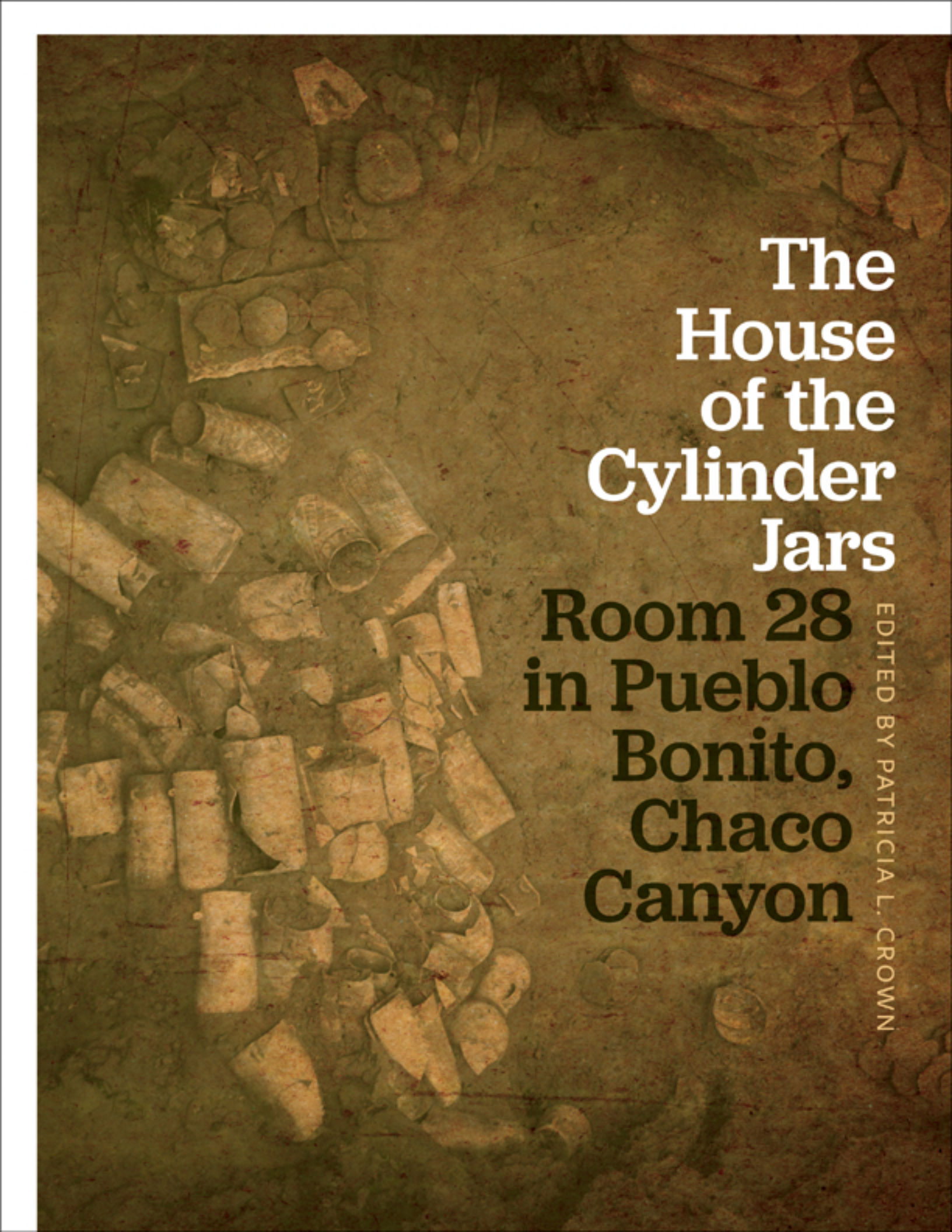


The background of the cover is a photograph of numerous ancient pottery fragments, including cylinder jars, scattered on a dark, textured surface. The fragments are light-colored, possibly tan or beige, and show signs of age and wear. Some are whole, while others are broken into pieces. The lighting is dramatic, highlighting the textures and shapes of the pottery.

The House of the Cylinder Jars

**Room 28
in Pueblo
Bonito,
Chaco
Canyon**

EDITED BY PATRICIA L. CROWN

THE HOUSE OF THE CYLINDER JARS



EDITED BY PATRICIA L. CROWN

The House of the Cylinder Jars Room 28 in Pueblo Bonito, Chaco Canyon

University of New Mexico Press Albuquerque

© 2020 by the University of New Mexico Press
All rights reserved. Published 2020
Printed in the United States of America

ISBN 978-0-8263-6177-6 (cloth)
ISBN 978-0-8263-6178-3 (electronic)

Library of Congress Control Number: 2020941429

COVER ILLUSTRATION Bird's-eye view of Room 28 in August
1896. Photograph by Richard Wetherill. HEE 105, Image
#411881, American Museum of Natural History Library

DESIGNED BY Mindy Basinger Hill

**To all who
made Chaco their
home** To Chip,
my partner
in life And to
Dabney Ford,
for making
this research
possible

Contents

List of Illustrations *ix*

List of Tables *xi*

Acknowledgments *xiii*

CHAPTER ONE Room 28 in Pueblo Bonito:
Background, Research Questions,
and Methods

PATRICIA L. CROWN 1

CHAPTER TWO The Architecture and Sequence
of Use of Room 28

PATRICIA L. CROWN 14

CHAPTER THREE Ceramics from Room 28

PATRICIA L. CROWN 37

CHAPTER FOUR Chipped and Ground Stone

from Room 28

JACQUELINE M. KOCER 68

CHAPTER FIVE Ornaments, Mineral Specimens,
and Shell Specimens from Room 28

HANNAH V. MATTSON AND JACQUELINE M. KOCER 80

CHAPTER SIX Textiles from Room 28 at Pueblo
Bonito

LAURIE D. WEBSTER 101

CHAPTER SEVEN Fauna from Room 28

CAITLIN S. AINSWORTH, STEPHANIE E. FRANKLIN,
AND EMILY LENA JONES 104

CHAPTER EIGHT Eggshells and Gastroliths
from Room 28: Turkey Husbandry

at Pueblo Bonito

CYLER CONRAD 123

CHAPTER NINE Archaeobotanical Evidence from

Room 28, Pueblo Bonito

KAREN R. ADAMS 131

CHAPTER TEN Pollen Results from Room 28,

Pueblo Bonito

SUSAN J. SMITH 144

CHAPTER ELEVEN Historical Artifacts from Room 28

KATHERINE L. BREWER 153

CHAPTER TWELVE Conclusions: Understanding

Room 28 in Pueblo Bonito

PATRICIA L. CROWN 156

APPENDIX A Room 28 Whole Vessels

PATRICIA L. CROWN 181

APPENDIX B Archaeobotanical Remains

KAREN R. ADAMS 185

APPENDIX C Human Remains

CAITLIN S. AINSWORTH
AND EMILY LENA JONES 189

References Cited 197

Contributors 213

Index 215

Illustrations

FIGURE 1.1 Map of Pueblo Bonito with location of Room 28 2

FIGURE 1.2 Chacoan cylinder jar 2

FIGURE 1.3 Map based on lidar scanning of Room 28 11

FIGURE 1.4 Lidar-scanning map draped over a historic bird's-eye photograph of Room 28 11

