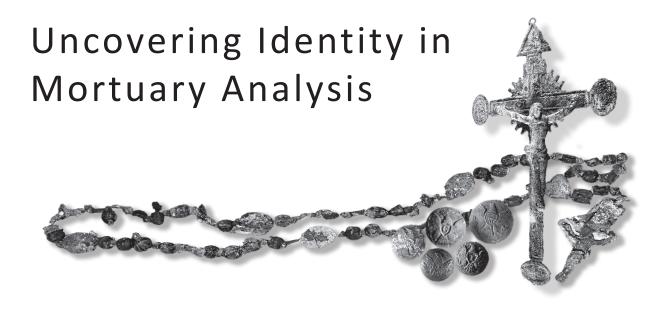


Uncovering Identity in Mortuary Analysis

COMMUNITY-SENSITIVE METHODS FOR IDENTIFYING GROUP AFFILIATION IN HISTORICAL CEMETERIES

MICHAEL P. HEILEN



SRI Press, a division of Statistical Research, Inc. (SRI), specializes in broad-interest volumes in archaeology, anthropology, history, and ethnography. In keeping with the company's mission, SRI Press publications seek to enlighten the public about our common history and shared past. As such, SRI is committed to distributing the results of significant anthropological and archaeological research to a wide audience, including professional archaeologists, avocational archaeologists, and general readers.

Uncovering Identity in Mortuary Analysis

Community-Sensitive Methods for Identifying Group Affiliation in Historical Cemeteries







Tucson, Arizona



First published 2012 by Left Coast Press, Inc.

Published 2016 by Routledge 2 Park Square, Milton Park, Abingdon, Oxon OX14 4RN 711 Third Avenue, New York, NY 10017, USA

Routledge is an imprint of the Taylor & Francis Group, an informa business

Copyright © 2012 Taylor & Francis

All rights reserved. No part of this book may be reprinted or reproduced or utilised in any form or by any electronic, mechanical, or other means, now known or hereafter invented, including photocopying and recording, or in any information storage or retrieval system, without permission in writing from the publishers.

Notice:

Product or corporate names may be trademarks or registered trademarks, and are used only for identification and explanation without intent to infringe.

Library of Congress Cataloging-in-Publication Data:

Uncovering identity in mortuary analysis: community-sensitive methods for identifying group affiliation in historical cemeteries / Michael P. Heilen, editor.

p. cm.—(Statistical Research, Inc.) Includes bibliographical references and index. ISBN 978-1-61132-183-8 (hardback: alk. paper) ISBN 978-1-61132-184-5 (pbk.: alk. paper) ISBN 978-1-61132-185-2 (institutional ebook) ISBN 978-1-61132-633-8 (consumer ebook)

1. Human remains (Archaeology)-Arizona-Tucson. 2. Demographic archaeology-Arizona-Tucson.

3. Ethnoarchaeology—Arizona—Tucson. 4. Cemeteries—Arizona—Tucson—History. 5. Forensic anthropology— Arizona—Tucson. 6. Forensic archaeology—Arizona—Tucson. 7. Ethnic groups—Arizona—Tucson. 8. Tuscon (Ariz.)

—Antiquities. I. Heilen, Michael P. CC79.5.H85U63 2012

930.1—dc23

2012015230

ISBN 978-1-61132-183-8 hardcover ISBN 978-1-61132-184-5 paperback



List of Illustrations	11
Foreword, by Roger Anyon	
Acknowledgments	
Chapter 1. Introduction, by Michael P. Heilen	23
Volume Organization: A Road Map	
The Growth and Abandonment of an Urban Cemetery	
Project Planning	31
Identity	
Identity in the Cemetery and in the Community	
Identity in the Community of Tucson	
Identity in the Alameda-Stone Cemetery	39
Methods: Context is Everything	
The Alameda-Stone Cemetery in Cultural and Behavioral Context	
Cemetery Organization	
The Place of a Cemetery within a Cultural Landscape	
The Cemetery in Broad Social, Economic, and Political Context	
The Cemetery in Comparative Context	
Respecting Identity After Death: Repatriation and Reburial	52
Chapter 2. Historic and Archaeological Overview for The Alameda-Stone Cemetery, by Michael P. Heil	
with contributions by Kristin J. Sewell	
The Alameda-Stone Cemetery and the Transformation of a Remote Outpost into an Urban City	
Environment	
Prehistory	
The Arrival of Europeans in the Vicinity of Tucson The Establishment of a Mission and Presidio at Tucson	
Tucson as a U.S. Settlement	
The Military Presence in Tucson	
The Post at Tucson	
Camp Lowell.	
Post–Civil War Military Activities	
The Camp Grant Massacre	
The Community of Tucson	
Religion in Tucson	
Cemetery Reform in Mexico and the United States	

 "Cemetery" Defined
 72

 The Archaeology and History of the Alameda-Stone Cemetery
 73

 The Use of Multiple Lines of Evidence in Analyzing the Cemetery
 74

 Identification of Cemetery Areas in the Civilian Section
 74

 Temporal Differences within the Cemetery
 76

Exhumation	
Other Disturbances	
Historical Data	
Contextual Data	
Osteological Data	
Cemetery Reform Revisited	
Chapter 3. Cultural Affinity, Identity, and Relatedness: Distinguishing Individuals and Cultural by Lynne Goldstein, Joseph T. Hefner, Kristin J. Sewell, and Michael P. Heilen	
"Cultural Affinity" Defined	
Assessing Cultural Affinity	
Contextual Evidence	
Osteological Evidence	
Historical Evidence	
Determining Cultural Affinity	
Assessment Results	
Native Americans	
Hispanics, Euroamericans, and African Americans	
Multiple Affinities	
Relationships among Individuals and Cemetery Areas	
Identification Assessments for Individuals in the Military Section	
Conclusions	
	101
Chapter 4. Life, Death, and Dying in Southeastern Arizona, 1860–1880: Historical Accounts and	
Bioarchaeological Evidence, by Michael P. Heilen, Joseph T. Hefner, and Mitchell A. Keur	
Introduction	
Comparative Cemetery Samples	106
Voegtly Cemetery	
Freedman's Cemetery	106
Mission Nuestra Señora del Refugio (41RF1)	107
San Agustín Mission	107
Tucson Presidio	107
Secaucus Potter's Field	
New York African Burial Ground	108
Diet and Nutrition	
Osteological Indicators of Diet	
Dental Indications	112
Dental Caries	
Dental Abscesses	
Antemortem Tooth Loss	
Dental Wear	
Dental Indicators of Diet and Nutrition within the Alameda-Stone Cemetery Sample	
Comparative Examinations	
Skeletal Manifestations of Diet and Nutrition	
Porotic Hyperostosis	
Cribra Orbitalia	
Skeletal Indicators of Diet and Nutrition within the Alameda-Stone Cemetery Sample	
Comparative Examinations	
Disease	
Burial of Diseased Individuals	
Osteological Indicators of Disease	
Dental Indicators of Disease	
Enamel Defects	
Skeletal Indicators of Disease	
Skeletal Manifestation of Infection	
Periosteal New Bone	

