

# Kleronomia: Legacy and Inheritance

Studies on the Aegean Bronze Age  
in Honor of Jeffrey S. Soles



Edited by  
Joanne M. A. Murphy  
and Jerolyn E. Morrison

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Jeffrey and Mary Ellen Soles at Mochlos in eastern Crete, 2011. Photo J. Morrison.

PREHISTORY MONOGRAPHS 61

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*Published by*  
INSTAP Academic Press  
Philadelphia, Pennsylvania  
2022

Design and Production  
INSTAP Academic Press, Philadelphia, PA

Printing and Binding  
HF Group – Acmebinding, Charlestown, MA

INSTAP Academic Press, a part of the Institute for Aegean Prehistory (INSTAP), was established to publish projects relevant to the history of the Aegean world, in particular from the Paleolithic to the 8th century B.C. It is a scholarly nonprofit publisher specializing in high-quality publications of primary source material from archaeological excavations and surveys as well as individual studies dealing with material from the prehistoric periods—exemplified by its *Prehistory Monographs* series of volumes. INSTAP is committed to engaging a variety of audiences by disseminating knowledge through its scholarly publishing program, which produces award-winning monographs at reasonable prices that are both academically and popularly acclaimed.

#### Library of Congress Cataloging-in-Publication Data

Names: Murphy, Joanne M. A., 1971- editor. | Morrison, Jerolyn E., 1972- editor. | Soles, Jeffrey S., 1942- honoree.  
Title: Kleronomia: legacy and inheritance : studies on the Aegean Bronze Age in honor of Jeffrey S. Soles / edited by Joanne M.A. Murphy and Jerolyn E. Morrison.  
Description: Philadelphia : INSTAP Academic Press, 2022. | Series: Prehistory monographs; 61 | Includes bibliographical references. | Summary: “Kleronomía—meaning legacy, inheritance, or allotment—encapsulates many of Jeffrey Soles’s feelings about the modern town and archaeological site of Mochlos in eastern Crete, his relationship with the people of Mochlos, the themes in his scholarship, and his contribution to our understanding of Minoan Crete. In ancient Greek text, kleronomía was used to describe the amount of land that was allotted or inherited. In many ways, the exploration of Mochlos is Jeff’s kleronomía. His life’s work has included both teaching students at The University of North Carolina Greensboro and co-directing with Costis Davaras the excavation of the Minoan town on the islet of Mochlos. The 27 papers presented in this volume in Jeff’s honor are a testament to his legacy of scholarship in Aegean Bronze Age archaeology. The papers, which are organized chronologically, harken to the wide range of themes that Jeff has addressed and influenced during his illustrious career: ancestry, burial customs, religion, trade, jewelry, the development of Mochlos, and the rise and fall of Minoan Crete”-- Provided by publisher.  
Identifiers: LCCN 2022019622 (print) | LCCN 2022019623 (ebook) | ISBN 9781931534284 (hardcover) | ISBN 9781623034337 (pdf)  
Subjects: LCSH: Mochlos Island (Greece)--Antiquities. | Crete (Greece)--Antiquities. | Minoans. | Soles, Jeffrey S., 1942--- Influence.  
Classification: LCC DF221.C8 K526 2022 (print) | LCC DF221.C8 (ebook) | DDC 939/.1801--dc23/eng/20220511  
LC record available at <https://lcn.loc.gov/2022019622>  
LC ebook record available at <https://lcn.loc.gov/2022019623>

#### Front Cover

View of the islet of Mochlos on the northeastern coast of Crete, looking north; photo J. Morrison. Bronze dragonfly bead (max. dim. 3.7 cm), LM IB, from Building C.7 in the Neopalatial settlement of Mochlos; Soles 2012, pl. CXIIIb, no. CA468; photo C. Papanikolopoulos; courtesy J.S. Soles.

#### Back Cover

Bronze sistrum (length 28.5 cm) from the merchant’s hoard found in Room 2.2, House C.3, in the Neopalatial settlement of Mochlos; Soles and Davaras, eds., 2022, 253–254, no. IVA.183, fig. 109, pls. 12, 73; photo C. Papanikolopoulos; courtesy J.S. Soles.

#### Back Cover and Chapter Icon

Representation of the gold seal ring from an LM IB burial at Mochlos; drawing by M. Kaplan based on CMS II.3, no. 252, which is © and courtesy Heidelberg Corpus for Minoan and Mycenaean Seals.

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# Table of Contents

|                                                                                                                                                                                         |      |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|
| List of Tables in the Text.....                                                                                                                                                         | vii  |
| List of Figures in the Text .....                                                                                                                                                       | ix   |
| Preface.....                                                                                                                                                                            | xix  |
| A Life at Mochlos, <i>Mary Ellen Carr Soles</i> <sup>†</sup> .....                                                                                                                      | xxi  |
| Bibliography of Jeffrey S. Soles .....                                                                                                                                                  | xxv  |
| List of Abbreviations.....                                                                                                                                                              | xxix |
| PART I. THE EARLIEST HUMANS ON CRETE                                                                                                                                                    |      |
| 1. A Case of Bioturbation at Damnoni Cave, <i>Thomas F. Strasser, Miriam G. Clinton, Eleni Panagopoulou, and Panagiotis Karkanas</i> .....                                              | 3    |
| PART II. PREPALATIAL PERIODS                                                                                                                                                            |      |
| 2. Silvery Weapons and Precious Jewelry: Early Minoan IB Metallurgy of East Crete, <i>Susan C. Ferrence, Alessandra Giumlia-Mair, Philip P. Betancourt, and Yiannis Papadatos</i> ..... | 11   |
| 3. New Beginnings: Occupation at Mochlos in the Early Minoan I Period, <i>Thomas M. Brogan and Luke Kaiser</i> .....                                                                    | 33   |

|                                                                                                                                                        |    |
|--------------------------------------------------------------------------------------------------------------------------------------------------------|----|
| 4. House Tombs of the Prepalatial Period: Less House, More Tomb, <i>Borja Legarra Herrero</i> .....                                                    | 43 |
| 5. Gournia, Mochlos, and Petras: Arenas for Sociopolitical Competition with Similar Beginnings<br>but Different Ends, <i>Metaxia Tsipopoulou</i> ..... | 49 |

### PART III. PROTOPALATIAL TO NEOPALATIAL PERIODS

|                                                                                                                                                                                |     |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|
| 6. What Do the Pots Say? Fine Ware Indicates Social Stratification in the Mirabello Region during<br>Middle Minoan IIB, <i>Georgios Doudalis</i> .....                         | 75  |
| 7. On the Wings of Birds: Reflections on the Cut Style in Minoan Glyptic, <i>Olga Krzyszkowska</i> .....                                                                       | 85  |
| 8. Sacred Minoan Columns? <i>Joseph W. Shaw</i> .....                                                                                                                          | 95  |
| 9. Role of the Neopalatial Dagger in the Bay of Mirabello, <i>Jesse Obert</i> .....                                                                                            | 107 |
| 10. A Reexamination of the Minoan “Sacral Knot” Motif, <i>Ann M. Nicgorski</i> .....                                                                                           | 115 |
| 11. Possible Origins and Meaning of the Minoan Figure-of-Eight Shield, <i>Costis Davaras</i> <sup>†</sup> .....                                                                | 125 |
| 12. Foundation Feasts in the Minoan Palace at Gournia, Crete, <i>R. Angus K. Smith</i> .....                                                                                   | 137 |
| 13. A Minoan Mystery Vase Type, <i>Peter Warren</i> .....                                                                                                                      | 149 |
| 14. Clay Vessels and Loomweights: Tracing Southeast Aegean Connections at Neopalatial<br>Mochlos, <i>Jerolyn Morrison, Eleni Nodarou, and Joanne Cutler</i> <sup>†</sup> ..... | 155 |
| 15. Prestige Goods, Foreign Knowledge, and Divine Practices: Giali Obsidian from Mochlos<br>in Context, <i>Tristan Carter</i> .....                                            | 173 |
| 16. Small but Meaningful: Beads in the Tombs around Pylos, <i>Joanne M.A. Murphy</i> .....                                                                                     | 189 |
| 17. On the Egyptian Origins of the Minoan Sistrum, <i>Evi Sikla</i> .....                                                                                                      | 201 |
| 18. A Peak Sanctuary for Gournia, <i>L. Vance Watrous</i> .....                                                                                                                | 211 |
| 19. The Population and Depopulation of Late Minoan Crete, <i>Malcolm H. Wiener</i> .....                                                                                       | 217 |

