



ASSYRIA TO IBERIA

at the Dawn of the
Classical Age

Edited by Joan Aruz,
Sarah B. Graff, and Yelena Rakic



The Metropolitan Museum of Art, New York

Distributed by Yale University Press, New Haven and London

This catalogue is published in conjunction with the exhibition "Assyria to Iberia at the Dawn of the Classical Age," on view at The Metropolitan Museum of Art, New York, from September 22, 2014, through January 4, 2015.

The exhibition is made possible by The Hagop Kevorkian Fund, the Stavros Niarchos Foundation, and Dorothy and Lewis B. Cullman.

Additional support is provided by an Anonymous Foundation and the Friends of Inanna.

It is supported by an indemnity from the Federal Council on the Arts and the Humanities.

This publication is made possible by The Andrew W. Mellon Foundation, The Hagop Kevorkian Fund, and the A. G. Leventis Foundation.

Published by The Metropolitan Museum of Art, New York
Mark Polizzotti, Publisher and Editor in Chief
Gwen Roginsky, Associate Publisher and General Manager of Publications
Peter Antony, Chief Production Manager
Michael Sirtenfeld, Managing Editor
Robert Weinberg, Senior Project Manager

Edited by Dale Tucker with Marcie Muscat and Margaret Donovan
Designed by Bruce Campbell
Production by Christopher Zichello
Bibliography and notes edited by Jean Wagner and Amelia Kuschbach
Image acquisitions and permissions by Fiona Kidd, Jane S. Tai, and Ling Hu

Translations from the French by Jean-Marie Clarke and Jane Marie Todd;
from the German by Russell Stockman; from the Spanish by Philip Sutton;
from the Greek by Eleni Drakaki; from the Italian by Lawrence Jenkins; and
from the Arabic by Erikson Translations Inc.

Maps by Anandaroop Roy

Photographs of works in the Metropolitan Museum's collection are by The Photograph Studio, The Metropolitan Museum of Art, unless otherwise noted. Additional photography credits appear on page 412.

Typeset in Monotype Sabon, Monotype Gill Sans, and Linotype Frutiger by Duke & Company, Devon, Pennsylvania
Printed on 135 gsm Satimat
Separations by Professional Graphics, Inc., Rockford, Illinois
Printing and binding coordinated by Ediciones El Vito, S.A., Madrid, Spain

Jacket illustration: Bronze cauldron with siren and griffin attachments. Salamina, Tomb 79. Cypro-Archaic period. Cyprus Museum, Nicosia (T.79/202, 202[b]) (detail of cat. 764)

Endpapers: engravings of drawings of the Black Obelisk (see pp. 62–64) from Austin Henry Layard, *The Monuments of Nineveh from Drawings Made on the Spot* (1849), pls. 53–56. The New York Public Library, Asian and Middle Eastern Division, Astor, Lenox and Tilden Foundations

Frontispiece: Syrian-style bery openwork plaque with striding sphinx. Nimrud, Fort Shalmaneser. Neo-Assyrian period. The Metropolitan Museum of Art, New York; Rogers Fund, 1964 (64.37.1) (see fig. 3.32)

Other illustrations: pp. xxviii–1, Gypsum alabaster relief showing ships transporting cedar logs from Tyre. Khorsabad, palace of Sargon II, Neo-Assyrian, reign of Sargon II. Musée du Louvre, Paris (AO 19889); pp. 12–13, Stone relief with battle between Egyptians and Sea Peoples. Medinet Habu, Temple of Ramesses III. Dynasty 20; pp. 50–51, Gypsum alabaster relief with king and queen banqueting in garden. Nineveh, North Palace. Neo-Assyrian, reign of Ashurbanipal. The Trustees of the British Museum, London (ME 124920) (detail of cat. 22); pp. 130–31, Gypsum alabaster relief showing Sennacherib's siege of Lachish. Nineveh, Southwest Palace. Neo-Assyrian, reign of Sennacherib. The Trustees of the British Museum, London (ME 124906, 124907); pp. 246–47, Bronze tympanum with Assyrianizing imagery. Cave of Zeus, Mount Ida. Orientalizing. Archaeological Museum, Heraklion, Greece (X9) (detail of fig. 3.5); pp. 330–31, Ishtar Gate as reconstructed in the Vorderasiatisches Museum, Berlin. Neo-Babylonian, reign of Nebuchadnezzar, pp. 350–51, *Tower of Babel*, Flemish School, late 16th century. Pinacoteca Nazionale di Siena (N.534) (detail of fig. 6.5)

The Metropolitan Museum of Art endeavors to respect copyright in a manner consistent with its nonprofit educational mission. If you believe any material has been included in this publication improperly please contact the Editorial Department.

Copyright © 2014 by The Metropolitan Museum of Art, New York

First printing

All rights reserved. No part of this publication may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopying, recording, or any information storage and retrieval systems, without permission in writing from the publishers.

The Metropolitan Museum of Art
1000 Fifth Avenue
New York, New York 10028
metmuseum.org

Distributed by
Yale University Press, New Haven and London
yalebooks.com/art
yalebooks.co.uk

Cataloguing-in-Publication Data is available from the Library of Congress.
ISBN 978-1-58839-538-2 (The Metropolitan Museum of Art)
ISBN 978-0-300-20808-5 (Yale University Press)

Contents

Director's Foreword vii
Sponsors' Statements viii
Acknowledgments ix
Lenders to the Exhibition xiv
Contributors to the Catalogue xv
Maps xviii
Chronology xxiv

Introduction

Joan Aruz 2

I The Age of Transition

CRISIS IN THE EASTERN MEDITERRANEAN AND BEYOND:
SURVIVAL, REVIVAL, AND THE EMERGENCE OF THE
IRON AGE

Elizabeth Carter and Sarah Morris 14

Homer and the Legacy of the Age of Heroes

John Boardman 24

Lefkandi and the Era of Transition

Maria Kosma 33

Sea Peoples and Philistines

Jonathan N. Tubb 38

The Cuneiform Scribal Tradition and the
Development of the Alphabet

Béatrice André-Salvini 46

II The Assyrian Imperial Age

ASSYRIA: ESTABLISHING THE IMAGERY OF EMPIRE

John Curtis 52

The Black Obelisk

Julian Reade 62

Ashurbanipal's Library at Nineveh

Irving Finkel 68

Assyria's Eastern Frontier

Daniel T. Potts 75

Elam

Elizabeth Carter 79

The Myth of Ararat and the Fortresses of Urartu

Béatrice André-Salvini and Mirjo Salvini 83

Syro-Hittite States: The Site of Tell Halaf

(Ancient Guzana)

Nadja Cholidis 93

Kingdoms of Midas and Croesus:

Western Anatolian States and Sanctuaries

Sarah B. Graff 104

III Assyria to Iberia: Conquest and Commerce

ART AND NETWORKS OF INTERACTION ACROSS THE
MEDITERRANEAN

Joan Aruz 112

The Gold of Nimrud

*Muzahim Mahmud Hussein, with contributions
by Kim Benzel* 125

Phoenicians and Aramaeans

Jonathan N. Tubb 132

Nimrud Ivories

Joan Aruz, with technical comments by

Jean-François de Lapérouse 141

Ivories of Arslan Tash

Elisabeth Fontan 152

Metalwork

Marian H. Feldman 157

Tridacna Shell

Annie Caubet 163

Phoenician and East Mediterranean Glass
Annie Caubet 167

The Lands of the Bible
Amihai Mazar 171

Cyprus in the Early Iron Age
Despina Pilides 184

The “Royal” Tombs of Salamis on Cyprus
Vassos Karageorghis 188

Jewelry from a Tomb at Kition
Sophocles Hadjisavvas 193

Egypt in the Neo-Assyrian Period
Marsha Hill 198

From Carthage to the Western Mediterranean
María Eugenia Aubet 202

Carthaginian Jewelry
Brigitte Quillard 206

The Phoenicians in Sardinia
Giuseppe Garbati 211

Phoenician Metal Production in Tartessos
Concepción San Martín Montilla 218

Phoenician and Orientalizing “Ivories”
in the Iberian Peninsula
Pablo Quesada Sanz 228

The Bajo de la Campana Shipwreck and
Colonial Trade in Phoenician Spain
Mark E. Polzer 230

The Phoenician Ships of Mazarrón
Iván Negueruela Martínez 243

IV The Orientalizing Era: Imports and Inspiration

BEYOND “ORIENTALIZING”: ENCOUNTERS AMONG
CULTURES IN THE EASTERN MEDITERRANEAN
Ann C. Gunter 248

The Worlds of Odysseus
Walter Burkert 255

Near Eastern Imagery in Greek Context:
Geometric and Orientalizing Pottery
Anastasia Gadolou 258

Demons, Monsters, and Magic
Sarah B. Graff 263

Cauldrons
*Joan Aruz, with technical comments by
Jean-François de Lapérouse* 272

Near Eastern Imports and Imagery on Crete
During the Early Iron Age
Nicholas Chr. Stampolidis 282

The Heraion at Samos
Wolf-Dietrich Niemeier 295

Levantine and Orientalizing Luxury Goods
from Etruscan Tombs
Maurizio Sannibale 313

V The Conquest of Assyria and the Rise of the Babylonian Empire

FROM NINEVEH TO BABYLON: THE TRANSITION FROM
THE NEO-ASSYRIAN TO THE NEO-BABYLONIAN EMPIRE
Marc Van De Mieroop 332

Gods and Their Images in the Bible and Babylonia
Ira Spar 347

VI Legacy of the Age of Great Empires

THE ASSYRO-BABYLONIAN AGE IN WESTERN ARTISTIC
AND LITERARY TRADITION
Michael Seymour 352

Notes 362

Bibliography 376

Index 413

Photograph Credits 421

THE BAJO DE LA CAMPANA SHIPWRECK AND COLONIAL TRADE IN PHOENICIAN SPAIN

Mark E. Polzer

From ancient times to the present, the Phoenicians have been renowned as sailors, explorers, and maritime traders extraordinaire—“men famed for their ships” (*Odyssey* 15.415). And yet, despite their maritime exploits and colonial adventure, which dominated much of the Mediterranean during the first half of the first millennium B.C., there has been sparse evidence of them from the sea—from shipwrecks.¹ This quirk of archaeology has been addressed in part by the investigation of two sites in southeastern Spain: the remains of two small boats that sank off Playa de la Isla, Mazarrón, in the second half of the seventh century B.C. (see “The Phoenician Ships of Mazarrón” in this volume, pp. 243–44), and the Phoenician shipwreck at Bajo de la Campana.