Osteomyclitis 120 Evidence of Infection within the Alameda-Stone Cemetery Sample 121 Comparative Examinations 122 Perioteal New Bone Crowth. 123 Treponemal Infections 124 Combined Fircts of Dire, Nutrition, and Infectious Disease on Stature 124 Combined Fircts of Dire, Nutrition, and Infectious Disease on Stature 125 Stature in the Alameda-Stone Cemetery Sample 125 Comparative Examinations 129 Osteological Fixience for Work 129 Osteological Fixience for Work 130 Humeral Robusticity and Shape 131 Osteological Indicators of Trauma 133 Comparative Examinations 133 Osteological Indicators of Trauma 137 General Fractures 137 Osteological Indicators of Trauma 137 Ostraitobution of General Trauma 137 Comparative Examinations 138 Skeletal and Artifactual Evidence of Weapons 141 Related to Weapon Use 144 Relationships between Weapons Artifacts and Weapons Trauma 142 Osteological Indicators of Medical Treatment 144 <th>Treponemal Infection</th> <th> 120</th>	Treponemal Infection	120
Evidence of Infection within the Alameda-Stone Cemetery Sample 121 Comparative Examinations 122 Periosteal New Bone Growth 123 Treponemal Infections 124 Combined Effects of Diet, Nutrition, and Infectious Disease on Stature 125 Stature in the Alameda-Stone Cenetery Sample 125 Combined Effects of Diet, Nutrition, and Infectious Disease on Stature 129 Pridence for Work 129 Osteological Evidence for Work 130 Humeral Robusticity and Shape 131 Degenerative Joint Disease 131 Spinal Injuries 133 Osteological Evidence for Work in the Alameda-Stone Cemetery Sample 132 Comparative Examinations 133 Teama 135 Osteological Indicators of Trauma 137 Ceneral Fractures 137 Osteological Indicators of Trauma 137 Comparative Examinations 138 Skeleral Trauma from Weapons 138 Skeleral Trauma from Weapons Artifacts and Weapons Trauma 140 Artifacts Related to Weapon Use 141 Relationships Eetween Weapons Artifacts and Weapons Trauma		
Comparative Examinations 122 Enamel Hypophasias 123 Periosteal New Bone Growth 123 Treponemal Infections 124 Combined Effects of Dick, Nutrition, and Infectious Disease on Stature 125 Stature in the Alameda-Stone Cemetery Sample 125 Comparative Examinations 129 Evidence for Work 129 Osteological Evidence for Work in the Alameda-Stone Cemetery Sample 131 Osteological Evidence for Work in the Alameda-Stone Cemetery Sample 132 Comparative Examinations 133 Trauma 135 Osteological Indicators of Trauma 137 General Fractures 137 Distribution of General Trauma 137 Comparative Examinations 138 Skeleral Inductors of Meapon Sampons 139 Skeleral Inductors of Meapon Sampons 139 Skeleral Inductors of Meapon Sampons 141 Artifacts Related to Weapon Sampons 142 Medical Beliefs and Practices 142 Medical Beliefs and Practices of Meapon Sampons 152 Mortality 150 Mortality 151		
Énamel Hypoplasias. 122 Periostal New Bone Growth. 123 Treponemal Infections 124 Combined Effects of Dier, Nurrition, and Infectious Disease on Stature 125 Stature in the Alameda-Stone Centery Sample 125 Comparative Examinations 129 Evidence for Work 129 Osteological Evidence for Work 130 Humeral Robusticity and Shape 131 Degenerative Joint Disease 131 Spinal Injuries 133 Osteological Evidence for Work in the Alameda-Stone Cemetery Sample 132 Comparative Examinations 133 Trauma 135 Osteological Indicators of Trauma 137 General Fractures 137 Osteological Indicators of Trauma 137 Osteological Indicators of Trauma 137 Osteological Indicators of Versuma 138 Skeletal Trauma from Weapons 139 Skeletal Trauma from Weapons 139 Skeletal Trauma from Weapons Artifacts and Weapons Truuma 141 Actifacts Related to Weapon Use 141 Relationships between Weapons Artifacts and Weapons Truuma <td></td> <td></td>		
Periosteal New Bone Growth. 123 Troponemal Infections 124 Combined Effects of Diet, Nutrition, and Infectious Disease on Stature 125 Stature in the Alameda-Stone Cemetery Sample 125 Comparative Examinations 129 Evidence for Work 129 Osteological Evidence for Work 130 Humeral Robusticity and Shape 131 Degenerative Joint Disease 131 Osteological Evidence for Work in the Alameda-Stone Cemetery Sample 132 Comparative Examinations 133 Truuma 133 Osteological Indicators of Trauma 137 General Fractures 137 Weapons Trauma 137 Distribution of General Trauma 137 Comparative Examinations 138 Skeletal Insuma from Weapons 139 Skeletal and Artifactal Evidence of Weapons 141 Artifacts Related to Weapons Artifacts and Weapons Trauma 142 Osteological Indicators of Medical Treatment 144 Artifacts and Practices 142 Osteological Indicators of Medical Treatment 144 Artifacts and Practices		
Treponenal Infections 124 Combined Effects of Diet, Nutrition, and Infectious Disease on Stature 125 Stature in the Alameda-Stone Centerey Sample 125 Comparative Examinations 129 Osteological Evidence for Work. 130 Humeral Robusticity and Shape 131 Degenerative Joint Disease. 131 Spinal Injuries 133 Comparative Examinations 133 Trauma 133 Osteological Evidence for Work in the Alameda-Stone Centery Sample. 132 Comparative Examinations 133 Trauma 137 Osteological Indicators of Medical Treatment 141 Artifacts Related to Weapon Use 141 Artifacts Related to Weapon Ose 142 Medical Beliefs and Practices 142 Osteological Indicators of Medical Treatment 144 Dental Ureatment 144 Dental Treatment 144 <tr< td=""><td></td><td></td></tr<>		
Combined Effects of Diet, Nutrition, and Infectious Disease on Stature 125 Stature in the Alameda-Stone Cemetery Sample 129 Evidence for Work 129 Oxteological Evidence for Work 130 Humeral Robusticity and Shape 131 Degenerative Joint Disease 131 Spinal Injuries 133 Consological Evidence for Work in the Alameda-Stone Cemetery Sample 132 Comparative Examinations 133 Trauma 135 Osteological Indicators of Trauma 137 Ceneral Fractures 137 Distribution of General Trauma 137 Comparative Examinations 138 Skeletal Trauma from Weapons 139 Skeletal and Artifactual Evidence of Weapons Artifacts and Weapons Trauma 141 Artifacts Related to Weapon Use 144 Medical Beliefs and Practices 144 Detail Traumating the Tucson Diocese Records 152 Mortality 153 Adult-to-Juvenile Ratios 155 Mortality 153 Adult-to-Juvenile Ratios 155 Mortality Destintractuse in Mexico and the American Southwest		
Stature in the Alameda-Stone Cemetery Sample 125 Comparative Examinations 129 Deteological Evidence for Work 130 Humeral Robusticity and Shape 131 Degenerative Joint Disease 131 Spinal Injuries 131 Comparative Examinations 132 Comparative Examinations 133 Trauma 135 Osteological Evidence for Work in the Alameda-Stone Cemetery Sample 131 Comparative Examinations 133 Trauma 137 Osteological Indicators of Trauma 137 Contrological Evidence of Weapons 138 Skeletal Trauma from Weapons 138 Skeletal Trauma from Weapons 139 Skeletal Trauma from Weapons Artifacts and Weapons Trauma 141 Artifacts Related to Weapon Use 141 Relationships between Weapons Artifacts and Weapons Trauma 142 Osteological Indicators of Medical Treatment 144 Dental Treatment 144 Dental Treatment 145 Mortality Estimates Using the Tucson Diocese Records 152 Juvenile Mortality 155 <		
Comparative Examinations 129 Evidence for Work 129 Octeological Evidence for Work 130 Humeral Robusticity and Shape 131 Degenerative Joint Disease 131 Spinal Injuries 131 Osteological Evidence for Work in the Alameda-Stone Cemetery Sample 132 Comparative Examinations 133 Taruma 135 Osteological Indicators of Trauma 137 General Fractures 137 Wespons Trauma 137 Comparative Examinations 138 Skeletal Trauma from Wespons 139 Skeletal Trauma from Wespons 139 Skeletal Taruma from Wespons 141 Artifacts Related to Wespons 141 Relationships between Wespons Artifacts and Wespons Trauma 142 Osteological Indicators of Medical Treatment 144 Dental Treatment 144 Dental Treatment 144 Dental Treatment 145 Mortality 155 Mortality 150 Mortality According to Sex 155 Survivorship 159 </td <td></td> <td></td>		
Evidence for Work 129 Osteological Evidence for Work 130 Humeral Robusticity and Shape 131 Degenerative Joint Disease 131 Osteological Evidence for Work in the Alameda-Stone Cemetery Sample 132 Comparative Examinations 133 Trauma 135 Osteological Indicators of Trauma 135 Osteological Indicators of Trauma 137 General Fractures 137 Weapons Trauma 137 Distribution of General Trauma 137 Comparative Examinations 138 Skeletal Trauma from Weapons 138 Skeletal Trauma from Weapons 139 Skeletal and Artifactual Evidence of Weapons 141 Relationships between Weapons Artifacts and Weapons Trauma 142 Medical Beliefs and Practices 142 Osteological Indicators of Medical Treatment 144 Demography 149 Mortality Estimates Using the Tucson Diocese Records 152 Juvenile Mortality 153 Adult Mortality 153 Adult too Juvenile Ratios 155 Mortality Accordin		
Osteological Evidence for Work. 130 Humeral Robusticity and Shape. 131 Degenerative Joint Disease. 131 Spinal Injuries 132 Osteological Evidence for Work in the Alameda-Stone Cemetery Sample. 132 Comparative Examinations 133 Trauma 135 Osteological Indicators of Trauma 137 General Fractures 137 Weapons Trauma. 137 Distribution of General Trauma. 137 Comparative Examinations 138 Skeletal Trauma 144 Relationships between Weapons Artifacts and Weapons Trauma 142 Medical Beliefs and Practices 144 Dental Treatment 144 Dental Treatment 144 Demography. 151 Mortality Estimates Using the Tucson Diocese Records 152 Juvenile Mortality		
Humeral Robusticity and Shape 131 Degenerative Joint Disease 131 Spinal Injuries 131 Osteological Evidence for Work in the Alameda-Stone Cemetery Sample 132 Comparative Examinations 133 Trauma 135 Osteological Indicators of Trauma 137 General Fractures 137 Weapons Trauma 137 Distribution of General Trauma 137 Comparative Examinations 138 Skeletal Trauma from Weapons 138 Skeletal Trauma from Weapons 139 Skeletal and Artifactual Evidence of Weapons 141 Artifacts Related to Weapon Use 141 Relationships between Weapons Artifacts and Weapons Trauma 142 Medical Beliefs and Practices 142 Osteological Indicators of Medical Treatment 144 Dental Treatment 144 Dental Treatment 144 Detrility 150 Mortality 151 Mortality 152 Juvenile Mortality 153 Adult Hortality 155 Mortality According to Sex		
Degenerative Joint Disease. 131 Spinal Injuries 131 Osteological Evidence for Work in the Alameda-Stone Cemetery Sample 132 Comparative Examinations 133 Trauma 135 Osteological Indicators of Trauma 137 General Fractures 137 Weapons Trauma 137 Distribution of General Trauma. 137 Comparative Examinations 138 Skeletal Trauma from Weapons 138 Skeletal Trauma from Weapons 139 Skeletal and Artifactual Evidence of Weapons 139 Skeletal and Artifactual Evidence of Weapons Artifacts and Weapons Trauma 141 Reliationships between Weapons Artifacts and Weapons Trauma 142 Medical Beliefs and Practices 142 Osteological Indicators of Medical Treatment 144 Dennal Treatment 148 Demography 150 Mortality 151 Mortality Estimates Using the Tucson Diocese Records 152 Juvenie Mortality 153 Adult Mortality 153 Adult Mortality 153 Adult Nortality Restim		
Spinal Injuries 131 Osteological Evidence for Work in the Alameda-Stone Cemetery Sample 132 Comparative Examinations 133 Trauma 135 Osteological Indicators of Trauma 137 General Fractures 137 Weapons Trauma 137 Distribution of General Trauma 137 Comparative Examinations 138 Skeletal Trauma from Weapons 139 Skeletal and Artifactual Evidence of Weapons. 141 Artifacts Related to Weapon Use 141 Relationships between Weapons Artifacts and Weapons Trauma 142 Medical Beliefs and Practices 142 Osteological Indicators of Medical Treatment 144 Dental Treatment 144 Dental Treatment 148 Demography 150 Mortality 153 Adult-to-Tuvenile Ratios 155 Mortality Estimates Using the Tucson Diocese Records 152 Juvenile Mortality 153 Adult-to-Tuvenile Ratios 155 Mortality According to Sex 155 Survivorship 159		
Osteological Évidence for Work in the Alameda-Stone Cemetery Sample 132 Comparative Examinations 133 Trauma 137 Osteological Indicators of Trauma 137 General Fractures 137 Weapons Trauma 137 Distribution of General Trauma 137 Comparative Examinations 138 Skeletal Trauma from Weapons 138 Skeletal Trauma from Weapons 139 Skeletal Trauma from Weapons 141 Artifacts Related to Weapon Use 141 Relationships between Weapons Artifacts and Weapons Trauma 142 Medical Beliefs and Practices 142 Osteological Indicators of Medical Treatment 144 Demography 149 Fertility 151 Mortality Estimates Using the Tucson Diocese Records 152 Juvenile Mortality 153 Adult Hortality 153 Adult Hortality 153 Adult Hortality 153 Adult According to Sex 155 Survivorship 159 Conclusions 160 Treatment of the Body amo		
Comparative Examinations 133 Trauma 135 Osteological Indicators of Trauma 137 General Fractures 137 Weapons Trauma 137 Distribution of General Trauma 137 Comparative Examinations 138 Skeletal Trauma from Weapons 139 Skeletal and Artifactual Evidence of Weaponss 141 Artifacts Related to Weapon Use 141 Relationships between Weapons Artifacts and Weapons Trauma 142 Medical Beliefs and Practices 142 Osteological Indicators of Medical Treatment 144 Demography 149 Fertility 150 Mortality Estimates Using the Tucson Diocese Records 152 Juvenile Mortality 153 Adult to Ivuenile Ratios 155 Mortality According to Sex 155 Survivorship 159 Conclusions 160 Treatment of the Body among Hispanic Catholics 166 Treatment of the Body among Hispanic Catholics 166 Processions and Graveside Rites 167 Potential Archaeological and Material Visibility of		
Trauma 135 Osteological Indicators of Trauma 137 General Fractures 137 Weapons Trauma 137 Distribution of General Trauma 137 Comparative Examinations 138 Skeletal Trauma from Weapons 138 Skeletal Trauma from Weapons 139 Skeletal Trauma from Weapon Use 141 Artifacts Related to Weapon Statifacts and Weapons Trauma 142 Osteological Indicators of Medical Treatment 144 Dental Treatment 145 Mortality 151 Mortality 153 Adult Mortality 153 Adult Nortality 153 Adult According to Sex 155 Survivorship 159 Conclusions 162 Introduction 165 Introduction 165 Introduction 165 Introduction 166 Processions and Gravesid		
Osteological Indicators of Trauma 137 General Fractures 137 Weapons Trauma 137 Distribution of General Trauma 137 Comparative Examinations 138 Skeletal Trauma from Weapons 139 Skeletal and Artifactual Evidence of Weapons 141 Artifacts Related to Weapon Use 141 Relationships between Weapons Artifacts and Weapons Trauma 142 Medical Beliefs and Practices 142 Osteological Indicators of Medical Treatment 144 Dental Treatment 148 Demography. 149 Fertility 150 Mortality 151 Mortality Estimates Using the Tucson Diocese Records 152 Juvenile Mortality. 153 Adult Mortality. 153 Adult Mortality. 153 Adult Mortality. 155 Mortality Coording to Sex 155 Survivorship 159 Conclusions 166 Treatment of the Body among Hispanic Catholics 166 Processions and Graveside Rites 166 Protestant Burial Practi		
General Fractures 137 Weapons Trauma 137 Distribution of General Trauma 137 Comparative Examinations 138 Skeletal Trauma from Weapons 139 Skeletal and Artifactual Evidence of Weapons 141 Artifacts Related to Weapon Use 141 Relationships between Weapons Artifacts and Weapons Trauma 142 Medical Beliefs and Practices 142 Osteological Indicators of Medical Treatment 144 Dental Treatment 144 Dental Treatment 149 Pertility 150 Mortality 151 Mortality Estimates Using the Tucson Diocese Records 152 Juvenile Mortality 153 Adult Mortality 153 Adult Mortality 153 Adult Mortality 159 Conclusions 162 Chapter 5. Deathways and Tucson's Living Population 1860–1880, by Kristin J. Sewell, Michael P. Heilen, and Lynne Goldstein 165 Introduction 165 Hispanic Catholic Burial Practices in Mexico and the American Southwest 166 Processions and Graveside Rites		
Weapons Trauma. 137 Distribution of General Trauma. 137 Comparative Examinations 138 Skeletal Trauma from Weapons 139 Skeletal Trauma from Weapons 139 Skeletal and Artifactual Evidence of Weapons. 141 Artifacts Related to Weapon Use 141 Artifacts Related to Weapon Strauma. 142 Medical Beliefs and Practices 142 Osteological Indicators of Medical Treatment 144 Dentography. 149 Fertility. 150 Mortality Estimates Using the Tucson Diocese Records 152 Juvenile Mortality. 153 Adult Mortality. 153 Adult Mortality. 153 Adult Mortality According to Sex 155 Survivorship 159 Conclusions 162 Chapter 5. Deathways and Tucson's Living Population 1860–1880, by Kristin J. Sewell, Michael P. Heilen, and Lyme Goldstein 165 Introduction 165 Introduction 166 Processions and Graveside Rites 167 Potential Archaeological and Material Visibility of Catholic Practices		
Distribution of General Trauma 137 Comparative Examinations 138 Skeletal Trauma from Weapons 139 Skeletal and Artifactual Evidence of Weapons 141 Artifacts Related to Weapon Use 141 Relationships between Weapons Artifacts and Weapons Trauma 142 Medical Beliefs and Practices 142 Osteological Indicators of Medical Treatment 144 Dental Treatment 144 Demography 149 Fertility 150 Mortality 150 Mortality 150 Mortality 151 Mortality 153 Adult Mortality 153 Adult Hortality 153 Adult According to Sex 155 Survivorship 159 Conclusions 162 Chapter 5. Deathways and Tucson's Living Population 1860–1880, by Kristin J. Sewell, Micbael P. Heilen, and Lynne Goldstein 165 Introduction 165 Hispanic Catholic Burial Practices in Mexico and the American Southwest. 166 Processions and Graveside Rites 167 Potential Arc		