### PART IV. POSTPALATIAL PERIODS AND IRON AGE

|                                                                                                         |     |
|---------------------------------------------------------------------------------------------------------|-----|
| 20. Minoan Stone Vases in Late Minoan IIIC Contexts, <i>Melissa Eaby</i> .....                          | 231 |
| 21. New Thoughts on the Karphi Goddesses, <i>Geraldine C. Gesell</i> .....                              | 239 |
| 22. Memory and Place in Early Iron Age Graves at Kavousi Vronda, Crete, <i>Leslie Preston Day</i> ..... | 249 |

### PART V. MINOANS AND THEIR WORLD

|                                                                                                                            |     |
|----------------------------------------------------------------------------------------------------------------------------|-----|
| 23. Mochlos and Pseira: Contrasting Economic Trajectories during the Bronze Age,<br><i>Philip P. Betancourt</i> .....      | 259 |
| 24. Groundwater Geochemistry and Persistent Places of Water Ritual on Crete, Greece,<br><i>Jonathan M. Flood</i> .....     | 267 |
| 25. Minoan Harbors at Mochlos, Crete, <i>Floyd W. McCoy and Rhonda R. Suka</i> .....                                       | 277 |
| 26. Veteran and Sacred Trees in Modern and Minoan Crete, <i>Jennifer Moody</i> .....                                       | 299 |
| 27. You Can Take the Potter Out of the Plain, but You Can’t Take the Plain Out of the Potter,<br><i>Peter M. Day</i> ..... | 319 |



## List of Tables in the Text

|             |                                                                                                                                               |     |
|-------------|-----------------------------------------------------------------------------------------------------------------------------------------------|-----|
| Table 2.1.  | Results (%) of XRF analyses on the EM IB copper-alloy dagger, pendants, and silver jewelry from the rock shelter in the Petras cemetery ..... | 17  |
| Table 2.2.  | Results (%) of XRF analyses on the metal artifacts from Hagia Photia. ....                                                                    | 18  |
| Table 2.3.  | Results (%) of XRF analyses on the artifacts from Livari .....                                                                                | 20  |
| Table 2.4.  | Results (%) of WD-EPMA analyses by Tselios (2008) on the EM II–III artifacts from Mochlos.....                                                | 22  |
| Table 5.1.  | Comparison of chronological phases and architecture of house tomb cemeteries at Gournia, Mochlos, and Petras .....                            | 61  |
| Table 5.2.  | Comparison of movable finds, excluding pottery, from the house tomb cemeteries at Gournia, Mochlos, and Petras .....                          | 63  |
| Table 14.1. | Correlating methods of fabric analysis with stylistic understanding of off-island objects from Mochlos .....                                  | 163 |
| Table 14.2. | Macroscopic fabric descriptions for Southeast Aegean objects at Neopalatial Mochlos.....                                                      | 164 |
| Table 14.3. | Primary non-plastic inclusions identified in Southeast Aegean macroscopic fabrics at Neopalatial Mochlos.....                                 | 166 |

|             |                                                                                           |     |
|-------------|-------------------------------------------------------------------------------------------|-----|
| Table 14.4. | Petrographic fabric descriptions for Southeast Aegean objects at Neopalatial Mochlos..... | 166 |
| Table 15.1. | Giali obsidian from Mochlos by context .....                                              | 175 |
| Table 16.1. | The number of glass and faience beads in the Pylos tombs.....                             | 193 |
| Table 25.1. | Physiographic configurations for Mochlos harbor determined from underwater surveys.....   | 285 |
| Table 26.1. | “Miracle and healing” trees in Crete. Locations listed from west to east.....             | 311 |



## List of Figures in the Text

|               |                                                                                                                                                                                    |    |
|---------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|
| Frontispiece. | Jeffrey and Mary Ellen Soles, Mochlos, 2011.....                                                                                                                                   | ii |
| Figure 1.1.   | Map of Crete showing the location of Damnoni.....                                                                                                                                  | 4  |
| Figure 1.2.   | The three strata of the slope.....                                                                                                                                                 | 4  |
| Figure 1.3.   | Damnoni Cave (center left) from the south with dense vegetation coverage .....                                                                                                     | 4  |
| Figure 1.4.   | Test trench in the cave with the fire pit visible in the balk in the upper left of the photograph.....                                                                             | 5  |
| Figure 1.5.   | A north-south stratigraphic cross-section of Trenches CC10-AC08 showing the total number of ceramics within each of the three strata .....                                         | 6  |
| Figure 1.6.   | A north-south stratigraphic cross-section of Trenches CC10-AC08 showing the average size of the ceramic sherds by loci (categorized by Natural Breaks [Jenks] Classification)..... | 6  |
| Figure 2.1.   | Map of sites in the Aegean region mentioned in the text .....                                                                                                                      | 13 |
| Figure 2.2.   | Daggers from the cemeteries of Hagia Photia, Livari, and Petras that were analyzed with XRF .....                                                                                  | 16 |

|              |                                                                                                                               |    |
|--------------|-------------------------------------------------------------------------------------------------------------------------------|----|
| Figure 2.3.  | Detail of dagger from Hagia Photia (HNM 4658) showing remains of a silvery sheen on the surface.....                          | 21 |
| Figure 2.4.  | Selected silver-alloy jewelry pieces from the cemeteries of Hagia Photia, Livari, and Petras that were analyzed with XRF..... | 23 |
| Figure 2.5.  | Map of sites in the eastern Mediterranean region and western Asia mentioned in the text.....                                  | 26 |
| Figure 3.1.  | Plan of Mochlos showing the Prepalatial Cemetery and Trench D2 97/9800.....                                                   | 35 |
| Figure 3.2.  | Section of Trench D2 97/9800 marking Phases I–IV.....                                                                         | 36 |
| Figure 3.3.  | Phase IA pottery, Plain Red/Brown Coarse Ware.....                                                                            | 36 |
| Figure 3.4.  | Phase IB pottery, Red Burnished Ware.....                                                                                     | 37 |
| Figure 3.5.  | Phase IB pottery, Plain Red/Brown Coarse Ware.....                                                                            | 38 |
| Figure 3.6.  | Phase IB pottery, Cretan imports.....                                                                                         | 39 |
| Figure 3.7.  | Phase IB pottery, Cretan imports, Light Brown Burnished Ware.....                                                             | 40 |
| Figure 3.8.  | Phase IB pottery, possible West Cycladic import or Cretan imitation.....                                                      | 41 |
| Figure 4.1.  | Comparison of house plans (left) with rectangular tombs (right) during the Prepalatial period.....                            | 45 |
| Figure 5.1.  | Aerial view of the Petras cemetery at the end of the 2019 excavation.....                                                     | 51 |
| Figure 5.2.  | Plan of the Petras cemetery (2022) showing the different periods of architecture.....                                         | 52 |
| Figure 5.3.  | Plan of the Petras cemetery (2019) highlighting the EM II architecture.....                                                   | 53 |
| Figure 5.4.  | Aerial view of House Tomb 4 at the end of the 2019 excavation season, after consolidation.....                                | 54 |
| Figure 5.5.  | Aerial view of House Tomb 6 at the end of the 2019 excavation season, after consolidation.....                                | 54 |
| Figure 5.6.  | Plan of House Tomb 12.....                                                                                                    | 55 |
| Figure 5.7.  | Plan of House Tomb 13.....                                                                                                    | 55 |
| Figure 5.8.  | Plan of House Tombs 3, 5, 14, and 16.....                                                                                     | 55 |
| Figure 5.9.  | Aerial view of House Tomb 15.....                                                                                             | 55 |
| Figure 5.10. | Selected pottery from House Tomb 16.....                                                                                      | 56 |
| Figure 5.11. | Aerial view of House Tomb 17 on top of House Tomb 26, at the end of the 2019 excavation season.....                           | 57 |
| Figure 5.12. | Plan of House Tomb 26 below House Tomb 17.....                                                                                | 57 |
| Figure 5.13. | Plan of House Tomb 1 and House Tomb 22 below it.....                                                                          | 57 |
| Figure 5.14. | Aerial view of House Tombs 7 and 35 at the end of the 2019 excavation season, after consolidation.....                        | 58 |