Between 2008 and 2011, the Institute of Nautical Archaeology’s (INA) Claude and Barbara Duthuit Expedition to Bajo de la Campana excavated the remains of an Iron Age (ca. 600 B.C.) shipwreck off La Manga, approximately 30 kilometers northeast of Cartagena, in southeastern Spain.² The site was discovered at least as early as 1958 by commercial salvage divers, and in subsequent years by recreational divers, who picked up additional archaeological material, much of which was eventually turned over to the Ministry of Culture of Spain.³ After their own inspections of the site in 1972 and 1988, ministry archaeologists determined that the recovered artifacts represented at least three ancient shipwreck assemblages, the oldest material belonging to a Phoenician context of the late seventh or early sixth century B.C.⁴ INA initiated the current investigation of the site in 2007 with a signed agreement of cooperation with Spain’s Ministry of Culture. Its exploratory survey of the site revealed that it still contained significant remains, including a more diverse assemblage of materials than previously suspected: several elephant tusks, lead ore, ingots of tin, a double-ended wood comb, two small lumps of raw amber, fragments of various ceramic vessels, and pine nuts and pinecone scales. These finds foreshadowed the cargo uncovered in the subsequent four seasons of excavation: raw materials—ingots of tin and copper, mineral lead, amber, and elephant ivory—and an assortment of manufactured products and luxury goods. Conservation and analysis of the recovered artifacts are

incomplete and ongoing, but information and preliminary interpretations are contributing new details on the regional circulation of goods and interactions with indigenous populations by Phoenician colonists on the Iberian Peninsula.

The Site

Bajo de la Campana (the Bajo) is a small, submerged basaltic outcropping situated 4 kilometers from La Manga, a thin spit of land separating the Mar Menor, Europe’s largest lagoon, from the Mediterranean Sea. The outcrop rises from a bottom depth of about 16 meters to within a meter of the water’s surface, while the sea bottom falls away from the base of the rock at a gentle 17-degree gradient. At the western limit of the site, a large fissure, or crevice, cuts through the rock and opens onto the seabed (fig. 3.72). When excavations began, the crevice was filled with rocks and boulders of all sizes, along with gravel and finer sediment. The fissure undercuts the base of the Bajo to form a shallow recess, also filled with sediment and boulders. The early finds taken from the site reportedly came from the crevice and recess, and much more material was recovered there during the excavation. The rest of the artifacts were scattered over about 400 square meters of the rocky bottom extending downslope from the Bajo.

Demolitions and military activity during the twentieth century along with the turbulent and exposed conditions of the shallow site resulted in the highly fragmentary and scattered disposition of the wreckage and the dearth of hull or other wood remains. They also left most of the preserved artifacts broken or damaged. However, the dispersal patterns of the heavier materials, such as metal ingots, ore, and elephant tusks, provide some indication of how the ship sank and came to rest on the bottom, and of what happened to the wreckage over the ensuing two and a half millennia.⁵

The Finds

The Bajo de la Campana site yielded its archaeological treasures begrudgingly, and the full scope of material types and goods did not become known until the very last days of



Fig. 3.72. Archaeologist Neil Puckett preparing to excavate with airlift in crevice. Bajo de la Campana shipwreck, 2011

excavation. When it sank, the ship was carrying at least 4 tons of cargo comprising consignments of both raw materials and manufactured goods, including a varied collection of western Phoenician pottery and a number of more exotic items. The assemblage recovered here speaks to Phoenician trade among colonies on the Iberian Peninsula and with its indigenous inhabitants but also highlights interconnections with trade

circuits farther afield. Early results suggest that the raw materials may yield new information on where such commodities were sourced and processed and on the locations of the workshops where craftsmen turned them into valued trade goods. The exotic goods exemplify luxury products destined for an elite clientele and illuminate the role that such items played in indigenous relations and commercial dealings.

Raw Materials

Ivory Tusks

The shipwreck is best known for its cargo of raw ivory (cat. 122a–c). In 1979 sport divers turned over to Spanish authorities 13 elephant tusks in poor condition, as they had not received proper conservation treatment since their removal from the sea.⁶ The recently completed INA excavations at the site recovered at least an additional 41 tusks in various states of preservation, up to 146 centimeters long and 17 centimeters in diameter.⁷

The elephant species that produced these tusks has yet to be identified scientifically, but the proximity of the shipwreck site to North Africa together with the tusks' sizes and shapes points to the most likely case that the elephants were African (*Loxodonta africana*), probably the smaller subspecies of forest elephant (*L. a. cyclotis*), sourced from western North Africa.⁸ However, the physical characteristics of tusks are unreliable criteria for identifying elephant species, as they can vary significantly within each group and are affected significantly by environmental, nutritional, and other factors.⁹

Inscribed Ivory Tusks

A number of the tusks recovered from the shipwreck are exceptional in that they are marked with inscribed Phoenician letters or with some other minor working. The dearth of Phoenician inscriptions before 500 B.C. renders these examples significant.¹⁰ Four of the original thirteen tusks taken from the site bear inscriptions.¹¹ Five additional inscribed tusks were recovered during the INA excavations, and another two

appear to have been inscribed. With the addition of at least five new inscriptions, the entire group is being reevaluated.¹² All include a personal name, either alone or in conjunction with a request for blessing or a declaration of devotion. In total, five different names are presented, one attested in Phoenician onomastics for the first time. All five are theophoric, the attested divine elements being *štrt*, (possibly) *mlqrt*, *šmn*, *hmn*, and *mlk*.

The inscription on tusk 1528 (cat. 122b) is *bdštrt* (Bod Ashtart), meaning “in the hand/protection of Ashtart.”¹³ The goddess Ashtart (or Astarte), associated with fertility, love, and war, was the chief female deity of the Phoenicians.¹⁴ The same name comprises the first line of the inscription on tusk 1529, which is followed on the line below by the term *'bd*, “servant” or “slave.”¹⁵ This Bod Ashtart could have served such a role, but most likely the term underscores his declaration of fervent devotion to the deity. The short inscription on tusk 1540 (cat. 122a), *m'*, is likely an abbreviated personal name, possibly *m(lqrtšm)* (Melqartsama).¹⁶

The inscription on 1537 is read by Joaquín Sanmartín Ascaso as *r'mlk 'nš*, which he interpreted as “from *r'mlk*, humbly.”¹⁷ However, upon closer examination, the inscription is better read as *mlk'n'*, a construct of the theophoric element *mlk* and a verb form that begins with *'n*; “answered” being a common enough possibility.¹⁸ Tusk BC07-0210 reads, *brk/šmnhlš*, “Bless Eshmunshalots!”¹⁹ The attested Phoenician name *šmnhlš* combines the name of the god *šmn* and the verb *hlš*, “deliver” or “save”; thus, “May [the god] Eshmun deliver [someone from harm].”²⁰ The same two-line inscription is found on tusk BC10-1752.01, although the first



Fig. 3.73. Archaeologists Mark Polzer and Juan Pinedo examining two elephant tusks and a mortar. Bajo de la Campana shipwreck, 2010



122a



Details of inscriptions (left and below)



122b



122c



123a-d

122a-c. Tusks

Ivory

a. L. 82 cm (32 1/4 in.), Diam. 8.5 cm (3 3/8 in.)

b. L. 88 cm (34 5/8 in.), Diam. 8.5 cm (3 3/8 in.)

c. L. 102 cm (40 1/8 in.), Diam. 8.1 cm (3 1/4 in.)

Manga del Mar Menor, Bajo de la Campana shipwreck area
7th-6th century B.C.

Museo Nacional de Arqueología Subacuática, Cartagena
(1540, 1528, BC10-1926)

124a, b. Ingots

a. Tin; max. W. 12.8 cm (5 in.), Weight 890 g (31.4 oz.)

b. Copper; max. W. 14.3 cm (5 5/8 in.), Weight 1085 g (38.3 oz.)

Manga del Mar Menor, Bajo de la Campana shipwreck
7th-6th century B.C.

Museo Nacional de Arqueología Subacuática, Cartagena
(BC08-541, BC10-1689.03)



124a

123a-d. Cuboid pan-balance weights

Lead-bronze composite

a. max. H. 7.4 cm (2 7/8 in.), W. 7 cm (2 3/4 in.), Weight 2,840.4 g (100.3 oz.)

b. max. H. 5.6 cm (2 1/4 in.), W. 4.8 cm (1 7/8 in.), Weight 913.7 g (32.2 oz.)

c. max. H. 4.7 cm (1 7/8 in.), W. 4.3 cm (1 3/4 in.), Weight 493.7 g (17.4 oz.)

d. max. H. 3.8 cm (1 1/2 in.), W. 2.8 cm (1 1/8 in.), Weight 157.8 g (5.6 oz.)

Manga del Mar Menor, Bajo de la Campana shipwreck
7th-6th century B.C.

