

Caribbean Paleodemography



Population, Culture History,
and Sociopolitical Processes
in Ancient Puerto Rico

L. Antonio Curet

CARIBBEAN
PALEODEMOGRAPHY

Population, Culture History, and Sociopolitical
Processes in Ancient Puerto Rico

L. ANTONIO CURET

THE UNIVERSITY OF ALABAMA PRESS

Tuscaloosa

Copyright © 2005
The University of Alabama Press
Tuscaloosa, Alabama 35487-0380
All rights reserved
Manufactured in the United States of America

Typeface: AGaramond

∞

The paper on which this book is printed meets the minimum requirements of American National Standard for Information Science—Permanence of Paper for Printed Library Materials, ANSI Z39.48-1984.

Library of Congress Cataloging-in-Publication Data

Curet, L. Antonio, 1960—
Caribbean paleodemography : population, culture history, and sociopolitical processes in ancient Puerto Rico / L. Antonio Curet.

p. cm.

Includes bibliographical references and index.

ISBN 0-8173-1461-X (cloth : alk. paper) — ISBN 0-8173-5185-X (pbk. : alk. paper)

1. Indians of the West Indies—Puerto Rico—Antiquities. 2. Indians of the West Indies—Puerto Rico—Population. 3. Indians of the West Indies—Puerto Rico—Migrations. 4. Excavations (Archaeology)—Puerto Rico. 5. Island archaeology—Puerto Rico. 6. Demographic archaeology—Puerto Rico. 7. Puerto Rico—Antiquities. I. Title.

F1969.C87 2005

304.8'097295—dc22

2004023853

Contents

Figures and Tables	ix
Acknowledgments	xiii
1. Demography and Ancient Populations in the Caribbean	1
2. Cultural and Social History of Ancient Puerto Rico	11
3. Migration, Colonization, and Cultural Change: An Anthropological Approach	27
4. Ancient Migrations in Puerto Rico: Issues and Possible Explanations	62
5. Intraisland Population Trends: Regional Analysis	95
6. Population, Carrying Capacity, and Population Pressure: Ancient Demography of the Valley of Maunabo	144
7. Paleodemography at the Local Level	185
8. Conclusions: Paleodemography and Caribbean Archaeology	220
References Cited	235
Index	269

Figures and Tables

FIGURES

- 1.1 Map of the Caribbean Basin. 2
- 2.1 Taxonomic system developed by Rouse (1986, 1992). 12
- 2.2 Chronological chart for Puerto Rico according to Rouse
(adopted from Rouse 1992). 14
- 5.1 Map of Puerto Rico showing the four regions included
in the intransland study. 98
- 5.2 Map of the Loíza River Basin showing the location of sites belonging
to the Hacienda Grande style (adopted from Rodríguez 1992). 101
- 5.3 Map of the Loíza River Basin showing the location of sites belonging
to the Cuevas style (adopted from Rodríguez 1992). 102
- 5.4 Map of the Loíza River Basin showing the location of sites belonging
to the Monserrate style (adopted from Rodríguez 1992). 103
- 5.5 Map of the Loíza River Basin showing the location of sites belonging
to the Santa Elena style (adopted from Rodríguez 1992). 104
- 5.6 Map of the Loíza River Basin showing the location of sites belonging
to the Esperanza style (adopted from Rodríguez 1992). 105
- 5.7 Distribution of number of sites through time in the
Loíza River Basin and Vieques Island. 106
- 5.8 Distribution of sites across physiographic regions
in the Loíza River Basin. 106

