

TREND, TRADITION, AND TURMOIL
WHAT HAPPENED TO
THE SOUTHEASTERN ARCHAIC?

DAVID HURST THOMAS

AND

MATTHEW C. SANGER

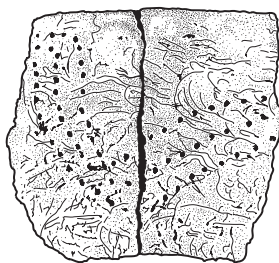
EDITORS AND CONTRIBUTORS

WITH CONTRIBUTIONS BY

DAVID G. ANDERSON, CHESTER DEPRATTER, JON L. GIBSON,
TRISTRAM R. KIDDER, WILLIAM H. MARQUARDT,
ROCHELLE A. MARRINAN, MICHAEL RUSSO,
KENNETH E. SASSAMAN, JOE SAUNDERS, REBECCA SAUNDERS,
MARGO SCHWADRON, AND VICTOR D. THOMPSON

Proceedings of the Third Caldwell Conference
St. Catherines Island, Georgia
May 9–11, 2008

ANTHROPOLOGICAL PAPERS OF
THE AMERICAN MUSEUM OF NATURAL HISTORY
Number 93, 341 pages, 71 figures, 24 tables
Issued June 23, 2010



CHAPTER 15

THE END OF THE SOUTHEASTERN ARCHAIC: REGIONAL INTERACTION AND ARCHAEOLOGICAL INTERPRETATION

DAVID G. ANDERSON

I appreciate being asked to comment on the papers in this volume, and want to start by thanking Dave Thomas and Matt Sanger, the organizers and editors of the May 2008 workshop on St. Catherines Island, for their hospitality and patience. All of the participants in the workshop, as well as those invited to contribute afterwards, deserve thanks for the excellent verbal and written presentations that led to this volume.

Interaction is an essential characteristic of many successful endeavors, such as that between the diverse group of scholars who produced the papers in this volume, or the peoples who built the mounds and middens in many parts of the Archaic Southeast, or who made up still larger interaction networks that spanned large parts of the region at various times. Feasting behavior at memorable places helps bind people together, and facilitates cooperative activity, and the 2008 Caldwell Conference was certainly characterized by both interaction and feasting, by people who in some cases traveled long distances to attend.¹ This volume is a tangible result of that behavior, and in its own way is every bit as valuable, in terms of the labor that it took to produce it, as the mounds, earthworks, or unusual artifacts generated by those prehistoric peoples—be they the ritual leaders or trading partners, pilgrims, or ordinary citizens—who made up the societies examined here. Cooperative behavior—in this case directed toward problem-oriented long-term research by bright and inquisitive people—can lead to significant results, especially when conditions exist to get large numbers of them, or the right mix, together. In that way, Thomas and Sanger are much like those earlier leaders who in a presum-

ably similar fashion directed the creation of sites like Watson Brake, Fig Island, or Poverty Point. This volume is a monument to their abilities and, just as prehistoric centers were repeatedly used and modified under the direction of skilled leaders, with new mounds or layers or architectural features added, so too can we hope that future workshops will occur on St. Catherines Island, and result in similar products.

Turning to the contents of the volume itself, one of the most important things demonstrated by the papers herein is that long-term research at specific sites and in specific areas is critical to understand what was occurring at those locations, and to examining more general questions like “What happened to the southeastern Archaic?” Having teams of scholars working in an area and on specific research questions also leads to better results than individual scholars tackling complex sites and issues by themselves. The ongoing work of scholars like Marquardt, Russo, Sassaman, and Schwadron in Florida, or Kidder, Russo, R. Saunders, and J. Saunders in the lower Mississippi Valley, or DePratter, Marrinan, R. Saunders, Thomas, and Thompson on the Georgia coast (along with many others in these same or multiple areas) exemplifies this kind of long-term collaborative approach. The work by Thomas and his colleagues on St. Catherines Island, in particular, is remarkable not only for the breadth of the ongoing research program but especially for the reporting effort. The many fine monographs and edited volumes produced to date, of which this is just the latest, ensure that the work that has been accomplished will be known to future generations, and stand as an example we should all

strive to emulate (e.g., Thomas and Larsen, 1979; Larsen and Thomas, 1982; Thomas, 2008a, to cite but a few of the studies that have appeared).

The papers in this volume also illustrate how multidisciplinary scholarship is of critical importance to better understanding the past, since many of the results reported herein are based upon collaborations between archaeologists and researchers in many other disciplines, including geologists, wildlife biologists, paleoclimatologists, and remote sensing and absolute dating specialists, to name a few of the many areas that have been drawn upon. Another thing the papers in this volume indicate is that having well-grounded site and locality histories is critical to archaeological interpretation, and an important way to achieve this is to have large numbers of well-collected and accurately calibrated radiocarbon determinations. The numbers of dates we have to work with are becoming truly impressive, as the papers by Kidder, Thomas, Schwadron, and others herein testify. Careful analysis of these dates is helping us identify periods of intensive use of a site or area as well as periods of less intensive use or abandonment. Coupled with this is the fact that more and more sites are being found, mapped, and excavated, as increasing numbers of people explore these questions and areas.

We have also seen that large-scale mapping and extended excavation are particularly important to understanding what was occurring at individual sites (e.g., as the papers by Russo, Sanger, Sassaman, Thomas, and Thompson, and others herein, demonstrate for shell U- or ring-shaped midden sites), and the test and small block units that once were considered sufficient are now being routinely augmented by innovative field strategies like systematic coring or probing to establish the extent and depth of shell or earthen deposits (e.g., J. Saunders et al., 1997, 2005; R. Saunders, 2002; Russo, 2004b, 2006, chap. 7, this volume). Recent research is also looking for sites in places not traditionally considered, such as within marsh areas (DePratter, 1977, DePratter and Howard, 1977, 1980, 1981 are important early exceptions), or below deposits thought impenetrable or sterile, as in the Everglades Tree Islands where Schwadron used power saws to cut through calcrete layers to reach the site (Schwadron, chap. 6, this volume), or beneath the shell hash “beach” at Oak Island (Gibson, chap. 2, this volume). The collection

and analysis of paleosubistence data have also improved markedly, with procedures like fine screening and flotation, novel approaches only 30 years ago, now routinely conducted (Marrinan, 1975, 1976, chap. 4, this volume). The older researchers at the Caldwell Conference, scholars who have worked for decades in their respective areas, over and over again offered variations on the comment that they were impressed with how much more information is now available than was the case even a decade or two ago. This is not to say that we know all we need or wish to know, far from it. But we have come far, and if research continues in the years ahead at the same pace it has in recent decades, our understanding of “What happened to the southeastern Archaic?” can only grow better.

WHAT DO WE MEAN BY “THE END OF THE SOUTHEASTERN ARCHAIC”?

