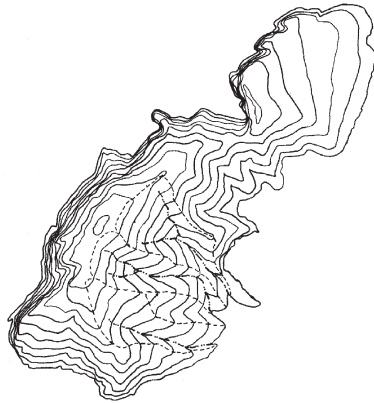


The Dams and Water Management Systems of Minoan Pseira



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Philip P. Betancourt



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Preface

When the Temple University archaeological project was excavating at the Bronze Age seaport on Pseira Island and Richard Hope Simpson discovered two massive stone and soil dams that were built in the middle of the second millennium B.C., we knew we had opened a new chapter in pre-historic engineering and water management. What we did not realize at the time was that these dams were not isolated constructions in the countryside, but parts of very sophisticated water retention systems. The Pseirans added retaining walls to prevent erosion, massive dams with associated reservoirs, and small check-dams to ravines that reached over one hundred meters in length in order to control water runoff and make it available for human use. Additional examples of Minoan dams have now been recognized at Gournia, Choiromandres, and perhaps Chalinomouri (all in eastern Crete), so we know that these Bronze Age projects were well known to Minoan builders as one of the options available to them to improve their agricultural potential. The restudy of the Pseiran examples over 20 years after they were discovered results in a much better appreciation of how they were used.

The opportunity to take a fresh look at the Pseiran water management system was inspired by the purchase of a differential Global Positioning System (dGPS) unit by the INSTAP Study Center for East Crete (INSTAP-SCEC). The unit uses satellite links to establish points for measuring and mapping, and a trained operator can map a region in a single day in a way that would once have required weeks. The unit is especially useful in a rugged topography like the island of Pseira where in many places no

previously surveyed points are visible for measuring. We are extremely grateful that the INSTAP Study Center offers this service to archaeological projects; and the results achieved for this study contribute substantial amounts of new information on the little known subject of Minoan water conservation and control. Agriculture was one of the cornerstones of the Bronze Age Cretan economy, and the ways to improve it must have been a major concern for those who depended on it for their existence.

Philip P. Betancourt
2011



Acknowledgments

The additional study that was directed to the dams on Pseira is indebted to a great many people. First, thanks are due to Richard Hope Simpson for doing such a splendid job of excavating and publishing these monuments of Minoan engineering and to my good friend and colleague Costis Davaras who collaborated with me for the excavations when the dams were discovered about 20 years ago. The clear presentation of the primary evidence by Richard was essential to our present understanding of how the dams functioned. The new work was conducted under permits issued by the Greek Ministry of Culture, and we are grateful to Vili Apostolakou, director of the 24th Ephorate of Classical and Prehistoric Antiquities, and Jack Davis, Director of the American School of Classical Studies at Athens, for arranging for the permits. The Institute for Aegean Prehistory (INSTAP) and Temple University, both located in Philadelphia, Pennsylvania, provided financial support. The new project was made possible by Thomas Brogan, director of the INSTAP Study Center for East Crete in Pacheia Ammos, Crete. Floyd McCoy is grateful to Sherry Fox and the other personnel of the Wiener Laboratory and the American School of Classical Studies at Athens for expediting his work there. Antonia Stamos and Doug Faulmann used the differential GPS to measure the dams and their setting. Computer processing was accomplished by Antonia Stamos, Susan Ferrence, and the authors. Thanks are extended to

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Abbreviations

Bibliographic abbreviations follow the conventions suggested in the *American Journal of Archaeology* 111.1 (2007), pp. 14–34.

asl	above sea level	INSTAP-SCEC	Institute for Aegean Prehistory Study Center for East Crete, Pacheia Ammos, Crete, Greece
cm	centimeter(s)		
EM	Early Minoan		
d	diameter		
dGPS	differential Global Positioning System	kg	kilogram(s)
ET	evapo-transpiration	km	kilometer(s)
FN	Final Neolithic	lb(s)	pound(s)
ft	foot/feet	LM	Late Minoan
g	gram(s)	m	meter(s)
GPS	Global Positioning System	m asl	meters above sea level
ht	height	mm	millimeter(s)
HM	Archaeological Museum, Herakleion	MM	Middle Minoan
I	infiltration	Ppt	precipitation
		RO	runoff
		sec	second(s)