x / Figures and Tables

- 5.9 Distribution of site types through time in the Lofza River Basin. 107
- 5.10 Map of Vieques showing the location of sites belonging to the Hacienda Grande style. 109
- 5.11 Map of Vieques showing the location of sites belonging to the Cuevas style. 109
- 5.12 Map of Vieques showing the location of sites belonging to the Monserrate style. 110
- 5.13 Map of Vieques showing the location of sites belonging to the Santa Elena style. 110
- 5.14 Map of Vieques showing the location of sites belonging to the Esperanza style. 111
- 5.15 Distribution of sites across physiographic regions in the Island of Vieques. 112
- 5.16 Distribution of site types through time in the Island of Vieques. 113
- 5.17 Map of the Salinas River Basin showing location of sites belonging to the Saladoid series. 116
- 5.18 Map of the Salinas River Basin showing location of sites belonging to Elenan Ostionoid subseries. 117
- 5.19 Map of the Salinas River Basin showing locations of sites belonging to Chican Ostionoid subseries. 118
- 5.20 Distribution of number of sites through time in the Salinas and Yauco River Basins. 119
- 5.21 Distribution of sites across physiographic regions in the Salinas River Basin. 119
- 5.22 Distribution of site types through time in the Salinas River Basin. 120
- 5.23 Map of the Yauco River Basin showing locations of sites belonging to Saladoid series. 124
- 5.24 Map of the Yauco River Basin showing locations of sites belonging to Ostionan Ostionoid subseries. 125
- 5.25 Map of the Yauco River Basin showing locations of sites belonging to Chican Ostionoid subseries. 126
- 5.26 Distribution of site types through time in the Yauco River Basin. 127
- 5.27 Distribution of number of sites through time in all regions. 130
- 6.1 Map of the Valley of Maunabo. 146
- 6.2 Map of the Valley of Maunabo showing the surveyed area (transects and blocks) and location of sites. 161

Figures and Tables / xi

- 6.3 Population and carrying capacity estimates through time for the Valley of Maunabo. 177
- 7.1 Map of Puerto Rico showing the three sites included in the paleodemographic study. 187
- 7.2 Distribution of age-at-death for the site of Punta Candelero. 201
- 7.3 Distribution of age-at-death for the site of Tibes, adjusted proportionally. 206
- 7.4 Distribution of age-at-death for the site of Tibes, adjusted equally. 207
- 7.5 Distribution of age-at-death for the site of Paso del Indio. 210

TABLES

- 5.1 Diachronic Comparison of Regional Information for the Four Regions. 135
- 6.1 Contents of 100 g Edible Portion of Raw Manioc Roots and Dry Whole Kernel Yellow Maize (From Roosevelt 1980, Tables 1, 2, and 5). 165
 - 6.2 Estimates Used for Calculating the Carrying Capacity. 167
 - 6.3 Estimates of Maximum Number of People That Could Have Been Supported in the Two Areas under Cultivation Based on Manioc Production in the Valley of Maunabo, Assuming a 10 Percent Loss of the Annual Crop. 169
 - 6.4 Estimates of Maximum Number of People That Could Have Been Supported in the Valley of Maunabo on Maize, Assuming a 20 Percent Loss of the Annual Crop. 172
- 6.5 Surface Area and Estimated Population for all Sites and Strata from the Valley of Maunabo. 175
 - 7.1 Abridged Life-Table for the Punta Candelero Population (Both Sexes). 200
 - 7.2 Fertility Values for the Skeletal Samples from All Sites. 203
 - 7.3 Abridged Life-Table for the Tibes Population Adjusting Age-at-Death Distribution by Distributing Indeterminate Adults Proportionally among All Adult Age Categories (Both Sexes). 205
 - 7.4 Abridged Life-Table for the Tibes Population Adjusting Age-at-Death Distribution by Distributing Indeterminate Adults Equally among All Adult Age Categories under 50 Years Old (Both Sexes). 206
- 7.5 Abridged Life-Table for the Paso del Indio Population (Both Sexes). 209

Acknowledgments

The idea for this book developed during the process of revising my dissertation for publication. Realizing that my dissertation was limited in scope and that it dealt with only one of the many issues and problems of how population and demography are used in archaeology, I decided to expand it by including multiple levels of analysis and several additional topics and questions. My interest in paleodemography, however, goes beyond my dissertation work, having grown from a course on demography I took in graduate school with George Cowgill. George's insights and knowledge on the topic motivated me to pursue further my research on paleodemography. I was able to put the chapters that follow together under the rubric of demography in great part thanks to my training with him.