|              |                                                                                                                                                                    |     |
|--------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|
| Figure 5.15. | Plan of the Petras cemetery (2022) highlighting the EM III–MM IA architecture .....                                                                                | 59  |
| Figure 5.16. | Plan of House Tomb 27 under House Tomb 11.....                                                                                                                     | 60  |
| Figure 6.1.  | Mochlos Middle Minoan Deposit 1: (a) white-on-dark bridge-spouted jug (P 657),<br>(b) alternating floral style jar (P 826), (c) white-on-dark tumbler (P 643)..... | 78  |
| Figure 6.2.  | Mochlos Middle Minoan Deposit 2: (a) carinated cup (P 6287), (b) decorated jug<br>(P 6301) .....                                                                   | 79  |
| Figure 6.3.  | Mochlos, House 1: rounded cup (P 10668).....                                                                                                                       | 80  |
| Figure 6.4.  | Mochlos, House 1: undecorated tumbler (P 12372).....                                                                                                               | 80  |
| Figure 6.5.  | Mochlos, House 1, two views of jug with zigzag and floral decoration (P 10629).....                                                                                | 80  |
| Figure 6.6.  | Mochlos, House 1, two views of base of possible straight-sided cup or closed vessel<br>from Malia (P 12371) .....                                                  | 80  |
| Figure 7.1.  | Birds with outstretched wings: LM I “naturalistic” and Cut Style.....                                                                                              | 87  |
| Figure 7.2.  | Waterbirds and other varieties: “talismanic” and Cut Style .....                                                                                                   | 89  |
| Figure 8.1.  | Palace at Knossos: fresco of shrine with double axes protruding from column<br>capitals, N.W. hall of palace .....                                                 | 96  |
| Figure 8.2.  | Palace at Knossos: portion of the Tripartite Shrine fresco thought by some to depict<br>a shrine set alongside the Central Court .....                             | 96  |
| Figure 8.3.  | Kato Zakros: carved stone lamp stand in the form of a capital from House Z .....                                                                                   | 96  |
| Figure 8.4.  | Palace at Knossos: restored eastern elevation of the Grand Staircase in the East<br>Wing .....                                                                     | 97  |
| Figure 8.5.  | Palace at Knossos: plan of the Northwest Lustral Basin .....                                                                                                       | 97  |
| Figure 8.6.  | Palace at Knossos: Northwest Lustral Basin, looking southwest .....                                                                                                | 97  |
| Figure 8.7.  | Palace at Phaistos, West Wing: isometric drawing of the parapet and column base<br>in the lustral basin within Room 19.....                                        | 98  |
| Figure 8.8.  | Palace at Kato Zakros, North Wing, Room LVIII: plan of lustral basin.....                                                                                          | 98  |
| Figure 8.9.  | Palace at Kato Zakros, detailed drawings of parapet in lustral basin in Room LVIII .....                                                                           | 99  |
| Figure 8.10. | Knossos, Little Palace: plan of lustral basin.....                                                                                                                 | 99  |
| Figure 8.11. | Knossos, Little Palace: lustral basin showing elevation of balustrade and wooden<br>column.....                                                                    | 99  |
| Figure 8.12. | Palace at Knossos, East Hall: painted stucco relief with griffins tethered to a column...                                                                          | 100 |
| Figure 8.13. | Palace at Knossos: perched birds on free-standing triad of terracotta columns from<br>MM II cult deposit.....                                                      | 100 |
| Figure 8.14. | Kato Zakros, Room LVIII: watercolor restoration depicting the north wall of the<br>lustral basin .....                                                             | 100 |

|               |                                                                                                                                                                                                                                                |     |
|---------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|
| Figure 8.15.  | Palace at Knossos, Throne Room, facing west: watercolor restoration depicting the lustral basin and steps leading downward and the throne between built benches.....                                                                           | 101 |
| Figure 8.16.  | Knossos, Royal Villa: west end of “Megaron” showing columns of balustrade restored and remains of seat of honor in recess beyond.....                                                                                                          | 103 |
| Figure 8.17.  | Mycenae: monumental stairway leading up to the palace .....                                                                                                                                                                                    | 104 |
| Figure 9.1.   | Percentage of tin and arsenic in the examined samples.....                                                                                                                                                                                     | 108 |
| Figure 10.1.  | Plaques representing knotted textiles .....                                                                                                                                                                                                    | 116 |
| Figure 10.2.  | Basic overhand slipknot.....                                                                                                                                                                                                                   | 117 |
| Figure 10.3.  | A typically conventionalized knot fastening the kilt of a servant, limestone relief, Egyptian, Old Kingdom, Dynasty 6, ca. 2350–2170 B.C. ....                                                                                                 | 117 |
| Figure 10.4.  | Red Jasper <i>tiet</i> (Isis knot) amulet from Abydos (Egypt), Cemetery D, Tomb D33; New Kingdom, Ramesside period, Dynasty 19–20, ca. 1295–1070 B.C.....                                                                                      | 118 |
| Figure 10.5.  | Square knot binding the lotus and the papyrus onto the <i>sema</i> , detail of seated statue of Chephren (Khafre), from Giza (Egypt), Old Kingdom, Dynasty 4, ca. 2500 B.C.....                                                                | 118 |
| Figure 10.6.  | Ebony <i>tjes</i> -knot amulet from the Foundation Deposit 9 (I), Temple of Hatshepsut, Deir el-Bahri (Egypt). From the joint reign of Hatshepsut and Thutmose III, New Kingdom, Dynasty 18, ca. 1479–1458 B.C.....                            | 119 |
| Figure 10.7.  | Herakles with Herakles-knotted lion skin; detail of decoration on red-figure amphora showing Herakles driving a bull to sacrifice. From Athens (Greece), by the Andokides Painter and Lysippides Painter, Archaic period, ca. 525–520 B.C..... | 119 |
| Figure 10.8.  | Gold armband with Herakles knot, inlaid with garnets, emeralds, and enamel. Greek, Hellenistic, 3rd–2nd century B.C. ....                                                                                                                      | 119 |
| Figure 10.9.  | Fragment of the so-called Campstool Fresco showing a young woman (generally identified as a goddess or a priestess), known as “La Parisienne,” from Knossos, Crete (Greece), LM IIIA, ca. 1350 B.C. ....                                       | 120 |
| Figure 10.10. | Fresco fragments representing a slip-knotted cloth, from Corridor 11, “Villa,” Nirou Chani, Crete (Greece), Neopalatial, MM IIIA–LM IB, ca. 1725–1500 B.C.....                                                                                 | 120 |
| Figure 10.11. | Jasper lentoid sealstone with bull, figure-of-eight shield, and two slipknots, LH I/II, ca. 1690–1390 B.C.....                                                                                                                                 | 121 |
| Figure 10.12. | Beak-spouted jug with highly stylized conjunctions of double axes and slipknots, Neopalatial, LM IB, ca. 1500–1450 B.C.....                                                                                                                    | 121 |
| Figure 10.13. | The goddess Inanna with her symbols (two sheaves of reed), detail of the so-called Warka Vase, alabaster, from Uruk, Mesopotamia (Iraq), ca. 3200–3000 B.C.....                                                                                | 122 |
| Figure 11.1.  | Wall painting of figure-of-eight shields at Knossos palace .....                                                                                                                                                                               | 126 |
| Figure 11.2.  | Boeotian shield as an emblem figure on a Boeotian coin .....                                                                                                                                                                                   | 126 |
| Figure 11.3.  | Signet ring from Mycenae, CMS I, no. 17.....                                                                                                                                                                                                   | 126 |
| Figure 11.4.  | Engraved design on a double axe from Voroï Pyrgiotissis.....                                                                                                                                                                                   | 127 |