Archaeologists use the terms Archaic and Woodland as *period* and *stage* formulations, respectively, to place prehistoric societies in the Southeast in specific intervals of time and by presumably roughly comparable levels of cultural development. The use of these terms varies appreciably from researcher to researcher, and while some agreement on temporal periods is emerging, we now know that the latter inference, that cultures within a stage share similar or identical technologies or organizational characteristics, is wildly inaccurate. Variability among the cultures placed in the southeastern Archaic *stage* is the norm, not uniformity, and documenting this variability, and the historical trajectories that produced it, as many authors in this volume emphasize, should be a goal for our research. Some authors call for the abandonment of stage terminology altogether in southeastern archaeology, in fact (e.g., Russo and Sassaman, chaps. 7 and 11, this volume), arguing that it constrains our thinking and channels our research into unproductive areas. I agree with this assessment, and believe terms like Paleoindian, Archaic, Woodland, and Mississippian should henceforth only be used to refer to specifically defined intervals of time in southeastern archaeology. Given their long history (e.g., Griffin, 1946, 1967) and widespread usage, however, I am unwilling to abandon the use of these terms altogether.² As chronological intervals, I believe they remain quite valuable, as

long as we don't take their cultural connotations too seriously.

The Archaic *period* is traditionally dated from ca. 10,000 to 3000 ¹⁴C yr B.P., or ca. 11,450 to 3200 cal B.P., a roughly 8000-year span separating what were known for the past half century or so as the Paleoindian and Woodland periods and cultural stages (Caldwell, 1958: 3, 6–7; Willey and Phillips, 1958; Griffin, 1967; Anderson and Sassaman, 2004: 87). The dates used to demarcate the Archaic period, 10,000 and 3000 ¹⁴C yr B.P., originally had the advantage of being nice round and easily remembered numbers, something now lost as calibrated or calendar ages are increasingly used. The ensuing Woodland *period* dates from 3000 to 1000 ¹⁴C yr B.P., or from roughly 3200 to 1050 cal B.P. and is succeeded in the last centuries prior to European contact by the Mississippian *period*, which is characterized by the emergence and spread of chiefdom-level societies engaged in intensive maize agriculture in many but by no means all parts of the region.

The dates delimiting the Archaic, 11,450 and 3200 cal B.P., were also once assumed to be closely tied to presumed major periods of change in global climate, the ending of the last ice age and the emergence of essentially modern climate conditions, respectively. As our knowledge and temporal resolution of past climate have improved, a similar deficiency of classificatory rigor comparable to that accompanying use of stage formulations is now apparent. The end of the ice age, or Pleistocene era, occurred in fits and starts, with major warming and cooling intervals lasting from decades to centuries over a period of several thousand years. The last major cold reversal, the Younger Dryas, ended rather abruptly about 11,650 cal B.P. (Broecker, 2003; see also Marquardt, chap. 14, this volume, for a discussion of abrupt climate change), some two centuries earlier than the 11,450 cal B.P. date currently employed by some researchers to delimit the end of the Paleoindian era. Likewise, no episode of global climate change conveniently occurs exactly at the other end of the Archaic period, although the centuries immediately following 3000 ¹⁴C yr B.P./3200 cal B.P. are characterized by appreciable climatic variability (Bond et al., 1997, 2001: 2130; Fiedel, 2001: 120–125; Kidder, 2006, chap. 1, this volume; Mayewski, 2009), which is of direct relevance to the subject of this volume, “What happened to the southeastern Archaic?”

It was during the Archaic period, and particularly during the latter part of this span, after ca. 6000 cal B.P., that recognizably complex societies appeared for the first time in parts of the Southeast. Those societies differed appreciably from one another, but their complexity is inferred by the presence of one or more of the following attributes: construction of monumental architecture, typically of earth and/or shell; status-linked patterns of burial using a wide array of mortuary practices, sometimes concurrently, including individual graves, marked cemeteries, and/or mound/charnel house complexes; modest to extensive participation in the importation or exchange of materials from long distances; evidence for elaborate ceremony or ritual including the creation of specialized artifacts and facilities used in these activities; and conflict that ranged from low-intensity skirmishes to perhaps more intensive warfare (B. Smith, 1986; Steponaitis, 1986; Russo, 1994a, 1994b, 1996a, 1996b; M. Smith, 1996; Gibson and Carr, 2004; Anderson and Sassaman, 2004; Sassaman and Anderson, 2004; Anderson et al., 2007b; Kidder and Sassaman, 2009). When we think of the end of the Archaic, it is usually the changes that occur in these *kinds* of societies that receive the most attention; we should actually be thinking of what happened at this *time* in all the societies that were present.

While the ending of the Archaic period in the Southeast has been placed at about 3000 ¹⁴C yr B.P. (3200 cal B.P.) by convention for many years, the actual date varies by up to several centuries in local chronologies. The reasons for this are clear: the differences between Archaic and Woodland cultures, that is, between the archaeological remains that occur in the centuries on one side or the other of the ca. 3200 cal B.P. divide, the papers in this volume demonstrate, are extensive and behaviorally significant in some areas and comparatively minimal or even unrecognizable in others. The conclusion as to which it is depends on the evidence available from the research areas of particular scholars, the time they were writing (older writings tend to see the differences as pronounced, at least over the region if not locally), and their research perspectives and theoretical orientations (i.e., how much weight is given to such matters as global climate change or historical tradition in examining change in human cultures). Thus, as Kidder (chap. 1, this volume, see also Kidder, 2006: 196) notes, to

many early researchers, such as Caldwell, Ford, Phillips, or Willey, “the break between Archaic economies and those that followed ... was perhaps *the* important transition in the history of the East” (italics in original).

But was it? The papers in this volume tell a different story, one of local and subregional cultures whose size, complexity, and specific societal histories, while embedded within and shaped by broader climate trends and historical traditions, were highly varied and each to some extent unique (e.g., the papers by Thompson and Sassaman, chaps. 10 and 11, this volume, provide particularly detailed discussions of this perspective). As many authors have noted in recent years, including all of those participating in the present volume, importantly, there was no sharp or simultaneous transition from one kind (i.e., *stage*) of culture to another at 3200 cal B.P. The characteristics that traditionally defined both the Woodland stage and period—mound building, ceramics, and agricultural food production—are now recognized to have appeared much earlier, during the middle and later Archaic period (e.g., B. Smith, 1986; Sassaman and Anderson, 1995, 2004; Anderson and Mainfort, 2002b: 3). As Russo (chap. 7, this volume) observed, in an argument for the elimination of stage formulations altogether, “archaeological markers of cultural behavior and structure that first transpired in the Late Archaic, continued or [were] reinvented in the Early Woodland.”

