journal of Near Eastern Studies*, Vol. 57, No. 1 (1998): 24.

<sup>125</sup> *Ibid.*, 19.

Another example of the ‘restoration of order’ genre can be found in the Middle Kingdom text “The Prophecy of Nefer-Rohu.” The central authority of Old Kingdom Egypt declined because of political instability in the late sixth dynasty, ushering in the First Intermediate Period (2220-2040 BCE).<sup>126</sup> This period of disunity endured until the end of the eleventh dynasty when Mentuhotep IV (2040-1995 BCE) brought central authority back to Egypt forging the path toward the Middle Kingdom.<sup>127</sup> During the reign of Mentuhotep IV, Amenemhat I seized the throne and became pharaoh, beginning dynasty XII. To help justify his usurpation, Amenemhat I commissioned a prophecy, set in the Old Kingdom court of Snefru c. 500-600 years prior to Amenemhat’s reign. The prophecy foretold of a king, Ameni (an alternate name for Amenemhat), who would rise to power during a period of chaos and bring order and unity back to Egypt. Within the text, a conversation between Pharaoh Snefru and a lector priest named Nefer-Rohu (Neferti) takes place. Nefer-Rohu describes the (future) chaos vividly,

THIS LAND IS (SO) DAMAGED (that) there is no one who is concerned with it...THE RIVERS of Egypt are empty...The land is diminished, (but) its administrators are many...Re separates himself (from) mankind.<sup>128</sup>

Through careful analysis, the description of the ‘future’ that Nefer-Rohu foretells can provide an understanding of the environmental and political conditions of the First Intermediate Period while allowing for usage of hyperbole.

These conditions can be likened to the political framework during the Second Intermediate Period and the acquisition of the throne by Ahmose. The Ahmose Stele reveals a similar set of conditions to those in the First Intermediate Period. The stele recounts Egypt as flooded, darkened for a time, in a state of ruin, and politically fragmented, with the gods having

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<sup>126</sup> Amélie Kuhrt, *The Ancient Near East: c. 3000-330 BC, Vol. I* (New York: Routledge, 1995), 159-161.

<sup>127</sup> *Ibid.*, 162-164.

<sup>128</sup> James B. Pritchard, “Oracles and Prophecies,” in *The Ancient Near East: An Anthology of Texts and Pictures*, trans. John A. Wilson (Princeton & Oxford: Princeton University Press, 2011), 386.

revoked their divine favor.<sup>129</sup> Descriptions from both the Ahmose Stele and the Prophecy of Nefer-Rohu share a common theme of discord and chaos, yet detail the events in different ways. Each instance of chaos described comes to a resolution with the arrival of the ‘restorer of order’: Ahmose and Amenemhet I, respectively.

#### The Prophecy of Nefer-Rohu

“IT IS THAT a king WILL COME, BELONGING TO THE SOUTH, Ameni Amenemhet], the triumphant, his name...He will unite the Two Mighty Ones; he will satisfy the Two Lords.”<sup>130</sup>

#### The Ahmose Stele

“Then His Majesty began to reestablish the Two Lands... Then His Majesty commanded to restore the temples which had fallen into ruin in this entire land.”<sup>131</sup>

Both of these texts share a ‘restoration of order’ theme and each ruler accomplishes this at the end of a period of political instability. In both cases, each ruler used literary propaganda to aid in their acquisition of the throne. Thus the intent of this genre of text is less concerned with reliable history and more with legitimizing the rule of a usurper through divine decree. In order to function in this way, it is essential that the chaos precede the restorer’s reign. In the case of Ahmose, the ‘tempest’ should not be interpreted as occurred during the reign of Ahmose, but rather during the preceding reign of the Hyksos.

#### **A Tradition of Hyksos Vilification:**

Though fragmentary, incomplete, and potentially biased, the text of Manetho (c. third century BCE) is used as a means to date the Hyksos occupation in Egypt as well as to

<sup>129</sup> Karen Polinger Foster, Robert K. Ritner, and Benjamin R. Foster, "Texts, Storms, and the Thera Eruption," *Journal of Near Eastern Studies*, Vol. 55, No. 1 (1996): 5.

<sup>130</sup> James B. Pritchard, "Oracles and Prophecies," in *The Ancient Near East: An Anthology of Texts and Pictures*, trans. John A. Wilson (Princeton & Oxford: Princeton University Press, 2011), 387-388.