FIGURE 2.1 Maps showing the changing configuration of Room 28 15

FIGURE 2.2 Level 15 in the southeast quadrant of Room 28, showing horizontal surfaces alternating with laminated sand 16

FIGURE 2.3 East wall of Room 28 19

FIGURE 2.4 Southeast corner of Room 28 with handprints in plaster 19

FIGURE 2.5 Southeast corner of Room 28 with postholes and step 20

FIGURE 2.6 Hyde Exploring Expedition photograph of vessels sitting on plaster 20

FIGURE 2.7 South wall of Room 28, showing post-and-mud construction 21

FIGURE 2.8 Close-up of plaster patch in figure 2.7 21

FIGURE 2.9 North wall of Room 28 22

FIGURE 2.10 Bisected Posthole 24 25

FIGURE 2.11 Hyde Exploring Expedition photograph of north wall of Room 40 27

FIGURE 2.12 Hyde Exploring Expedition photograph of Room 28 with cylinder jar cache 28

FIGURE 2.13 Hyde Exploring Expedition photograph of fifth layer of cylinder jars 30

FIGURE 2.14 West profile of Room 28, showing late masonry wall and backfill stratigraphy 30

FIGURE 2.15 Radiocarbon dates from Room 28 32

FIGURE 3.1 Sherds recovered in 1896 in Room 28 fill 41

FIGURE 3.2 Bird's-eye view of Room 28 in August 1896 43

FIGURE 3.3 Photograph taken in 1896 of vessels in Layer 1 by northeast door 43

FIGURE 3.4 Composite figure showing vessels in excavation "layers" for the western part of Room 28 50

FIGURE 3.5 Orifice diameters for cylinder jars from Room 28 51

FIGURE 3.6 Scatter plot of bowl rim diameter by height 55

FIGURE 3.7 Gallup Black-on-white bowl found with ornaments inside 55

FIGURE 3.8 Cylinder jar with greasy-looking discoloration 57

FIGURE 3.9 Cylinder jar with cut marks near lug handles 57

FIGURE 3.10 Cylinder jar with patch cut or ground from surface 59

FIGURE 3.11 Abrasion lines on exterior wall of a cylinder jar 59

FIGURE 3.12 Rejoining sherds recovered in Room 28 with photograph of vessel from Room 56 65

FIGURE 3.13 Map showing upper-story rooms in northern portion of Pueblo Bonito 65

FIGURE 3.14 Portions of cylinder jars recovered in backfill in Room 28 in 2013 66

FIGURE 3.15 Proportions of wares found in Room 28 assemblages 67

FIGURE 3.16 Proportions of regional wares for different contexts in Room 28 67

FIGURE 4.1 Frequencies of flaked stone by type 70

FIGURE 4.2 Projectile points from Room 28 excavations 72

FIGURE 4.3 Flaked stone with evidence of burning by level 73

- FIGURE 4.4 Percentage of jar lids and fragments by texture 77
- FIGURE 5.1 Common ornament types from Room 28 84
- FIGURE 5.2 Frequency of ornaments and related items by excavated context 87
- FIGURE 5.3 Artifact categories in the analyzed Room 28 ornament, mineral, and shell assemblage 87
- FIGURE 5.4 Finished ornament types from Room 28 87
- FIGURE 5.5 Raw material by major artifact type, Room 28 87
- FIGURE 5.6 Diameters of complete disc beads by material type, Room 28 90
- FIGURE 5.7 Diameters of complete shell disc beads from Room 28 by major provenience 91
- FIGURE 5.8 Distribution of turquoise disc bead diameters by provenience 92
- FIGURE 5.9 Distribution of complete shell disc bead diameters by provenience 92
- FIGURE 5.10 Coefficients of variation of bead dimensions by context 94
- FIGURE 5.11 Distribution of bilobe bead lengths from Room 28, Room 33, and kivas 94
- FIGURE 5.12 Diameters of complete spire-lopped and truncated *Olivella* beads from Pueblo Bonito 94
- FIGURE 5.13 Distribution of *Olivella* spire-lopped bead lengths by context 94
- FIGURE 6.1 Textile fragments from the 2013 Room 28 excavations 100
- FIGURE 7.1 Relative abundance of mammalian orders for Room 28 and Pueblo Bonito mounds 105
- FIGURE 7.2 Relative abundance of large mammal remains in Room 28 108
- FIGURE 7.3 Relative abundance of large bird remains in Room 28 109
- FIGURE 7.4 Bone tool made from a pronghorn ulna 110
- FIGURE 7.5 Relative frequency of rodent versus carnivore gnawing in the Room 28 and Pueblo Bonito mounds assemblages 114
- FIGURE 7.6 Frequency of rodent orders by depth in Room 28 117
- FIGURE 7.7 Taxonomic composition of the Room 28 subfloor assemblage 118
- FIGURE 7.8 Relative abundance of cottontails and jackrabbits at Chacoan great house and small house sites 119
- FIGURE 7.9 Relative proportion of skeletal elements for jackrabbits and cottontails from Room 28 and Pueblo Bonito mounds 120
- FIGURE 7.10 Relative proportion of forelimbs and hindlimbs for jackrabbits and cottontails from Room 28 and Pueblo Bonito mounds 120
- FIGURE 8.1 Map of select sites in Chaco Canyon 122
- FIGURE 8.2 A turkey inner eggshell and a non-turkey inner eggshell 124
- FIGURE 8.3 Eggshell thickness histograms for Arroyo Hondo Pueblo, Room 28, and Tijeras Pueblo 125
- FIGURE 8.4 A partial turkey egg from Chaco Canyon 126
- FIGURE 8.5 Swallowed debitage turkey gastroliths 126
- FIGURE 8.6 Distribution of maximum dimension of gullet stones in Room 28 127
- FIGURE 8.7 Distribution of turkey eggshells and gastroliths, quills/feathers, bones, and dung in Pueblo Bonito 128
- FIGURE 9.1 Reproductive parts of domesticated plants 135
- FIGURE 9.2 Reproductive parts of wild plants, plus evidence of rodents 135
- FIGURE 9.3 Reproductive parts of wild plants (continued) 136
- FIGURE 9.4 Charred wood and twigs of trees and shrubs 136
- FIGURE 9.5 Charred wood and twigs of trees and shrubs (continued) 138
- FIGURE 9.6 Charred wood and twigs of trees and shrubs (continued) 138
- FIGURE 10.1 Microphotographs of select pollen types from Room 28 145
- FIGURE 10.2 Summary of Room 28 pollen 148
- FIGURE 11.1 Porter bottle found in Room 28 154
- FIGURE 12.1 Photograph from 1897 of excavations in Room 28a 157
- FIGURE 12.2 Lower-story rooms in the northern portion of Pueblo Bonito 157
- FIGURE 12.3 Upper-story rooms in the northern portion of Pueblo Bonito 158
- FIGURE A.1 Room 28 cylinder jars 181
- FIGURE A.2 Room 28 pitchers and other vessels 183
- FIGURE A.3 Room 28 bowls 184