Many people deserve to be acknowledged and thanked for their help with different aspects of this book. I want to thank Daniel Corkill for providing several key references used in the preparation of Chapter 3. My long conversations with Reniel Rodríguez on the interaction between the Saladoid, La Hueca people, and foraging groups were very influential in the preparation of Chapter 4. These discussions were so intense and lengthy that at the end it was difficult for us to remember whose idea was whose. So, it should not be surprising to the readers that some of Reniel's publications overlap with some arguments presented in this book. Reniel and Scott Fitzpatrick also commented on the final versions of Chapters 3 and 4. Joshua Torres very generously shared some of his data and provided helpful insights for Chapter 5. He was also responsible for the preparation of the original versions of maps in

Figures 5.17–5.19 and 5.23–5.25. The regional study he conducted in southern Puerto Rico for his master's thesis was also influential in some of the ideas I presented in that chapter. Discussions with Miguel Rodríguez were also instrumental in the preparation of the chapter.

With some additions, updates, and improvements, Chapter 6 is an offshoot of my dissertation. I have to thank my dissertation committee, Barbara Stark, Sylvia Gaines, Keith Kintigh, Geoffrey Clark, Kate Spielmann, and Diana López, for their comments, encouragement, and support during the long and tedious preparation of the thesis. George Cowgill also provided helpful comments on some aspects of my dissertation work. Edwin Crespo Torres and William Pestle reviewed and provided useful comments on Chapter 7. The comments contributed by these two physical anthropologists on this very technical chapter are greatly appreciated. Jill Seagard deserves credit for the final versions of all maps and Figures 2.1–2.2, 5.17, 5.23–5.25, and 6.1–6.2. I want to thank Marjorie Pannell for her help in making the editorial corrections of the text and for providing helpful suggestions in the organization of the work.

I also would like to thank William Keegan and Samuel Wilson for taking the time and energy to review the book for The University of Alabama Press. They provided excellent critical comments that did nothing but strengthen many aspects of the book. I want to express my gratitude to the staff of The University of Alabama Press, who from the beginning gave their support to this project, and for their patience during its preparation. I began working on this book in January 2001, but health-related problems in my family delayed it several times. The press staff was always very supportive and never lost their faith in my ability to finish this monograph.

Last, but most importantly, I want to thank my wife, my parents, my children, and my brothers and sisters, who one way or another have always unconditionally supported me in all my endeavors. My wife and children, especially, have to be commended for tolerating me and for their love and patience with all the emotional, physical, and psychological traumas involved in the preparation of a book. To them goes all my love and for them I give thanks to God every day.

1 / Demography and Ancient Populations in the Caribbean

The Caribbean archipelago extends from the Florida peninsula to the mouth of the Orinoco River in Venezuela. Trending in a leisurely arc east-southeastward, this bulge of islands, channels, lesser archipelagos, and continental edges forms the eastern front of Central America. The climate is tropical to subtropical, and the land and sea area although loosely circumscribed is large (Figure 1.1).

The Caribbean archipelago has long been of interest to archaeological anthropologists interested in reconstructing the culture history and population movements of ancient peoples. From these reconstructions we now know that the Caribbean has been populated at least since 5000 B.C., with the first migrations probably coming from the Orinoco delta and possibly from somewhere in Central America. As more people migrated over time, the physiogeography of the island chain began to exercise its influence in both permissive and restrictive ways in regard to the movement of goods and people. The arrangement of the islands in a stepping-stone pattern connecting two continents facilitated interisland movement, while the water passages between the islands imposed at least temporary barriers to movement. Thus, both linear diffusion of cultures and the differential development of groups that settled on the same island came to characterize the early history of the Caribbean. The result was a rich mosaic of cultures and intercultural interactions between and among island groups, with the cultural fabric constantly renewed by new arrivals (or the departure of earlier settlers in back-migrations) and by ongoing changes among older, more settled groups. Social developments showed a