One thing is thus clear: there was no monolithic “later Archaic” culture in southeastern North America, or “Early Woodland” culture, for that matter. Instead, a wide range of vibrant prehistoric societies were present during the later part of the Archaic period, after ca. 6000 cal B.P. Some of these societies were characterized by monumental architecture, or extensive participation in long-distance exchange, or the use of domesticates, or evidence for warfare, while others were not, or at least not very much. Yet our knowledge of this variability is less developed than it should be. Sustained archaeological research on the later Archaic Southeast has tended to focus on localities where large sites with highly visible or readily accessible remains occur, such as earth or shell mounds and middens, or cemetery areas, or where unusual artifacts occur (i.e., soapstone vessels, early ceramics). Evidence from state site files shows that Late Archaic sites are found in large numbers in many parts of the region,

including areas where little or no evidence for monumental architecture, large midden deposits, early ceramic or stone containers, or burials have been found, something we would do well to remember (Anderson, 1996b, 2002). In these areas, which actually encompass much of the region, we have very little idea what people were doing. Societal energies in areas lacking evidence for mound and midden complexes may have been directed to other forms of behavior, such as the construction of monuments of wood or other perishable materials, or elaborate mortuary ritual in ways that did not involve unusual artifacts or readily apparent cemeteries. Or, as Sassaman (1995, 1996, 2001, 2004a) has long observed, people in these areas may have opted out of “complex” behaviors altogether, preferring and perhaps actively enforcing a simpler life.

Perhaps the best example of a complex Archaic society lacking evidence for monumentality is the Benton Interaction Sphere of the Midsouth, dating from ca. 6500 to 6000 cal B.P. (Johnson and Brookes, 1989; Meeks, 2000; Brookes, 2004; Anderson et al., 2007b: 463; McNutt, 2008; Kidder and Sassaman, 2009: 676–677). Appearing at or slightly before the earliest mound complexes in the region, the Benton Interaction Sphere was located in the vicinity of the upper Tombigbee, middle Tennessee, and middle Cumberland rivers. In this area, hypertrophic Benton projectile points were interred with burials and apparently exchanged widely, possibly as a means of promoting alliances between groups to help alleviate subsistence or other forms of uncertainty (i.e., warfare, mate procurement). Large Benton sites occur within a few hundred kilometers of one another, and are characterized by cemeteries with burials interred with elaborate caches of normal and sometimes oversized bifaces. While Benton burial sites are easily recognizable archaeologically, comparatively little else is known about the culture.

The apparent absence of interments with elaborate grave goods, or even any ready evidence for interments at all, unfortunately, characterizes many of the cultures that built mounds and middens during the later Archaic, particularly those along the Gulf and Atlantic coasts (e.g., Russo, chap. 7, this volume; Sassaman, chap. 11, this volume, R. Saunders, chap. 5, this volume), or in the lower Mississippi Valley (Kidder, chap. 1, this volume, J. Saunders, chap. 12, this volume). This absence or low incidence of burials is a very

real puzzle that warrants explanation. Perhaps, as some have suggested, burial in many societies occurred primarily at smaller, outlying sites, such as at Daw's Island in South Carolina or Conly in Louisiana (Michie, 2000; Girard, 2000). Or perhaps, as Russo, herein, suggests, ancestors became more important in the ensuing Woodland period, and as a result so too did the placement and preservation of their bodies, graves, or memory, which in some but by no means all societies was characterized by more archaeologically visible mortuary ritual.

While large sites with impressive architecture will undoubtedly continue to attract professional attention for a long time to come, a fascinating but understudied question is thus what was going on in those areas where large numbers of Late Archaic sites are known, yet virtually no large-scale excavation or effort at synthetic interpretation has occurred. The same bias can also be said to occur in areas where large and architecturally impressive sites *have* been examined . . . many small and presumably contemporaneous sites apparently exist over the surrounding landscape, yet few of these have been studied in detail (DePratter, chap. 13, this volume). Daws Island, Bass Pond, and Venning Creek are small Late Archaic sites with only diffuse pockets of associated shell that have been found along the South Carolina coast, yet they have yielded extensive quantities of ceramics, lithics, and human remains (Michie, 1979, 2000). How prevalent are these sites, and what part of the settlement system do they represent? Are they, as Jim Michie suggested (1979), where most of the people actually lived, coming together at rings only some of the time, perhaps for collective ceremony and feasting (see also Marrinan, chap. 4, this volume, who argues that rings were occupied by only a fraction of the total society's population, by "managerial" or ceremonial caretakers). We still have a long way to go before we understand what was occurring over the Southeast during the Late Archaic period; what is found on the tops of mounds or in the centers of rings, as many scholars have noted, is unlikely to be representative. If we wish to understand the end of the southeastern Archaic we need to better understand what it was that supposedly ended.

While the end of the Archaic *period* may thus be said to have been at 3200 cal B.P., what really interests us in this volume is what was occurring among the cultures in the region in

the centuries around and following that date. The standard archaeological accounting of the "end of the southeastern Archaic" is that the abandonment of many major centers occurred about this time, like Poverty Point and related sites in and near the lower Mississippi Valley and the ring- and U-shaped shell midden complexes of the Atlantic and Gulf coasts, coupled with a dramatic decline in the long-distance exchange of prestige goods or the materials used to make them (B. Smith, 1986; Steponaitis, 1986; Gibson, 1996b, 2000, chap. 2, this volume; Anderson, 2001; Sassaman, 2005, 2006b, 2010, chap. 11, this volume; Kidder, 2006, chap. 1, this volume; Russo 2006, chap. 7, this volume; Kidder and Sassaman, 2009: 681–682). Pottery, which had appeared about 4500 cal B.P. in coastal settings from South Carolina to Florida, yet had remained relatively restricted in occurrence, in contrast, spread widely across the region in the centuries after 3200 cal B.P., and came into common use in many areas for the first time (Sassaman, 1993a, 2004b, 2005; Kidder, 2006: 197–198). We now know that the timing of these events varied appreciably, and that the "end" of the Archaic was a long and highly varied transition.³

A pattern similar to the spread of pottery occurred with domesticated plants, particularly in portions of the interior Southeast and the lower Midwest (B. Smith, 1992). The domestication and cultivation of local plants, while underway after ca. 5000 cal B.P. was, like pottery, restricted, apparently largely to the interior Midsouth and lower Midwest until the very end of the Archaic or even later (B. Smith, 1986, 1992, 2004; Gremillion, 1996, 2002). Locally domesticated plants of the Eastern Agricultural Complex—including goosefoot or chenopodium (*Chenopodium berlandieri*), sunflower (*Helianthus annuus*), little barley (*Hordeum pusillum*), sumpweed (*Iva annua*), maygrass (*Phalaris caroliniana*), and knotweed (*Polygonum erectum*), and cucurbits or gourd—did not apparently assume much importance as a means of subsistence until after ca. 3000 cal B.P., during the Woodland and Mississippian periods. Again, as with other aspects of culture, use of domesticates varied widely over the region; it was clearly an important part of subsistence in some areas but contributed little or nothing in others, including in many areas where ceramics were adopted (Fritz, 1990; Fritz and Kidder, 1993; B. Smith, 1992, 2004; Gremillion, 2002).