Tables

TABLE 1.1 Three interpretations of events in Room 28 of Pueblo Bonito from construction to abandonment 7

TABLE 1.2 Expectations of the Pepper, Judd, and Crown models for the caching and burning events in Room 28 8

TABLE 1.3 Interpretive framework, including expectations for evidence of abandonment, desecratory termination, and reverential termination ritual 9

TABLE 2.1 AMS dates for Room 28 samples calculated with the IntCal13 calibration curve and the computer program OxCal4.2 18

TABLE 2.2 Room 28 posthole attributes and dates 24

TABLE 3.1 Counts of types and forms recovered from the subfloor in Room 28 in 2013 38

TABLE 3.2 Ceramic sherds recovered from floor features in Room 28 in 2013 40

TABLE 3.3 Sherds excavated by the Hyde Exploring Expedition in Room 28 in 1896 42

TABLE 3.4 All field numbers and vessels from Room 28 44

TABLE 3.5 Ceramic type classifications for whole vessels recovered by the Hyde Exploring Expedition from Room 28 in 1896 47

TABLE 3.6 Vessel forms recovered in 1896 by location in Room 28 48

TABLE 3.7 Types and forms of vessels found in front of the door to Room 51a 49

TABLE 3.8 Counts of vessels found in a large pile in the southwestern portion of Room 28 49

TABLE 3.9 Lugs and straps on cylinder jars from Room 28 53

TABLE 3.10 Maker's marks on Room 28 vessels by form 53

TABLE 3.11 Interior use wear for vessel forms found in Room 28 56

TABLE 3.12 Exterior basal use wear for vessel forms found in Room 28 56

TABLE 3.13 Room 28 vessels with evidence of reslipping, repainting, and fired-out paint 56

TABLE 3.14 Modifications to Room 28 vessels by form and type 58

TABLE 3.15 Counts of types and forms recovered in the backfill in Room 28 in 2013 61

TABLE 4.1 Tools versus non-tools by material 71

TABLE 4.2 Morphological description of projectile points found in Room 28 71

TABLE 4.3 Hammerstones and chopper by raw material, metric data, and parent state 74

TABLE 4.4 Frequency of ground stone types from Room 28 75

TABLE 4.5 Orifice diameter and coefficient of variation values for cylinder jars and jar lids 78

TABLE 4.6 Ground stone types by level 78

TABLE 5.1 Ornaments, mineral specimens, and shell specimens from Room 28 81

TABLE 5.2 Room 28 assemblage by project 83

TABLE 5.3 Attributes recorded during ornament analyses 83

TABLE 5.4 Artifact types by provenience 88

TABLE 5.5 Artifact types by raw material, Room 28 90

TABLE 5.6 Genera represented by shell artifacts, Room 28 90

TABLE 5.7 Bead types by raw material 91

TABLE 5.8 Pendant types from Room 28 by context and material 96

TABLE 5.9 Mineral specimens and manuports from Room 28 by material type and general context 97

TABLE 5.10 Frequency of selected ornament types by context, Pueblo Bonito 98

TABLE 6.1 Textiles from Room 28	101	TABLE 9.4 Charred subsistence and nonsubsistence resources preserved within seven flotation samples from subfloor features	139
TABLE 7.1 Number of faunal specimens from subfloor and backdirt contexts in Room 28	104	TABLE 9.5 Well-preserved maize cob segments and fragments collected separately	139
TABLE 7.2 Species identified in the Room 28 assemblage	106	TABLE 9.6 Uncharred wild seeds recovered within seven flotation samples	140
TABLE 7.3 Fragmentation data for the faunal assemblages of Room 28 and the Pueblo Bonito mounds	111	TABLE 9.7 Charred twigs from the subfloor surface where a large post was pulled from Posthole 22 in the southwest corner of Room 28	140
TABLE 7.4 Frequency of five types of surface modification in the faunal assemblages of Room 28 and the Pueblo Bonito mounds	112	TABLE 9.8 Pueblo Bonito archaeobotanical analyses that reported reproductive plant parts	142
TABLE 7.5 Measures of richness and evenness calculated at the order level for the faunal assemblages from Room 28	113	TABLE 10.1 Pollen samples analyzed from Room 28	144
TABLE 7.6 Surface modifications on rodent remains in the backdirt assemblage of Room 28	115	TABLE 10.2 Room 28 pollen data as raw counts	146
TABLE 7.7 Skeletal elements of the subfloor lagomorphs of Room 28	119	TABLE 10.3. Ethnobotanical uses of cattail (<i>Typha</i>)	149
TABLE 8.1 Turkey bone and eggshell remains from sites in Chaco Canyon	122	TABLE 10.4 Ceremonial, religious, and ritual uses of cattail (<i>Typha</i>)	149
TABLE 8.2 Number of identified eggshell and gastrolith specimens by level and context in Room 28, Pueblo Bonito	124	TABLE 10.5 Samples ranked by maize pollen abundance with representation of other economic taxa and cheno-am	151
TABLE 8.3 Published values for turkey eggshell thickness	125	TABLE 10.6 Select pollen types as percentage of samples by project	152
TABLE 8.4 Ancient DNA results for turkey samples analyzed from the Pueblo Bonito trash mounds	129	TABLE 11.1 Historical artifacts recovered from Room 28	154
TABLE 8.5 Strontium isotope results for analyzed turkey samples from Chaco Canyon	130	TABLE 12.1 Comparison of the contents of Rooms 28, 28a, 53, and 56	165
TABLE 9.1 Context of archaeobotanical samples analyzed	132	TABLE 12.2 Modified charred sticks found in backfill in Room 28 that originated from Room 28a	166
TABLE 9.2 Plant taxa and parts recovered in Room 28 samples	134	TABLE B.1 Archaeobotanical remains: flotation and macrobotanical samples from Room 28	185
TABLE 9.3 Uncharred macrobotanical specimens from backfill and subfloor features	137	TABLE C.1 Human skeletal elements from Room 28, Pueblo Bonito	190

Acknowledgments

This volume details the results of the reexcavation of Room 28 in Pueblo Bonito, Chaco Canyon. Financial support for the project was provided by the National Endowment for the Humanities (RZ-51417-13), the National Geographic Society (9276-13), the University of New Mexico (UNM), and the Friends of Chaco. My thanks to NEH program officer Lydia Medici and NatGeo program officers Christopher Thornton and Matthew Piscitelli. The field portion of the research was conducted in the Chaco Culture National Historical Park. We could not have completed the fieldwork without the help of the park staff, particularly archaeologist Dabney Ford and chief ranger Don Whyte. Dabney and Don provided support and advice throughout the project, and we were very fortunate that they were part of the staff that summer. CCNHP staff members Roger Moore, Rechanda Lee, and G. B. Cornucopia also provided help and advice (and sometimes pizza). Under Garry Joe's skilled supervision, the Chaco stabilization crew (Robinson Lewis, Willard Martinez, Wilmer Martinez, Harold Suina, James Yazzie) installed safety scaffolding, built a portable garage over the room, created "sheep pens" for our backdirt, set up a bucket-o-matic to lift dirt out of the deep room, hauled away tons of rock, and backfilled the room after we left. Harold Suina used his expert masonry skills to rebuild a filled door that had collapsed. Chip Wills and I oversaw an intrepid crew of UNM graduate students (Leigh Cominiello, James Davenport, Scott Gunn, Jacque Kocer, Jennie Sturm) and one undergraduate, Yvonne Green. Their patience and good humor made the hot enterprise fun. Brenda Shears volunteered her time and enthusiasm. UNM faculty member Emily Lena Jones joined us in the field and then returned to conduct the inventory of human remains. UNM safety engineer Robert Dunnington visited twice and provided solutions that made it possible for

us to continue to work under difficult conditions. Back in Albuquerque, the UNM Department of Anthropology staff, particularly JoNella Vasquez and Jennifer George, handled the finances for the project.