Comparative Examinations 138 Skeletal Trauma from Weapons 139 Skeletal and Artifactual Evidence of Weapons 141 Artifacts Related to Weapon Use 141 Relationships between Weapons Artifacts and Weapons Trauma 142 Medical Beliefs and Practices 142 Osteological Indicators of Medical Treatment 144 Dental Treatment 144 Demography 149 Fertility 150 Mortality 151 Mortality 151 Mortality 153 Adult To-Juvenile Ratios 155 Survivorship 159 Conclusions 165 Introduction 165 Hispanic Catholic Burial Practices in Mexico and the American Southwest 166 Processions and Graveside Rites 166 Protestant Burial Practic		
Skeletal Trauma from Weapons 139 Skeletal and Artifactual Evidence of Weapons 141 Artifacts Related to Weapon Use 141 Relationships between Weapons Artifacts and Weapons Trauma 142 Medical Beliefs and Practices 142 Osteological Indicators of Medical Treatment 144 Dental Treatment 144 Dental Treatment 144 Demography 149 Fertility 150 Mortality 151 Mortality Estimates Using the Tucson Diocese Records 152 Juvenile Mortality 153 Adult Mortality 153 Adult Mortality 153 Adult According to Sex 155 Survivorship 159 Conclusions 162 Chapter 5. Deathways and Tucson's Living Population 1860–1880, by Kristin J. Sewell, Michael P. Heilen, and Lynne Goldstein 165 Introduction 165 Hispanic Catholic Burial Practices in Mexico and the American Southwest 166 Processions and Graveside Rites 167 Potential Archaeological and Material Visibility of Catholic Practices in the Alameda-Stone 169		
Skeletal and Artifactual Evidence of Weapons 141 Artifacts Related to Weapon Use 141 Relationships between Weapons Artifacts and Weapons Trauma 142 Medical Beliefs and Practices 142 Osteological Indicators of Medical Treatment 144 Dental Treatment 144 Demography. 149 Fertility 150 Mortality Estimates Using the Tucson Diocese Records 152 Juvenile Mortality. 153 Adult Mortality. 153 Adult Hortality. 159 Conclusions 162 Chapter 5. Deathways and Tucson's Living Population 1860–1880, by Kristin J. Sewell, Michael P. Heilen, and Lynne Goldstein 165 Introduction 165 Hispanic Catholic Burial Practices in Mexico and the American Southwest 166 Processions and Graveside Rites 167 Potential Archaeological and Material Visibility o		
Artifacts Related to Weapon Use 141 Relationships between Weapons Artifacts and Weapons Trauma 142 Medical Beliefs and Practices 142 Osteological Indicators of Medical Treatment 144 Dental Treatment 144 Demography 149 Fertility 150 Mortality 151 Mortality Estimates Using the Tucson Diocese Records 152 Juvenile Mortality 153 Adult Mortality 153 Adult Mortality 153 Adult Vortality 153 Adult Vortality 153 Adult According to Sex 155 Survivorship 159 Conclusions 162 Chapter 5. Deathways and Tucson's Living Population 1860–1880, by Kristin J. Sewell, Michael P. Heilen, and Lynne Goldstein 165 Introduction 165 Processions and Graveside Rites 167 Potential Archaeological and Material Visibility of Catholic Practices in the Alameda-Stone 170 Cemetry 169 Processions and Graveside Rites 170 Treatment of the Body among Euroamerican Protestants		
Relationships between Weapons Artifacts and Weapons Trauma. 142 Medical Beliefs and Practices 142 Osteological Indicators of Medical Treatment 144 Dental Treatment. 144 Dental Treatment. 148 Demography. 149 Fertility. 150 Mortality Estimates Using the Tucson Diocese Records 152 Juvenile Mortality. 153 Adult Mortality 153 Adult Mortality 153 Adult-to-Juvenile Ratios 155 Survivorship 159 Conclusions 162 Chapter 5. Deathways and Tucson's Living Population 1860–1880, by Kristin J. Sewell, Micbael P. Heilen, and Lynne Goldstein 165 Introduction 165 Hispanic Catholic Burial Practices in Mexico and the American Southwest. 166 Processions and Graveside Rites 167 Potential Archaeological and Material Visibility of Catholic Practices in the Alameda-Stone 169 Cemetery. 169 Procession and Graveside Rites Practiced by Euroamerican Protestants 171 Procession and Graveside Rites Practiced by Euroamerican Protestants 171		
Medical Beliefs and Practices 142 Osteological Indicators of Medical Treatment 144 Dental Treatment 144 Dental Treatment 148 Demography. 149 Fertility 150 Mortality 151 Mortality Estimates Using the Tucson Diocese Records 152 Juvenile Mortality 153 Adult Mortality 155 Survivorship 159 Conclusions 162 Chapter 5. Deathways and Tucson's Living Population 1860–1880, by Kristin J. Sewell, Michael P. Heilen, and Lynne Goldstein 165 Introduction 165 Hirspanic Catholic Burial Practices in Mexico and the American Southwest. 166 Treatment of the Body among Hispanic Catholics 166 Protensial Archaeological and Material Visibility of Catholic Practices in the Alameda-Stone 169 Protestant Burial Practices. 170 <td></td> <td></td>		
Osteological Indicators of Medical Treatment 144 Dental Treatment 148 Demography 149 Fertility 150 Mortality 151 Mortality Estimates Using the Tucson Diocese Records 152 Juvenile Mortality 153 Adult Mortality 153 Adult-to-Juvenile Ratios 155 Mortality According to Sex 155 Survivorship 159 Conclusions 162 Chapter 5. Deathways and Tucson's Living Population 1860–1880, by Kristin J. Sewell, Michael P. Heilen, and Lynne Goldstein 165 Introduction 165 Hispanic Catholic Burial Practices in Mexico and the American Southwest 166 Processions and Graveside Rites 167 Potential Archaeological and Material Visibility of Catholic Practices in the Alameda-Stone 169 Cemetery 169 Protestant Burial Practices 170 The Beautification of Death. 170 The Beautification of Death. 170 Treatment of the Body among Euroamerican Protestants 171 Procession and Graveside Rites Practiced by Euroamerican Protestants		
Dental Treatment 148 Demography. 149 Fertility. 150 Mortality Estimates Using the Tucson Diocese Records 151 Mortality Estimates Using the Tucson Diocese Records 152 Juvenile Mortality. 153 Adult Mortality. 153 Adult Mortality. 153 Adult According to Sex. 155 Survivorship 159 Conclusions 162 Chapter 5. Deathways and Tucson's Living Population 1860–1880 , <i>by Kristin J. Sewell, Michael P. Heilen,</i> 165 Introduction 165 Introduction 165 Hispanic Catholic Burial Practices in Mexico and the American Southwest. 166 Processions and Graveside Rites 167 Potential Archaeological and Material Visibility of Catholic Practices in the Alameda-Stone 169 Protestant Burial Practices. 170 The Beautification of Death. 170 The Beautification of Death. 170 Treatment of the Body among Euroamerican Protestants. 171 Procession and Graveside Rites Practiced by Euroamerican Protestants. 171 Protenstial Archaeological and Material Visibility of Prot		
Demography. 149 Fertility. 150 Mortality 151 Mortality Estimates Using the Tucson Diocese Records 152 Juvenile Mortality. 153 Adult Mortality 153 Adult-to-Juvenile Ratios 155 Survivorship 159 Conclusions 162 Chapter 5. Deathways and Tucson's Living Population 1860–1880, by Kristin J. Sewell, Michael P. Heilen, and Lynne Goldstein 165 Introduction 165 Hispanic Catholic Burial Practices in Mexico and the American Southwest 166 Treatment of the Body among Hispanic Catholics 166 Processions and Graveside Rites 167 Potential Archaeological and Material Visibility of Catholic Practices in the Alameda-Stone 169 Cemetery. 170 The Beautification of Death. 170 The Be		
Fertility		
Mortality 151 Mortality Estimates Using the Tucson Diocese Records 152 Juvenile Mortality 153 Adult Mortality 153 Adult Mortality 153 Adult Mortality 153 Adult-to-Juvenile Ratios 155 Mortality According to Sex 155 Survivorship 159 Conclusions 162 Chapter 5. Deathways and Tucson's Living Population 1860–1880, by Kristin J. Sewell, Michael P. Heilen, and Lynne Goldstein 165 Introduction 165 Hispanic Catholic Burial Practices in Mexico and the American Southwest. 166 Treatment of the Body among Hispanic Catholics 167 Potential Archaeological and Material Visibility of Catholic Practices in the Alameda-Stone 169 Cemetery. 169 Protestant Burial Practices 170 The Beautification of Death 170 Treatment of the Body among Euroamerican Protestants. 171 Procession and Graveside Rites Practiced by Euroamerican Protestants. 171 Procession and Graveside Rites Practiced by Euroamerican Protestants. 171 Potential Archaeological and Material Visibility of		
Mortality Estimates Using the Tucson Diocese Records 152 Juvenile Mortality 153 Adult According to Sex 155 Survivorship 159 Conclusions 162 Chapter 5. Deathways and Tucson's Living Population 1860–1880, by Kristin J. Sewell, Michael P. Heilen, and Lynne Goldstein 165 Introduction 165 Hispanic Catholic Burial Practices in Mexico and the American Southwest 166 Treatment of the Body among Hispanic Catholics 166 Processions and Graveside Rites 167 Potential Archaeological and Material Visibility of Catholic Practices in the Alameda-Stone 169 Cemetery 169 Protestant Burial Practices 170 The Beautification of Death 170 The Beautification of Death 171 Procession and Graveside Rites Practiced by Euroamerican Protestants 171 Procession and Graveside Rites Practiced by Euroamerican		
Juvenile Mortality		
Adult Mortality 153 Adult-to-Juvenile Ratios 155 Mortality According to Sex. 155 Survivorship 159 Conclusions 162 Chapter 5. Deathways and Tucson's Living Population 1860–1880, by Kristin J. Sewell, Michael P. Heilen, and Lynne Goldstein 165 Introduction 165 Hispanic Catholic Burial Practices in Mexico and the American Southwest 166 Treatment of the Body among Hispanic Catholics 166 Processions and Graveside Rites 167 Potential Archaeological and Material Visibility of Catholic Practices in the Alameda-Stone 169 Cemetery. 169 Protestant Burial Practices. 170 The Beautification of Death. 170 Treatment of the Body among Euroamerican Protestants. 171 Procession and Graveside Rites Practiced by Euroamerican Protestants. 171 Potential Archaeological and Material Visibility of Protestant Practices in the Cemetery. 173 Jewish Burial Practices 173		
Adult-to-Juvenile Ratios 155 Mortality According to Sex. 155 Survivorship 159 Conclusions 162 Chapter 5. Deathways and Tucson's Living Population 1860–1880, by Kristin J. Sewell, Michael P. Heilen, and Lynne Goldstein 165 Introduction 165 Hispanic Catholic Burial Practices in Mexico and the American Southwest 166 Treatment of the Body among Hispanic Catholics 166 Processions and Graveside Rites 167 Potential Archaeological and Material Visibility of Catholic Practices in the Alameda-Stone 169 Protestant Burial Practices. 170 The Beautification of Death. 170 Treatment of the Body among Euroamerican Protestants. 171 Protestion and Graveside Rites Practiced by Euroamerican Protestants. 171 Protestiant Burial Practices. 171 Protestiant Archaeological and Material Visibility of Protestant Practices in the Cemetery. 173 Jewish Burial Practices 173		
Mortality According to Sex		
Survivorship 159 Conclusions 162 Chapter 5. Deathways and Tucson's Living Population 1860–1880, by Kristin J. Sewell, Michael P. Heilen, and Lynne Goldstein 165 Introduction 165 Hispanic Catholic Burial Practices in Mexico and the American Southwest 166 Treatment of the Body among Hispanic Catholics 166 Processions and Graveside Rites 167 Potential Archaeological and Material Visibility of Catholic Practices in the Alameda-Stone 169 Protestant Burial Practices. 170 The Beautification of Death. 170 Treatment of the Body among Euroamerican Protestants. 171 Procession and Graveside Rites Practiced by Euroamerican Protestant Summer		
Conclusions 162 Chapter 5. Deathways and Tucson's Living Population 1860–1880, by Kristin J. Sewell, Michael P. Heilen, 165 and Lynne Goldstein 165 Introduction 165 Hispanic Catholic Burial Practices in Mexico and the American Southwest 166 Treatment of the Body among Hispanic Catholics 166 Processions and Graveside Rites 167 Potential Archaeological and Material Visibility of Catholic Practices in the Alameda-Stone 169 Protestant Burial Practices 170 The Beautification of Death. 170 Treatment of the Body among Euroamerican Protestants. 171 Procession and Graveside Rites Practiced by Euroamerican Protestants 171 Protestial Archaeological and Material Visibility of Protestant Practices in the Cemetery. 173 Jewish Burial Practices 173		
Chapter 5. Deathways and Tucson's Living Population 1860–1880, by Kristin J. Sewell, Michael P. Heilen, and Lynne Goldstein 165 Introduction 165 Hispanic Catholic Burial Practices in Mexico and the American Southwest. 166 Treatment of the Body among Hispanic Catholics 166 Processions and Graveside Rites 167 Potential Archaeological and Material Visibility of Catholic Practices in the Alameda-Stone 169 Protestant Burial Practices. 170 The Beautification of Death. 170 Treatment of the Body among Euroamerican Protestants. 171 Procession and Graveside Rites Practiced by Euroamerican Protestants. 171 Potential Archaeological and Material Visibility of Protestant Practices in the Cemetery. 173 Jewish Burial Practices 173	1	
and Lynne Goldstein 165 Introduction 165 Hispanic Catholic Burial Practices in Mexico and the American Southwest 166 Treatment of the Body among Hispanic Catholics 166 Processions and Graveside Rites 167 Potential Archaeological and Material Visibility of Catholic Practices in the Alameda-Stone 169 Protestant Burial Practices 170 The Beautification of Death 170 Treatment of the Body among Euroamerican Protestants 171 Procession and Graveside Rites Practiced by Euroamerican Protestants 171 Potential Archaeological and Material Visibility of Protestant Practices in the Cemetery 173 Jewish Burial Practices 173	Conclusions	
and Lynne Goldstein 165 Introduction 165 Hispanic Catholic Burial Practices in Mexico and the American Southwest 166 Treatment of the Body among Hispanic Catholics 166 Processions and Graveside Rites 167 Potential Archaeological and Material Visibility of Catholic Practices in the Alameda-Stone 169 Protestant Burial Practices 170 The Beautification of Death 170 Treatment of the Body among Euroamerican Protestants 171 Procession and Graveside Rites Practiced by Euroamerican Protestants 171 Potential Archaeological and Material Visibility of Protestant Practices in the Cemetery 173 Jewish Burial Practices 173		
Introduction 165 Hispanic Catholic Burial Practices in Mexico and the American Southwest. 166 Treatment of the Body among Hispanic Catholics 166 Processions and Graveside Rites 167 Potential Archaeological and Material Visibility of Catholic Practices in the Alameda-Stone 169 Protestant Burial Practices. 170 The Beautification of Death. 170 Treatment of the Body among Euroamerican Protestants. 171 Procession and Graveside Rites Practiced by Euroamerican Protestant Practices in the Cemetery. 173 Jewish Burial Practices 173		
Hispanic Catholic Burial Practices in Mexico and the American Southwest 166 Treatment of the Body among Hispanic Catholics 166 Processions and Graveside Rites 167 Potential Archaeological and Material Visibility of Catholic Practices in the Alameda-Stone 169 Protestant Burial Practices 170 The Beautification of Death 170 Treatment of the Body among Euroamerican Protestants 171 Procession and Graveside Rites Practiced by Euroamerican Protestants 171 Potential Archaeological and Material Visibility of Protestant Practices in the Cemetery 173 Jewish Burial Practices 173		
Treatment of the Body among Hispanic Catholics 166 Processions and Graveside Rites 167 Potential Archaeological and Material Visibility of Catholic Practices in the Alameda-Stone 169 Cemetery. 169 Protestant Burial Practices. 170 The Beautification of Death. 170 Treatment of the Body among Euroamerican Protestants. 171 Procession and Graveside Rites Practiced by Euroamerican Protestants. 171 Potential Archaeological and Material Visibility of Protestant Practices in the Cemetery. 173 Jewish Burial Practices 173		
Processions and Graveside Rites 167 Potential Archaeological and Material Visibility of Catholic Practices in the Alameda-Stone 169 Cemetery. 169 Protestant Burial Practices. 170 The Beautification of Death. 170 Treatment of the Body among Euroamerican Protestants. 171 Procession and Graveside Rites Practiced by Euroamerican Protestants 171 Potential Archaeological and Material Visibility of Protestant Practices in the Cemetery. 173 Jewish Burial Practices 173		
Potential Archaeological and Material Visibility of Catholic Practices in the Alameda-Stone 169 Protestant Burial Practices. 170 The Beautification of Death. 170 Treatment of the Body among Euroamerican Protestants. 171 Procession and Graveside Rites Practiced by Euroamerican Protestant Practices in the Cemetery. 171 Potential Archaeological and Material Visibility of Protestant Practices in the Cemetery. 173 Jewish Burial Practices 173		
Cemetery		
Protestant Burial Practices. 170 The Beautification of Death. 170 Treatment of the Body among Euroamerican Protestants. 171 Procession and Graveside Rites Practiced by Euroamerican Protestants. 171 Potential Archaeological and Material Visibility of Protestant Practices in the Cemetery. 173 Jewish Burial Practices 173		
The Beautification of Death		
Treatment of the Body among Euroamerican Protestants		
Procession and Graveside Rites Practiced by Euroamerican Protestants		
Potential Archaeological and Material Visibility of Protestant Practices in the Cemetery		
Jewish Burial Practices		
Jewish Approaches to Treatment of the Body		
	Jewish Approaches to Treatment of the Body	174