|               |                                                                                                                                                                                                                                                                                                                                                                                        |     |
|---------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|
| Figure 11.5.  | Faience objects from the Temple Repositories at Knossos palace.....                                                                                                                                                                                                                                                                                                                    | 127 |
| Figure 11.6.  | Signet ring with figure-of-eight shield illustrated in a cultscape, in profile at lower right; CMS I, no. 219 .....                                                                                                                                                                                                                                                                    | 128 |
| Figure 11.7.  | Miniature mottled glass figure-of-eight shield from Pharmakokephalo Siteias (HNM 1516).....                                                                                                                                                                                                                                                                                            | 128 |
| Figure 11.8.  | Gold signet ring with alternating figure-of-eight shields and sacred knots from Archanes .....                                                                                                                                                                                                                                                                                         | 129 |
| Figure 11.9.  | Examples of the <i>kiden</i> -sign of early Elam: (a) a double circle sign as the head of a Goddess with Upraised Arms, (b) a triple circle sign as the head of a Goddess with Upraised Arms, (c) two pedestals side by side with a triple circle sign standing on top of each one, (d) <i>kiden</i> -signs standing on pedestals as part of the decoration on pottery from Susa ..... | 131 |
| Figure 11.10. | Lid from a Late Minoan IIIB incense burner (HNM 1929) from the cemetery at Myrsini Siteias .....                                                                                                                                                                                                                                                                                       | 133 |
| Figure 11.11. | <i>Kiden</i> -sign as the top of a standard set into horns of consecration: detail of painted decoration on the lid of an incense burner (HNM 1929) from the cemetery at Myrsini Siteias .....                                                                                                                                                                                         | 133 |
| Figure 12.1.  | Plan of the Southwest Wing of the Gournia palace.....                                                                                                                                                                                                                                                                                                                                  | 138 |
| Figure 12.2.  | Middle Minoan IIIA deposit in Room 13.....                                                                                                                                                                                                                                                                                                                                             | 140 |
| Figure 12.3.  | Middle Minoan IIIA plain cups and bowls from Room 13.....                                                                                                                                                                                                                                                                                                                              | 140 |
| Figure 12.4.  | Middle Minoan IIIA ridged straight-sided cup (11.543) .....                                                                                                                                                                                                                                                                                                                            | 141 |
| Figure 12.5.  | Middle Minoan IIIA straight-sided cup with splatter decoration (11.1333).....                                                                                                                                                                                                                                                                                                          | 141 |
| Figure 12.6.  | Middle Minoan IIIA rounded cup (11.623) .....                                                                                                                                                                                                                                                                                                                                          | 141 |
| Figure 12.7.  | Middle Minoan IIIA chalice (11.1343).....                                                                                                                                                                                                                                                                                                                                              | 141 |
| Figure 12.8.  | Middle Minoan IIIA deposit in Room 13, detail of deposit against western face of north-south wall (W1467) .....                                                                                                                                                                                                                                                                        | 142 |
| Figure 12.9.  | Late Minoan IB cup rhyton (11.181) .....                                                                                                                                                                                                                                                                                                                                               | 142 |
| Figure 12.10. | Late Minoan I cup rhyton (11.1715) .....                                                                                                                                                                                                                                                                                                                                               | 143 |
| Figure 13.1.  | Mystery vase <b>1</b> .....                                                                                                                                                                                                                                                                                                                                                            | 150 |
| Figure 13.2.  | Mystery vase <b>2</b> .....                                                                                                                                                                                                                                                                                                                                                            | 151 |
| Figure 13.3.  | Mystery vase <b>3</b> .....                                                                                                                                                                                                                                                                                                                                                            | 151 |
| Figure 13.4.  | Mystery vase <b>4</b> .....                                                                                                                                                                                                                                                                                                                                                            | 152 |
| Figure 14.1.  | Large beak-spouted jug ( <b>1</b> ), possibly Koan .....                                                                                                                                                                                                                                                                                                                               | 157 |
| Figure 14.2.  | Large closed vase, amphora, or jug ( <b>2</b> ) .....                                                                                                                                                                                                                                                                                                                                  | 157 |
| Figure 14.3.  | Small- to medium-sized closed vase, amphora, or jug ( <b>3</b> ) .....                                                                                                                                                                                                                                                                                                                 | 157 |

|               |                                                                                                                                                                                                           |     |
|---------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|
| Figure 14.4.  | Small footed closed vessel, amphora, or jug (4).....                                                                                                                                                      | 157 |
| Figure 14.5.  | Closed vase (5), possibly a Koan beak-spouted jug.....                                                                                                                                                    | 158 |
| Figure 14.6.  | Large oval-mouthed amphora (6).....                                                                                                                                                                       | 158 |
| Figure 14.7.  | Large closed vase, amphora, or jug (7).....                                                                                                                                                               | 158 |
| Figure 14.8.  | Large closed vase (8), possibly a Koan beak-spouted jug or amphora.....                                                                                                                                   | 159 |
| Figure 14.9.  | Small- to medium-sized closed vase, amphora, or jug (9).....                                                                                                                                              | 159 |
| Figure 14.10. | Beak-spouted jug fragment (10).....                                                                                                                                                                       | 159 |
| Figure 14.11. | Beak-spouted jug (11).....                                                                                                                                                                                | 160 |
| Figure 14.12. | Closed vase (12).....                                                                                                                                                                                     | 160 |
| Figure 14.13. | Small beak-spouted jug (13) .....                                                                                                                                                                         | 160 |
| Figure 14.14. | Small closed vase, amphora, or jug (14) .....                                                                                                                                                             | 161 |
| Figure 14.15. | Small closed vase, amphora, or jug (15) .....                                                                                                                                                             | 161 |
| Figure 14.16. | Small closed vase, amphora, or jug (16) .....                                                                                                                                                             | 161 |
| Figure 14.17. | Discoid ceramic loomweights from Southeast Aegean excavated at Mochlos in Neopalatial levels (18–20, 22, 23).....                                                                                         | 161 |
| Figure 14.18. | Southeast Aegean Petrography Groups 1–4.....                                                                                                                                                              | 167 |
| Figure 15.1.  | Aegean obsidian sources and MBA–LBA (second millennium B.C.) sites at which Giali obsidian artifacts have been reported.....                                                                              | 174 |
| Figure 15.2.  | Chunk of Giali A obsidian from a LM IB context in House C.2, Mochlos (CS 57).....                                                                                                                         | 175 |
| Figure 15.3.  | Distribution of Giali obsidian within the Neopalatial town of Mochlos .....                                                                                                                               | 176 |
| Figure 15.4.  | Rim and body fragment shown in the section drawing of a restored bowl made of Giali obsidian from MM Knossos. The form of the bowl imitates an Egyptian stone vessel from the Early Dynastic period ..... | 179 |
| Figure 15.5.  | Late Minoan IB chalice of Giali A obsidian from the palace at Zakros (HM 2725) .....                                                                                                                      | 180 |
| Figure 15.6.  | Cups in the White-spotted Style, a late MBA ceramic tradition from Central Crete whose surface decoration emulates Giali obsidian.....                                                                    | 181 |
| Figure 15.7.  | Middle Bronze Age (early second millennium B.C.) eastern Mediterranean sites at which obsidian vessels are found and/or produced.....                                                                     | 182 |
| Figure 16.1.  | Map of Bronze Age tombs around the Palace of Nestor .....                                                                                                                                                 | 190 |
| Figure 16.2.  | Sample of glass beads from the tombs .....                                                                                                                                                                | 194 |
| Figure 16.3.  | Sample of faience beads from the tombs .....                                                                                                                                                              | 194 |
| Figure 16.4.  | Sample of faience beads from Tholos III.....                                                                                                                                                              | 196 |

|               |                                                                                                                                             |     |
|---------------|---------------------------------------------------------------------------------------------------------------------------------------------|-----|
| Figure 17.1.  | Sistrum, Burial Building 9, Archanes .....                                                                                                  | 202 |
| Figure 17.2.  | Khesu-wer, nomarch and priest to Hathor, is teaching the use of the sistrum to Hathor's musicians, tomb of Khesu-wer, Kom el Hisn .....     | 202 |
| Figure 17.3.  | Priestesses-musicians playing the sistrum during Hathoric rituals, tomb of Ukh-hotep, son of Senbi, Meir .....                              | 205 |
| Figure 17.4.  | Miniature golden Hathor masks, Temple of the Obelisks, Byblos.....                                                                          | 206 |
| Figure 18.1.  | Map of area with sites mentioned in the text .....                                                                                          | 210 |
| Figure 18.2.  | View looking south showing the north coast of Crete with the peak of Stavromenos in relation to Gournia and Mochlos .....                   | 212 |
| Figure 18.3.  | Plan, peak of Stavromenos.....                                                                                                              | 212 |
| Figure 18.4.  | Minoan figurines, pottery, and pumice from Stavromenos .....                                                                                | 213 |
| Figure 18.5.  | Minoan pottery from Stavromenos .....                                                                                                       | 213 |
| Figure 18.6.  | Drawing of female figurine head from Stavromenos .....                                                                                      | 214 |
| Figure 20.1.  | Blossom bowl from Vronda Building I Room I3 .....                                                                                           | 232 |
| Figure 20.2.  | Stone vase fragments from Karphi .....                                                                                                      | 233 |
| Figure 20.3.  | Selection of stone vase fragments from Chalasmenos House A.2 .....                                                                          | 235 |
| Figure 21.1.  | Plan of Karphi. Contour interval ca. 2 m.....                                                                                               | 240 |
| Figure 21.2.  | Plan of the Temple at Karphi and its surroundings: Phase II, variant 1 .....                                                                | 240 |
| Figure 21.3.  | Karphi Goddess HM 11041, front view.....                                                                                                    | 244 |
| Figure 21.4.  | Karphi Goddess HM 11044, front view.....                                                                                                    | 244 |
| Figure 21.5.  | Karphi Goddess HM 11044, front view from left .....                                                                                         | 244 |
| Figure 21.6.  | Karphi Goddess HM 11044, feet from front .....                                                                                              | 244 |
| Figure 21.7.  | Karphi Goddess HM 11044, detail of face and tiara from front .....                                                                          | 245 |
| Figure 21.8.  | (a) Karphi Goddess HM 11044, detail of head from right; (b) Karphi Goddess HM 11045, upper torso, right arm, and head from front right..... | 245 |
| Figure 21.9.  | Karphi Goddess HM 11045, front view.....                                                                                                    | 245 |
| Figure 21.10. | Karphi Goddess HM 11042, front view.....                                                                                                    | 245 |
| Figure 21.11. | Karphi Goddess HM 11043, front view.....                                                                                                    | 246 |
| Figure 21.12. | Karphi Goddess HM 11042, feet from front .....                                                                                              | 246 |
| Figure 21.13. | Karphi Goddess HM 11043, feet from front .....                                                                                              | 246 |