Museo Nacional de Arqueología Subacuática, Cartagena
(BC11-3183, BC11-3246, BC11-3202, BC11-3270)



124b

letter and part of the second are missing. The inscription on tusk BC10-1925 reads '[-]l . . . l 'dnḥmn. The first line is badly deteriorated and remains unknown. The second line gives another personal name, 'dn ḥmn (Adon Khamon), "My lord is [the god] Khamon."²¹ Although ḥmn is the name of a well-known deity in the Phoenician world,²² and a common element of many names, until now it was not attested with 'adonī. Tusk BC10-1961 reads bd'strt, "Bod Ashtart," as in 1528 and 1529, above. Interestingly, however, the forms of several letters in this inscription — 'ayin and *taw* in particular — are different, and the inscription on tusk 1529 has two alternate forms of *taw*.²³

In addition to providing important onomastic data, the inscriptions also raise questions about the origin and function of these tusks. Previous interpretations of the first four inscriptions attempted to find indicators of merchant-captains,²⁴ procurement agents,²⁵ tax collectors,²⁶ or other administrative officials, clearly overly influenced by the shipwreck context of these finds. Instead, the tusks should be understood as votive offerings. The personal names and dedicatory inscriptions are typical of such offerings at temples and shrines, as are the valuable tusks themselves.²⁷ In fact, most Phoenician inscriptions from the western Mediterranean are votive.²⁸ The inscriptions therefore bear no direct connection to the ship or the commercial venture it represented. Given that dedicatory objects were meant to remain in the sanctuary wherein they were deposited, how and why they came to be on board the ship remains unknown.

Lead Ore

More than one ton of galena nuggets, the natural mineral form of lead sulfide and a primary ore of lead, was recovered from the shipwreck site. Preliminary analyses of the material show the ore to be quite pure and devoid of silver. A wood stave and fragmentary remains of basketry, found at the upper end of the crevice in association with the main concentration of galena, suggests that the ore (and probably metal ingots as well) was stowed in sturdy baskets in the hold and was some of the first material to spill out when the ship's bottom was ripped opened.

Results of lead isotope analysis of a selection of galena nuggets show that the entire load of material probably was sourced from a single location. Comparative interpretation of these results with published geological data from known sites across Iberia and elsewhere in the Mediterranean indicates that the ore most likely came from mines in the Almería province of southeastern Spain, from either the Sierra de Gádor or the Sierra Alhamilla.²⁹

Tin and Copper

The ship was carrying a consignment of tin in the form of 163 small plano-convex ingots, mostly discoid in shape (cat. 124a); oval, loaf-shaped, piriform, and siluriform (the latter so called because of the shape and the presence of a small "tail" that turns down at the narrower end) ingots also are represented. They weigh between 300 and 2,900 grams, with an average weight of 1,042 grams and a diameter of 12 centimeters. They are raw, or "blister," ingots, some well formed, others with highly irregular shapes and surfaces. The ingots preserve good metal integrity beneath a thin surface oxidation layer.

The sourcing and movement of tin in the Late Bronze and Early Iron Ages are largely unknown.³⁰ Classical authors reference tin from southern England (Cornwall and Devon) and Brittany (Armorican Massif), and deposits are known as well in the Massif Central of south-central France and in the Erzgebirge of Saxony-Bohemia.³¹ In the Mediterranean region, there are tin deposits at Monte Valerio in Tuscany and in southern Sardinia, but the most significant tin mineralizations are found on the Iberian Peninsula.³² The chronology of tin exploitation in Iberia is not yet well established, and good lead isotopic characterizations of known deposits are lacking. Tin deposits have been found at La Coruña, in northwestern Spain, and through the provinces of Pontevedra and Orense into northeast Portugal. In the southwest, the Ossa-Morena Zone, part of the Iberian Pyrite Belt, has tin mineralization, along with copper, gold, and mercury.³³ Smaller deposits also are known in the Murcia and Almería regions of the southeast.³⁴

Lead isotope analysis of the tin ingots has revealed that most of the metal was produced from a single deposit of ore. Copper ores from the Bilbao-La Coruña region have a comparable radiogenic curve, suggesting that much of the tin originally may have been sourced in the far northwest of Spain. The remaining ingots comprise two groupings, both of which may have originated in the Ossa-Morena but from different deposits.³⁵

Seven plano-convex discoid ingots (cat. 124b) and numerous small pieces or fragments of raw copper also were carried on the ship. The copper ingots have somewhat irregular surfaces and edges but are generally more consistent in shape, larger in diameter, and thinner than the tin ingots. They average almost 14 centimeters in diameter, 3 centimeters in thickness, and 1,563 grams in weight.

Copper plano-convex ingots of comparable size, mostly from the seventh and sixth centuries B.C., have been found in at least 20 sites across the Iberian Peninsula and Balearic

Islands.³⁶ They are significantly smaller than the plano-convex ingots circulating in the Mediterranean during the Late Bronze Age, exemplified by the 121 ingots carried onboard the Syro-Canaanite ship that sank off Uluburun, on the southern coast of Turkey.³⁷ The small size of the Iberian ingots may reflect a pre-Phoenician tradition of metalworking on the peninsula as well as an adaptation to the prevailing metallurgical technologies and commercial requirements within the region.³⁸

Lead isotope analyses of the copper ingots and fragments from the shipwreck show that the copper came from at least eight different mining regions—a surprising variety for such a small assemblage. Ores from Los Pedroches, Linares, Río Tinto, Aznalcóllar, and the Ossa-Morena Zone in Andalusia are represented, as is the mining region of Cartagena-Mazarrón, in southern Murcia. One small fragment of copper originated from the Apliki mine on Cyprus, and three other fragments may have come from Monte Sisini or Calabona on Sardinia. The provenance of two ingots and one copper fragment cannot be determined at this time.

Other Raw Materials

Other raw materials recovered from the site include five lumps of raw Baltic amber, fragments of three logs of branch wood, and thick globs of resin or pitch. Amber was a popular material for making beads and for inlay in jewelry and carved ivory;³⁹ this small allotment probably belonged to an individual merchant or craftsman aboard the ship. Documented on more than a dozen ancient shipwrecks,⁴⁰ resin was used to flavor wine,⁴¹ while pitch, often with wax or resin, was used to waterproof ships' hulls and cordage.⁴² If the latter, it may have come from the ship's onboard stores.

Manufactured Goods

The finished goods in the ship's cargo fall into two groups: pottery, sometimes containing agricultural products, and luxurious items made from costlier materials.

Pottery

Excavations recovered a wide array of ceramic vessel types, the vast majority of which are fragmentary and incomplete. However, sufficient diagnostic pieces remain to reconstruct the varied types of pots carried on board the ship, if not the complete profiles and exact count. The assemblage, entirely wheel made, includes transport amphorae, mortars, flanged plates, bowls, carinated bowls, oil bottles and other small unguentaria, cooking pots, casseroles, urns, and various jugs

and pitchers. The types represent much of the western Phoenician repertoire and place the ship and its cargo squarely in the western Phoenician and Orientalizing horizon (8th–6th century B.C.). A comprehensive petrographic study of this pottery, intended to help determine the location of their originating workshops, is nearing completion.⁴³

Two types of Phoenician transport amphorae are attested in the pottery assemblage, one with a distinct ovoid shape and the other with a carinated shoulder and a maximum diameter below the midlength (see cat. 132). The latter type, distributed widely from the Atlantic coast of Morocco to Sicily, was produced by colonial workshops in the environs of the Strait of Gibraltar from the late eighth into the sixth century B.C., especially during the seventh century, when the western colonies enjoyed their greatest period of growth and commercialization.⁴⁴ Preliminary characterization of the clay from some of the amphorae indicates that they were produced along the southern Andalusian coast, possibly at Cerro del Villar.⁴⁵ Amphorae from these potteries have been found throughout southern and eastern Spain, including at the indigenous settlement at Peña Negra (Crevillente) and the neighboring Phoenician colony of La Fonteta.⁴⁶ The Peña Negra amphora finds of this type are dated primarily from the late seventh to the first half of the sixth century B.C.⁴⁷ At La Fonteta, rim fragments comparable to the Bajo de la Campana pieces are distributed across most levels, making precise dating difficult. However, at least one amphora from the Bajo has a distinctive shoulder profile, inverted just before the carination, also seen in examples found in levels III–VI (670–560 B.C.) at La Fonteta.⁴⁸

The ovoid transport amphorae present on the ship, although few in number, are of a type produced by Phoenician potteries in the central Mediterranean colonies and are best represented at Carthage, Motya (Sicily), and Sulcis (Sardinia).⁴⁹ The clay fabric of the Bajo de la Campana examples exhibits typical characteristics of Carthaginian production.⁵⁰ In the far west such amphorae are attested predominantly along the Mediterranean coast of Spain, from Toscanos in the south to Sant Martí d'Empúries in the northeast, and especially on Ibiza, where their presence testifies to close trading links between the island and central Mediterranean centers.⁵¹ Generally dated from the end of the eighth or beginning of the seventh century to the first part of the sixth century B.C., the type enjoyed its peak production between 625 and 575 B.C.⁵² Jars of similar make were found at Sa Caleta (horizon M4, last third of the 7th century B.C.),⁵³ but very few at La Fonteta, and those mostly from the Archaic phases I–III (760–635 B.C.).⁵⁴

125. Pedestal altar

Limestone; H. 72 cm (28 $\frac{3}{8}$ in.), W. 34 cm (13 $\frac{3}{8}$ in.)
Manga del Mar Menor, Bajo de la Campana shipwreck
7th–6th century B.C.
Museo Nacional de Arqueología Subacuática, Cartagena
(BC08-324)

126. Arm with lotus

Bronze; L. 15.4 cm (6 $\frac{1}{8}$ in.)
Manga del Mar Menor, Bajo de la Campana shipwreck
7th–6th century B.C.
Museo Nacional de Arqueología Subacuática, Cartagena
(BC09-1389.05)