Jewish Funeral and Post-Funeral Rites	174
Potential Archaeological and Material Visibility of Jewish Practices in the Cemetery	175
Military Funerals	175
Potential Archaeological and Material Visibility of U.S. Military Burial Practices in the Cemete	ry 177
Apache Deathways	
Potential Archaeological and Material Visibility of Traditional Apache Burial Practices in the C	Cemetery179
O'odham Deathways	179
Traditional O'odham Deathways	179
O'odham Catholic Practices	
Potential Archaeological and Material Visibility of O'odham Practices in the Cemetery	181
Yaqui (Yoemem) Deathways	181
Treatment of the Body and Funeral Rites among the Yaqui	182
Potential Archaeological and Material Visibility of Yaqui Practices in the Cemetery	182
Conclusions	

Chapter 6. Mortuary Synthesis, by Lynne Goldstein, Kristin J. Sewell, Michael P. Heilen, and

The Graves187Vaulting and Niches187Burial Containers190Coffin Shape and Construction190Plank Burials192Coffin Hardware192Exterior Burial-Container Treatments194Interior Burial-Container Treatments194Clothing and Adornment194Clothing Fasteners195Straight Pins and Burial Shrouds195Buttons198Clothing Fasteners198Clothing Fasteners199Shree199Shoes199Religious and Ceremonial Artifacts203Jewelry205Other Items205The Military Section of the Cemetery205The Military Section of the Cemetery206Multivariate Analysis of Mortuary Artifacts Recovered from the Alameda-Stone Cemetery210Methods210Polychoric and Tetrachoric Correlations211Canonical Discriminant Function Analysis212Results212Age 215212	Joseph T. Hefner	
Graves and Burials 187 The Graves. 187 Vaulting and Niches 187 Burial Containers 190 Coffin Shape and Construction 190 Plank Burials. 192 Coffin Hardware 192 Exterior Burial-Container Treatments 194 Interior Burial-Container Treatments 194 Clothing rasteners 195 Straight Pins and Burial Shrouds 195 Other Fasteners 198 Clothing Fasteners and Gender Roles 199 Shoes 199 Multivariate Analysis of Mortuary Artifacts 201 Floral Crowns 203 Jewelry. 205 Other Items 206 Multivariate Analysis of Mortuary Artifacts Recovered from the Alameda-Stone Cemetery 201 Multivariate Analysis 211 Canonical	Introduction	185
The Graves187Vaulting and Niches187Burial Containers190Coffin Shape and Construction190Plank Burials192Coffin Hardware192Extrior Burial-Container Treatments194Interior Burial-Container Treatments194Clothing Fasteners195Straight Pins and Burial Shrouds195Other Fasteners198Clothing Fasteners and Gender Roles199Shoes199Shoes199Clothing Fasteners and Gender Roles199Shoes203Jewelry205Other Items203Jewelry205Other Items203Identities209Multivariate Analysis of Mortuary Artifacts Recovered from the Alameda-Stone Cemetery210Methods211Claupic Correlations211Cluster Analysis212Sex 21222Age 215212Cultural Affinity216Factor Analysis212Conclusions and Discussion of Multivariate Analysis212Chidren in the Cemetery212Close Analysis212Cluster Analysis212Cultural Affinity216Cultural Affinity216Cultural Affinity216Cultural Affinity216Conclusions and Discussion of Multivariate Analyses221	The Spatial Organization of the Cemetery	185
Vaulting and Niches187Burial Containers190Coffin Shape and Construction190Plank Burials192Coffin Hardware192Exterior Burial-Container Treatments194Interior Burial-Container Treatments194Clothing and Adornment194Clothing Fasteners195Straight Pins and Burial Shrouds195Other Fasteners198Clothing Fasteners and Gender Roles199Shoes199Shoes199Shoes203Jewelry205Other Items203Jewelry205Other Items205The Military Section of the Cemetery206Unditivariate Analysis of Mortuary Artifacts Recovered from the Alameda-Stone Cemetery210Multivariate Analysis of Mortuary Artifacts Recovered from the Alameda-Stone Cemetery211Canonical Discriminant Function Analysis211Canonical Discriminant Function Analysis212Age 215212Cultural Affinity216Factor Analyses220Cluster Analysis212Conclusions and Discussion of Multivariate Analyses221Conclusions and Discussi	Graves and Burials	187
Burial Containers190Coffin Shape and Construction190Plank Burials192Coffin Hardware192Exterior Burial-Container Treatments194Interior Burial-Container Treatments194Clothing and Adornment194Clothing Fasteners195Straight Pins and Burial Shrouds195Other Fasteners195Other Fasteners198Clothing Fasteners and Gender Roles199Shoes199Shoes199Shoes203Jewelry205Other Items205Other Items205The Military Section of the Cemetery205Other Items206Multivariate Analysis of Mortuary Artifacts Recovered from the Alameda-Stone Cemetery210Methods211Canonical Discriminant Function Analysis211Factor Analysis212Age 215212Cultural Affinity216Factor Analysis211Conclusions and Discussion of Multivariate Analyses221Conclusions and Discussion of Multivariate Analyses221	The Graves	187
Coffin Shape and Construction190Plank Burials192Coffin Hardware192Exterior Burial-Container Treatments194Interior Burial-Container Treatments194Clothing and Adornment194Clothing Fasteners195Straight Pins and Burial Shrouds195Buttons198Clothing Fasteners198Clothing Fasteners198Clothing Fasteners198Clothing Fasteners198Clothing Fasteners198Clothing Fasteners198Clothing Fasteners199Religious and Ceremonial Artifacts201Floral Crowns203Jewelry205Other Items205The Military Section of the Cemetery205Other Items206Identities209Multivariate Analysis of Mortuary Artifacts Recovered from the Alameda-Stone Cemetery210Methods211Canonical Discriminant Function Analysis211Canonical Discriminant Function Analysis212Age 215212Cultural Affinity216Factor Analysis220Cluster Analysis220Cluster Analysis221Conclusions and Discussion of Multivariate Analyses221Conclusions and Discussion of Multivariate Analyses221	Vaulting and Niches	187
Plank Burials192Coffin Hardware192Exterior Burial-Container Treatments194Interior Burial-Container Treatments194Clothing and Adorment194Clothing Fasteners195Straight Pins and Burial Shrouds195Buttons195Other Fasteners198Clothing Fasteners and Gender Roles199Shoes199Religious and Ceremonial Artifacts201Floral Crowns205Other Items205The Military Section of the Cemetery205Othed and Specific Artifacts?208Identities209Multivariate Analysis of Mortuary Artifacts Recovered from the Alameda-Stone Cemetery210Methods211Canonical Discriminant Function Analysis211Canonical Discriminant Function Analysis212Age 215212Cultural Affinity216Factor Analysis221Culster Analysis221Culster Analysis221Culster Analysis221Conclusions and Discussion of Multivariate Analyses221Conclusions and Discussion of Multivariate Analyses221	Burial Containers	190
Coffin Hardware192Exterior Burial-Container Treatments194Interior Burial-Container Treatments194Clothing and Adorment194Clothing Fasteners195Straight Pins and Burial Shrouds195Buttons195Other Fasteners198Clothing Fasteners and Gender Roles199Shoes199Shoes199Shoes199Religious and Ceremonial Artifacts203Jewelry205Other Items205Other Items205Other Items205Other Items206Multivariate Analysis of Mortuary Artifacts Recovered from the Alameda-Stone Cemetery210Methods210Polychoric and Tetrachoric Correlations211Canonical Discriminant Function Analysis212Sex 212212Age 215212Cultural Affinity216Factor Analysis221Conclusions and Discussion of Multivariate Analyses221Conclusions and Discussion of Multivariate Analyses221	Coffin Shape and Construction	190
Exterior Burial-Container Treatments194Interior Burial-Container Treatments194Clothing and Adornment194Clothing Fasteners195Straight Pins and Burial Shrouds195Buttons198Clothing Fasteners198Clothing Fasteners and Gender Roles199Shoes199Shoes199Religious and Ceremonial Artifacts201Floral Crowns203Jewelry205Other Items205Other Items207Children in the Cemetery205Other Items209Multivariate Analysis of Mortuary Artifacts Recovered from the Alameda-Stone Cemetery210Polychoric and Tetrachoric Correlations211Cluster Analysis211Canonical Discriminant Function Analysis212Sex 212212Age 215212Cultural Affinity216Factor Analysis221Cluster Analysis221Conclusions and Discussion of Multivariate Analyses221Conclusions and Discussion of Multivariate Analyses221	Plank Burials	192
Interior Burial-Container Treatments194Clothing and Adornment.194Clothing Fasteners195Straight Pins and Burial Shrouds195Buttons195Other Fasteners198Clothing Fasteners and Gender Roles199Shoes199Religious and Ceremonial Artifacts201Floral Crowns203Jewelry205Other Items205Other Items207Children in the Cemetery207Children in the Cemetery: Special Areas and Specific Artifacts?208Identities209Multivariate Analysis of Mortuary Artifacts Recovered from the Alameda-Stone Cemetery210Polychoric and Tetrachoric Correlations211Clause Analysis211Canonical Discriminant Function Analysis212Results212Sex 212212Age 215214Cultural Affinity216Factor Analyses220Cluster Analysis221Conclusions and Discussion of Multivariate Analyses221Conclusions and Discussion of Multivariate Analyses221	Coffin Hardware	192
Clothing and Adornment194Clothing Fasteners195Straight Pins and Burial Shrouds195Buttons195Other Fasteners198Clothing Fasteners and Gender Roles199Shoes199Religious and Ceremonial Artifacts201Floral Crowns203Jewelry205Other Items205The Military Section of the Cemetery205Children in the Cemetery: Special Areas and Specific Artifacts?208Identities209Multivariate Analysis of Mortuary Artifacts Recovered from the Alameda-Stone Cemetery210Methods210Polychoric and Tetrachoric Correlations211Cluster Analysis211Factor Analysis212Age 215212Cultural Affinity216Factor Analysis212Cluster Analysis212Cultural Affinity216Factor Analyses220Cluster Analysis212Cultural Affinity216Factor Analyses220Cluster Analysis221Conclusions and Discussion of Multivariate Analyses221	Exterior Burial-Container Treatments	194
Clothing Fasteners195Straight Pins and Burial Shrouds195Buttons.195Other Fasteners198Clothing Fasteners and Gender Roles199Shoes199Religious and Ceremonial Artifacts201Floral Crowns203Jewelry.205Other Items.205Other Items.207Children in the Cemetery.205The Military Section of the Cemetery207Children in the Cemetery.208Identities209Multivariate Analysis of Mortuary Artifacts Recovered from the Alameda-Stone Cemetery210Methods211Claster Analysis211Canonical Discriminant Function Analysis212Sex 212212Age 215212Cultural Affinity216Factor Analysis220Cluster Analysis221Conclusions and Discussion of Multivariate Analyses221Conclusions and Discussion of Multivariate Analyses221	Interior Burial-Container Treatments	194
Straight Pins and Burial Shrouds195Buttons.195Other Fasteners198Clothing Fasteners and Gender Roles199Shoes.199Religious and Ceremonial Artifacts201Floral Crowns203Jewelry.205Other Items.205The Military Section of the Cemetery205The Military Section of the Cemetery207Children in the Cemetery: Special Areas and Specific Artifacts?208Identities209Multivariate Analysis of Mortuary Artifacts Recovered from the Alameda-Stone Cemetery210Polychoric and Tetrachoric Correlations211Cluster Analysis211Factor Analysis212Sex 212212Age 215212Cultural Affinity216Factor Analysis220Cluster Analysis220Cluster Analysis221Conclusions and Discussion of Multivariate Analyses221Conclusions and Discussion of Multivariate Analyses221	Clothing and Adornment	194
Straight Pins and Burial Shrouds195Buttons.195Other Fasteners198Clothing Fasteners and Gender Roles199Shoes.199Religious and Ceremonial Artifacts201Floral Crowns203Jewelry.205Other Items.205The Military Section of the Cemetery205The Military Section of the Cemetery207Children in the Cemetery: Special Areas and Specific Artifacts?208Identities209Multivariate Analysis of Mortuary Artifacts Recovered from the Alameda-Stone Cemetery210Polychoric and Tetrachoric Correlations211Cluster Analysis211Factor Analysis212Sex 212212Age 215212Cultural Affinity216Factor Analysis220Cluster Analysis220Cluster Analysis221Conclusions and Discussion of Multivariate Analyses221Conclusions and Discussion of Multivariate Analyses221	Clothing Fasteners	195
Other Fasteners198Clothing Fasteners and Gender Roles199Shoes199Religious and Ceremonial Artifacts201Floral Crowns203Jewelry205Other Items205Other Items207Children in the Cemetery: Special Areas and Specific Artifacts?208Identities209Multivariate Analysis of Mortuary Artifacts Recovered from the Alameda-Stone Cemetery210Polychoric and Tetrachoric Correlations211Cluster Analysis212Sex 212Age 215Cultural Affinity216Factor Analyses220Cluster Analysis220Cluster Analysis220Cluster Analysis221Conclusions and Discussion of Multivariate Analyses221Conclusions and Discussion of Multivariate Analyses221	Straight Pins and Burial Shrouds	195
Clothing Fasteners and Gender Roles199Shoes199Religious and Ceremonial Artifacts201Floral Crowns203Jewelry205Other Items205The Military Section of the Cemetery207Children in the Cemetery: Special Areas and Specific Artifacts?208Identities209Multivariate Analysis of Mortuary Artifacts Recovered from the Alameda-Stone Cemetery210Polychoric and Tetrachoric Correlations211Cluster Analysis212Results212Age 215212Cultural Affinity216Factor Analyses220Cluster Analysis220Cluster Analysis221Conclusions and Discussion of Multivariate Analyses221Conclusions and Discussion of Multivariate Analyses221	Buttons	195
Shoes199Religious and Ceremonial Artifacts201Floral Crowns203Jewelry205Other Items205The Military Section of the Cemetery207Children in the Cemetery: Special Areas and Specific Artifacts?208Identities209Multivariate Analysis of Mortuary Artifacts Recovered from the Alameda-Stone Cemetery210Methods210Polychoric and Tetrachoric Correlations211Cluster Analysis211Factor Analysis212Sex 212Age 215Cultural Affinity216Factor Analyses220Cluster Analysis221Conclusions and Discussion of Multivariate Analyses221Conclusions and Discussion of Multivariate Analyses221	Other Fasteners	198
Religious and Ceremonial Artifacts201Floral Crowns203Jewelry205Other Items205Other Items207Children in the Cemetery: Special Areas and Specific Artifacts?208Identities209Multivariate Analysis of Mortuary Artifacts Recovered from the Alameda-Stone Cemetery210Methods210Polychoric and Tetrachoric Correlations211Cluster Analysis211Canonical Discriminant Function Analysis212Results212Sex 212212Age 215216Cultural Affinity216Factor Analysis220Cluster Analysis221Conclusions and Discussion of Multivariate Analyses221	Clothing Fasteners and Gender Roles	199
Floral Crowns203Jewelry205Other Items205Other Items205The Military Section of the Cemetery207Children in the Cemetery: Special Areas and Specific Artifacts?208Identities209Multivariate Analysis of Mortuary Artifacts Recovered from the Alameda-Stone Cemetery210Methods210Polychoric and Tetrachoric Correlations211Cluster Analysis211Canonical Discriminant Function Analysis212Results212Sex 212212Age 215216Cultural Affinity216Factor Analysis220Cluster Analysis221Conclusions and Discussion of Multivariate Analyses221Conclusions and Discussion of Multivariate Analyses221	Shoes	199
Floral Crowns203Jewelry205Other Items205Other Items205The Military Section of the Cemetery207Children in the Cemetery: Special Areas and Specific Artifacts?208Identities209Multivariate Analysis of Mortuary Artifacts Recovered from the Alameda-Stone Cemetery210Methods210Polychoric and Tetrachoric Correlations211Cluster Analysis211Canonical Discriminant Function Analysis212Results212Sex 212212Age 215216Cultural Affinity216Factor Analysis220Cluster Analysis221Conclusions and Discussion of Multivariate Analyses221Conclusions and Discussion of Multivariate Analyses221	Religious and Ceremonial Artifacts	201
Other Items205The Military Section of the Cemetery207Children in the Cemetery: Special Areas and Specific Artifacts?208Identities209Multivariate Analysis of Mortuary Artifacts Recovered from the Alameda-Stone Cemetery210Methods210Polychoric and Tetrachoric Correlations211Cluster Analysis211Canonical Discriminant Function Analysis212Results212Sex 212212Age 215214Cultural Affinity216Factor Analyses220Cluster Analysis221Conclusions and Discussion of Multivariate Analyses221		
The Military Section of the Cemetery.207Children in the Cemetery: Special Areas and Specific Artifacts?208Identities209Multivariate Analysis of Mortuary Artifacts Recovered from the Alameda-Stone Cemetery210Methods210Polychoric and Tetrachoric Correlations211Cluster Analysis211Canonical Discriminant Function Analysis212Results212Sex 212Age 215Cultural Affinity216Factor Analyses220Cluster Analysis221Conclusions and Discussion of Multivariate Analyses221	Jewelry	205
Children in the Cemetery: Special Areas and Specific Artifacts?208Identities209Multivariate Analysis of Mortuary Artifacts Recovered from the Alameda-Stone Cemetery210Methods210Polychoric and Tetrachoric Correlations211Cluster Analysis211Canonical Discriminant Function Analysis212Results212Sex 212212Age 215216Cultural Affinity216Factor Analysis220Cluster Analysis221	Other Items	205
Children in the Cemetery: Special Areas and Specific Artifacts?208Identities209Multivariate Analysis of Mortuary Artifacts Recovered from the Alameda-Stone Cemetery210Methods210Polychoric and Tetrachoric Correlations211Cluster Analysis211Canonical Discriminant Function Analysis212Results212Sex 212212Age 215216Cultural Affinity216Factor Analysis220Cluster Analysis221	The Military Section of the Cemetery	207
Identities209Multivariate Analysis of Mortuary Artifacts Recovered from the Alameda-Stone Cemetery210Methods210Polychoric and Tetrachoric Correlations211Cluster Analysis211Canonical Discriminant Function Analysis212Factor Analysis212Results212Sex 212Age 215Cultural Affinity216Factor Analysis220Cluster Analysis221Conclusions and Discussion of Multivariate Analyses221		
Methods210Polychoric and Tetrachoric Correlations211Cluster Analysis211Canonical Discriminant Function Analysis211Factor Analysis212Results212Sex 212Age 215Cultural Affinity216Factor Analysis220Cluster Analysis221Conclusions and Discussion of Multivariate Analyses221	Identities	209
Methods210Polychoric and Tetrachoric Correlations211Cluster Analysis211Canonical Discriminant Function Analysis211Factor Analysis212Results212Sex 212Age 215Cultural Affinity216Factor Analysis220Cluster Analysis221Conclusions and Discussion of Multivariate Analyses221	Multivariate Analysis of Mortuary Artifacts Recovered from the Alameda-Stone Cemetery	210
Cluster Analysis211Canonical Discriminant Function Analysis211Factor Analysis212Results212Sex 212212Age 215216Factor Analyses220Cluster Analysis221Conclusions and Discussion of Multivariate Analyses221		
Canonical Discriminant Function Analysis211Factor Analysis212Results212Sex 212Age 215Cultural Affinity216Factor Analyses220Cluster Analysis221Conclusions and Discussion of Multivariate Analyses221	Polychoric and Tetrachoric Correlations	211
Factor Analysis212Results212Sex 212Age 215Cultural Affinity216Factor Analyses220Cluster Analysis221Conclusions and Discussion of Multivariate Analyses221	Cluster Analysis	211
Results 212 Sex 212 Age 215 Cultural Affinity 216 Factor Analyses 220 Cluster Analysis 221 Conclusions and Discussion of Multivariate Analyses 221	Canonical Discriminant Function Analysis	211
Sex 212 Age 215 Cultural Affinity	Factor Analysis	212
Age 215216Cultural Affinity216Factor Analyses220Cluster Analysis221Conclusions and Discussion of Multivariate Analyses221	Results	212
Cultural Affinity216Factor Analyses220Cluster Analysis221Conclusions and Discussion of Multivariate Analyses221	Sex 212	
Factor Analyses	Age 215	
Cluster Analysis	Cultural Affinity	216
Conclusions and Discussion of Multivariate Analyses	Factor Analyses	220
Conclusions and Discussion of Multivariate Analyses	Cluster Analysis	221
	Discussion and Interpretations	225