The widespread but by no means universal co-occurrence of ceramics and agriculture in the Eastern Woodlands in the centuries following the end of the Archaic has led to suggestions that the technologies were related, perhaps because ceramics may have facilitated the preparation and cooking of the newly domesticated foods, particularly small seeds, which themselves may have partially replaced subsistence resources presumably used more intensively previously, such as shellfish or nut mast (e.g., Goodyear, 1988, Rice, 1999). An alternative model, proposed by Sassaman (1993a: 215–228), hypothesizes that elites controlling soapstone vessel (and other) exchange may have resisted or suppressed the adoption of pottery, since it would have interfered with established patterns and expectations for container use; only when exchange networks collapsed at the end of the Archaic period, seemingly counterintuitively, could pottery technology spread and become widely adopted.⁴ Both explanations could well be correct, at least for explaining the changes that occurred in particular parts of the region. Neither, however, applies universally, since domesticates were not adopted in some areas, nor did soapstone vessels occur everywhere; indeed, in many parts of the Southeast soapstone vessels are rare or nonexistent, or only occur after the appearance of pottery, and in some cases continue to be used well into the Woodland period (Truncer, 2004, 2006, Sassaman 2006a; O'Donoghue and Meeks 2007).

The end of the Archaic and the initial centuries of the Woodland period are also traditionally viewed as times when major changes in collective or ceremonial behavior occur in many areas. Small earthen burial mounds and associated mortuary facilities began to be built in areas where they had not appeared before⁵, and it has been suggested that mortuary ritual and ancestor veneration now served to bind peoples together from differing communities, rather than the aggrandizing behavior centered around competitive feasting and prestige goods exchange characteristic of some Late Archaic societies (e.g., see in particular Russo's paper, chap. 7, this volume, for an extended discussion of this perspective). The causes of these changes in ceremony and interaction are linked to environmental factors by several authors herein, such as an increase in the occurrence and intensity of storms and flooding, or fluctuations in sea level. These may have led

to uncertainty about both subsistence and shelter, in turn leading to a loss of faith in present leaders and a switch to relying on ancestors rather than aggrandizers for comfort or help.

These changes in the focus of social action were likely gradual, however, and again were by no means universal. Climate change is unlikely to have been the sole reason for such changes, although it was likely quite important in some areas. Sea level fluctuations, for example, may have led to a relocation of coastal populations and centers to more favored areas, as apparently happened among many peoples building shell midden and ring sites, in a conscious effort to maintain effective positioning with respect to estuarine and marine resources (Sanger, chap. 9, this volume). Increased rainfall or megaflooding may have facilitated the rise as much as the fall of Poverty Point, or had little to do with either (cf., Kidder, Gibson, and R. Saunders' contributions, chaps. 1, 2, and 5, this volume). Long-distance exchange may have declined for a few centuries in some areas with the abandonment of Poverty Point, but it eventually picked up again, as new centers and interaction networks were established, as exemplified by the materials of exotic origin found at Adena and especially Hopewellian sites, and this exchange appears to be associated with aggrandizing behavior in some cases. The items interred with Woodland leaders in death were likely used by them in life, and while mortuary behavior was important, it was as much about reinforcing the social positions and organization of the living as of the dead (e.g., Carr and Case, 2005; Dancy, 2005; Charles and Buikstra, 2006). The papers in this volume teach us that how people reacted to circumstances is what we should be striving to document and understand, and not solely whether their behavior conforms or fails to conform to inferred broad general patterns (see Thompson, chap. 10, this volume, for a particularly good discussion of this point).

Mound burial is known from the Archaic in parts of Florida at sites like Harris Creek Mound (Aten, 1999), and burials are common in many of the shell middens (whether considered monuments or not) of the Shell Mound Archaic culture of the Midsouth (e.g., M. Smith, 1996; Herrmann, 2002; Marquardt and Watson, 2005). Evidence for the construction of mounds, for burial or indeed for anything at all, in fact, is absent in many parts of the eastern United States during the initial centuries of the Woodland era; the occurrence of

mortuary mounds in cultures like Adena seems to be the exception rather than the rule. As with the Archaic, we really don't have good information on the mound building and mortuary practices of many Early Woodland societies in the region, making broad generalizations about what was occurring difficult to test in many specific cases. All of this reinforces the point made by many of the authors herein that we need to examine the variability in the region's archaeological cultures, and avoid accepting the broad generalizations implicit or explicit in stage terminology.

The "end of the southeastern Archaic" was thus a highly complex and varied process, as much a time of new beginnings or even continuity as of apparent endings. The changes that occurred were not the same everywhere, nor did they occur simultaneously across the region; instead they played out at different times and at different rates in different areas. Given these caveats, I now turn to some specific issues and comments regarding the study of this topic.

THE END OF THE SOUTHEASTERN ARCHAIC: COUNTING AND CALIBRATION ISSUES

Some scholars appear to accept as a given that a major decline in population, or a "gap in occupation" occurred and marked the end of the Archaic and the onset of the Woodland. The absence of monumentality or even appreciable numbers of sites presumably dating to the interval in parts of the region from ca. 3200 to 2400 cal B.P. is used in support of this inference. But equating numbers of sites, diagnostic artifacts, or radiocarbon dates with numbers of people needs to be carefully considered (Rick, 1987; Fiedel, 2001; Thomas, 2008b; Kidder, chap. 1, this volume), and the decline or low incidence appears to be by no means universal. Increases in the numbers of sites or monuments of shell or earth compared to the preceding later Archaic are reported or inferred during the Early Woodland in southern Florida and in the Alexander, Adena, and Tchfuncté culture areas (e.g., see papers by Gibson, Schwadron, Russo, and Sassaman, chaps. 2, 6, 7, and 11, this volume), for example, and increases in site numbers during the Early Woodland are also reported in western Tennessee, central Mississippi, and in the Green River/Mammoth Cave area (Kidder, chap. 1, this volume). A general pattern of increase in

numbers of sites from the later Archaic through the Woodland and into the Mississippian periods, in fact, is noted when site file data from many parts of eastern North America are combined (Milner, 2004a: 28–29). These data on numbers of sites contrast with the numbers of radiocarbon dates from initial Woodland context in many areas, which appear to be low (e.g., Farnsworth and Emerson, 1986; Fiedel, 2001). What is meant by these numbers, of course, must be carefully considered: a lithic scatter and a site like Poverty Point may both have a site number, but they clearly do not represent the same amount of activity.