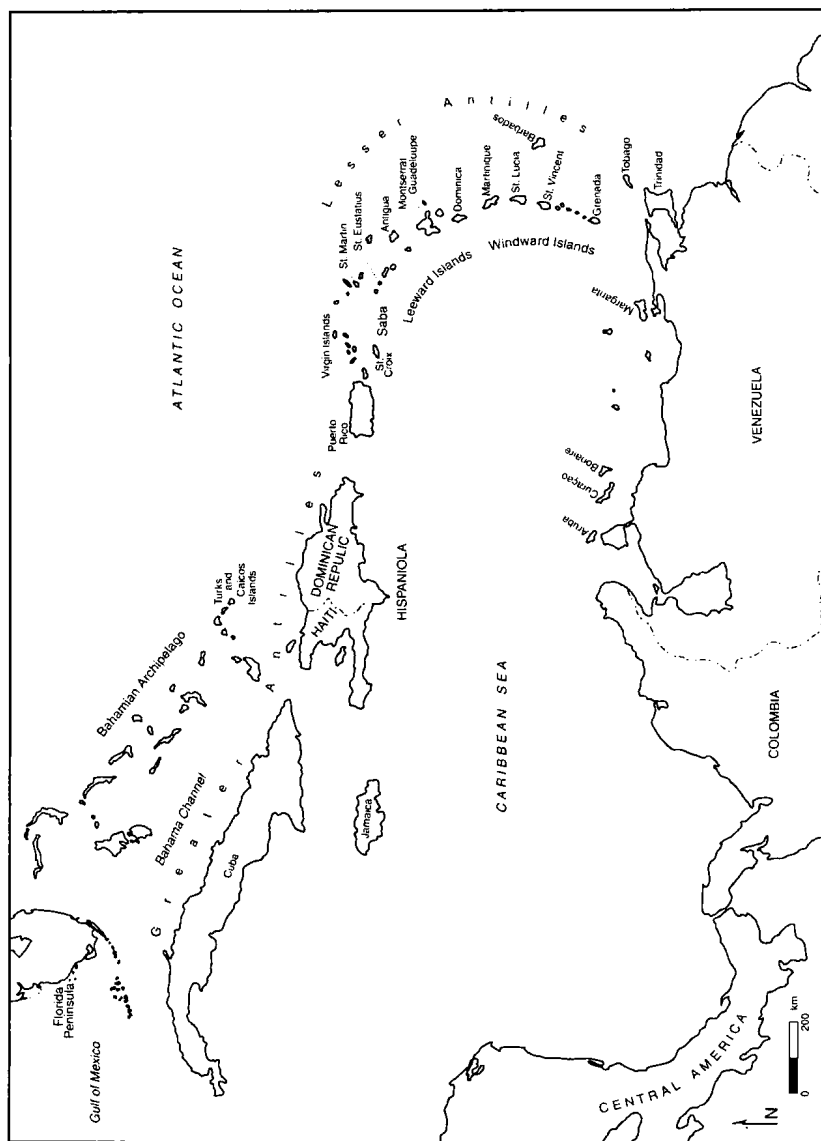


Figure 1.1. Map of the Caribbean Basin.

similar complexity, with the emergence of a variety of stratified societies in different areas of the Caribbean.