127. Tripod mortar

Ceramic; Diam. 30.5 cm (12 in.)
Manga del Mar Menor, Bajo de la Campana shipwreck
7th–6th century B.C.
Museo Nacional de Arqueología Subacuática, Cartagena
(BC10-1752)



128. Thymiaterion

Bronze; H. 20 cm (7 $\frac{7}{8}$ in.), W. 8.5 cm (3 $\frac{3}{8}$ in.)
Manga del Mar Menor, Bajo de la Campana shipwreck
7th–6th century B.C.
Museo Nacional de Arqueología Subacuática, Cartagena
(BC11-2932)



Eleven ceramic mortars along with numerous fragments also were recovered from the shipwreck. These dishes generally are thick coarse-ware bowls with enlarged rims, supported by either three legs, a ring base, or a simple flat base. The type evolved from stone mortars commonly found at Near Eastern sites of the first millennium B.C.⁵⁵ The tripod mortars in particular are emblematic of western Phoenician pottery production and are a primary indicator of Phoenician trade, influence, or settlement in a region.⁵⁶ In Iberia, examples have been found throughout the south, in colonial coastal settlements across the east and northeast, and in the indigenous hinterlands. Elsewhere, they appear in habitations and burials along the North African coast from Mogador (Atlantic Morocco) to Carthage, on the central Mediterranean islands, and on the Italian mainland.⁵⁷ They are most often found associated with amphorae, leading to speculation that they were used for grinding aromatic spices to flavor wine.⁵⁸

Except for two with ring bases, most of the Bajo de la Campana mortars are tripod mortars, commonly called tripod bowls (cat. 127). The variety of forms and styles is remarkable and includes two with a horizontal rim decorated with a groove, two small varieties with rounded rims and legs, and three that are decorated with concentric, circular grooves on the bottom of their exteriors. Similarly, at La Fonteta multiple variants coexisted across different phases of the settlement, thus precluding use of the vessel's typology for dating purposes, at least as a sole indicator.⁵⁹

Luxuries and Exotica

The third major part of the ship's cargo was a consignment of more prestigious objects for an elite clientele. The expedition recovered fragments of double-ended combs, probably more than twelve in total,⁶⁰ each carved from a single piece of boxwood (*Buxus* sp.) and decorated with simple, incised lines within the central field.

Several carved ivory pieces were found, including two small dagger handles with simple, rounded pommels and slots for the blade tangs, which were fastened to the handles with rivets centrally aligned along the lengths of the slots.⁶¹ Knives and daggers, especially with iron blades, were common in the western Mediterranean from the latter half of the eighth century until the sixth century B.C. They carried prestige significance beyond mere practical usage or the intrinsic value of their materials,⁶² and they represented elevated social status, as evidenced by their depiction in Near Eastern art, worn (often in pairs) by kings, supernatural beings, and important court officials.⁶³

The other ivory piece is a small spool-shaped ring base, again simple but elegantly carved, almost 3 centimeters high and with a diameter of about 8.5 centimeters.⁶⁴ A blue glass disc with a similar profile from the Uluburun shipwreck is identified as the base for an ostrich eggshell,⁶⁵ and the Bajo de la Campana piece may have served the same purpose, as several fragments of ostrich eggshell were recovered from the site. Two rim fragments, beveled outward, and the ivory base show that the eggshell was already fashioned into a luxury receptacle for elite consumption before it was placed in the ship.⁶⁶ The Phoenicians revived the use of ostrich eggs in art and ritual during the eighth century B.C. and spread it across the Mediterranean. In Spain ostrich eggs are prevalent in the seventh to fourth century but appear at some sites until the third and even first century B.C., the vast majority in burial deposits.⁶⁷

Finds of whole eggshells and fragments are distributed across southern and eastern Iberia, in both Phoenician and indigenous contexts.⁶⁸ The largest collection of these objects anywhere in the Mediterranean comes from the Phoenician/Punic necropolis of Villaricos, in southeastern Spain, with more than seven hundred examples.⁶⁹ Cut eggshells of the form represented at Bajo de la Campana have been found only on Ibiza.⁷⁰ Ceramic, alabaster, metal, and esparto (woven grass) supports with shapes generally similar to the ivory ring base from the shipwreck have been found in graves along with eggshells.⁷¹

Fragments of alabaster jars were recovered during the final excavation campaign. Alabaster jars of various types have been found at Sidon and at other Near Eastern sites as well as in Etruria and Carthage.⁷² Some fifty jars and twenty alabaster fragments dated to the seventh century B.C. have been recovered from sites on the southern Iberian Peninsula and Ibiza, with all but a few fragments used as cremation urns in elite burials. Many are Egyptian in origin and some carry hieroglyphic inscriptions (see cats. 113–115).⁷³

Bronze furniture elements were also among the manufactured goods, including the four legs of a small chair, stool, or table.⁷⁴ Cast hollow, the legs have a tapering, curvilinear shape, stand slightly more than 33 centimeters tall, and have a maximum diameter of 37 millimeters (at their upper terminus), with a single horizontal crosspiece that attaches to the leg just above the molding. None of these cross supports is preserved completely, but originally they would have extended more than 19 centimeters from the leg and reached at least 3 centimeters in diameter. In each leg, directly opposite the crosspiece join, there is a small rectangular hole that probably served to attach decorative elements such as carved ivory or wood panels, for which Phoenician craftsmen were renowned.

Another furniture piece comprises four corner elements of a couch frame, each integrating a cylindrical leg with four cuboid sockets into which the frame support beams would have fit.⁷⁵ These legs also have a small rectangular hole in their outer face, again for attaching decorative panels.⁷⁶ These pieces may well be parts of a *klinē*, and the others the legs of the accompanying side table, for use in reclined feasting and drinking.⁷⁷ They call to mind biblical references to luxurious furnishings, as in the warnings of Amos (6:4, 3:2) to the complacent of Israel, who “recline on beds of ivory and sprawl on their couches, [lest they be] snatched away—with the corner of a bed and the cover of a couch!” Beds and couches made from ivory, “SHA-wood” (probably an exotic species), and boxwood, some sumptuously inlaid and others overlaid with gold, feature prominently in lists of opulent furniture in the Assyrian annals.⁷⁸ The couch fittings have a close parallel in a single piece in the British Museum (BM 127213), acquired as part of an assemblage of grave goods supposed to have come from the necropolis at Tharros (Sardinia).⁷⁹

A small, hollow-cast bronze object in the form of a right forearm and hand clenching a stylized lotus blossom was



Fig. 3.74. Pedestal altar on seabed. Bajo de la Campana shipwreck, 2008

found together with the bronze furniture (cat. 126). Three holes in the underside of the blossom were presumably for attaching another element, now lost. Lotus blooms and palmettes are common decorative symbols in Egyptian and Near Eastern art of the Bronze and Iron Ages; kings, gods, and other exalted personages often were depicted with, or holding, stylized trees, flowers, or palm fronds. On Phoenician ivories, as on this piece, a symmetric volute delimits the juncture of flower and stem, although unusually here, the flower is held upside down.⁸⁰ The style of the lotus flower is virtually identical to that worn on the head of a bronze figure of Ashtart found at Cástulo and dated to the sixth century B.C.⁸¹ Its size and design suggest that this piece may have been part of a ceremonial object that symbolized rank and privilege, such as a staff.

The expedition team also recovered several pieces of a bronze cauldron or other vessel and the upper portions of two bronze stands for incense burners, or thymiateria (cat. 128), of Cypriot type. Other Cypriot thymiateria have been found in Phoenicia, North Syria, the Aegean, and Etruria, and on Malta, Sardinia, and the Iberian Peninsula.⁸² Two examples were among the grave furnishings of Tabnit, a sixth-century B.C. king of Sidon.⁸³ They were manufactured from the end of the eighth to the beginning of the fifth century B.C., and those from Sardinia and Iberia are some of the earliest, assigned mainly to the seventh century.⁸⁴ Because their provenance is well documented, the two from Bajo de la Campana provide important evidence for clarifying the chronology and production locations of these objects.⁸⁵

Two other objects that deserve mention are a long, slender wooden handle and a limestone pedestal. The handle has a flared end with a drilled central hole and may belong to a flywhisk or fan. Fans and flyswatters as well as parasols and standards were common royal attributes in Egypt and the Near East, and this object may have had similar connotations.

The pedestal (cat. 125, fig. 3.74) is assembled in three parts: base and pillar, volute capital, and abacus. The pillar stands on a stepped base with a rectangular plinth, is rectangular in section and tapers toward the top, and is fluted on its front and side faces. The wide necking comprises seven bands—the middle band being double the width—extending only around the front and side faces. Similarly, the spiraling volutes are inscribed only on the front face of the capital. The abacus extends beyond the front and rear face of the capital and has a central rectangular recess.

The size and shape of the pedestal are typical of altars, with the recess for receiving offerings or libations.⁸⁶ The volute capital is best known from the later Ionic order in Greece but

has antecedents in Iron Age architecture and architectural representations. Terracotta altars or architectural models found at Ta'anach and Tell el-Far'ah North similarly depict scroll-topped columns. Both examples date to the tenth century B.C. (see cats. 69, 70).⁸⁷ The simple symmetrical echinus of the Bajo de la Campana altar, with flat top and bottom faces that extend tangentially between the volutes, and the wide necking harken to Proto-Aeolic capitals used on rectangular piers, doorjambs, stelae, and altars, including votive examples, in the Near East and Cyprus.⁸⁸ In Spain, two similar pedestal altars of Hellenistic date (perhaps 3rd century B.C.) are known from Mas Castellar (Pontós, Gerona) and the sanctuary of Asklepios at Emporion (L'Escala, Gerona). These examples are cylindrical with splayed circular bases, fluted pillars, and Ionic volute capitals, but they are of similar size, as are their recesses.⁸⁹

Tools and Equipment

Beyond commercial goods, items such as galley wares, equipment, and personal effects can provide information about the crew, their tasks, and potentially the ship's port of origin. Other property such as weights and specialized implements can illuminate commercial aspects of trade and crafting. A limited number of items recovered from the Bajo de la Campana site fall into this category.