Authors using numbers of radiocarbon determinations as a proxy for population, or even as evidence that people were present at all, must also take particular care when examining samples dating from ca. 2750 to 2200 ¹⁴C yr B.P. (Thomas, 2008b: 437–442, chap. 8, this volume, Kidder, chap. 1, this volume). The terrestrial radiocarbon calibration curve is seriously skewed and nonlinear during this time (fig. 15.1). Between ca. 2800 and 2700 cal yr B.P., for example, it exhibits a steep decline, in which three centuries of radiocarbon determinations, from ca. 2750 to 2450 ¹⁴C yr B.P., actually equate with ca. 100 years of real or calendar time. This is followed by a plateau in the calibration curve from ca. 2700 to 2350 cal B.P., in which radiocarbon determinations from a roughly 50-year span from ca. 2450 to 2400 ¹⁴C yr B.P. correspond to roughly 350 calendar years. Another steep decline in the calibration curve immediately follows from ca. 2350 to 2300 cal yr B.P., or ca. 2400 to 2200 ¹⁴C yr B.P., in which ca. 50 calendar years corresponds to ca. 200 radiocarbon years. This is followed by a plateau around ca. 2200 ¹⁴C yr B.P., in which relatively few radiocarbon years encompass the interval from ca. 2300 to 2200 cal yr B.P. (Stuiver et al., 1998; Fiedel, 2001: 122–123; Nijboer et al., 2001: 166–167; Reimer et al., 2004: 1039, 1057; Thomas, 2008b: 437–442). The fluctuations in the calibration curve indicate—assuming relative uniformity in size and continuity in settlement in the regional populations forming the archaeological record—that we should see proportionally far fewer radiocarbon determinations of from ca. 2750 to 2450 and 2400 to 2200 ¹⁴C yr B.P., and proportionally many more determinations from around 2450 to 2400 and again around 2200 ¹⁴C yr B.P. This is, not surprisingly, what is commonly seen in the archaeological record in areas where

large numbers of determinations have been run, as on St. Catherines Island where it should be noted the effect of calibration has been carefully considered (e.g., Thomas, 2008b: 459–461, chap. 8, this volume). Thus, the occurrence of Early Woodland dates and hence sites in our regional chronologies and sequences is at least partially as much an artifact of calibration as it is of changes in human population or settlement. The effect of calibration thus needs to be carefully considered in any attempts to equate numbers of dates with numbers of sites or people during the initial Woodland period (see also Fiedel, 2001, for an extended discussion of these impacts in the interpretation of Early Woodland settlement in the Northeast).

The same variability that occurs within the radiocarbon calibration may confuse fine-grained interpretations of cultural developments earlier in time as well, like the interval of the so-called “hiatus” in mound building in the lower

Mississippi Valley, between ca. 4700 and 3700 cal yr B.P. (Gibson, chap. 2, this volume; J. Saunders, chap. 12, this volume). A steep decline in the calibration curve occurs between ca. 4900 and 4800 cal B.P., corresponding to ca. 300 radiocarbon years, from ca. 4400 to 4100 ^{14}C yr B.P.; this is followed by a brief reversal and then a plateau from ca. 4750 to 4600 cal B.P., corresponding to radiocarbon dates between ca. 4200 and 4150 ^{14}C yr B.P. (Reimer et al., 2004: 1056; fig. 15.2). Fortunately, while additional minor declines, reversals, and plateaus occur, much of the time of the “hiatus” is comparatively tranquil in terms of fluctuations in radiocarbon, at least when compared to the calibration during the initial centuries of the Woodland period. This suggests that the explanation for the observed “hiatus” is at best only partially related to calibration effects. The perceived gap in monumental construction in the lower Mississippi Valley may be real or may be due to sampling and preservation, since

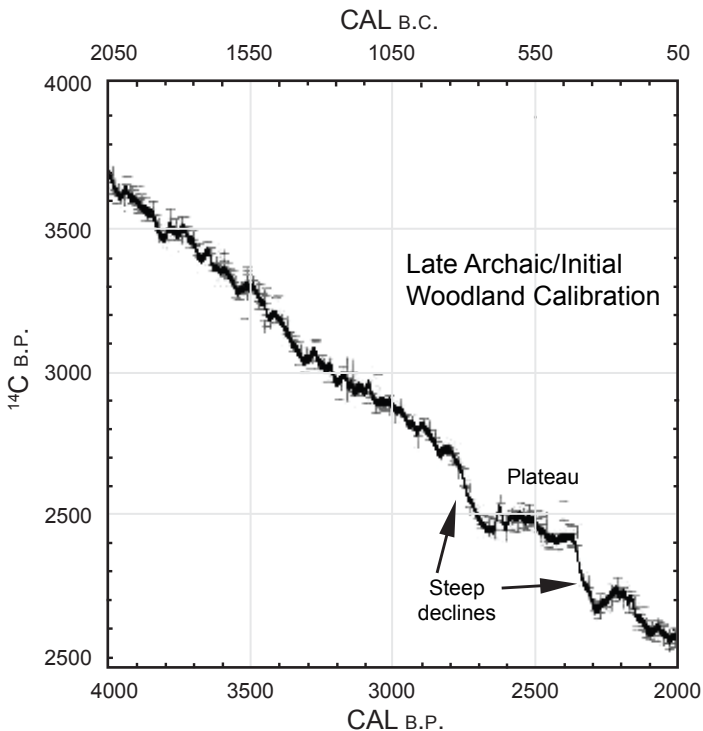


Fig. 15.1. Radiocarbon calibration curve for the end of the Archaic and the initial centuries of the Woodland periods. (Adapted from Reimer et al., 2004: 1057)

geoarchaeological research in the region in recent years has shown that many later Archaic sites have likely been lost to erosion or are deeply buried under alluvial sediments (Arco et al., 2006; Kidder and Sassaman, 2009: 672–673). Only time, and more research directed to looking for sites during this interval, will tell.

The idea that portions of the Southeast could be abandoned or largely depopulated at various times in the past, however, should not be viewed as at all unusual, but instead something that did occur

from time to time. Such events are commonplace in the Mississippian period, where portions of major drainages or even larger parts of the Eastern Woodlands were depopulated at various times, for reasons as of yet incompletely understood, although both climatic and cultural factors appear implicated (Anderson, 1994, 1996c; Cobb and Butler, 2002; Meeks and Anderson, 2007); the papers in this volume indicate that similar patterns occurred earlier in prehistory in the Southeast as well (e.g., Kidder, Schwadron, Russo, J. Saunders, chaps. 1, 6,