|               |                                                                                                                                                                                                                                                                    |     |
|---------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|
| Figure 21.14. | Karphi Goddess HM 11042, detail of face and tiara from front .....                                                                                                                                                                                                 | 246 |
| Figure 21.15. | Karphi Goddess HM 11043, detail of face and tiara from front .....                                                                                                                                                                                                 | 246 |
| Figure 22.1.  | Aerial view of part of the northeastern coast of Crete showing locations of Vronda, Kastro, and Azoria.....                                                                                                                                                        | 250 |
| Figure 22.2.  | Plan of Vronda showing location of LM IIIC buildings, Subminoan–Protogeometric tholoi, and Late Geometric–Early Orientalizing burial enclosures .....                                                                                                              | 251 |
| Figure 22.3.  | Architectural section through Tholos IV and Grave 3 (G.3) .....                                                                                                                                                                                                    | 252 |
| Figure 22.4.  | Aerial view of Grave 3 showing location of a stand to hold a marker.....                                                                                                                                                                                           | 253 |
| Figure 22.5.  | Pottery from Grave 3 .....                                                                                                                                                                                                                                         | 253 |
| Figure 23.1.  | Aerial view of part of the northeastern coast of Crete showing the small islands of Pseira and Mochlos in relation to the mainland .....                                                                                                                           | 260 |
| Figure 24.1.  | Field test results for Kato Syme and Psychro Cave.....                                                                                                                                                                                                             | 272 |
| Figure 24.2.  | Common inorganic solutes in water at Psychro Cave and Kato Syme (mg/L).....                                                                                                                                                                                        | 272 |
| Figure 24.3.  | Trace elements in water at Kato Syme and Karphi (ppb).....                                                                                                                                                                                                         | 273 |
| Figure 24.4.  | Trace elements in water at Psychro Cave (ppb).....                                                                                                                                                                                                                 | 273 |
| Figure 25.1.  | Bathymetric map of Mochlos in 2016 .....                                                                                                                                                                                                                           | 279 |
| Figure 25.2.  | Tectonic map of the Ierapetra Fault Zone in eastern Crete and associated major faults in the vicinity of Mochlos .....                                                                                                                                             | 280 |
| Figure 25.3.  | Diagram illustrating the SIGMA acoustic-mapping equipment and mounting arrangement on a floating polystyrene foam board platform and its coverage area by depth.....                                                                                               | 281 |
| Figure 25.4.  | Morphology of the modern seafloor off Mochlos, based upon acoustic seafloor data and visual observations from SIGMA surveys .....                                                                                                                                  | 283 |
| Figure 25.5.  | Underwater photograph illustrating marine notches 1 (bottom), 3 (middle), and 4 (top) along a portion of the eastern side of the submerged tombolo .....                                                                                                           | 284 |
| Figure 25.6.  | Diagram illustrating the marine notch sequence eroded into bedrock as mapped along the eastern side of the submerged tombolo at Mochlos.....                                                                                                                       | 284 |
| Figure 25.7   | (a) Locations of wind stations in the southern Aegean and eastern Mediterranean Seas that collected surface wind data used in this study. (b) Annual surface wind patterns north and east of Mochlos—these depict the direction from which winds are derived ..... | 287 |
| Figure 25.8.  | Sketch of the nomenclature of wave parameters .....                                                                                                                                                                                                                | 288 |
| Figure 25.9.  | Surface wind-wave refraction patterns, with wave orthogonals (light blue arrows), for the modern coastal and offshore configuration of Mochlos harbor.....                                                                                                         | 289 |

|               |                                                                                                                                                                                                               |     |
|---------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|
| Figure 25.10. | Reconstruction of the Bronze Age harbors at Mochlos: associated shorelines depicted by dashed lines indicate a broad subaerial ridge, or tombolo, that connected the Cretan mainland to the island .....      | 290 |
| Figure 25.11. | Surface wind-wave refraction patterns under northerly (Etesian) tropospheric atmospheric patterns with wave orthogonals (light gray arrows) as inferred and calculated for the MM IIIB harbor at Mochlos..... | 291 |
| Figure 25.12. | Underwater photograph of phyllite-quartzite bedrock exposed along the western margin of the submerged tombolo at its juncture with the mainland .....                                                         | 292 |
| Figure 25.13. | Accumulation of angular, coarse-cobble or fine-boulder sized (ca. 10–30 cm) gravels photographed off the eastern flank of the submerged tombolo at Mochlos at a water depth of 4.5 meters.....                | 292 |
| Figure 26.1.  | <i>Phoenix</i> -type palms in flower and Minoan iconography.....                                                                                                                                              | 300 |
| Figure 26.2.  | <i>Phoenix</i> -type palms in fruit and in Minoan iconography .....                                                                                                                                           | 301 |
| Figure 26.3.  | Doum Palms in nature and in Minoan iconography .....                                                                                                                                                          | 302 |
| Figure 26.4.  | Fig trees in Minoan iconography .....                                                                                                                                                                         | 303 |
| Figure 26.5.  | Olive trees in Minoan iconography .....                                                                                                                                                                       | 304 |
| Figure 26.6.  | Imagery of trees with incised chevrons for leaves.....                                                                                                                                                        | 304 |
| Figure 26.7.  | Tree imagery on Minoan signet rings, seals, and sealings.....                                                                                                                                                 | 305 |
| Figure 26.8.  | Important veteran tree-types in Crete .....                                                                                                                                                                   | 307 |
| Figure 26.9.  | Veteran olive trees in Minoan iconography.....                                                                                                                                                                | 308 |
| Figure 26.10. | Tree imagery on Minoan signet rings, seals, sealings, and an ivory box .....                                                                                                                                  | 309 |
| Figure 26.11. | Cypress charcoal with 58 countable rings from Kamilari .....                                                                                                                                                  | 310 |
| Figure 26.12. | Roots of the Holy Carob at Hagios Antonios covered with icons, Mathes (Apokoronou), February 2017.....                                                                                                        | 311 |
| Figure 26.13. | Detail of the LM III Hagia Triada sarcophagus, showing an olive tree on top of a building with a parapet of “horns of consecration,” probably a shrine (HM Λ396) .....                                        | 311 |
| Figure 26.14. | Tree imagery on Minoan seals and sealings .....                                                                                                                                                               | 312 |
| Figure 26.15. | Dancing trees .....                                                                                                                                                                                           | 312 |
| Figure 27.1.  | Well-balanced donkey with a Thrapsano potter .....                                                                                                                                                            | 320 |
| Figure 27.2.  | Map of East Crete showing locations mentioned in the text .....                                                                                                                                               | 321 |
| Figure 27.3.  | The potter’s red clay source below Lastros in 1984.....                                                                                                                                                       | 324 |
| Figure 27.4.  | Thin section photomicrographs of four sherds of water jars from the kiln of the <i>Kampitis</i> at Lastros, Crete .....                                                                                       | 325 |

|              |                                                                                                                                         |     |
|--------------|-----------------------------------------------------------------------------------------------------------------------------------------|-----|
| Figure 27.5. | Thin section photomicrographs of four sherds of water jars from the kiln used by the Tzanidakis family at Vaīnia, Ierapetra, Crete..... | 326 |
| Figure 27.6. | Thin section photomicrographs of four sherds of <i>pitharia</i> from the Thrapsaniote kiln at Ta Gournia, Exo Mouliana, Crete .....     | 327 |
| Figure 27.7. | Thin section photomicrographs of four sherds of pitharia from the Thrapsaniote kiln at Vanges, Episkopi, Ierapetra, Crete.....          | 328 |



## Preface

*Kleronomiá* (κληρονομιά)—meaning legacy, inheritance, or allotment—encapsulates many of Jeffrey Soles’s feelings about the modern town and archaeological site of Mochlos in eastern Crete, his relationship with the people of Mochlos, the themes in his scholarship, and his contribution to our understanding of Minoan Crete.