Chapter 7. The Alameda-Stone Cemetery and Mortuary Archaeology, by Lynne Goldstein	
Introduction, Contexts, Definitions	227
Definitions and the Alameda-Stone Cemetery	229
Comparisons	229
Čemetery-Level Overviews	231
Reasons for Excavation of Sites in the Comparative Sample	231
The Uxbridge Almshouse Cemetery, Massachusetts	231
The Voegtly Cemetery, Pennsylvania	232
Milwaukee County Poor Farm, Wisconsin	233
The Grafton Cemetery, Illinois	
The Michigan City Old Graveyard, Indiana	
The Freedman's Cemetery, Texas	
Secaucus Potter's Field, Secaucus, New Jersey	
The Old Snohomish Cemetery, Washington	235
Summary of Reasons for Excavations	235
Comparison of Research Findings with Those from Other Cemeteries	
Grave and Coffin Preparation	
Grave Inclusions	237
Artifacts Related to Body Preparation	
Personal Artifacts	
Dental Health	
Discussion of the Alameda-Stone Cemetery and Internal Spatial Relationships	
Final Disposition of Individuals Excavated	
Conclusions	
Chapter 8. Cemeteries, Consultation, Repatriation, Reburial, and Sacred Spaces Today,	
by Lynne Goldstein and Roger Anyon	
Introduction	
Anthropological and Historical Context	
Consultation	
Repatriations and Reburial Ceremonies	
Conclusions	
References Cited	
Index	
About the Authors	

This page intentionally left blank



FIGURES

Figure 1. Modern downtown Tucson, with the cleared Joint Courts Complex Archaeological Project area in the foreground
Figure 2. Map of the Joint Courts Complex project area, showing grave features
Figure 3. Examples of medallions and religious pendants from the Alameda-Stone cemetery
Figure 4. Rosary from the grave of an older adult male of Hispanic cultural affinity
Figure 5. Example of a crucifix from the Alameda- Stone cemetery
Figure 6. Workboot refit from the grave of an older adult female of Hispanic cultural affinity
Figure 7. Military uniform buttons from the Alameda-Stone cemetery
Figure 8. A view of a portion of downtown Tucson ca. 1889
Figure 9. Historical photograph of the excavation for the expansion of Tucson Newspapers building
Figure 10. Location of the Joint Courts Complex Archaeological Project in downtown Tucson, Arizona
Figure 11. Mechanically stripping the Joint Courts Complex project area 42
Figure 12. Using a TEREX Powerscreen Mark II to recover artifacts and bones 42
Figure 13. Shelves from the grave of an adult male of Hispanic cultural affinity 43
Figure 14. Head niche with human remains from the grave of an adult male of Euroamerican cultural affinity 44
Figure 15. Postmortem photograph ca. 1916 of a mother holding her deceased child wearing a floral crown
Figure 16. Grave 13614, Burial 21829, adult Euroamerican male 46
Figure 17. Three dimensional rendering of the cranium of the young adult Hispanic male; and the pelvis from the adult Euroamerican male
Figure 18. An example of a three-dimensional scanned image

Figure 19. The "National" or "Government" Cemetery at Tucson, 1870	49
Figure 20. Burial spaces in Tucson	50
Figure 21. The missions, presidios, and native <i>rancherías</i> of the Spanish Colonial period	56
Figure 22. Mission San Xavier del Bac	58
Figure 23. Cemetery area map	75
Figure 24. Map of exhumed burials in project area	
Figure 25. 1881 plat map of Military Cemetery	80
Figure 26. Distribution of graves with multiple interments	81
Figure 27. Map showing possible rows in the cemetery	
Figure 28. Burial orientation	
Figure 29. The Star of David button from Individual P, Grave Pit 7894	85
Figure 30. Examples of rosaries from the Alameda- Stone cemetery	85
Figure 31. Relative frequency of individuals, by age category and cemetery section	86
Figure 32. Relative frequency of individuals, by sex and cemetery section	86
Figure 33. Relative frequency of individuals, by biological affinity and cemetery section	87
Figure 34. Detail from the 1880 Carleton Watkins photograph of Tucson	89
Figure 35. Spatial distribution of individuals, showing assigned cultural affinity	
Figure 36. 1881 plat map overlay with Cemetery Area 1	102
Figure 37. Percent of individuals affected by cribra orbitalia and porotic hyperostosis	116
Figure 38. Frequency of health complaints listed in Tucson Military Hospital records, 1868–1872	118
Figure 39. Percent of individuals with enamel hypoplasias	123
Figure 40. Percent of periosteal new bone	124
Figure 41. Estimated stature of juveniles and Hispanic adults	127
Figure 42. Estimated stature of juveniles and Hispanic adults from the Alameda-Stone cemetery compared to the modern U.S. sample	128
Figure 43. Estimated stature of juveniles and Hispanic adults from the Alameda-Stone cemetery compared to the modern U.S. sample of individuals identified as Hispanic	128
Figure 44. Stature at Alameda-Stone cemetery	130
Figure 45. Distribution of degenerative joint disease at each joint complex	133

Figure 46. Distribution of degenerative joint disease at combined joint complexes	134
Figure 47. Percent of individuals affected by trauma, according to sex	139
Figure 48. Left radius with antemortem fracture and periosteal reaction	146
Figure 49. Femoral head of an older adult male with good evidence of dislocation	147
Figure 50. Sawed crania, indicative of autopsy	147
Figure 51. Dental plate with artificial tooth	149
Figure 52. Estimates of fertility based on census data, the Tucson Diocese burial records, and the Alameda-Stone cemetery osteological sample	151
Figure 53. Juvenile mortality calculated from the Tucson Diocese records	154
Figure 54. Adult mortality calculated from the Tucson Diocese records	154
Figure 55. Adult-to-juvenile ratios calculated from census data	155
Figure 56. Adult-to-juvenile ratios calculated from the Tucson Diocese burial records	156
Figure 57. Adult-to-juvenile ratios, per cemetery area	156
Figure 58. Sex ratios computed from the census data, per cultural affinity	157
Figure 59. Adult mortality calculated from the Tucson Diocese records, by sex	157
Figure 60. Age heaping in the historical record	160
Figure 61. Siler Model age at death: records vs. osteology	160
Figure 62. Age at death, by sex	161
Figure 63. Siler Model survivorship, by cemetery area	161
Figure 64. Siler Model survivorship: Cemetery Areas 3–5 vs. Tucson Diocese records	162
Figure 65. Distribution of graves with vaulting and/or head niches	188
Figure 66. Grave arches from Individual P, Grave Feature 3228	189
Figure 67. Coffin Shapes from the Alameda-Stone cemetery	190
Figure 68. Fragments of fabric from Individual P, Grave Feature 7802	191
Figure 69. Coffin-handle types	193
Figure 70. Coffin-screw types	194
Figure 71. Straight pins with small fragments of fabric from burials with possible shrouding	196
Figure 72. Examples of engraved shell buttons	197
Figure 73. Bone buttons	

Figure 74. Examples of cinch buckles	. 199
Figure 75. Examples of hook-and-eye fasteners	. 200
Figure 76. Examples of metal sew-through pants buttons	. 200
Figure 77. Shoe parts	. 202
Figure 78. Child's copper-toe-covered boot	. 203
Figure 79. Examples of crosses	. 204
Figure 80. The reliquary locket from Individual P, Grave Pit 7528	. 205
Figure 81. Examples of the jewelry	. 206
Figure 82. Examples of shell casings	. 207
Figure 83. Correspondence plot of wood type and sex	. 214
Figure 84. Correspondence plot of presence of cross or crucifix and sex	. 215
Figure 85. Correspondence plot of coffin shape and age	. 216
Figure 86. Correspondence plot of orientation and age	. 217
Figure 87. Correspondence plot of coffin shape and cultural affinity	. 218
Figure 88. Correspondence plot of button types and cultural affinity	. 219
Figure 89. Factor loading and scree plot of mortuary variables	. 220
Figure 90. Ranking of importance of mortuary variables for cluster analysis	. 222
Figure 91. Tree diagram of seven mortuary variables	. 222
Figure 92. Grave orientation by northern and southern areas of the cemetery	. 223
Figure 93. Toys and tools from the Alameda-Stone cemetery	. 238
Figure 94. Examples of frames	. 238
Figure 95. Artist's rendering of the frame with drawing	. 239
Figure 96. Cranium with gunshot exit wound	. 240
Figure 97. Three-dimensionally rendered image of the cranium indicating the direction of the shot	. 240
Figure 98. Painted buttons	. 240
Figure 99. Examples of transfer-printed buttons	. 242
Figure 100. Hunziker Construction Company newspaper advertisement from the 1950s	. 248
Figure 101. Photograph of the new cemetery created for historical-period military burials at Sierra Vista military cemetery	. 256