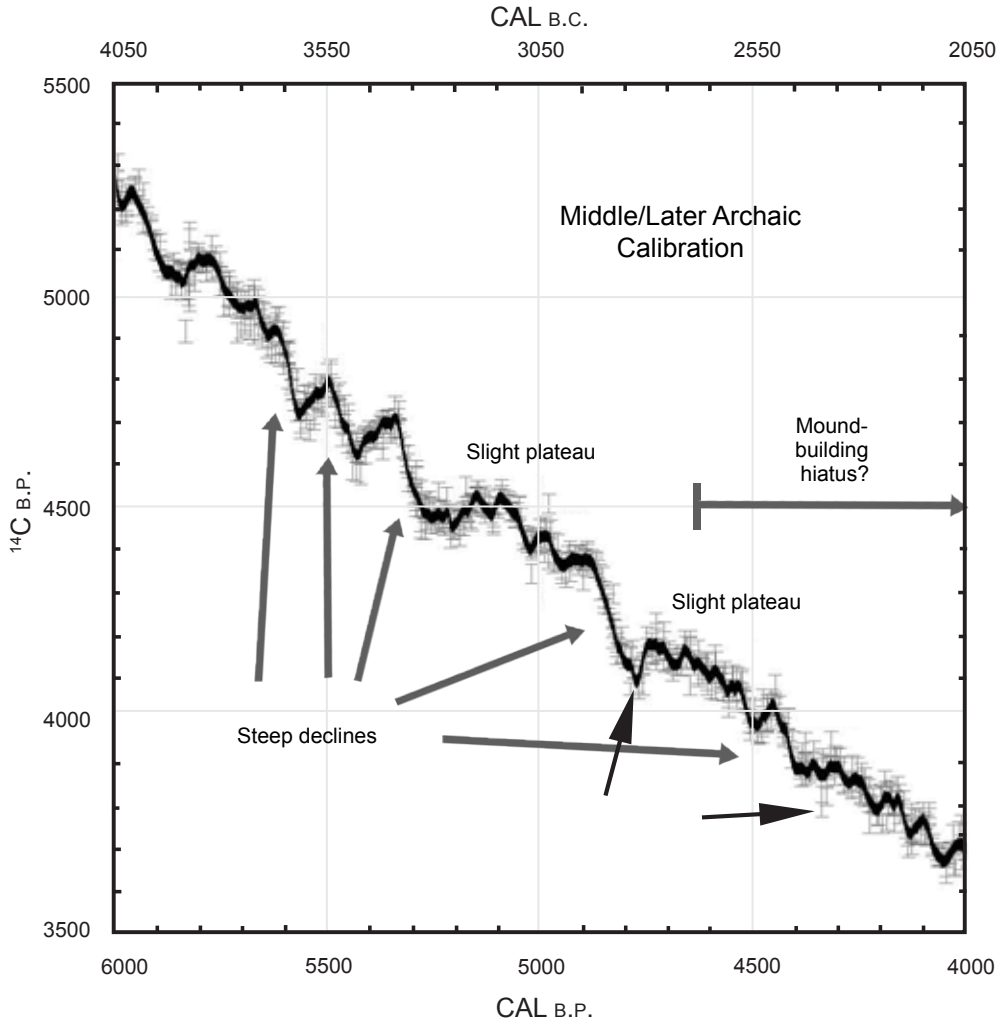


Fig. 15.2. Radiocarbon calibration curve for the period of the Middle Archaic “hiatus” in mound building in the lower Mississippi valley. (Adapted from Reimer et al., 2004: 1056)

7, and 12, this volume). The Tree Island/freshwater portion of the Everglades, for example, was abandoned from ca. 3800 to 2700 cal B.P., Poverty Point was abandoned after ca. 3200 cal B.P., and many of the shell ring- and U-shaped middens of the lower Southeast were abandoned after ca. 3800 cal B.P. (e.g., Russo and Sanger, chaps. 7 and 9, this volume). Small-scale population movements leading to the temporary or permanent abandonment of individual sites or comparatively small localities are, of course, commonplace in southeastern prehistory, and are typically directed to maintaining regular and predictable patterns of both interaction and resource procurement. Larger-scale population movement or relocation also would have occurred, however, as people positioned themselves with respect to one another to form and maintain buffer zones; to move away from or replace or incorporate allies or enemies; to maintain optimal interaction, information exchange, and mating networks; or to settle new areas.

The movement of people over a regional landscape as centers grow or decline in size, power, or influence, that commonly results in localized or larger-scale abandonments or population declines—what is sometimes called cycling—occurs in societies at a wide range of complexity, in so-called “tribal” societies just as it does in chiefdoms and states (Parkinson, 2002, Russo, chap. 7, this volume; see also Wright, 1977, 1984; Marcus, 1998; Anderson, 1994). Whatever one thinks of neoevolutionary terminology, and the use of concepts like “tribe” or “chiefdom”—and the authors of this volume are nearly unanimous in thinking not much (*sensu* Pauketat, 2007), since their use tends to constrain consideration of variability and history—recognizing and understanding the causes of the abandonment of centers, localities, or regions remains an important subject for research.⁶ Familiarity with ethnographic examples, as we shall see below, can help us better understand the nature of the social organization that might have been present, and the kinds of behavior that might have been occurring. Thus, when a gap in occupation is indicated by site or radiocarbon data, what is going on should be carefully explored.

THE END OF THE SOUTHEASTERN ARCHAIC: CLIMATE CHANGE

In recent years cultural developments at the

end of the Archaic have been linked to global and regional climatic conditions. The abandonment of Poverty Point, for example, has been tied to changes in the course and flooding patterns of the lower Mississippi River by Kidder (Kidder, 2006: 214–216, chap. 1, this volume; Kidder and Sassaman, 2009: 681–682). Kidder’s “Climate Hypothesis” (2006, chap. 1, this volume), and his related collaborative and multidisciplinary research (e.g., Arco et al., 2006; Adelsberger and Kidder, 2008; Kidder et al., 2008b), is a sustained local application of the global focus on paleoclimatological research that has occurred in recent years, and is exemplary for its emphasis on the importance of understanding how human cultures responded to changes in climate in the prehistoric Southeast (see also Gunn, 1997; Anderson, 2001; Anderson et al., 1995, 2007b; Blanton and Thomas, 2008; Grissino-Mayer, 2009; and the papers by Marquardt, Sanger, J. Saunders, R. Saunders, Thomas, and others, this volume).

Following in the tradition of Fisk, Ford, and Roger Saucier, Kidder examines cultural developments in the lower Mississippi Valley with respect to changes in global climate as well as in local/subregional drainage conditions, to argue that the abandonment of Poverty Point may have been brought about by increased flooding and cooler temperatures, leading to an impoverishment of floodplain subsistence resources that its peoples relied heavily upon.⁷ I concur with Kidder that how global climate change translates locally must be carefully examined.⁸ Indeed, I also agree that we must employ multiple geographical and temporal analytical scales simultaneously when examining the impact of climate change on human culture (Anderson, 2001: 148–151; Anderson et al., 2007a; Mayewski, 2009; Kidder, 2006, chap. 1, this volume; Marquardt, chap. 14, this volume; Thompson, chap. 10, this volume; R. Saunders, chap. 5, this volume). In particular, we should pay attention to the effects of short-, intermediate-, and longer-term climate variability, which roughly correspond to historical developments on similar scales, such as the *evenments*, *conjunctures*, and *longue durée* of Fernand Braudel (1949 [1972], 1958 [1980]; see also Cobb, 1998: 170–171).