<sup>131</sup> Karen Polinger Foster, Robert K. Ritner, and Benjamin R. Foster, "Texts, Storms, and the Thera Eruption," *Journal of Near Eastern Studies*, Vol. 55, No. 1 (1996): 6.

characterize their relations with the Egyptian populace. Over the past decades Manetho has come to be viewed with more skepticism.<sup>132</sup> Historians and archaeologists (prior to Redford, 1970<sup>133</sup>) have been influenced by the myth that the Hyksos “take-over” was a sudden and unheralded military attack from ‘wretched Asiatics.’ This claim has since been challenged strongly in favor of a gradual infiltration of Levantine Easterners over a long period of time. Contrary to the traditional view of sudden invasion, archaeological evidence from Tell el-Dab’a shows that the Hyksos adopted many culturally Egyptian practices. It is also thought that many Egyptians prospered during the period of Hyksos rule. While the general populace of both Egyptian and Hyksos territory may have cooperated, Egyptian political texts suggest administrative, religious, and territorial tension. It seems that at some point in the mid-sixteenth century the politics between these two political entities clashed. With the reign of Kamose, son of Seqenenre Tao II and brother to Ahmose, in c. 1555 BCE political tension reached an apex.<sup>134</sup>

The reasons for Egyptian royal resentment are probably rooted in two events. First, the Hyksos are thought to be responsible for the death of Seqenenre Tao II, as he perished while on a hippopotamus hunt in the delta. Secondly, when Kamose became pharaoh he was angered by the partitioning of the land among three potentates, two of whom were not Egyptian. “(One) chief is in Avaris, another is in Kush, and I sit (here) associated with an Asiatic and a Southerner! Each man has his slice of Egypt, and (so) I share in the portioning of the land!”<sup>135</sup> This response most certainly was rooted in the Egyptian view of unification and preservation of *ma’at* (harmony, justice, and order).

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<sup>132</sup> Donald B. Redford, "The Hyksos Invasion in History and Tradition," *Orientalia*, Vol. 39 (1970): 3.

<sup>133</sup> *Ibid.*

<sup>134</sup> Claude A.P. Vandersleyen, “Ahmose” in *The Oxford Encyclopedia of Ancient Egypt*, Vol. 2 (London: Oxford University Press, 2001), 221.

<sup>135</sup> Donald B. Redford, "The Hyksos Invasion in History and Tradition," *Orientalia*, Vol. 39 (1970): 31.

The first unification of Upper and Lower Egypt by Menes (Narmer) beginning dynasty I is an enormously important formative event of Egyptian culture. This is a defining moment for Egyptian religious and cultural identity. From this point forward, the necessary and correct way to rule was dominion of both Upper and Lower Egypt under a single, ‘divine’ king.<sup>136</sup> Unification was thought to be the only peaceful and harmonious means of existence. Each pharaoh strove both to preserve and to continue the divine order of the world, *ma’at*, during periods of central authority. During periods of chaos, each pharaoh attempted to restore *ma’at*, as evidenced by several ‘restoration of order’ genre texts.<sup>137</sup> Manetho and the Turin Canon (c. thirteenth century BCE) provide direct evidence for the importance of Menes, as his name appears first on these king lists.<sup>138</sup> Furthermore, the problems with these king lists occur during periods of multiple rulers and co-regencies. This is the result of the understanding that Egypt, at any given point, is under the dominion of a single ‘divine’ king. During these unified periods of strong, centralized control, Egypt found itself prospering. The Old Kingdom was the first era of pyramid building, and the Middle Kingdom the second, abounding with Egyptian literature. The intermediate periods were times in which a collapse of centralized power led to fragmented control, multiple rulers, and co-regencies. This fragmentation of Egyptian order resulted in many contemporary administrators and kings, and sometimes “civil” war. Shattering the age-old tradition of unity upset the balance of Egyptian life. Thus, the Hyksos were portrayed negatively by Egyptian administrators and kings amidst the chaos of the Second Intermediate period.

Kamose spoke to the partitioning of the land of Egypt in a section from the Carnarvon Tablet (c. 1555-1550 BCE); he also makes mention of his foreign policy as a “desire to rescue

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<sup>136</sup> Amélie Kuhrt, *The Ancient Near East: c. 3000-330 BC, Vol. I* (New York: Routledge, 1995), 125.

<sup>137</sup> *Ibid.*.