In this book I investigate the relationship between population dynamics and demographic factors, on the one hand, and cultural and social change on the other. Each of these elements should be understood as having multiple factors and dimensions—for population, those factors are population size and density, increases and decreases, movements (migrations), and distribution over the landscape; for demography, age and sex distribution, fertility and mortality rates, life expectancy, site size, and aggregation of population; and for sociocultural changes, the variables of different kinds of social organization, changes in settlement patterns, and cultural markers—any of which may influence and in turn be influenced by the others. In splicing together population and demographic variables as a basis for exploring cultural change, my aim is to reconstruct a more faithful picture of ancient human behavior in the Caribbean than has been available thus far. By “human behavior” I mean the full range of possible behavior, from personal or household-level behavior such as reproductive decisions and the treatment of the dead to society-wide behavior such as economic strategies and political alliances. The reconstruction cannot, at this time, be complete, in part because of the paucity of data from some of the regions I compare, and in part because not all behaviors leave their mark in the archaeological record. However, because demography can look at very small social units and consider behavior at small, local levels, the picture I put together should be denser and richer than one in which demographic factors are subordinated to a grand theory. Simply put, detecting reasons for cultural change is much more difficult if the scale is too large, the brush too broad. If demography teaches us one thing, it is that scale matters.

In working toward this reconstruction, I will be departing from several established avenues of work. In the past, “population” as a dependent or independent variable was commonly introduced in arguments concerning migration, changes in subsistence patterns, and sociocultural change. Particularly prevalent were models that sought in population-resource imbalance an explanation for changes in the archaeological record. In most such cases, population was treated somewhat simplistically as a factor with only two dimensions, size and density. An excess in either size or density was then taken as *the* driver of social and cultural change. Today the pendulum has swung back to the opposite extreme, so that population factors are now considered of little importance. A more nuanced understanding of population dynamics and their integration with demographic factors would be expected to reveal

different, more complex drivers of behavior, and thus to result in very different modeling of prehistoric human behavior in the Caribbean.

DEMOGRAPHY AND THE STATE OF CARIBBEAN ARCHAEOLOGY

Fortunately for my endeavor, Caribbean archaeology, after a long period in the backwater of New World studies, is experiencing a renaissance. In earlier eras, Caribbean archaeology concentrated almost exclusively on the important but limited issues of migration and cultural histories. Fairly simple methods of excavation and data analysis were used, and issues relating to social and cultural practices—human behavior—were ignored, or the behavior was assumed. Since the early 1980s, however, Caribbean archaeologists have begun expanding their investigative horizons by adding a wide variety of research topics, including interaction between human communities (e.g., Crock 2000; Hofman 1995; Hoogland and Hofman 1999), social and cultural processes (Curet 1992a, 1992b, 1996; Curet and Oliver 1998; Oliver 1998; Siegel 1989, 1991b, 1996a, 1999; Valcárcel Rojas 1999, 2002; Veloz Maggiolo 1991, 1993), subsistence systems (e.g., deFrance 1989; deFrance et al. 1996; Newsom 1993; Newsom and Deagan 1994; Wing 2001a, 2001b, 2001c), and social organization (e.g., Curet 2002, 2003; Keegan and MacLachlan 1989; Keegan et al. 1998; Tavares María 1996). Furthermore, new field, laboratory, and data-processing methods have been developed to ensure the collection of appropriate data to address these topics. One consequence of this renewed attention to multidisciplinary studies and research design has been the appearance of faunal, botanical, geologic, and soil specialists as standard staff members on many archaeological projects. This revival of archaeological interest in the region and the increased professionalism of the fieldworkers have resulted in an enormous amount of new and reliable information becoming available. Needless to say, many of the new avenues of research have forced a reevaluation of accepted understandings of the past inhabitants of the region. Data previously collected await reinterpretation within critical frameworks that enjoy strong theoretical and statistical support. With these tools in hand, researchers should be in better position to generate hypotheses concerning the archaeological samples and human populations of the ancient Caribbean.