After the fieldwork was completed, analysis of the materials collected in 2013 and the materials collected in 1896 began. Research assistant Jacque Kocer conducted the analysis of the 2013 chipped stone, ground stone (with help from undergraduate Curtis Randolph), gullet stones, and ornaments, and she ran the flotation samples in preparation for the analysis. Katherine Brewer analyzed the historical artifacts. Research assistants Stephanie E. Franklin and Caitlin S. Ainsworth analyzed the faunal material under the supervision of Emily Lena Jones. Dr. Jones and Caitlin S. Ainsworth also completed the inventory of the human remains. Cyler Conrad conducted analysis of the eggshells. Cyler Conrad and Marian Hamilton prepared some bird and rabbit bones for stable isotope analysis, which was conducted at UNM in the laboratory of Seth Newsome. Research assistant Jill Jordan conducted the scanning electron microscope analysis of some ceramics and plaster samples from Room 28, a project that continues with Katharine Williams, both in the laboratory of Michael Spilde. Specialists Karen Adams (macrobotanical materials) and Susie Smith (pollen) completed their analyses with funding from the NEH. The NEH grant provided funding for trips to the American Museum of Natural History in 2014 and the National Museum of the American Indian in 2016 to analyze the 1896 Room 28 collections. Hannah Mattson accompanied me on the trip to AMNH, and her previous dissertation analysis of the ornaments from Room 28 was incorporated into our research outlined here. At AMNH, David Hurst Thomas gave us access to the Room 28 collections, and Anibal Rodriguez supervised our work. We could not have completed this por-

tion of the study without the excellent staff at AMNH, particularly Barry Landua (systems manager and manager of digital imaging) and Kendra Meyer (digital lab manager, Department of Library Services). At NMAI, I worked with Lisa Anderson and Veronica Quiguango, both of whom made my research time a pleasure. Nathan Sowry (reference archivist, NMAI) was wonderfully responsive to my request for permission to use digital images. Diane Tyink, archivist for the Maxwell Museum of Anthropology, provided access to the George Pepper photographs in its collection. At Harvard's Peabody Museum of Archaeology and Ethnology, Cynthia Mackey of the Office of Rights and Reproductions provided help with an image request. At the Robert S. Peabody Institute of Archaeology, Marla Taylor provided help with my image request.

I had previously analyzed all of the cylinder jars from Room 28 on research visits to AMNH in 2003 and 2007, a research visit to NMAI in 2007, and a research visit to the Peabody Museum at Harvard in 2009. These visits were facilitated by David Hurst Thomas, Lori Pendleton, and Anibal Rodriguez (AMNH), Patricia Nietfield (NMAI), and Steven LeBlanc (Peabody). The material from Rooms 53 and 56 discussed in this volume was analyzed during research trips in 2008, 2017, and 2018. I am indebted to Bonnie Sousa and Marla Taylor of the Peabody Institute of Archaeology for their help with the Moorehead collec-

tions and to David Hurst Thomas and Anibal Rodriguez for their help with the AMNH collections.

NEH and UNM funding also supported cataloging of the materials in the National Park Service system for curation at the Chaco Collections at the University of New Mexico. Under the expert and patient supervision of Wendy Bustard, graduate students Jacque Kocer, Jill Jordan, and Katherine Brewer cataloged the artifacts collected in 2013 so that future researchers can access them.

Compiling this volume has involved the hard work of the contributors over the last several years. I am grateful to all of them for their efforts and patience. At the University of New Mexico Press, Clark Whitehorn, James Ayers, and Sonia Dickey helped shepherd the volume to print. Steve Lekson and Barbara J. Mills provided helpful comments on an earlier draft of the volume. Merryl A. Sloane provided exceptional copyediting.

Finally, I could not have completed this volume without the support of my family, particularly my partner in research, Chip Wills, who was there throughout the process, providing good counsel and his vast understanding of Chaco. My wonderful children, Carson Alice Wills and Andrew Keith Wills, suffered through years of listening to me natter about Room 28 and cylinder jars; hopefully, they now will see where studying one question in depth can lead.

THE HOUSE OF THE CYLINDER JARS

Room 28 in Pueblo Bonito

Background, Research Questions, and Methods

In 1896, William McKinley beat William Jennings Bryan in the US presidential election, Guglielmo Marconi applied for a patent for the radio, Wilhelm Roentgen identified X-rays, miners discovered gold in the Klondike, Giacomo Puccini's *La Bohème* premiered in Turin, John Philip Sousa penned "The Stars and Stripes Forever," Greece hosted the first modern Olympics, and Queen Victoria continued her reign in England. And in June in a sandstone canyon located in the northwestern part of the Territory of New Mexico, the Hyde Exploring Expedition (HEE) began excavating Pueblo Bonito. Led by George Pepper, a 23-year-old archaeologist from New York, and Richard Wetherill, a rancher from Colorado, the HEE crew consisted primarily of Navajo men hired in Chaco, and the work was financed by Talbot and Fred Hyde, brothers whose fortune came from soap.

Around August 10, George Pepper and Richard Wetherill commenced excavations in Room 28 of Pueblo Bonito. They numbered rooms as they worked, and Room 28 was the 28th opened during that season. This room is located on the northern side of Pueblo Bonito, sandwiched between the West Court and what is called the northern burial cluster (figure 1.1). Initially, the Navajo workers found only burned roofing and walls in the two-story room, and they encouraged Pepper to move elsewhere (Pepper 1920). But on August 20, 1896, a worker identified only as Juan uncovered the first known Chacoan cylinder jar in Room 28. The Chacoan cylinder jar is a distinctive form that is approximately 2.5 times as tall as it is wide (Crown 2018; figure 1.2). Over the following nine days, they discovered another 111 cylinder jars along with numerous bowls and pitchers in a large pile on the western end of the room and in smaller groups in other parts of the room, eventually totaling 174 whole vessels. The room had burned and collapsed, burying the vessels with debris. On August 29,

they finished excavating Room 28 and removed stone masonry from a sealed doorway in the north wall of the room. George Pepper entered the adjacent room (Room 32) through the doorway and from there moved through another doorway into Room 33, the room with the two richest burials in Pueblo Bonito. This ended the 1896 excavation of Room 28, but for the next several weeks, it served as a staging area for the excavations in the adjacent Rooms 32 and 33. Fill from those rooms was thrown into Room 28, where it was searched for artifacts. Pepper was not thorough about recording where backdirt from any rooms ended up, but it appears that the fill from Rooms 32 and 33 was eventually tossed out of Room 28 in order to keep the room clear and to make it easier to search for small artifacts by placing the fill outside Richard Wetherill's tent.