<sup>138</sup> *Ibid.*

Egypt which the Asiatics have destroyed.”<sup>139</sup> This evidence is certainly Egyptian propaganda intended to vilify the Hyksos dynasty and an admission that *ma'at* needed to be restored. The first evidence of actual attacks on the Hyksos was found on a schoolboy's practice tablet, and then later found to reflect the sentiments of the Karnak Stele.<sup>140</sup> The Karnak Stele recounts the treatment of the Hyksos-controlled territory by Kamose during the war:

I did not leave a thing of Avaris, because it is *empty*, with the Asiatic vanished...I shall leave it in desolation, without people therein, after I have destroyed their towns. I shall burn up their places, made into red mounds forever, because of the damage which they did in this (part of) Egypt.<sup>141</sup>

The period of Hyksos vilification begins with Kamose, as this is one of the earliest examples of political aggression on behalf of the Egyptians. His reign is marked by his advance(s) on the Hyksos capital at Avaris, modern-day Tel el Dab'a, though whether the “expulsion” of the Hyksos was a result of the armies of Kamose or his successor, Ahmose, is uncertain. It is probable that Ahmose completed that which his brother started and is credited for the expulsion in its entirety. The biographical record of a modest, Upper Egyptian soldier, Ahmose, son of the woman Eben, outlines the conflict. His tomb biography indicates times of conflict near Avaris, and the eventual despoiling of the city itself.<sup>142</sup> This account loosely supports Kamose's claims. This tradition of vilifying the Hyksos began in the reign of Kamose and continued through the reign of Hatshepsut (c. 1479-1458 BCE) and beyond.<sup>143</sup> Hatshepsut makes mention of the Hyksos in the Speos Artemidos Inscription, “They ruled without Re, nor did he act by divine decree right down to (the reign of) My Majesty.”<sup>144</sup> Hatshepsut's reference

<sup>139</sup> Donald B. Redford, "The Hyksos Invasion in History and Tradition," *Orientalia*, Vol. 39 (1970): 5.

<sup>140</sup> James B. Pritchard, “Egyptian Historical Texts,” in *The Ancient Near East: An Anthology of Texts and Pictures*, trans. John A. Wilson (Princeton & Oxford: Princeton University Press, 2011), 243.

<sup>141</sup> Donald B. Redford, "The Hyksos Invasion in History and Tradition," *Orientalia*, Vol. 39 (1970): 5.

<sup>142</sup> James B. Pritchard, “Egyptian Historical Texts,” in *The Ancient Near East: An Anthology of Texts and Pictures*, trans. John A. Wilson (Princeton & Oxford: Princeton University Press, 2011), 226-228.

<sup>143</sup> Donald B. Redford, "The Hyksos Invasion in History and Tradition," *Orientalia*, Vol. 39 (1970): 33.

<sup>144</sup> *Ibid*, 31.

was not directed toward the destructive nature of the Hyksos as Kamose and Ahmose before her. Her statement is one of Egyptian theological implication.<sup>145</sup> The text states that the foreign kings ruled without Re and that the god had refused to sanction their rule. This mention oddly mimics the phrasing in the Prophecy of Nefer-Rohu (1991-1962 BCE), “Re separates himself (from) mankind.”<sup>146</sup> This chain of vilification extends for a period of over 100 years of New Kingdom history. It is within this chain of vilification that Ahmose is observed as founder of the eighteenth dynasty and with it the New Kingdom of Egypt. It would be expected of Ahmose to vilify the Hyksos as his brother had before him, especially if he is credited with their expulsion. The Ahmose Stele is Egyptian propaganda intended to depict the Hyksos negatively. The physical imagery and the divine implications associated with this vilification may have been influenced by the Thera eruption.

The portion of the Ahmose Stele referred to as Ahmose’s Restoration of the Temple (Lines 14-18 front ; 16-21 back) further recounts the actions and statements made by Ahmose in order to restore the temples and the land.

What His Incarnation did was to rest in the Palace, lph [“lph” is an abbreviated form of the phrase “life, prosperity, health!” which is a common phrase meant to honor the Pharaoh.]. Then one was reminding His Incarnation of the entering of the sacred estates, the dismantling of tombs, the hacking up of mortuary enclosures, and the toppling of pyramids-how what had never been done (before) had been done. Then His Incarnation commanded to make firm the temples that had fallen to ruin in this entire land: to make functional the monuments of the gods, to erect their enclosure walls, to put the sacred things in the special room, to hide the secret places, to cause the processional images that were fallen to the ground to enter their shrines, to set up the braziers, to erect the altars and fix their offering-loaves, to double the income of office-holders-to put the land like its original situation. Then it was done like every-thing that His Incarnation commanded to do.<sup>147</sup>

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<sup>145</sup> *Ibid.*

<sup>146</sup> James B. Pritchard, “Oracles and Prophecies,” in *The Ancient Near East: An Anthology of Texts and Pictures*, trans. John A. Wilson (Princeton & Oxford: Princeton University Press, 2011), 387.