The discussions presented in the following chapters, then, concentrate on evaluating old and new assumptions about the groups that populated the ancient Caribbean by looking at available information from different perspec-

tives and at different scales of analysis. The topic of demography runs as a thread through Caribbean archaeology almost from the beginning, and through most of New World neotropical archaeology as well. Demographic issues simply have not been very well understood or articulated. At times they have been occluded by researchers' intense focus on a particular method or line of historical reasoning that has since been superseded. It is axiomatic that the trajectory of a discipline becomes self-evident only in the rearview mirror. By calling the attention of Caribbean studies to demography, I hope to assemble a picture of ancient Caribbean society that answers questions raised by more strictly cultural accounts. If at the same time the work provides a corrective to certain misunderstandings that have been repeated in the literature or helps researchers understand how to use basic demographic data, that would be an additional benefit.

PLAN OF THE BOOK

In this book I use basic demographic data as the analytic materials for investigating the social construction of culture at four levels or scales: most broadly, the whole-archipelago or *interisland* level, followed by the *intraisland* (regional comparative) level, then the *regional* (single-region) level, and finally the *local* (single-site) level. It should be recognized that a great number of issues could be discussed for any of these levels. However, for each horizon I decided to choose a single topic to serve as the focal point for organizing the discussion. Various minor issues arc through the discussion of each major topic, providing new vantage points and suggesting different ways of connecting data.

Geographically, I concentrate on Puerto Rico and neighboring islands, with occasional reference to the rest of the Greater Antilles, the Lesser Antilles, and the Bahamas. The period of my study is the Ceramic Age, which in Puerto Rico lasted for about 1800 years (ca. 300 B.C. to A.D. 1500), although I will also refer to the Archaic groups that preceded the later horticultural groups and co-inhabited the islands with them for some time. There are a couple of reasons for limiting the scope of the analysis in this way. First, more of the information and data necessary for making the detailed reconstruction that I attempt are available for the Ceramic Age than for other ages, and particularly for Puerto Rico. Second, Puerto Rico effectively serves as a natural laboratory for investigating demographic and population issues at a variety of levels: as an island, it participated in island-hopping and progressive dispersal of culture at an interisland level; because it is a relatively large island,

it became home to several groups that settled and embarked on different lines of development in the east and in the west simultaneously, thus allowing regional or intraisland comparisons; and, finally, good site and regional data are available in Puerto Rico, thus allowing fairly intimate scrutiny of local practices. I should also mention that Puerto Rico is the focus of my personal research, and I am interested in identifying and understanding demographic trends in this part of the Caribbean that could be used in comparative studies of populations on other islands or during other eras. Even more interesting, from a research perspective, would be the finding that the conclusions I present for Puerto Rico are not applicable to other islands or other regions of the Caribbean. Such a finding would suggest that different processes and different demographic trends were at work in those areas.

Interisland Populations

Migration is an alluring topic for students of island cultures, and the Caribbean archipelago has proved to be a particularly rich ground for developing theories about population movements. At least since the beginning of the twentieth century, archaeologists and historians have been working to identify the origins and the routes of migration of the early inhabitants of the Caribbean (e.g., Fewkes 1907; Rainey 1940; Rouse 1952). Migration has become the explanation par excellence for a number of phenomena, including social and cultural change. The standard template of migration has been a monochromatic one: migration of relatively large populations as a unitary, one-way *event* with a termination and an endpoint, to be followed some time later by another unitary, one-way event, in each case involving the resumption of the migration (hence the wave theory of migration). Push-pull models are quite common in this setting: either a strong attractor, such as a better food supply, pulls the population toward a new settlement site, or a strong detractor, such as warfare or exhausted resources, pushes the population into migrating. But cross-cultural studies on the anthropology of migration would seem to refute this depiction of migration being just an event. We might instead think of hesitations, reversals, decisions made and unmade at the level of household or communities, a return to a previous settlement site three generations later—in short, migration as an ongoing, multilayered process proceeding in multiple directions at once and in different population densities, from few to many persons. The difference between the view of migration as event and position of migration as process would again seem to be one of scale: the event approach entails population behavior in the aggregate and is analyzed