Eleven fine-grained, pale green to dark gray whetstones, representing three types, were recovered from the shipwreck. Three are large cylindrical andesite rods with a slightly rough finish that taper from their midpoint toward generally flat ends; they were probably used to sharpen bronze and iron implements. Similar objects, often perforated at one end and fitted with a metal ring for suspension from a belt, have been found in the Near East. Many examples, with or without attached handles,⁹⁰ were interred in tombs or dedicated as votive offerings. All but one of the remaining whetstones are slimmer with a fine, smooth finish and finely beveled ends. The majority are made from softer limestone and closely resemble a sandstone object from a late seventh-century B.C. tomb in the necropolis at La Joya, near Huelva.⁹¹

The last stone is thin and rectangular, with only one end preserved. The same tomb at La Joya contained a second stone implement similar to this one, reportedly made of quartzite.⁹² These latter two types of implements are perhaps burnishing or polishing stones and may have been used for fine work with ivory, jewelry, ceramics, or other materials.

Pan-balance scales and weights (cat. 123a–d) were essential in a precoinage economy, for merchants as well as for crafts-

men. Fifty-six metal pan-balance weights were recovered across the site but concentrated predominantly along the lower, eastern extent. The collection includes 43 cuboid weights, the majority of which are composite, comprising a bronze shell filled with lead. The shell has a projection that is centered on top and perforated, perhaps for tying with cordage, attaching a metal loop handle, or hanging from a hook.⁹³ The composite weights may constitute two sets, as the top features exhibit two distinct styles; they range in length from 6 millimeters to 7 centimeters on a side and, in mass, from less than 3 grams to almost 3 kilograms. One has the letter *het* inscribed on its top face,⁹⁴ curiously in an archaizing form from the tenth to eighth century B.C.⁹⁵

The corpus of known metal cuboid weights is large and chronologically broad, spanning the Mediterranean, but most are unprovenanced and difficult to date precisely.⁹⁶ Lead-bronze composite weights are known in the Late Bronze Age⁹⁷ but are virtually unattested in Iron Age contexts.⁹⁸ The examples from Bajo de la Campana are the largest collection of Iron Age metal cuboid weights and perhaps the only assemblage of bronze-lead composite weights from this period.

Excavations also recovered one intact oil lamp, essentially a small dish with a wide rim and two troughlike nozzles for wicks, formed by pinching the rim at one end. Charring around the nozzles indicates that the lamp was used by the ship's crew and, as a personal possession, may help identify the home region of the vessel and the crew that manned it. Lamps with two nozzles are found predominantly in the western Mediterranean, and this one is similar to, among others, examples from Castillo Doña Blanca (Cádiz), Laurita (Almuñécar), and Trayamar (Morro de Mezquitilla) along Spain's southern coast.⁹⁹ Several are known on Ibiza, at Sa Caleta and in the necropolis at Puig des Molins, the vast majority of which have two nozzles.¹⁰⁰ However, establishing a chronological sequence based on number of nozzles has proven problematic, and lamps with one or two nozzles have been found in seventh- and sixth-century B.C. deposits.¹⁰¹

Maritime Trade Networks of the Iberian Peninsula

Much of the pottery on the ship was produced by workshops in Phoenician settlements along the Mediterranean coast of Andalusia, especially the province of Málaga.¹⁰² Perhaps the most important of these establishments was Cerro del Villar, located in the Bay of Málaga at the mouth of the Guadalhorce River, the largest in the region. The settlement had excellent clay deposits nearby, good land for cultivation and grazing, a sheltered port with facilities to handle large

ships, and access to the hinterlands through the Guadalhorce Valley.¹⁰³ It was situated at the intersection of the sea-lanes connecting Gadir and the Atlantic circuits to the Mediterranean, and the main communication route from the Mediterranean to the rich mining regions of Tartessos. The colony had all the prerequisites of a cosmopolitan emporium.¹⁰⁴ Large dwellings built at least by the early part of the seventh century B.C. reflect the inhabitants' prosperity, which was based mainly on agriculture, animal husbandry, fishing, and the industrial production of metalwork, textiles, dye, and especially ceramics. Retail spaces, small metal workshops and forges, and lead pan-balance weights found at the site testify to the settlement's vibrant economy.¹⁰⁵ During the last quarter of the seventh century B.C., most of Cerro del Villar's population moved to the nearby Phoenician colony of Malaka, and the establishment became a specialized industrial enclave producing pottery, especially amphorae, for the new commercial center in the bay.¹⁰⁶ The region experienced tremendous economic growth during the seventh century B.C., spurred by industrial specialization and intensification of trade with the surrounding indigenous communities and with colonial and indigenous establishments along the eastern Iberian seaboard and in the northeast of the peninsula.¹⁰⁷

La Fonteta

This interregional trade was directed especially at the Phoenician colonies of La Fonteta and Sa Caleta and at indigenous communities farther north in Catalonia. La Fonteta was founded in the eighth century B.C. at the mouth of the Segura River, less than 45 kilometers north of Bajo de la Campana, in response to a thriving Atlantic-type metals trade and local mineral resources in the Sierra de Crevillente.¹⁰⁸ The Phoenicians at La Fonteta leveraged this situation to build a vibrant metalworking industry that included iron-, copper-, and bronzeworks as well as silver and lead production. Additionally, archaeological investigations of the surrounding indigenous townships of Peña Negra and Saladares have found evidence for Phoenician enclaves that produced ceramics and Orientalizing jewelry, indicating close relations between the colonists and local communities.¹⁰⁹

Excavations at La Fonteta recovered examples of virtually every type of ceramic vessel carried in the ship.¹¹⁰ Analysis of the collection has shown that, despite local production, the colony maintained a steady import of pottery from Cerro del Villar or other workshops along the Málaga coast. Amphorae, tripod bowls, red-slipped dishes, and oil bottles from these potteries also made their way into the local communities,

along with more exotic imports such as ivory bracelets, glass beads, scarabs, bronze objects, and iron knives.¹¹¹

Metallic and mineral lead, a copper ingot, and other metallurgical remains were found at La Fonteta.¹¹² Analyses of the lead materials show that the colony was importing galena from the same area in southeastern Spain that produced the galena on the Bajo de la Campana ship.¹¹³ The ore was used to produce metallic lead, which subsequently was employed in the cupellation of silver contained in complex copper ores, possibly mined in the same area.¹¹⁴ Fragments of litharge (lead oxide) found on the site match the isotopic signature of litharge cakes from ship 2 at Mazarrón (cat. 130),¹¹⁵ which sank near the Phoenician settlement of Punta de los Gavilanes, the site of a silver foundry that operated throughout the seventh century B.C.¹¹⁶ Litharge and other secondary products of silver production may have been transported to La Fonteta and co-smelted with galena to recover residual silver and produce metallic lead as a way of making the overall processing more efficient and cost-effective.¹¹⁷ The source of the copper ingot, raw material for the manufacture of copper and bronze objects, was indeterminate, but its isotopic data is most similar to copper ores from Sardinia or the Timna area of the Wadi Arabah in the Jordan Rift Valley.¹¹⁸

The Bajo de la Campana shipwreck and its galena cargo confirm that the Phoenicians of La Fonteta continued to exploit lead ore from the Almería region, a practice evident during the Archaic phase of the colony, longer than previously thought.¹¹⁹ The copper finds from the shipwreck and site are both limited and thus difficult to interpret but may reflect opportunistic supplementation of copper recovered from silver-bearing copper ores or from other sources. Whatever the case, if all the tin aboard the Bajo de la Campana ship was to be used in the settlement's workshops to produce binary and ternary bronzes,¹²⁰ then well over one and a half tons of copper would be required, an amount far beyond what is present and suggested in these remains.

Ibiza

Two hundred kilometers northeast of La Fonteta is the site of the Phoenician colony of Sa Caleta, situated on the southern end of the island of Ibiza. Founded at least by the beginning of the seventh century B.C., the settlement was inhabited until the early sixth century, when the colonists abandoned it for another site to the northeast on the Bay of Ibiza.¹²¹ Throughout that time, inhabitants imported virtually all their wheel-made pottery from the colonial workshops of southern Andalusia. The vessel types include almost all of those present in the shipwreck assemblage: transport amphorae, tripod

mortars, plates and bowls, carinated bowls, lamps with two nozzles, oil bottles, and various types of jugs.¹²² In addition, excavations recorded a significant number of ovoid-type amphorae from Carthage.¹²³ Evidence suggests that Sa Caleta's economy was based on milled grain and livestock, salt, fishing and the harvesting of mollusks, weaving and possibly dyeing, and metallurgy.¹²⁴ The colonists mined local iron mineral deposits and processed the ore in the settlement, produced lead and silver, and engaged in commercial recycling of copper and bronze scrap and the fabrication of bronze objects.¹²⁵

Metallurgical studies show that the colonists imported galena from the southeast of the mainland, in the vicinity of the Sierra de Cartagena in the region of Murcia, while also exploiting lead mineral deposits at the northern end of the island.¹²⁶ The galena was processed to recover silver and to produce metallic lead. However, judging by the amount of galena stored at the site, much greater than that required for cupellation, the colony was also exporting metallic lead. The trade link with Carthage evinced by the ovoid amphorae found at the site suggests that an exchange for this surplus may have been the *quid pro quo*.¹²⁷