In 2009, nutritional chemist Jeff Hurst and I discovered residues of cacao (chocolate) drinks absorbed into the fabric of Chaco cylinder vessels from Pueblo Bonito (Crown and Hurst 2009). This discovery was the first evidence of cacao north of the Mexico border, but it raised a number of additional questions, including how and why Chaco residents obtained cacao from more than 2,000 km away. Cacao grows in the tropics and could not grow in Chaco Canyon, so it had to be acquired at the source, brought by traders, or exchanged hand to hand across the distance between Chaco and the nearest *Theobroma cacao* trees.

Another important question concerned how Pueblo Bonito residents consumed cacao. I believed that a way to answer this lay in further study of the cylinder jars and the contexts in which they have been found. There are only around 200 known Chacoan cylinder jars, and 112 of those were found in Room 28, a room consumed by fire sometime in the AD 1100s. I believed that reopening Room 28 might answer some basic questions about the

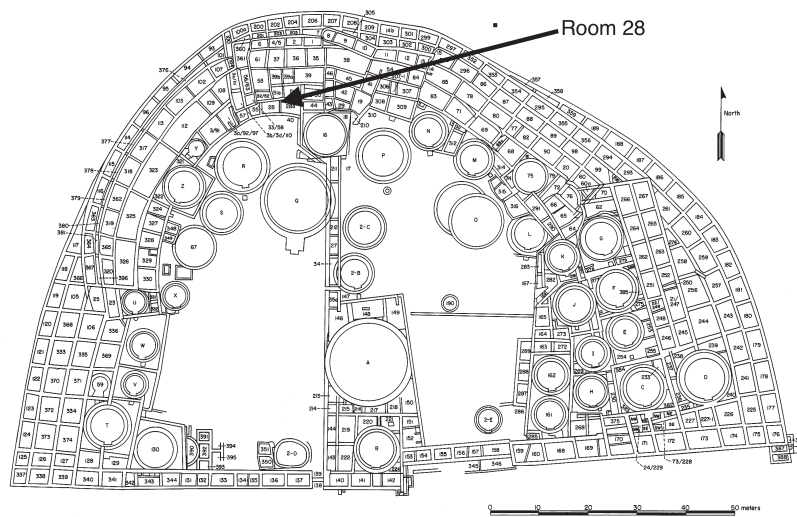


FIGURE 1.1. Map of Pueblo Bonito with location of Room 28. Base map courtesy of Thomas C. Windes. Image created by Drew Wills.



FIGURE 1.2. Chacoan cylinder jar (AMNH H/3414). Courtesy of the Division of Anthropology, American Museum of Natural History. Photograph by Patricia Crown.

room, particularly when and why it burned and why so many jars were placed there. Discussions with staff at the Chaco Culture National Historical Park (CCNHP) about reopening the room began in 2009; I then submitted a draft proposal in May 2010 and a second proposal in March 2011 that responded to comments from park personnel. The revised proposal was sent to the Tribal Consultation Committee, which has 22 member tribes, for comments and to three senior southwestern archaeologists for peer review. I received comments from representatives from Acoma Pueblo, the Hopi Tribe, Ysleta del Sur Pueblo, and the Pueblo of Zuni. I also received comments from archaeologists Eric Blinman, Barbara Mills, and Steve Plog. I again revised the proposal based on these comments and resubmitted it to the CCNHP and the New Mexico State Historic Preservation Office. The work was approved in October 2011 by the CCNHP and the New Mexico SHPO. I then sought and received funding from the National Endowment for the Humanities (RZ-51417-13) and the National Geographic Society (9276-13). Our Archaeological Resources Protection Act permit (13-CHCU-01) was signed on April 15, 2013.

Excavations began on June 4, 2013, and continued until July 13. Chip Wills and I supervised a crew of five UNM graduate students (Leigh Cominiello, James Davenport, Scott Gunn, Jacque Kocer, and Jennie Sturm) and one undergraduate (Yvonne Green from Amherst College). While our permit was issued for a thirty-day field season, excavations were halted and a consultation

was held in the middle of the season due to the inadvertent discovery of isolated human remains, which had been tossed into Room 28 with backfill from another room. Pepper and Wetherill had not found any human remains in Room 28 in 1896, so finding them in 2013 was a surprise. The human remains included several toe bones found in a tin can, so they were clearly thrown into Room 28 in the late 1800s. The consultation determined that we could resume work, but a reburial of the human remains was scheduled for immediately before the project ended. The need for consultation reduced the number of project days to 23. In addition, the CCNHP wanted all human remains inventoried prior to reburial (but not documented in any other way, including photography), so Emily Lena Jones of the University of New Mexico was hired to complete the inventory while we were working in the field.

The funded research included reopening Room 28 to the level where the HEE excavators stopped work and also some new excavation beneath the floor to document any earlier surfaces. It also included analysis of all material recovered from the room during our excavations as well as material from the 1896 excavations. The latter analysis required research visits to the American Museum of Natural History in New York City and the storage facility for the National Museum of the American Indian in Suitland, Maryland. Analysis of all of the artifacts excavated from Room 28 in the 1890s was deemed necessary to enlarge our understanding of the

suite of material used in cacao drink preparation and consumption.

The basic research questions included how, why, and when the room was abandoned, with the goal of situating the ritual drinking of cacao and the abandonment of the cylinder jars in the broader life history of Pueblo Bonito. The research was expected to improve our appreciation for the social and cultural conditions surrounding the acquisition of cacao from cultures in Mesoamerica and was part of an NEH initiative to enlarge Americans' understanding of other times, cultures, and beliefs within current US borders, focusing in this case particularly on rituals that demonstrate the great historical depth of the exchange of goods and ideas with Mesoamerican peoples. The project was also expected to have a significant impact on the public interpretation of Pueblo Bonito, the most visited site in Chaco Canyon.

In the remainder of this chapter, I present the original research design that guided the reopening of Room 28 and the methods used in the excavations. Specific methods used in the analysis of the artifacts and ecofacts from Room 28 are presented in the individual chapters that report the results of those analyses.

RESEARCH DESIGN AND QUESTIONS

The focus of the Room 28 reexcavation was how Ancestral Puebloan populations in Chaco Canyon in what is now New Mexico performed two specific rituals that engaged long-distance exchange for chocolate, special equipment and knowledge, and, based on the number of cylinder jars, perhaps scores of participants. The first ritual involved consumption of cacao drinks in cylinder jars. The second included the caching and burning of most of the known cylinder jars in Room 28. Both rituals were believed to date sometime between AD 1000 and 1140.