In ancient Greek text, *kleronomiá* was used to describe the amount of land that was allotted or inherited. In many ways, the exploration of Mochlos is Jeff’s *kleronomiá*. Jeff has often said the best things that happened to him in his life were his wife, Mary Ellen, and Mochlos: the former leading to his beautiful family and the latter to his career and life’s work as co-director with Costis Davaras of the excavation of the Minoan town on the islet of Mochlos. Both have given him huge amounts of pleasure.

The shared protection of the *kleronomiá* of Mochlos among the archaeologists and the local

people has led to life-long and trans-generational friendships full of stories and adventures reminiscent of the ancient epics. The dynamic and personal investment by Soles and Davaras in their work at Mochlos, as part of their longstanding *synergasia* (συνεργασία, meaning cooperation, partnership, or collaboration), has been strengthened and made more impactful by the generous help and support of the people of Mochlos village. They have embraced the archaeological team as family, have kept a watchful eye on the site, and also have helped to pay for its preservation.

Jeff’s connection with *kleronomiá* does not stop there; it is also tied to the way he has shared Mochlos with the next generation of scholars. Since starting the *synergasia* excavations at Mochlos in 1989, he has invited large numbers of undergraduates, graduate students, and senior scholars from around the globe to participate in the project. These numbers include over 50 undergraduates

from The University of North Carolina at Greensboro. For many of these students, the trip to Greece was their first time outside the United States, and to help them with the cost, Jeff secured private funding in order to give several scholarships each year to students. Their experience of working at Mochlos was not only an enriching cultural and professional one, but it changed their worldview and revealed new opportunities. As a direct result of their work with Jeff, several of the students have pursued archaeological careers both in Crete and in the US. Other students who have not continued in archaeology have gained invaluable knowledge about the diverse world in which we live and its ancient history and culture. These students' international and professional experience with Jeff and

his team has left them with a broadened mind and a deepened curiosity.

The 27 papers presented in this volume in honor of Jeff's work are a testament to how he and his career have left a legacy of scholarship in our field. The papers, which are organized chronologically, harken to the wide range of themes that Jeff has addressed and influenced during his illustrious career: ancestry, burial customs, religion, trade, jewelry, the development of Mochlos, and the rise and fall of Minoan Crete.

Joanne M.A. Murphy  
and  
Jerolyn E. Morrison



## A Life at Mochlos

*Mary Ellen Carr Soles<sup>†</sup>*

Officially this is a biography of Jeffrey Scott Soles, but it is a story that cannot be told without a history of a place, Mochlos, because the two are so intertwined.

I first met Jeffrey at a garden party at the American School of Classical Studies in Athens in 1972 when he was a Fulbright fellow and I a Yale Traveling fellow. After some banter about the *American Journal of Archaeology* for 1909, which I had checked out to my carrel and he thought he owned because it contained Richard Seager's 1908 excavation report on Mochlos, I discovered his true passion for the site. It was to set the pattern for our lives.

Jeff first visited Mochlos in 1970 in search of a dissertation topic while at the University of Pennsylvania and returned in 1971 after he acquired a permit to clean the tombs in the Prepalatial cemetery. With practically the first shovel full of dirt, the Greek workmen he had hired with his Fulbright grant money uncovered a silver cup full of gold

jewelry that included a diadem with its antennas still attached. News of its discovery spread quickly, and it was reported in the Cretan newspapers, establishing Jeff's link to Mochlos in the minds of Cretan locals and his academic peers.

At that time Mochlos was still a fishing village because there were still fish to be caught, but there was no electricity, no running water, no tourists, and only a precipitous dirt road leading down from Sphaka for access. The only light in town in the evening was a kerosene Tilley lamp, which had to be pumped every hour to keep burning. It was the prized possession of Georgios and Rodanthe Frangiadakis, proprietors of Taverna ta Kochilia. Every night Georgios lit the lamp, pulled out his violin to play, and Rodanthe danced. So began a half-century commitment to Mochlos, which is still going strong, and a continuing friendship with the Frangiadakis family, now in its fourth generation.

My first personal contact with Mochlos was in 1976, two years after we were married and I was pregnant with our first child, when Jeff recruited me to help him draw the Minoan sandstone quarry. There was still no electricity in Mochlos, and the only fresh water was still being trucked into the village. We bathed from a bucket shower with a pull chain and slept on a concrete roof behind the Kochilia taverna under the stars. Jeff pointed out the Milky Way and the shooting stars, and I noted that it was still a roof. Little did I know that we were to spend so much of our lives at Mochlos and raise our two children, Abigail and John, there.

In the following years Jeff worked at Gournia and Kavousi, but his heart remained in Mochlos, and in 1989 he received an excavation permit for a *synergasia* with Costis Davaras who was then *ephor* (ἐφορ, director) of the local district for antiquities in eastern Crete. Jeff raised a large three-year grant from the National Endowment for the Humanities, the first of four that he was awarded, and another grant from the Institute for Aegean Prehistory, which has supported the project every year. The project made its first great discovery that year, a thick deposit of tephra from the volcanic island of Thera (Santorini) perfectly stratified between LM IB and LM IA deposits, thereby disproving the long held theory introduced by Spyridon Marinatos that the Bronze Age eruption of the Thera volcano destroyed the Minoan civilization. In fact, the Minoans continued to flourish for up to another century, and the discovery was immediately presented before the Third International Congress in Santorini, Greece, which was being held in September that year, and it was also reported on the front page of the Science section of the *New York Times*. Jeff discovered that year that excavation is expensive, and so when Baron Philippe and Baroness Marion Lambert showed up at the end of the summer, he gave them a royal tour, at the end of which Marion said she had always wanted an excavation of her own, and he replied, "You can have this one!" So began a close friendship with the Lamberts who became loyal supporters of the project until their untimely deaths in 2011 and 2016.

The excavation continued in four campaigns—1989–1994, 2004–2005, 2009–2010, and 2012—with periods between them devoted to study and publication. Each year of excavation produced a

remarkable discovery that called for another year of excavation: the tephra in 1989, the Artisans' Quarter in 1990, the House of the Telestas in 1991, the great ashlar ceremonial Building B.2 in 1992, the foundry hoard in the House of the Metal Merchant and the Mycenaean cemetery at Limenaria in 1993 and 1994, the first tin ingot ever found in the Aegean and the merchant's hoard in House C.3 in 2004, the Theatral Area with its evidence for ancestor worship in 2005, the EM II gold workshop in 2009, the Ivory Pyxis with the scene of a goddess' epiphany on the lid in 2010, and the Temenos of Olive Trees in 2012. It would not have been possible to store and process all the finds without the opening of the INSTAP Study Center for East Crete in 1997, thanks to the generosity of Malcolm Wiener. The Study Center made all the difference, and it continues to be an indispensable resource in fulfilling the project's publication goals.

During this time many famous people also came to visit the site, beginning with Lynne Cheney in 1991 in her capacity as chair of the National Endowment for the Humanities. She arrived with her husband, Dick Cheney, then Secretary of Defense, on a gun boat flying a Cypriot flag as a disguise. Jeff introduced Dick to archaeology and explained its importance to him—preserving a record of the past and of mankind's common cultural heritage. Two months later the Persian Gulf War began. Saddam Hussein hid his MiG-21 fighter jets in the shadow of the ziggurat of Ur thinking they would be safe there, and indeed they were because Dick Cheney refrained from bombing them fearing he would harm the ziggurat. Jeff takes full credit for the fact that the ziggurat still stands intact today. The most recent VIP to visit was Gloria Steinem, a world leader of the women's liberation movement. He took her to see the House of the Lady with the Ivory Pyxis and explained the role of the Knossian priestess who lived there, thinking she would be impressed by the importance of the role women played in Minoan Crete, but to his dismay, she responded only with, "It's all about control!"