<sup>147</sup> Malcolm H. Wiener and James P. Allen, “Separate Lives: The Ahmose Tempest Stela and the Thera Eruption,” *Journal of Near Eastern Studies*, Vol. 57, No. 1 (1998): 6.

Vandersleyen, in his original publication, argued that the devastation of these monuments was caused by the rain, while Foster and Ritner have suggested the additional agency of an earthquake.<sup>148</sup> Vandersleyen's initial assertion is incorrect. He claimed that the storm's origin was local in nature, yet able to topple monuments and temples. Were this the case, monuments in Egypt would always be in a state of ruin or, at minimum, sub-prime condition. A storm originating in Egypt would not be strong enough to deliver the kind of widespread devastation discussed in the text. Foster and Ritner suppose an additional earthquake component was the cause of the damages. Christos Doumas agrees with Foster and Ritner about the potential for a precursor earthquake associated with the Thera eruption.<sup>149</sup>

Weiner and Allan observe that the verb usage in the inscription is not compatible with the types of damage implied. The verbs used connote purposeful destruction: "entering (*ḥq*)... dismantling (*whn*) ... hacking up (*hb3*)... toppling (*w<sup>c</sup>*) . . . doing what had not been done (*jryt tmmt jr*)."<sup>150</sup> These verbs usually imply human agency and willful destruction. The likelihood that rain or an earthquake could 'dismantle' or 'hack up' monuments is very low. Wiener and Allan conjecture that this is a reference to the ravages wrought by the conflict between Ahmose's predecessors and the Hyksos. Little physical evidence supports this, although that does not mean the Hyksos were not intended to be blamed for such ruin. Wiener and Allen support this as the text "seems to draw a deliberate parallel between the situation caused by the storm and that which existed before it."<sup>151</sup> It is plausible that Ahmose, being well within the chain of known Hyksos vilification, would attempt to use the Hyksos as a scapegoat for all the disasters, past and present, in his bid for power, depicting himself as the restorer of *ma'at*.

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<sup>148</sup> *Ibid.*, 20.

<sup>149</sup> *Ibid.*, 24.

<sup>150</sup> *Ibid.*, 20.

<sup>151</sup> *Ibid.*

It is this bid for power, by both Kamose and Ahmose that catalyzes the tradition of Hyksos vilification. Redford makes an important claim concerning the Hyksos rule, drawing his evidence from many Assyrian, Persian, and Babylonian traditions,

The procedure adopted by the collective historical nation seems clear: an acclimatized foreigner who adopts the culture of the natives and tries to become one of them, is accepted, and his origin forgotten. A foreign war-lord who reduces the country through war and rules it, not on the strength of traditional practice, but on the strength of his army, is never accepted as a native, but is forever after remembered as an alien.<sup>152</sup>

As discussed previously, the Hyksos adopted many culturally Egyptian practices both social and political. The Hyksos 'infiltration' was not one of sudden and violent character, but of gradual settlement and assimilation. In no way should they fit into the category of foreign warlords. The Egyptian administration needed to remove the Hyksos in order to obtain power. To an Egyptian ruler attempting to restore *ma'at*, false justification for such an action was still justification. As an addendum, Redford explains that the

distinction for the Egyptians lay between the incarnate of Horus, duly crowned and sanctioned by the gods – what his ethnic origin was mattered little, though in fact he was usually Egyptian – and a foreign usurper who took power by violent means. That history treated the Hyksos as though they belonged to the latter category, both consciously in propaganda texts and unconsciously by constantly stressing their foreign origin, is a point in favour of the traditional concept of an invasion.<sup>153</sup>

Even Hatshepsut refers to this in the Speos Artemidos Inscription, claiming that the gods did not sanction the rule of the Hyksos. This implies only a royal agenda and not one of the entire Egyptian populace.

### **Reconciliation:**

If Manetho and the Turin Canon are used to establish a date for the arrival of the Hyksos in the Nile Delta a date of c. 1648 BCE is given according to the Egyptian middle chronology.<sup>154</sup>

<sup>152</sup> Donald B. Redford, "The Hyksos Invasion in History and Tradition," *Orientalia*, Vol. 39 (1970): 10.

<sup>153</sup> *Ibid.*, 14-15.

<sup>154</sup> Amélie Kuhrt. *The Ancient Near East: c. 3000-330 BC, Vol. I* (New York: Routledge, 1995), 176.