Northwest Iberian Peninsula

It was long thought that Ibiza was the linchpin in the southern peninsula's colonial trade with the indigenous communities of the northwest.¹²⁸ Recent studies have provided new data for that area and a better understanding of its trading relations with Ibiza and the Phoenician ambit in the south.¹²⁹ Throughout Iberia's Orientalizing phase, the southern colonies extended their trade to the eastern coast of the peninsula and northward to the Ebro River and virtually the entire Catalanian coast. This process intensified during the seventh century B.C., such that, during the second half of that century until the middle of the next, Phoenician commercial interests maintained a monopoly on trade in the territory.¹³⁰ The nature of this exchange differed from that elsewhere on the peninsula in that it was focused on agricultural goods such as wine, olives and olive oil, salted fish, meat, and possibly wax and aromatic substances transported in amphorae, rather than luxury goods and pottery.¹³¹ Nevertheless, grave goods excavated from necropoleis in the region do include typical Orientalizing objects such as ceramic tableware, tripod mortars, oil bottles, decorated ostrich eggshells, and bronze furnishings.¹³² According to petrographic analyses of the numerous amphora finds from the region, some of the vessels came from coastal Andalusian workshops and some were of local manufacture, but a large percentage was manufactured somewhere in the southern peninsula between Granada

province and the region of Cartagena-Mazarrón, a production not attested on Ibiza.¹³³ One of the ceramic fabric groups distinguished so far in the petrographic study of the Bajo de la Campana pottery, a metamorphic type composed largely of phyllites and tentatively assigned to the Cartagena region, could represent a common production source.¹³⁴

In exchange for these goods, the Phoenicians received mineral and metal resources from the region, where evidence has been found for mining and processing of various minerals of copper, silver, and especially lead.¹³⁵ Lead isotope and elemental analyses of geological and archaeological metallurgical samples from the mining area of El Molar-Bellmunt-Falset and the nearby settlement of El Calvari (Priorat) show that the lead mineralization of the region is galena with extremely low levels of silver, meaning that it was exploited for the production of metallic lead.¹³⁶ Slag and lead samples have the same isotopic signature as the galena, indicating that at least some of the ore was processed locally. Furthermore, the isotopic data also matches some lead and silver subproducts from the Tartessian territory in the southwest, revealing that lead produced from galena mined in the northeast was used to cupel silver-bearing minerals in that region. These studies also show that, despite their geographical proximity, neither galena nor lead was being exported to Ibiza from the northeast of the peninsula, perhaps because of its low silver content.

Despite what must have been thousands of sea voyages undertaken by the Phoenicians in pursuit of their commercial and colonizing enterprises in the Mediterranean and Atlantic over half a millennium, testimony from the ships involved and the people, cargoes, and paraphernalia they carried has been largely mute. The Bajo de la Campana shipwreck is finally giving voice to such evidence.

The items recovered from the shipwreck place the vessel and those aboard squarely within a western Phoenician colonial milieu and confirm the commercial nature of the enterprise at the end of the seventh or the beginning of the sixth century B.C., when the Phoenician colonies on the Iberian Peninsula were flourishing. The colony of Cerro del Villar/Malaka, in particular, developed into a full-fledged commercial center that was a driving force in the expansion of trade and industrialization of the Spanish Levantine coast and northeastern corner of the peninsula. In addition to locally made pottery, most of the other cargo items carried aboard the ship would have been accessible at such a market port: the elephant ivory transshipped from North Africa along with those pieces inscribed from a temple somewhere on the

peninsula (Gadir, perhaps); tin from the mining regions of the northwest, either shipped by sea through the Strait of Gibraltar or via overland routes and through the Guadalhorce River Valley; copper from various mineral regions of upper Andalusia, transported south to the coast along the same land routes; and copper from more distant sources in the central and eastern Mediterranean, along with Baltic amber, Carthaginian amphorae, and ceramic vessels imported from the Near East, all transported by ship and likely through various intermediaries. The wine or fish products contained in the carinated amphorae probably were local products, while the antler (pin), boxwood (combs), brushwood (dunnage), and pine nuts (victuals) were all available in the environs. Likewise, the ship may also have been transporting some type of perishable bulk commodity, such as grain, cloth, wool or other raw material for textile production. Although there is no direct evidence for such a cargo, it would certainly fit the narrative based on the agricultural production and faunal remains in evidence at Cerro del Villar, and the spindles, whorls, loom weights, and mollusks encountered at Sa Caleta.¹³⁷ This also would help explain the low tonnage of the ship as inferred from the recovered remains. Any trace of a bulk organic cargo is unlikely to survive on an ancient shipwreck, especially one situated in a rocky and turbulent underwater environment such as at Bajo de la Campana.

Upon leaving port loaded with these and possibly other materials, the ship would have headed east along the Málaga-Granada coast; its probable destination was La Fonteta, more than 400 kilometers by sea to the northeast. The journey likely included one, and possibly two, intermediate stops: one at Abdera (Adra), a Phoenician settlement situated at the mouth of the Adra River at the western edge of Almería province, to acquire a load of galena¹³⁸ and possibly a supplementary assortment of pottery vessels; and another perhaps at Punta de los Gavilanes (Mazarrón) as part of a regular supply stop.

Passing Mazarrón and Cartagena, the coast turns northward, and the ship's path would have taken it around Cape Palos, past the Mar Menor, and on to the Segura River and La Fonteta. Unfortunately, upon rounding the cape, the ship likely sailed into a strong easterly wind, the Levante, which has a propensity to come up suddenly in this region. The ship was forced too close to shore, and although the helmsman managed to steer it past Isla Grosa and El Farallón rock, he was unable to avoid the final hazard—the lurking shoal of the Bajo.

Had the ship arrived safely at port, the entire cargo may well have been unloaded for trading at La Fonteta and in Peña Negra or another local settlement. Galena is well attested at the site, as is the pottery from the Andalusian coast, in both the colony and surrounding indigenous settlements. The luxury and prestige objects were probably destined for exchange with high-level persons in the local communities in order to maintain good relations, access, and ongoing industrial operations between townships. It is also within this framework—jewelry and metal crafts production—that the whetstones, amber, copper, and at least some of the ivory and tin make most sense.

Had the ship's original itinerary included onward trips to Ibiza or the northeast, a number of cargo goods would fit the known archaeometric data for the sites. The ship's ceramics cargo and amphora contents, including the central and eastern Mediterranean imports, could just as well have been destined for Sa Caleta. The aforementioned potential agricultural and textile goods would also fit this exchange narrative. As for the Priorat area and northeast, transshipment of the amphora contents and tripod mortars from Abdera, finished (and dyed) cloth from Sa Caleta, copper,¹³⁹ and the hypothetical bulk organic materials would all be compatible with the excavated evidence from the region. This is true as well for the Orientalizing goods, even if their sparse representation in the region's archaeological record would argue for Peña Negra and that region's indigenous communities as the more likely destination.

Ongoing studies of the finds from the Bajo de la Campana shipwreck and sites along the eastern Iberian seaboard demonstrate a much greater complexity in the circulation and processing of minerals and metals and in the distribution of ceramic vessels and produce than was previously presumed. Even as the data generated are helping to reveal and clarify certain aspects of this trade, many questions remain unanswered and new ones arise. What were the intended distributions of the tin and ivory from the ship? What are the reasons for the apparent counterflow of galena and lead across the peninsula? What goods would have been received in exchange for the ship's outbound cargo and transported home? Where were the bronze furnishings fabricated? These and many other lines of inquiry remain open, and their ongoing investigation will only help increase our understanding and appreciation of this dynamic period in the Phoenician adventure in the far western Mediterranean.

10. Dayagi-Mendels 2002, p. 69, fig. 4.15 (no. 6). Listed in Golani 2013, p. 113, as well as the exemplar of Sarafand, for which the author pushes the date back by a century vis-à-vis that assigned by the discoverer (Saidah 1983, p. 216, pl. LIV, 3). A third specimen, of unknown provenance, is in a museum in Jerusalem: see Quillard 1987, p. 133.
11. Maxwell-Hyslop 1971, p. 237, fig. 127 (no. 6).
12. See Lancellotti 2002, pp. 19–39, pls. I–IV.
13. Quillard 1987, pp. 24–27 (nos. 94–99), 135–39, pls. XXXII, XXXIII, and Brouillet 1994, p. 42 (no. 4). For Sardinia, compare to Pisano 1987, pp. 78–79 (Type I), and *I gioielli di Tharros* 1990, nos. 1, 9, 10; for Sicily, to Di Stefano 1998, pp. 138 (no. 80), 207 (VG 45), 400 (G34). The “bushel” or “ball and cage” pendant is another characteristic and widespread model, cf. Quillard 2013, pp. 22–30, 184–87, figs. 9–20.
14. Two variants with a falcon.
15. Spanò Giannellaro 1995, p. 51, pl. I (necklace).
16. Quillard 1987, pp. 38–40 (nos. 257–63), 78, 167–70, pls. XIV, XV (nos. 1–3), XXXVIII (Type A1); Brouillet 1994, p. 43 (no. 8). See the following note.
17. See, for Malta, C. Sagona 2002, p. 326, fig. 6 (no. 3); for Palermo, Di Stefano 1998, p. 385, 401 (G 38); for Trayamar, Nicolini 1990, pp. 352–53 (no. 119), pl. 77 (a, b).
18. Golani 2013, pp. 136–37, 249, fig. 15 (nos. 23–25); V. Karageorghis, Mertens, and Rose 2000, pp. 194–96.
19. Quillard 1987, pp. 46–47 (no. 274), 172, 176 (Type B2), 186–88, pl. XVII, XXXIX.
20. Redissi 1999, p. 35.
21. Bonnet 1988.