Slowly but surely over these years another Minoan town was uncovered, one that played an important role in the economy and religion of the region, and many secrets of the Minoans were revealed. The modern village of Mochlos also underwent a sea change. Electricity finally came to the town in 1981 when a large German hotel was built at the

eastern end of the Mochlos coastal plain, the road from Sphaka was paved in 1986, fresh water arrived in 1991, and another access road was opened from Platanos a few years later. The sleepy little fishing village that Jeff knew in 1971 was transformed into a bustling tourist destination, and only two fishermen (and very few fish) are left today, but there are now several tavernas and fancy bars, more than a dozen small hotels, and luxury villas in the Limeria area southwest of the village costing around €700,000.00. Jeff wonders what if any effect the excavation has had on all this development, but he is sure of one thing, whatever economic crisis has hit the rest of Greece, Mochlos is flourishing again like it did at its peak in the LM IB period.

Jeffrey was born in Meadville, Pennsylvania, home of Talon zippers, the firm that invented the zipper, with which his family was closely connected. They moved to Connecticut when he was still in grade school to be closer to Talon's manufacturing center in New York City's garment district where Jeff was to work while in college during the summer holiday putting bottom stops on the new Zephyr zipper. He received a classical education as a young man and began his study of Latin in the 7th grade; he was introduced to ancient Greek at Phillips Exeter Academy in New Hampshire where Henry Phillips Jr. of Chase and Phillips fame (*A New Introduction to Greek*, 1949) had him reading Homer in the original in the 12th grade. Jeff went on to Dartmouth College where he spent more time on the ski slopes than he should have but still managed to graduate with a degree in Classical Studies. After a two-year stint in the Peace Corps teaching in the Cameroons, he earned an M.A. in Classics at the University of North Carolina at Chapel Hill and then earned his Ph.D. at the University of Pennsylvania where he was fortunate to study with two giants in the field of archaeology—Rodney Young, the discoverer of Gordion, and George Bass, the excavator of the Cape Gelidonya and Uluburun shipwrecks and founder of underwater archaeology. Bass taught a year-long course in the Aegean Bronze Age that inspired Jeff and many of his classmates to become Aegean archaeologists.

They included Phil Betancourt, Vance Watrous, Jerry Rutter, and others who went on to become distinguished archaeologists. Like most of Young's and Bass's students, Jeff was extremely fond of both professors. They were the supervisors of his dissertation and a source of inspiration to him in his own career. Penn was a transformative experience for Jeff, and it made him into the scholar he is today. It was there that he fell in love with the Minoans and launched his career while still a graduate student, resolving never to turn back. His first excavation experience was in 1969 in the Franchthi Cave with Tom Jacobsen—where he learned the importance of stratigraphy that was to stand him in good stead at Mochlos—and from there he moved to Crete to dig at Gournia and Mochlos.

Jeff received his Ph.D. in 1973, and struggled, as so many Aegean archaeologists still do today, to find a full-time teaching position. He taught part time for four years until he received a tenure-track position in the Department of Classical Studies at the University of North Carolina at Greensboro. He was to teach there for 39 years and founded the university's Archaeology Program, the only undergraduate interdepartmental program when it was established in 1985, serving as its chair for 25 years. The program combined courses in classics, anthropology, history, and geography and produced many graduates who went on to careers in archaeology, mostly in Cultural Resource Management, but also no small number who went to graduate school and embarked on academic careers in archaeology. The Mochlos Excavation Project served as a training ground for Jeff's students and for students from other universities, provided dissertation topics to several of them, and produced a number of scholars who became distinguished Aegean archaeologists. His own research centered on his discoveries at Mochlos, but he was never satisfied with simple description and always strove to find an explanation for what he found and to link it to the wider context of Minoan or Mycenaean civilization. Jeff is by no means finished with his research and maintains that his best work lies ahead.





## Jeffrey S. Soles

### Degrees

- 1964 B.A., Dartmouth College, Hanover, NH  
1969 M.A., University of North Carolina at Chapel Hill, Chapel Hill, NC  
1973 Ph.D., University of Pennsylvania, Philadelphia, PA

### Publications

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## List of Abbreviations

|                 |                                             |                  |                                              |
|-----------------|---------------------------------------------|------------------|----------------------------------------------|
| BA              | Bronze Age                                  | GEP              | Gournia Excavation Project                   |
| cat.            | catalog                                     | GPS              | Global Positioning System                    |
| cm              | centimeter(s)                               | GS               | ground stone inventory number                |
| cm/yr           | centimeters per year                        | H <sub>1/3</sub> | highest third of the waves                   |
| cm <sup>2</sup> | square centimeters                          | h.               | height                                       |
| CMS             | <i>Corpus of Minoan and Mycenaean Seals</i> | ha               | hectare(s)                                   |
| CS              | chipped stone inventory number              | HM               | Herakleion Archaeological Museum number      |
| d.              | diameter                                    | HNM              | Hagios Nikolaos Museum number                |
| dim(s).         | dimensions                                  | ICP-MS           | inductively-coupled plasma mass spectrometer |
| DoL             | Dark-on-Light                               | IFZ              | Ierapetra Fault Zone                         |
| EA              | Amarna Letter                               | INSTAP           | Institute for Aegean Prehistory              |
| EBA             | Early Bronze Age                            | SCEC             | Study Center for East Crete                  |
| EC              | Early Cycladic                              | Inv.             | Inventory                                    |
| EC              | electrical conductivity                     | kg               | kilogram(s)                                  |
| EH              | Early Helladic                              | kHz              | kilohertz                                    |
| EM              | Early Minoan                                | km               | kilometer(s)                                 |
| EO              | Early Orientalizing                         | kV               | kilovolt                                     |
| FN              | Final Neolithic                             | LBA              | Late Bronze Age                              |
| g               | gram(s)                                     |                  |                                              |

|                |                                        |       |                                                          |
|----------------|----------------------------------------|-------|----------------------------------------------------------|
| LG             | Late Geometric                         | Petro | petrographic                                             |
| LH             | Late Hellenic                          | PG    | Protogeometric                                           |
| LM             | Late Minoan                            | pH    | potential hydrogen                                       |
| LN             | Late Neolithic                         | ppb   | parts per billion                                        |
| LoD            | Light-on-Dark                          | ppm   | parts per million                                        |
| mA             | milliamp                               | ppt   | parts per thousand                                       |
| Macro          | macroscopic                            | pres. | preserved                                                |
| max.           | maximum                                | PT Ta | Pylos tablet                                             |
| m              | meter(s)                               | sec.  | second(s)                                                |
| m <sup>2</sup> | square meters                          | SELAP | Serraglio, Eleona, and Langada<br>Archaeological Project |
| m <sup>3</sup> | cubic meters                           | SEX   | Stratigraphical Museum Extension site                    |
| m asl          | meters above sea level                 | SEYDK | Society of Cretan Olive Municipalities                   |
| MBA            | Middle Bronze Age                      | SIGMA | Sonar Integrated GPS Mini-Aquatic                        |
| mg/L           | milligrams per liter                   | SM    | Subminoan                                                |
| µg/L           | micrograms per liter                   | sq m  | square meters                                            |
| ml             | milliliter(s)                          | SWH   | significant wave height                                  |
| MM             | Middle Minoan                          | TDS   | total dissolved solids                                   |
| mm             | millimeter(s)                          | th.   | thickness                                                |
| mm/yr          | millimeters per year                   | TSJs  | transport stirrup jars                                   |
| m/sec.         | meters per second                      | UNCG  | University of North Carolina at Greensboro               |
| Ms             | microsecond                            | vol.  | volume                                                   |
| µS/cm          | microsiemens per centimeter            | w.    | width                                                    |
| mV             | millivolt                              | wt.   | weight                                                   |
| M <sub>w</sub> | moment magnitude                       | XP    | cross-polarized                                          |
| n              | number                                 | XRF   | X-ray fluorescence spectroscopy                          |
| NAM            | National Archaeological Museum, Athens | yBP   | years before present                                     |
| n.d.           | no date                                |       |                                                          |
| no(s).         | number(s)                              |       |                                                          |
| ORP            | oxidation-reduction potential          |       |                                                          |
| pers. comm.    | personal communication                 |       |                                                          |
| pers. obs.     | personal observation                   |       |                                                          |

PART I

The Earliest Humans on Crete







## A Case of Bioturbation at Damnoni Cave

*Thomas F. Strasser, Miriam G. Clinton, Eleni Panagopoulou,  
and Panagiotis Karkanas*

The Damnoni Cave was excavated in 2011 and 2013 in order to discover *in situ* Mesolithic artifacts on Crete.\* The project was successful but also revealed an unexpected category of artifacts: ceramics. This contribution evaluates the tiny fragments of ceramics mixed with the Mesolithic stone tools. We explain their presence as the result of bioturbation (i.e., redeposition of later material through weather, root growth, and animal disturbance); the ceramics thus were not *in situ* with the lithic assemblage but were there as a result of later depositional processes. Because the Mesolithic period is a pre-ceramic culture in the Aegean, this distinction is seminal to understanding the nature of the site.