Ritual is a universal human behavior involving a set of fixed actions conducted in a prescribed order according to customs; rituals are often used in religious practice, such as sacred ceremonies, but also in secular practice. Rituals characterize the lives of people throughout the past and present. Gaining a fuller understanding of ritual activity in Chaco is particularly important because current interpretations of the archaeology of the canyon emphasize the primacy of ritual activity in explaining the cultural florescence there. Many Chacoan scholars consider the canyon to have been a major religious center

(Fritz 1978; Judge 1989; Lekson 2006; Sofaer 1997; Stein and Lekson 1992; Toll 1991), designating it a "rituality" (Yoffee 2001) with a "sacred economy" and evidence of "high devotional expression" (Renfrew 2001). The National Park Service promotes this vision in its visitor brochure: "From AD 850 to 1250, Chaco was a hub of ceremony, trade, and administration for the prehistoric Four Corners area—unlike anything before or since." Despite an almost universal acceptance of this view of Chaco, little scholarship has delineated the nature of the beliefs, ceremonies, and rituals associated with any religion there. In other words, scholars recognize the importance of sites such as Pueblo Bonito in the ritual life of the Ancestral Puebloans who inhabited Chaco Canyon, but they have rarely identified the nature of any specific rituals that occurred there.

Recent advances in methods and theory provide frameworks for evaluating ritual activities in the past. In particular, careful analyses of stratigraphic sequences and deposits often reveal processes such as dedication and termination rituals (Freidel and Schele 1989; Harrison-Buck et al. 2007; McAnany and Hodder 2009; Mills 2008; Mock, ed. 1998; Pagliaro et al. 2003; Stanton et al. 2008; Walker 2002; Walker et al. 2000). Advances in dating methods offer the opportunity to evaluate the timing of novel ritual behavior. Residue analysis demonstrates the presence of specific substances consumed in ritual activity. Combining multiple lines of evidence permits us to determine when and how two types of ritual activity occurred in Chaco: the consumption of cacao drinks in cylindrical jars and the termination ceremonies associated with the last use of most of these vessels.

To examine ritual in Chacoan society, the plan of work was to (1) reexcavate Room 28 (originally excavated in 1896), where more than 60% of all known cylinder jars were cached; (2) examine the remaining stratigraphy on the west end of the room that overlaid the cylinder jar cache to determine the sequence of events surrounding the burning and collapse of the room; (3) extract datable material from the room; (4) extract pollen and macrobotanical samples to search for ritual use of plants; (5) determine if the original excavators found the floor of the room and excavate to that floor if they did not; (6) analyze all artifacts extracted from the 1896 and new excavations; (7) analyze organic residues from a sample of artifacts found in the room; and (8) interpret the nature of the ritualized deposits associated with Room 28 at Pueblo Bonito.

The Bonito phase (ca. 850–1140) in Chaco Canyon is one of the most prominent and debated examples of rapid social transformation in the archaeology of North America (Altschul 1978; Bernardini 1999; Bustard 1996, 2003; Crown and Judge 1990; Kohler 1998; Lekson 1999, 2006; Mills 2002; Neitzel 1999, 2003a; Vivian 1990; Wills 2001). Within a short period of time, perhaps only one to two generations, a regional population of dispersed farming households gave rise to aggregated settlements socially anchored by a dense cluster of large stone buildings in Chaco Canyon called “great houses.” Labor estimates for the construction of individual great houses exceed several hundred person-hours (Lekson 1984) and bear testimony to the unprecedented amount of energy and organization that marks a shift from small undifferentiated social networks to large segmentary corporate groups (Kantner 1996; Saitta 1997; Sebastian 1992). Archaeologists have studied this striking change for more than 100 years and since the 1940s have known with considerable confidence the span in calendar years during which great houses appeared, were occupied, and were abandoned. Researchers have devoted much effort to understanding the role or function of great houses in their final or completed form (e.g., Cameron and Toll 2001; Heitman and Plog 2005; Plog and Heitman 2010; Renfrew 2001), but they have been hampered by a limited number of excavations at great houses, which were primarily conducted before current standards of fieldwork were established, and sometimes by the inadequate publication of results.

Archaeologists consider Pueblo Bonito to be the center of the Chaco world (Neitzel, ed. 2003). The largest and most completely excavated of the great houses in Chaco Canyon also produced the largest assemblage of whole artifacts. Two major expeditions excavated most of the site in the 1890s and 1920s, providing extensive collections housed at the Smithsonian Institution and the American Museum of Natural History. These excavations revealed a concentration of objects that has not been duplicated in excavations of other great houses (Heitman and Plog 2005:90). These collections form the basis of much of what is known about the Chacoan material world. Pueblo Bonito is thus not only the center of the Chaco world, but also the center of Chaco archaeologists’ world. Discussions of subjects such as a possible Mesoamerican connection and ritual activity rely on this material because the preponderance of clearly Meso-

american objects and identifiable ritual objects in the Chaco world come from Pueblo Bonito.

Pueblo Bonito was excavated by two major expeditions. For the Hyde expedition in the late 1890s, Richard Wetherill worked with George Pepper to excavate approximately half of the rooms in Pueblo Bonito (Pepper 1905, 1909, 1920). They packed and shipped the artifacts from their work to eastern museums, and most are curated at the American Museum of Natural History in New York City, with a smaller collection at the National Museum of the American Indian in Washington, DC. A second expedition funded by the National Geographic Society in the 1920s excavated most of the remaining rooms in the site under the supervision of Neil Judd (1954, 1964). Those artifacts are curated at the National Museum of Natural History in Washington, DC. Smaller projects have included opening two rooms by the Phillips Academy in Andover, Massachusetts, in 1897 (Moorehead 1906), stabilization and tree-ring sampling by the National Park Service (Windes and Ford 1992), and the reopening of trenches placed through the trash mounds south of Pueblo Bonito by the University of New Mexico in 2004–2008 (Crown, ed. 2016; Wills et al. 2016).

As already mentioned, reopening Room 28 offered an exceptional opportunity to examine two distinct and identifiable rituals: the drinking ritual associated with the cylinder jars and the termination ritual. Room 28 is known primarily for the recovery of more than half of all known Chacoan cylinder jars (Crown 2018; Toll 1990; see also Washburn 1980). Cylinder jars are now known to have been used in consuming drinks made from cacao brought more than 2,000 km from the tropics of Mesoamerica (Crown and Hurst 2009; Crown et al. 2015; Washburn et al. 2011) or from holly brought from the Gulf coast or Mexico (Crown et al. 2015). Room 28 contained 112 cylinder vessels together with pitchers and bowls, which were found in discrete and apparently orderly groupings. Other artifacts in the room in 1896 included grinding stones, sandstone jar lids, a variety of other objects (chipped stone knives, bone awls, bone “implements,” a wooden stick, yucca cord, and a wooden “piece”), and non-utilitarian pigments and ornaments (shell beads, shell bracelets, a crystal, mica, iron ore, turquoise, copper ore, and a copper object) (Pepper 1920:112–28). Further analysis of these objects offers the opportunity to examine the nature of the drinking ritual involving the cylinder jars.