Figure 102. Covered caskets, part of the military reburial ceremonies	. 257
Figure 103. The veterans' motorcycle escort accompanying the military burials to their new location	. 258
Figure 104. Buffalo Soldier re-enactors; military personnel guarding caskets; Buffalo Soldier re-enactors carrying the casket of a Buffalo Soldier; military personnel carrying caskets	. 259
Figure 105. The crowd at the military reburial ceremony	. 260
Figure 106. Ballad sung at the military reburial service	. 262
Figure 107. The permanent memorial for all individuals from the Alameda-Stone cemetery	. 263

TABLES

Table 1. Arizona State Museum Age Categories	79
Table 2. Distribution of Cultural-Affinity Designations, by Cemetery Area and Sex	97
Table 3. Distribution of the Cultural-Affinity Designations of the Multiple-Affinities Group, According to Age	100
Table 4. Attributes Compared among the Three Lines of Evidence for Each Grave	103
Table 5. Percent of Individuals with Evidence of Infection, by Age Category	121
Table 6. Comparison of Children and Adults with Evidence of Infection	122
Table 7. Prevalence of Infection among Adults in the Northern and Southern Sections of the Cemetery	122
Table 8. Prevelance of Infection among Children in Cemetery Areas 3 and 4	122
Table 9. Individuals with Evidence of Weapons Trauma	140
Table 10. Individuals with Weapons Artifacts Directly Associated with Trauma	141
Table 11. Locations of Dental Fillings in the Dental Arcade	148
Table 12. Temporal Groups Established for Analysis of Tucson Diocese Burial Records, 1863–1875	153
Table 13. Sex Ratios Computed from the Tucson Diocese Records	157
Table 14. Sex Ratio according to Biological Affinity in the Alameda-Stone Cemetery Osteological Sample	158
Table 15. Tetrachoric and Polychoric Correlation Coefficients between Mortuary Data Collected at the Alameda-Stone Cemetery	212

Table 16. Polychoric and Tetrachoric Correlation Coefficients between Mortuary Observations and Biological and Spatial Variables	213
Table 17. Age and Sex Distribution of Mortuary Observation Sample	213
Table 18. Frequency Distribution of Crosses and Crucifixes, by Sex	215
Table 19. Frequency Distribution of Coffin Shapes, by Age	216
Table 20. Frequency Distribution of Various Inhumation Orientations, by Age	217
Table 21. Frequency Distribution of Coffin Shape, by Cultural Affinity	218
Table 22. Frequency Distribution of Buttons by Cultural Affinity, per Burial Feature	219
Table 23. Component Loading Extracted during Factor Analysis	221
Table 24. Distribution of Clusters, by Cemetery Area	223
Table 25. Frequency Distribution of Mortuary Variables per Burial Feature, by Cemetery Area	224
Table 26. Comparison of Historical-Period Cemeteries Generally Contemporaneous with the Alameda- Stone Cemetery	230
Table 27. Composition of the Cemeteries Compared to the Alameda-Stone Cemetery	232
Table 28. Spatial Distribution of Variables in the Alameda-Stone Cemetery, by Sex and Cemetery Area	244



When, in 2004, the voters of Pima County approved funding to construct a new courthouse in downtown Tucson, Arizona, no one could foresee that the project would result in one of the largest historical-period cemetery excavations ever conducted in the United States. The Joint Courts Complex Archaeological Project undertaken at the nineteenthcentury Alameda-Stone Cemetery is an excellent example of success built upon the development of exemplary relationships with descendant groups combined with the application of innovative technological advances in both the field and laboratory.

Because the project had local County funding, was situated on land owned by local government, and required no federal permits, all of the consultations, repatriations, and reburials were conducted under Arizona State law. Fortunately, this provided substantially greater flexibility in relationship building and working with descendant groups than under federal law, which tends to give greater import to the rights and concerns of Indian tribes. For the Joint Courts Complex Archaeological Project, all descendant groups, Indian and non-Indian, had an equal stake in the process.

Far too often, the removal of a historical-period cemetery becomes a vortex of disputes. Developers routinely start construction, encounter burials, exclaim that they had no idea the cemetery was there, and then demand that the cemetery be removed as quickly as possible to avoid construction delays. Descendant groups fight back, citing disrespect for their ancestors. Archaeologists get caught in the middle and try to satisfy all parties involved in the disputes. Media attention focuses on the acrimony, further stoking the seething resentment.

From the outset, Pima County wished to avoid the pitfalls of many previous projects involving the removal of historical-period cemeteries and insisted on doing the right thing. Prior to the excavation of the first shovelful of dirt, the County conducted 2 full years of background studies and consultations with descendant groups. Throughout, one principle was paramount: the process was to be transparent, open, and inclusive. Consultations, coordinated through Arizona State Museum as required under state law, were not always amicable. They were, however, honest. The tribes made it clear that they wanted the cemetery left in place, to be disturbed no further. Los Descendientes del Presidio de Tucsón, on the other hand, made clear that they preferred their ancestors finally be removed from beneath the streets, offices, parking lots, and other urban amenities after more than a century of residential and commercial urban development atop the abandoned cemetery. Los Descendientes also wanted their ancestors to be given the dignity of reburial in a modern cemetery where they would remain undisturbed in the future. The chasm between these positions was not trivial. The planning team from the County met with the descendant groups to discuss the logistics of the courts system in downtown Tucson, the requirements of the courts, and the need for this location as the new courts building. Descendant groups' concerns caused the County to fully reassess its need for this particular 4-acre project area. Even so, it became clear that this was the only viable location for the new building. Not all descendant groups were satisfied with this outcome, but they knew their concerns had been heard and had been seriously considered through an open and transparent process in which they had a meaningful role. The burial agreements that resulted from this process included statements about cultural affinity and the conditions for the repatriation and reburial of all those who would be disinterred during archaeological excavations. In essence, the agreements provided the basic rules and procedures regarding the Alameda-Stone Cemetery excavations and the final disposition of the deceased.

With the burial agreements in place, the County then approached the media. Meetings were held with the editorial boards of local newspapers. Television and radio reporters were contacted. All available information about the cemetery, the burial agreements, and the plans for excavation were provided, again in the interest of transparency and openness. Questions were asked, and questions were answered. By the time excavations began, everyone with an interest knew

Foreword

what was happening and why it was happening; a common understanding of how the project would be conducted and what the possible outcomes would be for the stakeholders had been achieved.

Participation by the descendant groups, the media, the County, the Arizona State Museum, and others in an open and transparent consultation process resulted in a smooth and dispute-free project. The successful excavation of the Alameda-Stone Cemetery, the innovative assessment of the cultural affinity of each disinterred individual, and the fulfillment of respectful repatriation and reburial provide an excellent example of the power of collaborative planning and consultation resulting in a positive and successful community-based project.

> Roger Anyon Pima County Office of Conservation and Sustainability



Т

I he magnitude of the Joint Courts Complex Archaeological Project demanded the participation and support of scores of people and institutions, without whose involvement this project would never have been successfully completed. The Pima County Cultural Resources and Historic Preservation Office, most notably Roger Anyon and Linda Mayro, provided support, advice, and constructive criticism. Roger, in particular, was involved in the project on a daily basis, providing sage advice and clear direction throughout the project as well as contributing to the project report. As Arizona State Repatriation Coordinator, John Madsen of the Arizona State Museum was responsible for preparing the burial agreements under which the project operated and for ensuring that the project was in compliance with those agreements. John was assisted in these efforts by Todd Pitezel, who helped to arrange many of the meetings held with project stakeholders. Descendant groups and other project stakeholders were identified, notified in advance of the project's goals, and allowed to express their concerns as a result of the careful preparations of Roger Anyon, Linda Mayro, and John Madsen. As a result of these efforts, the project was completed without incident or controversy.

For their support we are indebted as well to Presiding Judge Jan E. Kearney and Judge John S. Leonardo of the Arizona Superior Court in Pima County, Presiding Judge Maria Felix of the Pima County Consolidated Justice Court, and Presiding Magistrate Antonio Riojas and Court Administrator Joan Harphant of the Tucson City Court. Legal advice and court orders were provided by Jacob Lines, Hal Gilbreath, and Neil Konigsberg of the Pima County Attorney's Office. Public relations assistance was provided by Annabelle Valenzuela and Carol Brichta of the Pima County Department of Transportation's Community Relations Office. Thanks are gratefully extended to Douglas Leach of the Arizona Department of Health Services, Office of Vital Records, who expedited the disinterment/reinterment permit. The Pima County Board of Supervisors-including Ann Day, Ramón Valadez, Sharon Bronson, Raymond J. Carroll, and Richard Elías—provided necessary support to the project as did Pima County Administrator Chuck Huckelberry provided important directives to all county personnel that took into account the sensitivity of such a large, public cemetery excavation project. Debra Rodriguez attended to the financial aspects of the contract and Terri Spencer, Pima County Contracts Officer, handled the contract and its various modifications. Staff from Pima County's Facilities Management Department overcame difficult logistical challenges that arose during fieldwork. Thanks especially to Mike Tuinstra, Reid Spaulding, Carter Volle, Gary Campbell, Lisa Josker, Dan Meinke, and Chuck Haak. Support and assistance were also provided by John Bernal and Nanette Slusser of Pima County Public Works. Jim Glock, City of Tucson Department of Transportation, disabled the city webcams that covered the project area during the sensitive excavations.

Numerous stakeholder representatives participated in the project, providing crucial information and perspectives, asking tough questions, and weighing in on how they felt the project should be conducted. Stakeholder representatives included: Fred McAninch, Arnold Smith, and Hector Soza from Los Descendientes del Presidio de Tucsón; Joe Joaquin and Peter Steere from the Tohono O'odham Nation; Tony Burrell from the San Xavier District of the Tohono O'odham Nation; Rolando Flores, Amalia Reyes, Veronica LaMotte Darnell, and Marcelino Flores from the Pascua Yaqui Tribe; Vernelda Grant from the San Carlos Apache Indian Tribe; Bishop Gerald Kicanas, Jim DeCastro, Fred Allison, and Kay Mullenax from the Diocese of Tucson; Joe Larson and Crickette King from the Southern Arizona Veterans' Memorial Cemetery; Joan Way from the Southwest Association of Buffalo Soldiers; Barnaby Lewis from the Gila River Indian Community; and from the Jewish community, Eileen Warshaw and the Jewish History Museum.

More than 180 employees of Statistical Research, Inc, participated in the Joint Courts Complex Archaeological Project during its 4-year contract period. Although all of them cannot be named here, the contributions of some of these individuals can be highlighted. Marlesa Gray managed this highly complex project for Statistical Research, Inc., making certain that the project was on track, that all milestones were met, and that staff had the support they needed

Acknowledgments

to successfully complete project tasks. Scott O'Mack provided the groundwork for the project through completion of two background and archival reports prior to fieldwork and served as archaeological principal investigator during the fieldwork phase of the project. Scott was succeeded by Michael Heilen, who oversaw the analysis and reporting of the cemetery component. Joe Hefner served the project as principal investigator for bioarchaeology, and Karen Swope managed the analysis and reporting of the postcemetery component.

Archaeological fieldwork direction was provided first by David Palmer, followed by John Hall. John was responsible for preparation of the end-of-fieldwork report; the burial descriptions; and the analysis and reporting of the prehistoric component. Mitch Keur supervised the burial excavations and much of the bioarchaeological analysis and reporting. Kristin Sewell oversaw analysis and reporting of the mortuary analysis. Scott Plumlee oversaw the field operations for the postcemetery component and provided much of the archival research and reporting for the same. The bulk of the bioarchaeological excavations, analysis, and reporting were conducted by Patrick Stanton, Amber Harrison, Willa Trask, Bob Dayhuff, Tamara Leher, Tracie Diaz, and Shannon Black.

The mapping of all excavated features was conducted by Stephen McElroy and Nahide Aydin, who were assisted in the field and office by a number of staff members, notably Rita Sulkosky and Tim Gibbs. Matt Lewis and Malcolm (Skip) Hooe conducted the three-dimensional scanning of the burials. John Pope supervised the field sorting crew and kept the mechanical sorter in good working condition. Dorothy Ohman headed the field laboratory, assisted by Erica Young. Jody Holmes managed the Tucson laboratory and the curation efforts. The staggering amount of data collected during the project could not have been managed effectively without the efforts of a number of programmers and analysts, including Jim LoFaro, Andy Bean, James Harvey, Carey Tilden, and Ivan Davis. Robert Heckman provided crucial direction to the database management staff to ensure that the project database met the archaeological and management needs of the project. Computer servers, workstations, and communication networks were built, maintained, upgraded, and backed up by IT staff, including Mitch Eichenseer, Dale Tersey, Josh Johnson, Ken Ramey, William Hayden, Paul Burns, and Mark Woodson. Data entry was conducted by Lexi O'Donnell and George Vanovich. John Pope supervised the field sorting crew and kept the mechanical sorter in good working condition. Many other staff members contributed to the project as crew chiefs, analysts, and/or writers, including Karry Blake, Amanda Cannon, Cannon Daughtrey, Carrie Gregory, Janet Griffitts, Kelly Jenks, Stacey Lengyel, Justin Lev-Tov, Kandus Linde, Kate McMahon, Ashley Morton, Amelia Natoli, Jeremy Pye, Kerry Sagebiel, Resha Shenandoah, Shari Tiedens, Callie Unverzagt, William G. White, and Jason Windingstad.

The publications department transformed written drafts into coherent, professional-quality reports. María Molina and Mary Robertson provided leadership, support, and assistance with the many written report products generated during the course of the project. Report layouts were designed by Jason Pitts, Linda Wooden, and KeAndra Begay. Beth Bishop, John Cafiero, Diane Holliday, Grant Klein, Jennifer Shopland, Niamh Wallace, and Julie Wilson served as technical editors. Report figures were produced by Peg Robbins and her staff of graphic artists: William Olguin, Andrew Saiz, Jackie Dominguez, and Wallace Begay. April Moles provided assistance to production staff, including compiling copies of project reports for distribution.

Project leadership was amply supplied by the owners and executive committee of Statistical Research, Inc.: Jeff and Debbie Altschul, Donn Grenda, Terry Majewski, Peter Fox, Richard Ciolek-Torello, Stephanie Whittlesey, Chris Dore, Bob Grenda, and Clay Mathers. Terry Majewski provided overall project management, as well as lent her expertise in historical period ceramics analysis when needed. Both Richard and Stephanie contributed to written products, and their thoughtful reviews of the research were always appreciated.