When Manning's 17<sup>th</sup> century date is considered valid, the Thera cataclysm dates to 1660/1639-1613 BCE.<sup>155</sup> Though potentially coincidental, it is important to consider the relationship between the gradual growth to prominence of a foreign Hyksos power in Lower Egypt and the abnormal and extraordinary aftereffects of the Thera eruption. Even so, any time during the Hyksos occupation of the delta would be a sufficient amount of time for the creation of Egyptian propaganda by Ahmose (c. 1550-1525 BCE). The Ahmose Stele explains the reaction of the Pharaoh: "How much greater is this than the impressive manifestation of the great god, than the plans of the gods!"<sup>156</sup> This supports the contention that the gods were viewed as responsible for the creation of 'The Rainstorm.' 'The Rainstorm' produced phenomenal effects such as heavy rains, long periods of darkness, loud booming sounds like that at Elephantine, undoubtedly colder weather conditions, and spectacular sunrises and sunsets, as described by the stele itself. It is clear that there is a relationship between Hyksos vilification and the Egyptian perception of the Thera Eruption. Because of its genre, the Ahmose Stele cannot reference disastrous events during Ahmose's reign, but events that must have taken place up to 100 years before. 'Restoration of order' genre texts never apply to the political situations of the time in which they were written, but rather situations in the past. This genre exists to justify a new regime by claiming a disruption of order in the past that needed to be rectified. By appreciating the genre of the Ahmose Stele, its description of the aftereffects caused by the Thera eruption can be confidently placed in the Hyksos period, rather than the time of Ahmose himself.

When the great majority of radiocarbon dating of local and distal samples is coupled with additional methods of scientific dating, they make a convincing case for a high 17<sup>th</sup> century date

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<sup>155</sup> Sturt W. Manning, "Eruption of Thera/Santorini," *The Oxford Handbook of the Bronze Age Aegean* (London: Oxford University Press, 2010), 463.

<sup>156</sup> Malcolm H. Wiener and James P. Allen, "Separate Lives: The Ahmose Tempest Stela and the Thera Eruption," *Journal of Near Eastern Studies* Vol. 57, No. 1 (1998): 24.

for the eruption. A shift of the calendrical date for the relative chronological framework of the Aegean would help to reconcile the data. When the Ahmose Stele and other contemporary texts are compared, a clear pattern of Hyksos vilification emerges with the occurrence of a terrible storm during their rule. It would seem plausible that the eruption could have happened during the middle to late seventeenth century BCE, being remembered as an extraordinary event, only to be described years later in a chain of Egyptian propaganda targeting the Hyksos. Perhaps this gap in time is what caused a misrepresentation of the directional origin of the darkness described in the Ahmose Stele. The storm may have become associated with the Hyksos, and was later described in the Ahmose Stele, only because the volcanic aftereffects plagued Egypt during Hyksos rule. The Egyptian assertion that the Hyksos “ruled without Re” may be a physical description as well as a theological one. To rule without Re implies ruling without the presence of the sun. If the Thera eruption caused long-lasting (or even brief) darkness during the Hyksos reign, the Egyptians may well have understood this as a bad omen, a rejection by Re.

It was not uncommon for Egyptian pharaohs, such as Ahmose, to attempt to assert themselves as the sole ruler in time of chaos. During times of great transition a ruler had to establish himself politically, socially, and religiously. The Ahmose Stele seeks to serve all of these purposes. Such texts do not always depict history as it happened, because historical accounts usually have layers of biases. Thus, they are prone to hyperbole, misrepresentations of people, and biased claims, as described by the Prophecy of Nefer-Rohu, and should not be considered an unbiased account of history. They were used as literary tools to help rulers bolster their legitimacy. It does not seem unrealistic for the founding ruler of a new age of Egyptian history to refer to spectacular events that happened prior – even much earlier – than his reign if it aids him in his claim for legitimacy as restorer of order. When viewing the Ahmose Stele as

recounting an event that occurred during the Hyksos period, prior to the reign of Ahmose, the scientific evidence and the reevaluated archaeological evidence for the eruption align chronologically.

Though this paper may not provide irrefutable evidence for a high dating for the Thera eruption, it does provide one possible, reconciled viewpoint on a decades-old chronological issue. It raises a question about how scholars view the relationship between the eruption, and the surrounding regions, and the people who inhabited those regions. It addresses also the possible adjustments that need to be made to the chronology of the Aegean. It would seem there is no reason not to reconcile the scientific, archaeological, and literary data. With more time, more effort, and new evidence the truth behind the Thera controversy may become clearer, perhaps changing the way scholars construct and interpret the cultural-historical synthesis of the entire Mediterranean.

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