Cacao would have been brought from Mesoamerica as beans or semi-processed tablets of chocolate, and additional processing of either form would be required to make chocolate drinks. Processing would include grinding the nibs or tablets to make a paste, then stirring water and other additives into the paste to make a drink, which was followed by some means of creating a froth on the drink (probably by pouring from jar to jar). Alternatively, historical records indicate that holly drinks were created by toasting the leaves and twigs, then brewing a tea by heating the toasted plants in water (Merrill 1979). The elixir was then frothed, much like cacao drinks. Because they were found together with the cylinder jars in Room 28, the ground stone and wooden implements found in Room 28 may have been used in preparing drinks or in the drinking ritual. Examination of these implements for evidence of use in preparing elixirs would help to determine the range of objects associated with drink preparation in Chaco Canyon. While the use of the cylinder jars found in Room 28 is roughly dated to around AD 1000–1140 based on the range of ceramic designs on the pots, refining the dating of the placement of the cache of cylinder jars would provide a stronger date for cacao and holly use and exchange. The broader question in this case is what the material associated with this largest collection of cylinder jars tells us about ritual drinking.

The second ritual of interest here involved the caching of the cylinder jars and other vessels in the room followed by burning of the room. Prior to the reexcavation, a possible explanation was that the vessels represented items stored in a room that accidentally burned (Crown and Wills 2003; Toll 1990; although see Akins 2001). However, Barbara Mills (2008) suggested that the large group of vessels was the remains of a termination ritual. Common in Mesoamerica (Mock, ed. 1998) but recognized also in the US Southwest (Adams 2016; Mills 2008; Walker 1995, 2002), termination rituals brought permanent closure to rituals, objects, constructions, or features. Many cultures believe that some objects or buildings must be given life—animated or ensouled—to empower them; termination rituals reverse the processes that originally animated or brought to life those objects, rooms, and sites through destruction and “decharging” (Stanton et al. 2008). Such rituals might involve the retirement of objects considered too powerful to be discarded in the manner of normal ob-

jects (Mills 2004, 2008) and/or deconsecration of ritual spaces (Creel and Anyon 2003; Mills 2008; Walker et al. 2000). Termination rituals occur in ethnographic contexts under several different circumstances: when the last practitioner capable of performing a ritual died; when a village or town was abandoned; in association with cyclical ritual destruction of objects or structures (as when a ritual cycle was complete) prior to rebuilding; or when enemies occupied or sacked a site and wished to cleanse it. In all cases, the goal was to remove sacred power from objects and structures. The special nature of many of the objects found in Room 28 in 1896 indicates shared features with termination rituals elsewhere, but we only know about the material part. The nonmaterial parts of the ritual, including placement of the objects, burning the structure, and depositing additional material above them, can only be determined through careful analysis of the surrounding stratigraphy. Through such careful analysis, a project research goal was to determine whether this was indeed a termination ritual, the type of termination ritual it was, and when it occurred.

To answer these questions, it was necessary to reopen Room 28. The field notes, photographs, journals, and publications created by Richard Wetherill and George Pepper based on the 1896 excavations provided all of the information we had in 2013 about this important room beyond the artifacts and a single tree-ring date. Unfortunately, these left many issues unanswered. Photographs of the room combined with Pepper’s (1920) published description of his excavations indicated a complex series of formation processes. We knew the following events occurred but did not know the order: the room was constructed and used, the room was partitioned, artifacts were placed in the room, the door to the adjoining burial room was closed, the room burned, the room flooded, the room filled with trash, and the upper partition wall was built.

According to Pepper (1920), the Room 28 fill was unremarkable. The fill included fallen walls and “accumulated debris.” Pepper described evidence of the room having burned: blackened walls, reddened plaster/adobe, red vitrified sand, and posts turned to charcoal. He noted that the western portion of the room had filled with sand that had both blown in and washed in before the ceiling fell, helping to preserve the ceramics in the room. He also thought that the cylinder jars had been forced from their “well-laid pile” and sometimes crushed “by

the weight of the debris that the burning of the ceiling beams precipitated upon them” (Pepper 1920:117).

There were several reasons to question this interpretation of the events. First, the HEE photographs reveal a highly uneven surface with vessels sitting at various depths on the undulating surface. Second, careful reading of the expedition artifact catalog at the American Museum of Natural History reveals that Pepper found masses of broken cylinder jars both 3 feet (91 cm) above the “floor” and “a few feet below the surface.” Because the “floor” on which the cache was found was only 1.22 m below the surface, the actual mass of pottery apparently extended from about 30 cm below the 1896 surface to 1.22 m below the surface; in other words, the cache may have been part of a much larger pile of pottery, the upper levels of which were crushed and sandwiched in a 1 m layer. Third, the photographs reveal burned wooden beams in, around, and *under* the vessels in the cache. Fourth, my examination of the cylinder jars in the cache showed that most were exposed to fire, but the fire damage was often on the *underside* of the pots rather than on the surface facing up (it is possible to determine which surface faced up both from the photographs and from silt lines still visible on the unwashed pots themselves). Where charred wood is visible in the photographs, the pots in physical contact with the wood are burned on the vessel walls that contacted the wood. All of this patterning suggests that the pots were originally resting on a wooden structure that burned while the pots were in contact with it. But what was the wooden structure—a bin, shelving, or the upper-story floor? In other words, were the pots actually placed in the lower story of Room 28 or on the floor of the upper story (Room 28b)? The answer to this question is critical for understanding the cultural and natural processes that created the cache and associated stratigraphy.

Prior to the reexcavation, the only additional information we had came from the photographs and from the descriptions of the adjoining Rooms 55 on the west and 28a on the east. Beginning with Room 55, the cache of cylinder jars partly underlaid a mass of material that formed the foundation for a later masonry wall that partitioned an upper story of Room 28 into Room 28b to the east and Room 55 to the west. Pepper had to partially undercut this mass of material to retrieve some of the cylinder jars. Thus, Pepper’s notes suggest that lower Room 28 and lower Room 55 were once a single large room, making Pepper’s description of what he

found in lower Room 55 relevant here. In lower Room 55, Pepper (1920:215–16) noted that the western wall was debris, but the remains of a floor were found 4 feet (1.2 m) below the western (upper cross) wall; this was not an intact lower-room floor, but an upper-story floor that had collapsed into the room. Pepper described east-west beams, cedar bark covering, and pieces of adobe that represented this fallen upper floor. Only sterile sand to a depth of 4 feet (1.2 m) lay below these floor beams. The presence of this floor was of interest because its depth seemed to fit well with the level at which the cache of vessels was found in Room 28, again suggesting the possibility that the cylinder jars were originally resting on an upper-story floor that collapsed during the fire.