Short-term climate trends occur at daily to annual scales, and include such things as variation in rainfall, temperature, seasonality, or severe storm frequency, as well as more

unusual or unpredictable events like volcanic eruptions, or meteor impacts. *Intermediate-term* climate variation is that which occurs at decadal to century scales, with trends at least partially observable within the lifetime of at least some individuals. These encompass periods of sustained warmer or colder temperature, rainfall, or seasonality, like those that characterized the Little Ice Age or the Medieval Warm Interval. El Niño/Southern Oscillation (ENSO) effects occur at short-term scales measured in years, but changes in the frequency and intensity of ENSO vary at longer scales, with major changes noted at ca. 6000 and 3000 cal B.P. (Sandweiss et al., 1996, 2001; Sandweiss and Quilter, 2009); such changes are thought to have influenced the development of southeastern prehistoric cultures at these times (e.g., Hamilton, 1999, Kidder, 2006, chap. 1, this volume; R. Saunders, chap. 5, this volume; J. Saunders, chap. 12, this volume; Schwadron, chap. 6, this volume). *Long-term* climate trends take place at scales of hundreds to thousands of years, and include such things as (1) the “Dansgaard–Oeschger” and “Bond” cycles operating with a periodicity of ca. 1500 years in glacial and interglacial periods, respectively (Dansgaard et al., 1989, 1993; Bond and Lotti, 1995; Bond et al., 1997); (2) Heinrich cold events occurring irregularly every ca. 7000 to 11,000 years during glacial cycles (Heinrich, 1988; Hemming, 2004; Peck et al., 2007); and (3) glacial-interglacial Milankovitch cycles operating at scales of roughly 100,000 years, at least for the past ca. 430 ky or so (Hays et al., 1976; Augustin et al., 2004). Transitions in climate may occur gradually or quite rapidly, something that must also be considered when evaluating impacts on human cultures (e.g., Anderson et al., 2007a: 3–7; Kidder, chap. 1, this volume; R. Saunders, chap. 5, this volume; Marquardt, chap. 14, this volume). Kidder makes the very good point that we lack “useful high-resolution climate proxies” from many areas, making it crucial that archaeologists not only be aware of this record, but participate in its collection and interpretation (e.g., Anderson et al., 1995; Blanton and Thomas, 2008; Grissino-Mayer, 2009).⁹

As Kidder, Marquardt, and others in this volume note, the end of the southeastern Archaic and the onset of the Woodland period were particularly challenging times for the region’s inhabitants, as well as for paleoclimatologists and archaeologists exploring the relationship between

climate and culture. Around 1159 cal B.C. a major short-term change in global climate apparently occurred, reflected in some two decades of narrow growth rings in the Irish Oak tree-ring record; the Hekla 3 volcanic eruption in Iceland occurred about this time or slightly later, and may be the cause of this episode (Baillie, 1988, 1991, 1999; Eiríksson et al., 2000; Fiedel, 2001: 120–121). Additionally, a Bond event (#2) took place about 2850 cal B.P., identified by the presence of ice rafting debris in North Atlantic sea cores, and that was marked by cooler temperatures worldwide; this dating is roughly coeval with the subboreal to the subatlantic transition (Bond et al., 1997, 2001; Fiedel, 2001: 121–123). The latter event at ca. 2850 cal B.P. affected global temperature and circulation, altering the uptake of radiocarbon in the ocean, and likely bringing about the fluctuations observed in the radiocarbon calibration curve at this time. ENSO frequency and intensity also appear to have increased after ca. 3000 cal B.P., leading to increased rainfall and flooding in the Southeast, possibly contributing to the collapse of Poverty Point (Kidder, 2006, chap. 1, this volume). ENSO effects were certainly felt elsewhere, most notably in Peru, where the early mound building tradition ceases about this time (Sandweiss et al., 2001, 2007: 26, 42, 45). Flooding may have not only affected Poverty Point’s subsistence resources, but also may have blocked access to stone sources, since high water could have rendered gravel bars or erosional cuts inaccessible; these impacts, furthermore, could have occurred widely over the region (Kidder, chap. 1, this volume). The correlation of climatic conditions with specific episodes of activity at Poverty Point is difficult, such as those associated with periods of large-scale construction or final site abandonment.

As Rebecca Saunders (chap. 5, this volume) also observes, in a challenge to the uniqueness of the terminal Archaic climatic events posited by Kidder (2006, chap. 1, this volume), mega-flooding occurred a number of times in the northern Gulf of Mexico in the Late Holocene (Brown et al., 1999), not just around the time Poverty point declined (see also Gibson, chap. 2, this volume). These episodes are dated to ca. 4.7, 3.5, 3.0, 2.5, 2.0, 1.2, and 0.3 thousand years ago, and, as Saunders argues, why was one period of flooding seemingly detrimental to the inhabitants of Poverty Point, while another was not? Did local peoples react differently to these

climatic events? If the activity that took place at Poverty Point was “risk reduction in the face of a deteriorating climate (R. Saunders, chap. 5, this volume), a variation of the argument Hamilton (1999) proposed for Middle Archaic mound building in the lower Mississippi Valley, for example, why was it apparently successful early on ca. 3500 cal B.P. and unsuccessful later, after ca. 3200 cal B.P.? It may be that these climatic episodes varied in duration and intensity, with the one seemingly coeval¹⁰ with the decline of Poverty Point particularly detrimental. Or, alternatively, the effects of climate on culture may have been more subtle and cumulative. Evidence for water erosion has been noted at Poverty Point, for example (see R. Saunders, chap. 5, this volume; Gibson, chap. 2, this volume). Could increased rainfall and flooding have made repairing Poverty Point’s monuments more difficult, another task in a mounting series of responsibilities, until the people who lived there could or would no longer keep up?

One of the lessons of this volume, accordingly, is that we must make every effort to bring available paleoclimatological and archaeological data into congruence, while remaining fully cognizant of the temporal or spatial variation in the different data sources. Annual or decadal resolution in tree-ring or ice-core records may not be matched by archaeological data, but using tools like dendrochronology and high-precision AMS dating and wiggle matching can bring them close. Another important lesson is that appreciable effort must be made to determine how broad climatic patterns played out locally. In this regard, studies like those by Kidder, Thomas, R. Saunders, and others in this volume, attempting to determine local manifestations of global climatic events, and cultural responses to these effects, are important examples of the way in which we should proceed. In addition to Kidder’s work in the lower Mississippi Valley, the sustained work by Dave Thomas’s team exemplifies how climate change and human response can be examined at a smaller geographic scale, in this case on St. Catherines Island (Blanton and Thomas, 2008; Thomas, 2008c, 2008d; Thomas et al., 2008). Whatever else it might have been (i.e., a time “boring” or “good gray” cultures, after Williams’s description [1963: 297] of the Late Woodland, as co-opted by Kidder, chap. 1, this volume), the interval associated with the end of

the southeastern Archaic and the onset of the Woodland period was one of appreciable climate change and instability.