Numerous subconsultants performed a wide variety of tasks for the project. Lynne Goldstein, Michigan State University, served as mortuary advisor for the project. Lynne did more than advise; she encouraged and guided staff, reviewed large portions of the text, and wrote a significant section of the synthetic report. Additional bioarchaeological expertise was provided during the fieldwork by John McClelland and Lane Beck from the Arizona State Museum. John spearheaded the dental analysis and wrote significant portions of the report. Bioarchaeological excavation, analysis, and reporting were also provided by Lorrie Lincoln-Babb, Bioarch LLC, and Kimberly Spurr, Past Peoples Consulting LLC. Jan Gordley and Marsha Baker of Gordle Design Group oversaw the public relations efforts for the project. Carol Ellick and Joe Watkins of the SRI Foundation designed and implemented a sensitivity training workshop for all project personnel. Database design was conducted by John Donoghue of Donoghue and Associates. Stephen Ousley from Mercyhurst College provided advice on refinements to the bioarchaeological database.

Additional analytical expertise and advice was provided by a number of professional during the course of the project. The project staff was greatly appreciative of the help from the following individuals: James Ayres for his advice on historical-period excavation, research into Tucson newspapers, and artifact analyses; Karen Adams for macrobotanical analysis and reporting; Owen Davis for pollen analysis; Karl Reinhard, PathoEcology Services LLC, for parasitological and pollen analysis; Heather Edgar, University of New Mexico, for dental analysis; Ken Gobalet, California State University, for the analysis of fish remains; Laurie Webster for textile analysis; Nicholas Herrmann, University of Tennessee, for bioarchaeological and demographic analysis; Homer Thiel, Desert Archaeology, Inc., for historical-period artifact analysis and research into Tucson newspapers; James Davidson, University of Florida, for mortuary analysis advice; Gregory L. Fox, Joint POW-MIA Accounting Command (JPAC), Department of the Navy, for advice on cultural affinity determinations; Árpád Somogyi, University of Arizona, for mass spectrometry analysis of medicinal remains; Bill Lockhart and Carol Serr for assistance in bottle analysis; Nancy Odegaard, Arizona State Museum, for X-ray fluorescence analysis; Mark Candee, University of Arizona, for analysis of a garnet recovered from the postcemetery component; and Bruce Anderson, Pima County Medical Examiner, for bioarchaeological analysis advice.

Initial mapping of the project area and setup of the datums was accomplished by Darling Environmental and Surveying Ltd. The mechanical excavations were conducted by Dan Arnit from Innovative Excavating, Inc, assisted by Steve Ditschler. Demolition of existing buildings and debris removal was conducted by staff from Barnett & Shore Contractors LLC, who were directed by Ed Barnett and Frank Shore. Cheryl Cooper from Barnett & Shore provided administrative assistance. The following individuals and companies should also be thanked for their logistical assistance on the project: Christine Reks from The Riverpark Inn; Scott Eisenfeld from Castro Engineering; Kevin Josker from Vanir Construction; Gregg Williams from DMJM; Debbie Stratton from Pima County Wastewater Management; and the staff of Orta Fence Company. Off-hours security of the project area was provided by staff from Securitas, managed by Gwen Parker. Thanks is also due to the staff of Chicanos por la Causa, especially the late Lorraine Lee, who put up with the noise and dust from our extended field season.

Reburial efforts were assisted by the following staff from the All Faiths Cemeteries, Evergreen Cemetery, and Holy Hope Cemetery: Kenny Larson, Cameron Nerison, Chris Evans, Cruz Cota, Enrique Martinez, and Able Santiago. Dolan Ellis, Arizona State Balladeer, deserves gratitude for granting permission to use his ballad dedicated to the military soldiers who were buried in the Alameda-Stone cemetery. Representative Steve Farley designed the artwork for the memorial at All Faiths Cemeteries dedicated to memory of the persons who were interred at the Alameda-Stone cemetery. Rabbi Thomas Louchheim and Reverend John Lille officiated at the reburial service and the memorial dedication at All Faiths Cemetery.

In addition to all the people and organizations who contributed to the successful completion of the project, thanks must also be extended to Mitch Allen and his staff at Left Coast Press, Inc. Mitch saw the need for publishing the context and synthesis volume from the project report series as a standalone book that could be used by investigators as an example of how a large, cemetery excavation project can be run in today's legal and political environment to not only meet the needs of archaeological research, but meet the needs of the community affected by that research. Without his vision and support, this book would not have been published. This page intentionally left blank

Introduction

Michael P. Heilen

 ${igstar}$ round the world, people identify closely with the remains of their ancestors. Descendants can be strongly motivated to ensure that the sanctity of those remains is preserved and protected. Whether the remains are left in place or disinterred within a few generations and moved to make way for new burials depends on the historical circumstances and context. In some times and places, it has been expected that a person's remains will be disinterred and moved to a storage facility or other locale within a generation or two of their burial, in order to make way for new burials. In other times and places, such as in parts of North America during the historical period and in recent times, it is often hoped that burials will remain undisturbed in perpetuity. Despite this, cemeteries are routinely abandoned and the land containing them repurposed. Such changes can result in the disturbance or destruction of a cemetery, impacting the burials contained within its bounds and hiding its remains from public view and consciousness. This is, in fact, what happened to the Alameda-Stone cemetery in the heart of downtown Tucson, Arizona, the cemetery excavated during the Joint Courts Complex Archaeological Project (Figure 1).

The Alameda-Stone cemetery was used for burial by the community of Tucson for approximately two decades during the nineteenth century before it was closed to further use. Most of the burials within the abandoned cemetery were left in place while the city of Tucson grew around it. Residential and commercial buildings and city infrastructure were built over the cemetery, periodically disturbing or destroying the burials left hidden below ground, occasionally in large numbers. By the twenty-first century, the land containing the former cemetery had become an urban environment consisting of buildings, sidewalks, streets, and landscaping features, with not a trace of the former cemetery to be seen from the surface. When this land was recently needed for a new city/county joint courts facility and no alternative locations were deemed viable, the cemetery was excavated and the burials placed in new locations according to the wishes of descendant groups who could claim remains from the cemetery.

Archival information obtained prior to excavations revealed that the cemetery was a public one, used for a relatively brief period by the entire Tucson community. The cemetery was divided into a military section and a civilian section, which themselves were further subdivided into areas used at different times or by different groups. The military section was used from 1862 until January 1881, and the civilian section was used from sometime in the late 1850s or early 1860s until it was closed to further burial in 1875. Because the cemetery was used by the entire, multiethnic community of Tucson, the approximately 1,800-2,100 individuals originally buried in the cemetery were expected to be of diverse cultural and biological backgrounds (O'Mack 2005, 2006). Based on the demography of Tucson at the time, burials would have included Hispanic individuals from Mexico, the southwestern United States, Spain, and South America; non-Hispanic Euroamericans from many parts of the United States, Canada, Europe, the Caribbean, and the Middle East; Native Americans, including Tohono O'odham, Akimel O'odham, Yaqui, and Apache; and a small number of African Americans. Religious affiliations varied among the populace as well. Many of the Hispanics using the cemetery would have likely been buried according to Catholic traditions, whereas non-Hispanic Euroamericans would likely have been buried according to Protestant, Catholic, or Jewish traditions. Native Americans and African Americans buried in the cemetery may also have been buried according to a variety of traditions, including Christian or syncretic Christian traditions, given the public nature of the cemetery within a largely Christian cultural context. Burials of individuals associated with the U.S. military also occurred in the cemetery. The diverse cultural and religious backgrounds of individuals buried in the cemetery and the requirement to



Figure 1. Modern downtown Tucson, with the cleared Joint Courts Complex Archaeological Project area in the foreground (Henry Wallace, courtesy Center for Desert Archaeology).

determine the cultural affinity of burials (discussed below) meant that archaeologists had to be prepared to differentiate burials associated with a wide array of burial practices and cultural and biological backgrounds.

Burial agreements between Pima County (which funded the entire project) and potential descendant groups required that all human remains within the project area be recovered during excavations, including fragmentary remains in secondary deposits. This was to satisfy the concerns of descendants that no osteological materials or funerary remains be left behind during excavations. As a result, the entire 4.3-acre parcel containing the cemetery was excavated to culturally sterile soil, and all excavated sediments, including vast quantities of overburden, were screened for artifacts and osteological materials, resulting in exceptionally thorough and complete excavations. It was also required that the cultural affinity of burials be determined with the greatest degree of certainty possible according to a transparent and agreed-upon framework. This was so that remains from the cemetery could be repatriated to the appropriate groups without unnecessary ambiguity, dispute, or controversy. Thus, identity assessments served both to guide the study of the cemetery and the burial population and to fulfill the individual needs of descendant groups. Restrictions were also placed by some descendant groups on the kinds of analyses that could be performed and the kinds of information that could be reported, requiring an additional level of sensitivity to be exercised during on the excavation, analysis, and reporting of some burials in the cemetery.

The Joint Courts Complex Archaeological Project intensively investigated one of the largest and most unique cemetery components ever investigated in North America.¹ Excavations conducted from 2006 through 2008 resulted in the discovery, documentation, and interpretation of 1,083 grave-pit features and osteological materials from more than 1,300 individuals buried in the cemetery (Figure 2). As the only cemetery for a growing and urbanizing frontier community of the expanding American West, the cemetery contained multiple discrete cemetery areas associated with different groups and grave-pit and burial features associated with individuals of diverse cultural affinities, religious backgrounds, and life histories. The cemetery thus afforded a unique opportunity to investigate variation in social identity, life experience, and burial practice among individuals, burial features, and cemetery areas according to a wide variety of biological, cultural, and behavioral dimensions.

Successful completion of the project required thorough archival research; the implementation and integration of advanced database, cartography, and geographic information systems technologies; a broad array of methodological advances; and unusually large staffing. Just as important, an intensive level of planning, coordination, and communication was required to ensure that accurate information was distributed to project stakeholders in a timely and community-sensitive fashion and that project participants were in agreement as to how the project was to be conducted. The consultation efforts and identity assessments undertaken for this project were innovative, forward-thinking, and culturally sensitive approaches that could serve as models for future cemetery investigations.² Undertaken in the midst of a thriving city, the Joint Courts Complex Archaeological project was conducted with the utmost respect not for only the individuals interred in the Alameda-Stone cemetery, but also for those individuals' possible descendants.

The Joint Courts Complex Archaeological Project represents a unique contribution to mortuary studies, bioarchaeology, historical archaeology, and project planning and administration. The investigation of as large a cemetery with a majority Hispanic component has never been undertaken in the United States. The vast majority of previous projects in the United States have investigated the cemeteries of non-Hispanic Euroamericans or African Americans. The diverse nature of the cemetery—with multiple demographic groups-is also unique to cemetery investigations, as nearly all other cemeteries have been far less diverse and have not represented the burial population of an entire multiethnic community. The brief use of the cemetery, along with the large sample size, is unusual as well, allowing the researchers to amass a substantial amount of information about the burial practices, health status, organization, and life experience of a community during a brief span of time. In doing so, the project was able to provide details about the use of a historical-period cemetery and the lives and deaths of the people buried there, about what happened to the cemetery after it was abandoned, about the lives of the people who lived atop the cemetery, and about how the land containing the former cemetery was urbanized during the late-nineteenth and twentieth centuries.

The findings presented in this book and in the project report series (Gray and Swope 2012; Hall et al. 2012; Heilen and Gray, eds. 2012; Heilen, et al., eds. 2012) represent a tremendous amount of work performed by many

¹A large residential and commercial urban component postdating the cemetery and a small but informative prehistoric component dating to the Middle Archaic, Late Archaic/Early Agricultural, and Middle Formative periods were also investigated as part of the project (see Gray and Swope, eds. 2012; Gray et al. 2012; Hall et al. 2012).

²It was especially fortunate that the technical representative for SRI's contract with the County, Roger Anyon, and a peer reviewer for the project, Lynne Goldstein, together have an extraordinary depth of experience and knowledge about repatriation and reburial efforts. Their expert insight and tireless efforts were of primary importance in ensuring the success of these aspects of the project.

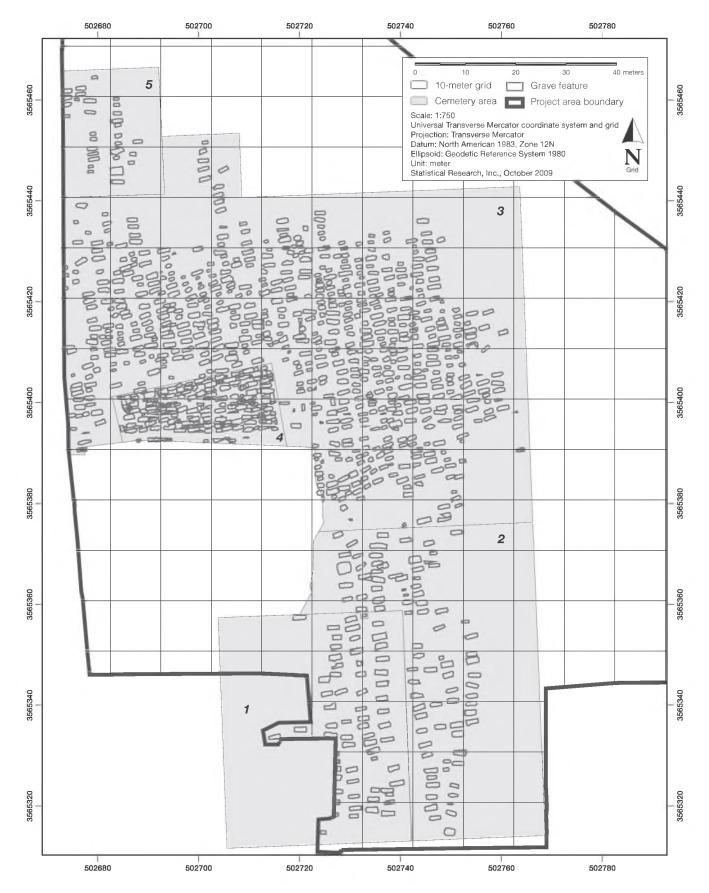


Figure 2. Map of the Joint Courts Complex project area, showing grave features.

dedicated professionals over the course of several years, as well as an unprecedented level of project planning and coordination. A project of this size requires a substantial commitment by personnel to see it through to the end. Large projects such as this are also subject to the frequent turnover of staff, which happened multiple times during the course of the project, requiring that management focus on project structure and redundancy of staff positions to make sure that the project moved forward without problems and according to schedule. Many people participated in the project, including researchers, descendant groups, and government officials, and many steps were taken to ensure the success of the project from beginning to end. Efforts encompassed not only the investigation of the archaeology and history of the project area, but, importantly, the repatriation of individuals to descendant groups and the reburial of individuals in new burial spaces where they can now be honored and memorialized and protected from further disturbance. Given the success of the project along these lines, planning organizations might use the project as a model for how to conduct similar excavations in the future. Furthermore, methods developed for the project should contribute to the advancement of methods for excavating, documenting, and analyzing historical-period cemeteries and urban contexts.