The Phoenicians in Sardinia

1. The westward Phoenician expansion is deeply connected to the flourishing of Tyre (in modern Lebanon), one of the main Phoenician cities, between the ninth and eighth century b.c.
2. The importance of the Gulf of Oristano for the Phoenicians is also well attested at Othoca, the foundation of which seems to have taken place about the second half to the end of the eighth century b.c.
3. Additionally, the fortifications of Nuraghe Sirai (about 1 kilometer south of Monte Sirai), a site that housed a mixed community of indigenous peoples and Phoenicians, can be dated to the end of the seventh century b.c. On the opposite coast of the island, owing to the intensification of contact between Sardinia and central Italy, Cuccureddus of Villasimius was founded about the second half of the seventh century b.c.
4. At more or less the same time, the *tophet* was founded outside the inhabited area.
5. However, it has to be noted that some settlements—such as Cuccureddus of Villasimius and Monte Sirai—seem to have suffered acts of destruction at the end of the sixth century b.c.; at the same time, some sites (Othoca, Bithia, and Sulcis) experienced contraction, while others (Tharros and Karalis) developed. These events and processes probably were connected to the beginning of Carthaginian politics and to the consequent preference given to specific territories.
6. The plans of the African metropolis during this period are well indicated—for example, by the presence of fortified walls in the main urban centers and the diffusion of numerous small sites in the countryside, mainly aimed at crop production (particularly in the Campidano and Oristanese regions)—and legitimized by the second treaty between Carthage and Rome (348 b.c.), which refers to the Punic conquest and foundation of cities. Even after the Roman conquest of Sardinia in 238 b.c., the cultural

dimension that matured during the long Phoenician presence continued to influence many of the insular customs, as represented by a Punic inscription of the second to third century A.D. found in the so-called temple of Bes in Bithia. It mentions some primary political institutions of the Punic world, such as the *suffetes* (similar to judges), testifying to the pervasiveness of centuries-old Phoenician traditions.

Phoenician Metal Production in Tartessos

1. For ancient accounts of the Phoenicians' pursuit of silver, see Torres Ortiz 2002, pp. 107–9.
2. Jiménez Ávila 2010, p. 42; Jiménez Ávila 2004, p. 13.
3. Jiménez Ávila 2002, p. 140.

Phoenician and Orientalizing “Ivories” in the Iberian Peninsula

1. Lapérouse 2008, p. 306.
2. See Almagro Gorbea 2008.
3. *Ibid.*, p. 487, fig. 612.
4. Martín Ruiz 2006, pp. 126ff.
5. See Escacena Carrasco and Coto Sarmiento 2010.

The Bajo de la Campana Shipwreck and Colonial Trade in Phoenician Spain

1. Of the 1,259 sites listed in A. J. Parker's catalogue of ancient shipwrecks, a mere 26 date between 1200 and 500 b.c., and only 9 of these are potentially Phoenician (Parker 1992, p. 10). Another three shipwreck sites of this period have since been discovered: Ashkelon (Tanit and Elissa), in deep water off Israel, eighth century b.c. (R. Ballard et al. 2002); Kekova Adası, Turkey, seventh century b.c. (Greene, Leidwanger, and Özdaş 2011); and Mazarrón 1 and 2 (Negueruela et al. 1995 and 2000).
2. The excavation was conducted in cooperation with the Ministry of Culture of Spain (now part of the Ministry of Education, Culture, and Sport), with permission from the government of the Autonomous Community of the Region of Murcia. Major funding support for the excavation and research was provided by Claude and Barbara Duthuit, the Expeditions Council of the National Geographic Society, Lucy Darden, David Hadley, John DeLapa, Peter Way, the Spain-USA Foundation, the Program for Cultural Cooperation between Spain and United States Universities, the Center for Maritime Archaeology and Conservation at Texas A&M University, and the University of Western Australia.
3. Roldán Bernal, Martín Camino, and Pérez Bonet 1995, p. 12.
4. *Ibid.*, pp. 12, 42–45.
5. Polzer and Pinedo 2011, pp. 6–7.
6. Más García 1985, pp. 156, 158, fig. 4; Roldán Bernal, Martín Camino, and Pérez Bonet 1995, pp. 12, 16.
7. Owing to the fragmentary nature of many of the recovered tusks, this number represents a minimum count, and the total could be as many as 49–57.
8. Krzyszkowska 1990, pp. 16–17.
9. *Ibid.*
10. Except for a few inscriptions, there is a general gap from the tenth to the fifth century b.c.; Benz 1972, p. 10.
11. These being tusks 1528, 1529, 1537, and 1540. After their initial publication by the site's original investigator (Más García 1985, pp. 159, 160, pl. I), the inscriptions were treated more fully by Sanmartín Ascaso 1986, pp. 89–91, 93 fig. II, 97–98, photos 1–4; and subsequently commented on by others (López Pardo 1992,

- pp. 291–92; Roldán Bernal, Martín Camino, and Pérez Bonet 1995, pp. 28–30, 57, fig. 23; Mederos Martín and Ruiz Cabrero 2004, pp. 270–71, 275–77.
12. The inscriptions currently are under study by Jo Ann Hackett, University of Texas at Austin, who provided the readings given here. The most recently discovered inscription is severely deteriorated and has not yet been discerned.
 13. Benz 1972, pp. 82–88, 283–86, 386–87.
 14. In the Bible she is identified as Ashtoret (Judg. 2:13; 1 Sam. 7:3, 31:10), of the Sidonians (1 Kings 11:5, 33), the Sidonian abomination (2 Kings 23:13). See also Blázquez Martínez 2001, pp. 119–28.
 15. Benz 1972, p. 283, see pp. 369–72 for theophoric names constructed with 'bd.
 16. *Ibid.*, p. 141, and cf. pp. 137–46 for alternative name possibilities.
 17. Sanmartín Ascaso 1986, pp. 90–91.
 18. Benz 1972, p. 381. The supposed letters *resh* and *'ayin* are much fainter than the other letters, which are more deeply and confidently carved, and they do not conform to the same regular spacing. Más García 1985, p. 159, did not include the *resh* in his original reading, although he did the *'ayin*. The last letter (formerly read as *shin*) is now recognized as *aleph*, a well-attested hypocoristic ending on Phoenician names. For *mlk*, see Benz 1972, pp. 344–45.
 19. Benz 1972, pp. 279, 291–92.
 20. *Ibid.*, pp. 278–79, 311. Eshmun was one of the great gods of the Phoenician pantheon, associated with healing (*ibid.*, pp. 278–79; Blázquez Martínez 2001, p. 129, and pp. 128–33 in general).
 21. For *'dn*, “Lord,” an appellative for various Phoenician deities, see Benz 1972, pp. 260–61. For the theophoric *ḥmn*, “Lord of the Incense Altar,” see *ibid.*, p. 312.
 22. As Baal Hamon, he was chief god at Carthage (*ibid.*, p. 312).
 23. Something not altogether uncommon in Semitic inscriptions; Demsky 2007, p. 70.
 24. Más García 1985, p. 159.
 25. López Pardo 1992, p. 292.
 26. Mederos Martín and Ruiz Cabrero 2004, pp. 276–77.
 27. Scullard 1974, p. 261.
 28. Benz 1972, pp. 10–11.
 29. Stos-Gale, Polzer, and Woodhead 2014 (forthcoming).
 30. See Alvar Ezquerro 1980 for an overview of the problem of the Atlantic tin trade.
 31. Muhly 1985, pp. 287–89; Tylecote 1992, p. 30.
 32. Muhly 1985, pp. 285–86; Tylecote 1992, pp. 27–28.
 33. Tornos et al. 2004.
 34. Tylecote 1992, p. 28.
 35. Tornos and Chiaradia 2004.
 36. Montero-Ruiz et al. 2011, especially p. 119, fig. 8.
 37. Pulak 2008, pp. 292, 308, no. 185d.
 38. Montero-Ruiz et al. 2011, p. 111; p. 109 for the axe-ingots of the Alicante region, which weigh less than 200 grams each.
 39. For an excellent example, see the engraved tusk with amber inlay from the seventh-century b.c. Barberini Tomb, Praeneste (Moscati 2001, p. 624).
 40. Parker 1992, nos. 47, 308, 373, 376, 451, 499, 517, 578, 746, 750, 830, 831, 879, 1160, 1193.
 41. Pliny the Elder, *Natural History* 14.24 and 16.22.
 42. Casson 1995a, p. 211, and as documented on numerous ancient shipwrecks.
 43. Polzer, Milá Otero, and Rodríguez Iborra 2014 (forthcoming).
 44. Ramón Torres 1995, pp. 56, 281–81, 230–31, 462–63, 559–61, 648 map 109; Roldán Bernal, Martín Camino, and Pérez Bonet 1995, pp. 16–19.