Pepper found that Room 28a to the east of Room 28 was separated from Room 28 by a masonry partition wall that was 1.22 m high on the Room 28 side, but 2.59 m high on the Room 28a side. In describing Room 28a, Pepper (1920:126) stated that this dividing wall “extended to the ceiling of the lower room which was 8½ feet [2.59 m] from the floor at this end. The base on which the wall rested was composed of large stones. The room was floored at this depth (8½ feet) and had been filled in, and another floor put down at the bottom of the dividing wall or at a depth of 6 feet [1.83 m] from the ceiling.” If there were floors in Room 28a at 1.83 m and 2.59 m below the former ceiling, it is possible that Pepper never reached the actual floors in Room 28 on the other side of the partition wall, instead stopping at 1.22 m. His published description of Room 28 and his diary entries in the Chaco Research Archive indicate that on August 28, 1896, Pepper and Wetherill completed removing the cache of pottery from Room 28; on August 29, they packed up the pottery for shipment, measured the floor, and broke through a sealed door to adjacent Room 32. They then used Room 28 only as a location to temporarily throw backdirt while excavating Rooms 32 and 33. There is no indication that they ever excavated below the level of the cache in Room 28. Since the cache was only 1.22 m below the ceiling, I believed there was a strong possibility that additional floors were still present in Room 28 at .61–1.37 m below the level at which Pepper stopped working in this room.

From Pepper’s description, it was clear that although the room burned and many perishable objects may have been lost, preservation was fairly good, with charred posts standing almost a meter high and wooden ob-

jects buried in sand left uncharred. Pepper did not state whether he removed the charred posts, leaving open the possibility that they remained in the room and could be dated by tree-ring dating.

The later excavator of other portions of Pueblo Bonito, Neil Judd (1954:22–28), raised questions about Pepper’s interpretation of Room 28 and provided a thorough re-interpretation of the series of events that led to the archaeological strata found by Pepper. My own interpretation of the notes, photographs, and artifacts is quite different from both Pepper’s and Judd’s. All three interpretations are outlined in table 1.1.

In the research design, I argued that determining the actual dating and sequence of events was critical because the large cache of cylinder vessels found in Room 28 was associated with the importation and consumption of cacao from Mesoamerica. Dating the room and examining the other artifacts in the room provided the best opportunity for enlarging our understanding of drinking rituals in Chaco Canyon. The charred material in contact with the jars offered the possibility of obtaining information on room construction prior to the fire and a terminus post quem (date after which the cache must have been placed); radiocarbon dating of any charcoal in

TABLE 1.1. **Three interpretations of events in Room 28 of Pueblo Bonito from construction to abandonment**

	PEPPER 1920	JUDD 1954	CROWN 2011
EVENT 1	Room 28 constructed late 800s to early 900s	Room 28 constructed late 800s to early 900s	Room 28 constructed late 800s to early 900s
EVENT 2	Room 28 remodeled	Room 28 remodeled and construction debris pushed into room	Room 28 remodeled
EVENT 3	partition wall built between Rooms 28 and 28a	clean sand placed over debris and new floor laid at doorsill level	partition wall built between Rooms 28 and 28a
EVENT 4	clean sand fills western half	partition wall built between Rooms 28 and 28a	drifting sand blows into lower-story room
EVENT 5	cylinder jars and other objects placed in room	cylinder jars and other objects placed in lower Room 28, AD 1025–1050	doorway to adjacent Room 32 sealed
EVENT 6	door to Room 32 sealed	sand blows into room, covering artifacts	cylinder jars and other objects placed in upper-story room and room burned as termination ritual
EVENT 7	room burned	room burns	room open to elements (evidence of wet silt deposited on vessels)
EVENT 8	room flooded	door to Room 32 sealed	additional debris dumped into room and upper story built, creating Rooms 28b and 55, around AD 1083
EVENT 9	room filled with trash	upper story burned, walls and roofing dumped into lower room through an opening	
EVENT 10	upper partition wall built between Rooms 28 and 55	upper-story walls rebuilt on south	
EVENT 11		upper partition wall built between Rooms 28 and 55, AD 1071–1083	
EVENT 12		corridor left in debris in lower Room 28 to access adjacent Room 51a to the north	

TABLE 1.2. Expectations of the Pepper, Judd, and Crown models for the caching and burning events in Room 28

	PEPPER	JUDD	CROWN
EXPECTATIONS FOR FLOOR BENEATH CYLINDER JARS	clearly defined floor at level of cylinder jars	a clearly plastered floor at level of door sills	no evidence for a floor at level of cylinder jars
EXPECTATIONS FOR STRATIGRAPHY	clearly defined floor in the stratigraphy of the dirt between Rooms 28 and 55 at level of cylinder jars	a layer of blown sand below level of cylinder jars	evidence that debris from the falling burned roofs was below level of cylinder jars as well as above
EXPECTATIONS FOR POSTS	no charring of posts below level of cylinder jars	burned material above level of cylinder jars, but not at or below that level	burned material mixed in with layers at which Pepper found cache; charring of posts below level of cache
EXPECTATIONS FOR LOWER FLOOR	no evidence for a lower floor up to 1.5 m below final excavation level	lower floors likely exist	evidence for lower floors at 0.3 and 1.3 m below final excavation level

the room constructed over the burned room and overlying the main cache of jars might provide a terminus ante quem (date before which the cache must have been placed). Having both sets of dates should bracket the cache. Finally, bracketing the placement of the cache also would provide a date for the likely termination ritual involving the placement of the cache and burning of the room. Scholar Barbara Mills (2008) has argued that a termination of the Room 28 cache occurred at the end of the Pueblo Bonito occupation in the late 1100s. Without absolute dates to indicate when the room burned, we could not determine whether this dating is correct or not. Only through additional excavation, careful examination of stratigraphy, and obtaining dates could we hope to resolve this ongoing debate concerning the dating of the room and cache. Teasing apart the actual sequence required examining the stratigraphy and presence of features, such as floors, in addition to obtaining datable material. Expectations for the three models are presented in table 1.2.

In addition to determining the sequence of events that created the stratigraphy and artifact placement in Room 28, our research sought to determine the nature of the probable ritual activity associated with these events, including whether these were use-and-abandonment processes or part of a termination ritual. It is possible that the vessels were simply stored in Room 28 between uses. The room might have burned with the vessels left inside, or the room might have been abandoned before it burned. In either event, the association of the cache,

burning, and abandonment might be coincidental rather than purposeful. As mentioned, some researchers have suggested that the cache and burning represent a termination ritual (Mills 2008:108). They might represent a desecratory termination ritual enacted when victors of a conflict or later occupants of Pueblo Bonito wanted to remove sacred power from the objects or site by piling the vessels up and setting the room ablaze. Alternatively, existing occupants of Pueblo Bonito might have held a reverential termination ritual if the last practitioner capable of performing the ritual associated with the cylinder jars died, perhaps as the population of Pueblo Bonito dwindled (Mills 2008:105), if abandonment of the site was planned, or in association with the cyclical ritual destruction of objects or structures prior to rebuilding. Determining which of these three scenarios is correct required careful examination of stratigraphy, dating, residues on vessels, defacement of vessels, and marks on room walls. Table 1.3 presents the specific expectations for each scenario, based in part on models derived from reverential and desecratory termination ritual activity in Mesoamerica.

EXCAVATION METHODS

A year prior to our beginning the excavation, graduate student Jennie Sturm conducted tests with ground-penetrating radar in the room. Using this technique, we hoped to determine the depth to the floor and whether there was intact wood in the room. The results indicated