The methods and findings presented in this book underscore some of the differences between academic and cultural resource management (CRM) approaches to conducting big projects (see, for example, Altschul 1998). Large academic projects are often funded by grant organizations and are conducted over long periods of time by faculty and students who generally can devote only a portion of their time toward a particular project. Research goals and corresponding investigative methods and contexts are selectively identified in academic projects in order to address the particular interests of researchers and to pursue issues considered most salient in current discussions of theory and method. Reporting for academic projects is often achieved through the publication of articles in peer-reviewed journals, as well as in theses and dissertations by students working with project materials. The results of such projects can be distributed widely but not always comprehensively or at the same time.

CRM projects are dictated more than academic projects by development and legal requirements and, increasingly, by the interests of identity groups with a stake in a project's outcome. Large CRM projects tend to involve the mitigation of resources that will be impacted by development and thus place a heavy emphasis on thoroughly documenting and interpreting resources that will be destroyed rather than tailoring a project to address the goals of a specific research program. The resources to be investigated, as well as some of the issues considered most salient to documentation and interpretation, are typically not chosen by investigators but are chosen for them by factors outside of their control. Large CRM projects enjoy a much greater level of funding than most academic projects, but also must be accomplished faster and under contract by professionals paid a wage to work on CRM projects full-time. Completing final reports is generally not an option but rather a contractual requirement on which the future of the contracting organization depends. Unfortunately, CRM reports often have limited distribution and are not widely accessible, being confined to the "gray literature." Thus, the relevance of a CRM project's findings to larger research issues can be difficult to assess without combing through the large body of gray literature developed over many decades of CRM research (Altschul 1998).

Development interests and legal requirements, of course, played a major role in determining the course of the Joint Courts Archaeological Project, but the project also had to be sensitive to a wide range of topics having to do with the interests of planning organizations, the community, and descendant groups. Furthermore, the large scale of the project and time constraints placed upon it necessitated a project structure and methods that could accomplish the project objectives within a short period of time. The project was a success on multiple levels but also resulted in a variety of lessons learned about how to conduct large projects, including managing project tasks and personnel, implementing and integrating diverse technologies, preparing materials for curation and repatriation, and organizing, analyzing, and curating the large volume of data developed during the investigation. At the same time, the project was able to conduct research within a CRM context that is of broad methodological and theoretical interest.

Volume Organization: A Road Map

This book is based on the first volume of a four-volume report series completed for the Joint Courts Complex Archaeological Project (Heilen and Gray, eds. 2012; Heilen. Hefner, and Keur 2012; Gray and Swope 2012; Hall et al. 2012). The book focuses on the cemetery component of the project, but it should be noted that substantial efforts were also made in documenting and interpreting prehistoric finds within the project area and a large urban component that postdated the use of the cemetery (Gray and Swope 2012). This book deals only with a portion of the finds resulting from the project and restricts discussions mostly to those issues considered most relevant to understanding the cemetery component and how it was investigated.

This chapter introduces the cemetery and the project in terms of their unique significance, presenting information on the growth and abandonment of the cemetery, project

Michael P. Heilen

planning, the study of identity in archaeology and in mortuary contexts, and project methods. The chapter also places the project findings within a broad theoretical and comparative context. Chapter 2 provides a historic context for Tucson prior to and during the establishment, use, and abandonment of the cemetery and an overview of the archaeology and history of the cemetery. The design and results of identity assessments conducted for the project are presented in Chapter 3. These assessments not only facilitated analysis of excavation results but also greatly facilitated repatriation and reburial, serving as a model for future cemetery investigations. Historical, contextual, and osteological evidence for diet, nutrition, disease, trauma, medical intervention, and demography are considered in Chapter 4, revealing a burial population that was relatively healthy in terms of diet and nutrition but heavily affected by disease and trauma, with little consistent access to healthcare and high mortality rates for some segments of the community.

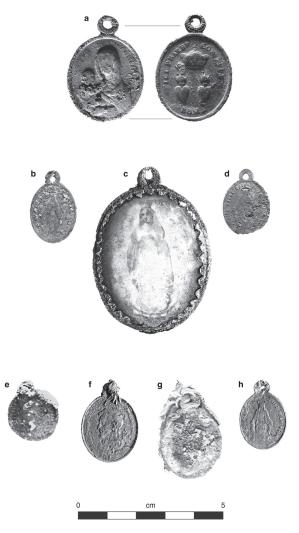
In light of the multiethnic and diverse use of the cemetery, Chapter 5 provides a context for understanding the deathways practiced by different segments of the community in Tucson. Emphasis is placed on Hispanic Catholic deathways and Euroamerican deathways, with a focus on the effects of cemetery reform and the Civil War on mortuary behavior in Tucson. Information on military and fraternal funerals, as well as the deathways of O'odham, Yaqui, and Apache groups, is also discussed, including discussion of aboriginal practices not observed in the cemetery. Chapter 6 synthesizes the mortuary data developed for the project, integrating historical, contextual, and osteological findings.

In Chapter 7, all the findings from the cemetery context are summarized and compared to the results of investigations of other, contemporaneous cemeteries, exploring the ways in which the cemetery investigation, and the cemetery itself, are unique. In Chapter 8, the final chapter, the repatriation and reburial of remains is discussed. Like the identity assessments, these efforts represent a new approach that could serve as a model for other projects. In addition, the chapter highlights the contrasting ways in which different groups from the cemetery were memorialized and reburied.

The Growth and Abandonment of an Urban Cemetery

Alameda-Stone cemetery was in use, Tucson had evolved into a growing multicultural community in the midst of the Sonoran desert. Although once isolated and sparsely inhabited, Tucson had become home to Hispanic settlers; native Yaqui, O'odham, and Apache individuals; U.S. military personnel; and Euroamerican migrants. The town prospered despite resistance by native peoples, a reputation for lawlessness, and a rugged environment that presents many challenges to human occupants even today (see Chapter Two). Burials in the cemetery testify to the multiethnic nature of the cemetery as well as the complex makeup of a community that grew as a result of economic opportunity, military action, and missionary efforts (the enduring influence of these efforts is evident in various artifacts found in the Alameda-Stone cemetery; Figures 3–5).

As noted previously, the remains of perhaps two thousand people of all ages from a wide variety of cultural and



In order to understand how the cemetery was investigated and why, it is worth discussing how and when the cemetery was used and by whom. At the time that the

Figure 3. Examples of medallions and religious pendants from the Alameda-Stone cemetery.



economic backgrounds were buried in the cemetery, which was used by the entire community of Tucson. The cemetery was established near the edge of town so that people could bury their dead at a distance that kept them relatively safe from Apache raids, which represented a major threat to the town's inhabitants while the cemetery was in use. The cemetery was divided into a large civilian section and a smaller military section, which were further subdivided into sections likely representing different social groups. The first burials placed in the military section of the Alameda-Stone cemetery were placed shortly after the arrival of the U.S. military in 1862. Whether civilian burials had already been placed in the cemetery by this point is not clear, but it is suspected that the civilian section was first used around this time or perhaps several years earlier. With the arrival of the U.S. military and the influx of immigrants from many parts of the United States, Mexico, and diverse other countries, Tucson was transformed culturally and economically into an American settlement on the southwestern frontier of the American West. By 1870, at a time when the Alameda-Stone cemetery had become the resting place of hundreds of the town's former inhabitants, Tucson's population stood at over 3,000 people (Mabry et al. 1994), many of them recent arrivals to the town.

During the brief period of its use, the cemetery came to be surrounded by development as Tucson grew from a remote Mexican village to a modernizing American city. As a result of this growth, the cemetery came to be located in the bustling center of town and eventually came to be viewed as a danger and a nuisance. Criminal activities taking place within and around the cemetery and the cemetery's dilapidated and deteriorated condition were seen as disrespectful to the dead. The solution adopted at the time was to close the cemetery, advise citizens and the U.S. military to remove burials from it, open a new cemetery outside of the city center, and transfer ownership of the former cemetery land to those who would develop it.



Figure 5. Example of a crucifix from the Alameda-Stone cemetery.

The civilian section of the Alameda-Stone cemetery was officially closed by the Village Council on May 31, 1875, and the Court Street Cemetery was opened the following day on the far northern edge of town (Arizona Citizen 1875). Just 5 years later, the Southern Pacific Railroad completed its connection to Tucson, bringing to the city new immigrants, easy and inexpensive access to mass-produced commodities and world markets, and, perhaps most importantly, a changing political economy. The railroad began to transform a small hinterland community into one of the hubs of commerce and culture in the Southwest (Luckingham 1982; Mabry et al. 1994). The military section of the Alameda-Stone cemetery continued to be used until 1881, when the commanding officer of Fort Lowell was notified by the City Council that the military cemetery was not available for further burials (Arizona Weekly Citizen 20 February 1881:4) and was to be closed by the City (Callender 1998; Faust and Randall 2002; O'Mack 2005, 2006).

The last known burial-that of Corporal John Lyonswas placed in the military section of the Alameda-Stone cemetery on January 23, 1881 (Arizona Weekly Star 1881). A month later, the southwestern corner of the Alameda-Stone cemetery was deeded to the school trustees, with the stipulation that they would be responsible for removing all bodies from that parcel. Some burials were removed from the cemetery in 1882 in response to a notification from the City Council that burials in the cemetery must be exhumed within 60 days and reburied in the new Court Street cemetery (Arizona Daily Star 1882). In local newspapers, undertaker E. J. Smith advertised his services-in Spanish and English-to assist with the removal of burials from the nonmilitary portion of the cemetery (O'Mack 2006:44). By January 1883, a wall demarcating the cemetery had been demolished (Arizona Weekly Citizen 1883; Arizona Weekly Star 1883).

In June, 1884, the burials from the military section of the Alameda-Stone cemetery were moved to a new cemetery associated with Fort Lowell, 7 miles away (Arizona Weekly Citizen 1884). These exhumations, however, were incomplete, missing some burials and leaving behind burial-associated objects as well as skeletal material (Figures 6 and 7). With the closing of the civilian and military sections, the dismantling of the cemetery was soon underway. In a special session in April of 1884, the City Council began discussions concerning the selling of lots in the former cemetery (Arizona Daily Citizen 1884), and by April 1889, the old cemetery grounds were divided into lots and sold at auction (Arizona Daily Citizen 15 April 1889:4) (Figure 8). Shortly after their sale, lots were graded, removing all surface evidence of the former cemetery.

The next few decades witnessed developments that threatened the existence of the cemetery as increasingly urbanized Tucson grew over the project area. Homes were built on the lots in the project area, with many of them used as rental properties; privies, trash pits, utility trenches, and landscaping features were dug into the former cemetery, often impacting the graves below. After a few decades of residential use, the land containing the former cemetery was again transformed, now transitioning into a commercial district. With the establishment of the Baum and Adamson Tire and Automotive Company in 1925, the land containing the former cemetery had been gradually transformed into a commercial district in the heart of downtown Tucson. Construction of commercial buildings and urban facilities continued to disturb the former cemetery. The largest of these, the construction of the Tucson Newspapers Building basement within the cemetery in 1940 and construction of an addition in the 1950s (Arizona Daily Star 1940, 1955) (Figure 9), resulted in the displacement or destruction of burials. Archaeologically, the total number of burials destroyed by the construction of the Tucson Newspapers Building appears to number at least several hundred (see Heilen and Hall 2012).

Historical knowledge of the cemetery persisted, but it had become hidden from view, and the city's demographic makeup had become increasingly dominated by residents unaffiliated with Tucson's former inhabitants. As a result, the cemetery had for the most part receded from public memory until the voters of Pima County approved \$76 million to construct a city/county courts complex in 2004 (Figure 10). The archaeologists contracted to excavate





Figure 7. Military uniform buttons from the Alameda-Stone cemetery.

the 4.3 acres of land containing the cemetery faced several challenges, not the least of which was how to best approach the excavation of a cemetery in a very public downtown setting.

Project Planning

Pima County was aware that the excavation of a historical-period cemetery had the potential to draw intense public controversy and conflict. For instance, excavation of the African Burial Ground in lower Manhattan during the 1990s-a site where thousands of enslaved Africans and African Americans had been buried in colonial New York during the seventeenth and eighteenth centuriesresulted in intense public outcry and scrutiny. In this earlier landmark project, important stakeholders, including the African American descendant community and the New York City Landmarks Preservation Commission, had not been adequately consulted, and an appropriate level of project planning and support had not been developed. No research design or burial agreements had been emplaced even when the excavation commenced, and sufficient information about the nature and extent of potential remains within the New York African Burial Ground had not been developed. Construction accidents resulting in destruction of burials occurred during excavation as did vandalism and theft of remains. Prominent public officials, community leaders, celebrities, and concerned citizens spoke out vehemently against the African Burial Ground Project while excavation was underway and demanded a voice in how the project was to be conducted. Public concern with the project prompted two Congressional subcommittee hearings, protests, and numerous scathing commentaries in local and national news media. In short, the project erupted into a public relations nightmare that required numerous

interventions and redirections to get back on course, resulting in a much greater expenditure of time and money than was originally planned.³

Given the potential for what could happen with a cemetery excavation project, Pima County was determined that, if excavation of the Alameda-Stone cemetery was to be conducted, all the appropriate steps had been taken to ensure a culturally sensitive project approach that took into account the needs of the community and was in full compliance with all applicable laws. Problems experienced in the past with other historical-period cemetery excavations were to be anticipated and minimized. The County's answer to problems that emerged in the past with other historical-period cemetery excavations was to do exactly what had not been done for those projects: careful and comprehensive planning, intensive and transparent information gathering and disclosure, and the full involvement of descendant groups and other stakeholders throughout the project. Central to the County's approach was the overriding concern that the planning and consultation process be open, inclusive, and transparent. There were to be no surprises (Gray and Anyon 2012).

As the Joint Courts Complex Archaeological Project was funded by the County and would take place on lands owned by the County, the project would not be conducted under federal law. The County, as a political subdivision of the state of Arizona, instead had to comply with several Arizona historic preservation statutes, including the Arizona Antiquities Act and the Arizona Historic

³ Struggles over the course of the project ultimately resulted in the halting of excavations, scaling down of original building plans, transfer of scientific control of the postexcavation phases of the project to a new research team with experience in the archaeology and history of the African diaspora, construction of an onsite memorial and visitors center, and the development of plans for the Smithsonian National Museum of African American History and Culture in Washington, D.C. (Blakey and Rankin-Hill 2009).