at the macrolevel, whereas a process entails multiple individual and small-group movements and is analyzed at the microlevel. Chapter 3 draws together work by a number of researchers to show how modern anthropological theory models migration. The theory treats migration as a multidimensional process and somewhat favors *microlevel* processes, but it attempts to *harmonize* macrolevel and microlevel factors in a structural conception of migration. One interesting result of this work is the finding that, while migrations can vary in multiple ways, once they have begun, patterns do emerge: the process is not entirely haphazard but proceeds in a somewhat predictable order. Thus, multidimensional modeling favoring microscaled behavior does indeed bring us back to regularities, but of a different kind from those espoused by traditional archaeologists, for the regularities are processual rather than involving the wholesale displacement of a population or culture in one event.

This view of migration as a complex process with microlevel dimensions is further developed in Chapter 4 by way of two examples for Puerto Rico, the Saladoid–La Hueca migration (ca. 300 B.C.) and the Ostionoid expansion (ca. A.D. 600). Archaeological reconstructions indicate that the process of the early Saladoid migration involved information gathering, decision making, and prior social interactions with the Archaic groups into whose territory the Saladoids moved and with whom they thereafter cohabited. Available information now suggests alternative hypotheses of population movement to replace the traditional unidirectional, replacement hypotheses. In the case of the Ostionoid migration, or, as I prefer, the Ostionoid expansion, which chronologically followed the Saladoid migration, the archaeological data are open to conflicting interpretations. A tentative conclusion offered here is that the Ostionoid expansion may have involved one or more complex processes of interaction and transculturation between the Archaic and Saladoid societies normally not considered by the traditional view. In exploring this and alternative hypotheses, anthropologists have had to confront directly social questions, such as whether language, culture, and people must migrate simultaneously or whether some factors, such as diet (as part of culture) or language, may experience faster rates of change. At the microscalar level, uncertainties over the relations of different populations have also led anthropologists to look more closely at the possibility of *smaller communities within larger populations* or cultures acting autonomously and independently from the larger population, with the independent interactions accumulating over time to produce mixed populations interacting with other mixed populations. These two major Puerto Rican migration issues, which still await complete understand-

ing, highlight the inadequacy of conventional population-replacement theories to explain social developments during and after contact and suggest that researchers might do better to locate an account of population movements in social factors.

Intraisland Populations: Population Distribution and Settlement Patterns

The issue of different processes co-occurring differentially in Puerto Rico, such as during the major island migrations, moves our analytic focus to the level of comparative regional or intraisland developments. Chapter 5 examines trends in population dynamics—population increases and decreases, site sizes and distributions—in four regions of Puerto Rico as foundational data for arguing against homogeneous demographic, social, and political development across cultural areas. According to the cultural-chronological model most commonly applied to the islands, that of Irving Rouse, similarity in culture equates with similarity in other realms. In other words, this view tends to assume homogeneity over large areas implying similarity in behavior over the whole expanse. However, analysis of population dynamics shows differences among the four areas in respect to population distribution and dynamics suggesting the presence of variability in resource use, political strategies, and social decisions occurring during the same cultural epoch. Perhaps most interesting, data on architectural differences, when combined with data on population dynamics and site distribution, can be used to reconstruct the features of the ancient political economies of these areas. In particular, the emergence of abundant ceremonial architecture in some regions may be a manifestation of the rise of some form of hierarchical society. Other regions do not show this florescence of monumental architecture suggesting that in these cases the political and social process followed different paths. These reconstructions show substantial comparative differences in social and political organization among the sites, differences that slice across a shared culture for Puerto Rico.

Regional Populations

One of the factors long considered to motivate population trends has been an imbalance between the carrying capacity of the environment and the size of the population in that environment, or in some cases how the population used the environment. This important and misunderstood topic is isolated and examined in Chapter 6 as part of a continuing discussion of regional population