### Context

Damnoni Cave is located on the southwest coast of Crete between the modern village of Plakias

and the Preveli Gorge (Fig. 1.1). It is situated on the south-facing slope of a flight of marine terraces. The cave is quite small (2 x 2 m), but the talus area (i.e., collapsed rocks) in front of the entrance preserved Mesolithic (ca. 12,400–8,500 B.P.; Facorellis 2003) stone tools on the surface that were discovered by a survey in 2008 (Strasser et al. 2010, 170). In 2011 and 2013, 99 trenches measuring 1 x 1 m were excavated on the slope south of the entrance to the cave to investigate the nature and size of the site.

The site has two distinct areas of soil stratigraphy. The small cave to the north of the trenches has a yellowish-green clayey soil that is broadly consistent to approximately 1 m in depth. On top is a small fire pit dug in the Late Bronze Age. The soil in the cave mouth is substantially different from

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\*We thank Jeff for his advice and friendship over the years.

the rest of the site, which consists of the talus immediately south of the cave entrance and down the slope to the south. The soils in the talus are unlike those in the cave and are consistently comprised of three strata (Fig. 1.2).

Stratum 1 is the topsoil, which is present at varying depths of 5–15 cm from the modern surface. This sandy silt topsoil is rich in organic matter, having occasionally a granular soil structure. It is normally loose but includes more firm horizons in areas where its thickness increases. It is a light gray (10R 7/1 [for Munsell colors see Kollmorgen Instruments Corporation 2010]) to reddish-brown soil (5YR 5/4).

Stratum 2 is 5–20 cm in thickness and reddish yellow in color (7.5YR 6/6). It is a clay-rich sandy layer. Its structure is the result of wind-blown sands and therefore is identified as aeolian sediment affected by weak soil formation processes

(pedogenesis). This stratum contains the majority of Mesolithic artifacts.

Stratum 3 is a light red (2.5YR 6/6) paleosol that lies below Stratum 2 and varies in thickness from a few centimeters to a meter. It is a sandy clay paleosol with fluctuating amounts of small and large stone that is probably a B-horizon (i.e., a subsoil that has been enriched with material leached from above) and overlies the bedrock. Small amounts of Mesolithic artifacts were found in the top 4 cm of this stratum. Below that initial interface, this hard-packed stratum quickly became sterile of artifacts.

The talus was covered by a large amount of flora. The largest and most conspicuous plant was *Euphorbia dendroides* (Fig. 1.3), which has a deep root system, but many other plants were also present. No portion of the site was devoid of vegetation prior to excavation.

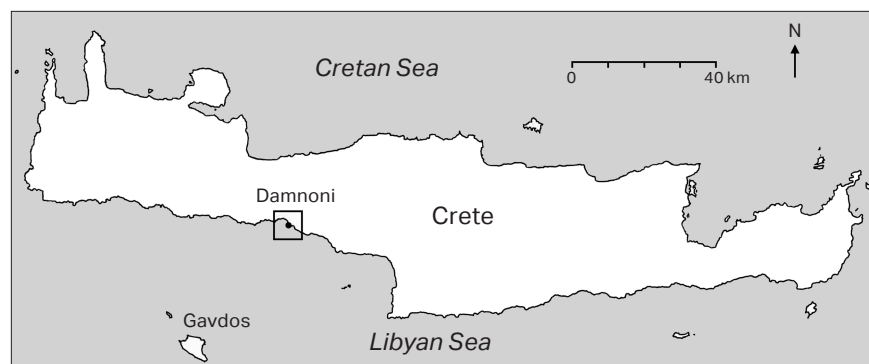


Figure 1.1. Map of Crete showing the location of Damnoni. Drawing E. McClellan.

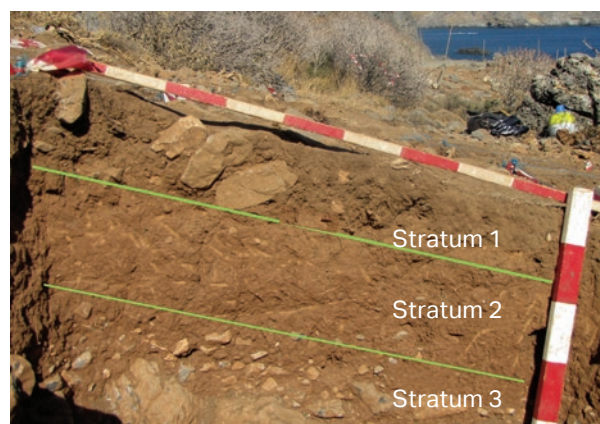


Figure 1.2. The three strata of the slope. Photo T. Strasser.



Figure 1.3. Damnoni Cave (center left) from the south with dense vegetation coverage. The large grayish-brown plants are *Euphorbia dendroides*. Photo T. Strasser.

The site was excavated with hand picks, trowels, and brushes. The small trench size encouraged excavators to focus on a limited area at a time to ensure careful collection. All the soil was dry sieved through a <0.5 cm mesh, and at least 25% of Stratum 2 was processed through a water-separation, or flotation, machine. This detailed attention to soil processing allowed for meticulous scrutiny of the artifacts and a very high rate of recovery.

The Mesolithic stone tools are morphologically (typo-technologically) similar to other early Holocene assemblages in the Aegean (Kopaka and Matzanas 2009; Strasser et al. 2010, 170; 2015; Carter et al. 2016). A discussion of the Damnoni tools has appeared in preliminary reports, and a more complete description is under preparation. The Mesolithic stone tools were found primarily in Stratum 2, which we argue is an in situ context, and we maintain that the ceramics were deposited into the strata due to bioturbation in subsequent periods.

## Ceramics and Bioturbation

A large percentage of the pottery found at the Damnoni site came from a LBA deposit in the cave mouth. The main feature associated with the pottery was a small fire pit cut into a yellowish-green soil that was otherwise sterile of artifacts (Fig. 1.4). One rare datable sherd is a false neck of a stirrup jar that is attributable to the LBA. Though the totals of pottery finds in the cave trenches were small in comparison to sites of long-term LBA habitation, they were comparatively large for Damnoni. In fact, one of the cave trenches alone accounted for almost 10% of the total sherds found on the site in 2011. This pottery was also preserved better than that found in the talus below and south of the cave entrance. The cave usage, specifically the fire pit, thus appears to be an important source of the pottery found in the Mesolithic layers.

The cave entrance is perched at an almost 18° slope above the talus where the Mesolithic artifacts were found. Pottery from this area north of the talus, as well as some pottery from a bedrock shelf about 50 m above the cave, naturally washed over and into the talus throughout the millennia due to the action of gravity and erosion. Tiny and highly degraded sherds of this pottery washing over the talus were likely carried down into the Mesolithic

layer through the natural processes of weathering and root growth, also known as bioturbation. Support for this conclusion comes from the distribution of these sherds across the site; the largest counts and sizes of sherds come from the upper two-thirds of the talus closest to the cave (Figs. 1.5, 1.6).

Bioturbation is the “interaction between animals, plants, and soil materials during which soil fabric is altered by additive or subtractive processes” (Grave and Kealhofer 1999, 1240). To this can be added the impact of the weather. This phenomenon has been discussed since Charles Darwin’s work on the subject, and it is well-recognized as a depositional factor in archaeological sites (e.g., Grave and Kealhofer 1999, 1240). Though there are many types of bioturbation, we believe that this potentially deflated site, with compressed soils, suffered especially from floralturbation due to the dense root systems of the plants found on the surface (Schiffer 1987, 210–212; Holliday 2004, 270–289).

Figures 1.5 and 1.6 show a cross-section of nine 1 x 1 m trenches in the talus directly downslope from the cave, with the counts and size of the ceramic fragments, respectively. The strata were excavated in this area in 5 cm spits, and no spit except one contained more than 12 sherds; the total number of sherds is also relatively small, with the entirety of the site yielding only about 600 sherds in 2011. Perhaps more significantly, the size ranges indicate that the sherds are minuscule. For



Figure 1.4. Test trench in the cave with the fire pit visible in the balk in the upper left of the photograph. Photo T. Strasser.