45. Polzer, Milá Otero, and Rodríguez Iborra 2014 (forthcoming); see also Roldán Bernal, Martín Camino, and Pérez Bonet 1995, pp. 16–17; Docter 1997, p. 120; Mederos and Ruiz 2004, p. 266.
46. González Prats 1986, pp. 283 fig. 2, 285, 292–94; González Prats 2011, pp. 291–95.
47. González Prats 1986, p. 292.
48. González Prats 2011, p. 294.
49. Ramón Torres 1995, pp. 56, 177–78, 279–80, 374, 515–16; Mas García 1985, pp. 156, 157, fig. 3:1; Roldán Bernal, Martín Camino, and Pérez Bonet 1995, pp. 19–21.
50. Ramón Torres 1995, pp. 258–59.
51. *Ibid.*, p. 606, map 25; Vives-Ferrándiz Sánchez 2004, p. 28, fig. 6.
52. Ramón Carbonell 1986, p. 110; Ramón Torres 1995, p. 280; Roldán Bernal, Martín Camino, and Pérez Bonet 1995, p. 20.
53. Ramón Torres 2007, p. 110; Ramón Torres 2010, p. 225.
54. González Prats 2011, pp. 298–99, 306–16.
55. Culican 1970b, pp. 11–16.
56. González Prats 2011, p. 375.
57. Culican 1970b; Vives-Ferrándiz Sánchez 2004.
58. Vives-Ferrándiz Sánchez 2004, pp. 25–30. For the small versions of this vessel type, Alfredo González Prats (2011, p. 376) proposes the related function of mixing honey for the sweetening of wine.
59. González Prats 2011, pp. 375–76.
60. The poor and fragmentary preservation of the majority of these pieces makes establishing an exact count impossible.
61. Polzer and Pinedo 2009, p. 6, fig. 6. A small, thin piece of iron was recovered that may be the remnants of one of the knife blades; part of the tang is preserved.
62. Mancebo Dávalos 2000, although against this see Joan Ramón Torres (2007, pp. 120–21), who is unconvinced of any ritual or symbolic meaning. The daggers from Bajo de la Campana have a Near Eastern style and probably were fitted with straight blades rather than the curved blades and rectangular handles typical of the more common, so-called *afalcados* knives found throughout the Iberian Peninsula.
63. Of the many examples, see especially the Assyrian bas-reliefs, such as those from the Northwest Palace of Ashurnasirpal II (Nimrud, 9th century B.C.) in Reade 1998.
64. Polzer and Pinedo 2011, p. 12, fig. 15.
65. Pulak 2008, pp. 294, 324–25, no. 194b.
66. San Nicolás Pedraz's (1975, p. 78, pl. II, and p. 81, pl. III) form III 6b, or possibly form IV 6b.
67. *Ibid.*, pp. 96–98; Pellicer Catalán 2007, pp. 65–67.
68. San Nicolás Pedraz 1975, p. 77, pl. I; Pellicer Catalán 2007, pp. 65–67.
69. San Nicolás Pedraz 1975, p. 98.
70. *Ibid.*
71. *Ibid.*, pp. 95–96, 97, pl. VIII.
72. See López Castro 2006, p. 79, fig. 3.
73. *Ibid.*, pp. 78–81, 84.
74. Polzer and Pinedo 2009, p. 7, fig. 10.
75. *Ibid.*, pp. 6, 7, figs. 7, 9.
76. Richard Barnett (1935, pp. 184–85), for example, attributes ivories from the Northwest Palace of Ashurnasirpal to a sumptuous couch.
77. Oswyn Murray (1995, p. 225) notes that “the *klinē* and side tables were often finely made and decorated with inlay; there were elaborate cushions and other coverings.” He suggests as well that the Greeks adopted their commensal custom of reclining from the Phoenicians (p. 224).
78. Luckenbill 1989, §§466, 475–77, 501. It is worth noting here the presence on the ship of a number of short lengths of boxwood with octagonal sections, which may be “blanks” from which legs or feet, staves, connectors, or other furniture parts would have been carved.
79. The grave contents can be dated no more precisely than the eighth to third centuries B.C., and the bronze object itself was interpreted as “part of a bed, wagon, or carrying-chair”; see Barnett and Mendleson 1987, pp. 154–55, fig. 22, pl. 87.
80. Winter 1976b, pp. 6, 16, pls. Ia, IIIa, IVb, VIa, b.
81. For a drawing of the figure, see Blázquez Martínez 2006, p. 96, fig. 6.
82. See Jiménez Ávila 2002, pp. 171–73, 178, fig. 122.
83. Hamdi and Reinach 1892, p. 90, fig. 35.
84. Jiménez Ávila 2002, pp. 173–74.
85. *Ibid.*, p. 174.
86. Altars served primarily as platforms on which to deposit and burn offerings, such as incense, cakes, blood and other liquids, or animal flesh; Larson 2007, p. 8. See also Lipiński 1992, pp. 80 fig. 51, 382 figs. 278, 279, for scenes of altar sacrifice on Punic votive stelae.
87. Muller 2002, nos. 143, 157; see also no. 180.
88. On the origins of the Ionic order, see Dinsmoor and Anderson 1950, pp. 58–63.
89. Adroher, Pons i Brun, and Ruiz de Arbulo 1993, pp. 41–46, figs. 7–10.
90. For examples from Luristan, where a rich metalworking tradition flourished from the turn of the millennium to the seventh century B.C., see Moorey 1974, pl. IV, A–C; Curtis 1990, pp. 28, 29 fig. 34.
91. Garrido Roiz and Orta García 1978, pp. 140 fig. 88, 143, pls. LXXX.2 and XCVII.1.
92. *Ibid.*, pp. 141 fig. 89, 143, pls. LXXX.2 and XCVII.2.
93. Several Phoenician dome-shaped balance weights from the Near East show similar top projections, except that they are much larger and are described as handles; see J. Elayi and A. Elayi 1997, p. 74 and pl. VI, nos. 122 and 124, p. 77 and pl. VIII, no. 134.
94. The letter *het* is one of several letters and other designations commonly found inscribed on bronze cuboid weights; Birney and Levine 2011, p. 482. See also J. Elayi and A. Elayi 1997, p. 378 fig. 10 (A II 1), pl. IV:31–33, 49, 51–52, 61 and pl. V:81 (with only two oblique strokes).
95. J. Elayi and A. Elayi 1997, p. 278.
96. See, for example, J. Elayi and A. Elayi 1997; Kletter 1998; García Bellido 2013; Birney and Levine 2011.
97. Some of the nineteen bronze-cast zoomorphic weights recovered from the Uluburun shipwreck were filled with lead; Pulak 1998, p. 209.
98. Bronze and lead are found together in some weights that were intentionally modified to change their mass (e.g., Kohlmeyer 1985, pp. 282, 284, nos. 127, 128). For examples of similar alterations to stone weights, see Birney and Levine 2011, pp. 479–80.
99. Maaß-Lindemann 1985, p. 232.
100. Ramón Torres 2007, pp. 108–9.
101. Moyano Cerrato 2011, pp. 473–74.
102. Polzer, Milá Otero, and Rodríguez Iborra 2014 (forthcoming). Apart from the few imports from the east, these workshops produced all of the pottery types carried in the ship. See Aubet et al. 1999, pp. 194–277, 304–5. The fabric of this production is distinguished by schist, mica, and quartz temper; see *ibid.*, p. 187.
103. *Ibid.*, pp. 42, 45, 286–305.
104. Aubet 1997, p. 16.
105. Aubet et al. 1999, pp. 43–45, 146–47, 156, 307–24; Delgado 2008, pp. 77–79.
106. The move was in response to periodic flooding and silting of the river caused by deforestation and erosion; Aubet et al. 1999, p. 147.
107. Aubet 2001, pp. 324–25; Delgado 2008.
108. González Prats, García Menárguez, and Ruiz Segura 2002, p. 124.
109. González Prats 1986, pp. 297, 301.
110. González Prats 2011.
111. González Prats 1986, pp. 285, 299.
112. Renzi, Montero-Ruiz, and Bode 2009, pp. 2584–87, figs. 2, 3.
113. Sierra de Gádor or Sierra Alhamilla, Almería province; see *ibid.*, p. 2591.
114. *Ibid.*, pp. 2593–94.
115. Negueruela et al. 2000, p. 1674.
116. Aubet 2001, p. 340.
117. Renzi, Montero-Ruiz, and Bode 2009, p. 2594.
118. *Ibid.*, pp. 2592–93.
119. *Ibid.*, p. 2594.
120. *Ibid.*
121. Ramón Torres 2007, p. 143.
122. *Ibid.*, pp. 137, 188–09.
123. *Ibid.*, pp. 88, 109–10.
124. *Ibid.*, pp. 137–40.
125. *Ibid.*, pp. 120, 138–39.
126. Ramón Torres et al. 2011, pp. 75–76. Excavations found galena, lead castings, remains of a furnace, and two storerooms for lead ore and smelted metal (Ramón Torres 2007, pp. 37–45, plan 3, 121). The isotopic characteristics of the imported lead ore have some overlap with lead mineralizations in the Sierra de Cartagena but are distinct from those in the environs of Mazarrón; see Ramón Torres et al. 2011, p. 61.
127. Ramón Torres et al. 2011, p. 76.
128. For example, Aubet 2001, p. 341; Ramón Torres 2007, pp. 140–45.
129. See Rafel et al. 2010, p. 177 n. 1; Ramón Torres et al. 2011, p. 77 n. 1.
130. García i Rubert and Gracia Alonso 2011, p. 38.
131. *Ibid.*, pp. 38–44.
132. *Ibid.*, pp. 41, 45.
133. Rafel et al. 2010, p. 184.
134. Polzer, Milá Otero, and Rodríguez Iborra 2014 (forthcoming).
135. Rafel et al. 2010, p. 183.
136. Montero-Ruiz et al. 2010, p. 117.
137. Aubet et al. 1999, pp. 43, 307–18; Ramón Torres 2007, p. 138.
138. The Adra River Valley provides direct access to the mining regions in the Sierra de Gádor, from where the galena from Bajo de la Campana and La Fonteta possibly was mined. The site also has yielded various archaeometallurgical finds (Suárez Márquez et al. 1989).
139. Analysis of several bronze objects from the lower Priorat showed that they were made of metal produced from ores from Linares (Jaén) and southeastern Iberia (Rafel et al. 2008, p. 261), source regions compatible with some of the copper on the ship.

The Phoenician Ships of Mazarrón

1. See Negueruela et al. 1995 and 2000.
2. For details, including the methodology and technical equipment employed, see Negueruela 2004 and 2005. These essays contain a detailed overall description of the ship, and the second also includes a more exhaustive description of each of its pieces.
3. See Pulak 2008, with additional references.
4. This contrasts with the larger Jules Verne vessel in Marseilles. See Pomey 1997.