THE END OF THE SOUTHEASTERN ARCHAIC: CHANGES IN REGIONAL INTERACTION

Evidence for large-scale long-distance exchange is observed a number of times in the prehistory of the Eastern Woodlands, together with periods when such interaction is markedly diminished (e.g., Griffin, 1967; Brose, 1979; Goad, 1979; Johnson, 1994; Lafferty, 1994; Cobb, 1998). A reduction in long-distance exchange in the first several centuries of the Woodland period closely follows the abandonment of the regional center at Poverty Point after about 3200 cal B.P. (Gibson 1998a; chap. 2, this volume), which perhaps not coincidentally is the Archaic-Woodland temporal boundary. The resulting dissolution of ties between Poverty Point and other societies in the region undoubtedly shaped conditions that followed. As Kidder herein notes, “the collapse of the center may have disrupted the social fabric of numerous small-scale societies throughout the Mississippi basin.” Yet why should the abandonment of one center, however large, have such impact over such a large area? What does societal collapse mean in regional perspective?

Direct evidence for Poverty Point interaction, widespread though it may have been, is not found in many parts of eastern North America, and even within the Southeast, only some areas appear to have been in presumably direct contact with the center (Webb, 1968; Byrd, 1991; Gibson, 1996b, 2000: 219–221, 2007: 511, 513–514). While it is possible and indeed likely that far more interaction occurred than we have tangible evidence for, this is only an assumption. That is, people, materials, and ideas could have moved over the landscape in appreciable numbers, but save for extralocal lithic raw materials imported into the center, which are present in large quantities, whatever else may have been moving has left little trace in the archaeological record, at least that we currently have found or recognize. Although raw materials, predominantly stone, were coming into the center from an array of sources, some at appreciable distances, Poverty Point is the only site in the lower Mississippi Valley—or indeed the Eastern Woodlands at the time—where such

activity “was conducted on such a regular basis or grand scale” (Gibson, 2000: 221).

Furthermore, whatever the people at Poverty Point were exporting, if indeed they were exporting much of anything tangible or at least material, was apparently perishable. Whether they were organic goods like fabric, feathers, or food, or a less tangible product like an idea manifest by Poverty Point itself, that is, some form of “social, ritual, and or mythic legitimization” (Kidder, chap. 1, this volume; see also Gibson 2000, chap. 2, this volume; Sassaman 2005, 2010, chap. 11, this volume; Kidder and Sassaman, 2009) is currently unknown. The ideological underpinnings of Poverty Point were almost certainly critically important to the peoples living in and near the center, and judging by the distances materials came from, what happened at the site was likely at least generally known if not revered by peoples much farther away. It may have been perceived from afar as the equivalent of the shining city on the hill (or of the hill), the place where things were happening, a great place to see and be seen, and to party. It may indeed have been what Webb and Gibson called “The Wonderful World” (Gibson, 2007: 516, 523; Webb, 1975: 7). Exotic stone may have been the price of admission or an aid to alliance formation, if brought in by outsiders and not obtained by well-traveled locals. But if outsiders did come to Poverty Point, and helped provision it with lithics in the process, they apparently did not take much made locally back with them, although they may have stayed and settled, as Sassaman (2005, 2010) and Kidder (chap. 1, this volume) have suggested. Whether Poverty Point reflects exogenous and multiethnic as opposed to local and endogenous origins, however, is currently the subject of some debate (cf., Gibson 2007, chap. 2, this volume with Kidder and Sassaman, 2009, Kidder, chap. 1, this volume).

When Poverty Point declined, this interaction was lost; and the activities that may have made this site the ideological or party center of the later Archaic Southeast stopped with it¹¹. Even Disneyland can get old, as people find new places to go or other ways of occupying their attention; perhaps changing climate rendered feasting less sumptuous or the area more challenging to get to, or the lithic materials that were the focus of great interest more difficult to access (Kidder, 2006, chap. 1, this volume; Gibson 2000, 2007, chap. 2, this volume). What was once perceived as important to peoples both locally and further

afield, however, was no longer. Long-distance interaction, be it brought about by pilgrimages or trading parties, was replaced by more local concerns, perhaps directed more to memorializing past leaders than helping augment present ones, an emphasis on ancestors rather than aggrandizers (Russo, chap. 7, this volume). Similar arguments, of course, have been raised to explain changes in the Eastern Woodlands following the decline of Hopewell and Cahokia (e.g., Brose and Greber, 1979; Pauketat and Emerson, 1997; Anderson, 1997; Pauketat, 2004, 2007; Jefferies, 2004b: 124).

What happened at Cahokia, in fact, may offer some indication as to what occurred across the Southeast with the decline of Poverty Point, since Cahokia too far exceeded in size and complexity any other prehistoric center in the Eastern Woodlands at its peak in the 11th and 12th centuries, or indeed any time after.¹² When Cahokia declined after ca. A.D.1200, nothing comparable replaced it. Instead, smaller centers became dominant in their subregions, probably formed by local leaders emulating what they had seen or heard about Cahokia, at places like Etowah and Moundville early on, and later at the sites making up the societies DeSoto and other early European explorers encountered. The peoples in these successor societies had seemingly different priorities. Exchange in exotic materials and finished goods still took place, but apparently at a much-reduced scale, sites were smaller (nothing comparable to Monks Mound was ever built again), and no one of them could legitimately claim, at least on the basis of overwhelming size, to be “the center.” When Poverty Point declined, however, unlike Cahokia it was not replaced by smaller-scale copies of itself. Indeed, it was centuries before even remotely comparable monumental construction and exchange occurred again within the region, at the varied centers of the Hopewellian world (save apparently in portions of south Florida [Schwadron and Russo, chaps. 6 and 7, this volume]). While vibrant cultures were present in parts of the region in the centuries immediately following the end of Poverty Point, such as Alexander and Adena, there was no longer one dominant center, no “Wonderful” place.

But how did the decline of Poverty Point play out, and why? Climate change, such as increased rainfall or flood frequency, may have affected societies across the region—by impacting their traditional food sources or foraging areas,

disrupting communications arteries, or masking formerly accessible lithic and other raw material sources—not only in the lower Mississippi Valley, but elsewhere, as Kidder, R. Saunders, and others have suggested in this volume. But even assuming that we are able to resolve the cause of the collapse of the Poverty Point site itself, why didn't interaction continue, with another center or centers, either locally or in another part of the region, assuming a comparable role in terms of scale or influence? Gibson (chap. 2, this volume) suggests one answer, when he argues that Poverty Point had grown too large and complex to sustain itself for very long, which it could have only done if the people living there were willing or able to change their basic social values and organizational properties, perhaps by becoming less egalitarian.¹³ In this view, Poverty Point was a precursor to the complex societies of the later Woodland or Mississippian era, yet its people failed to develop mechanisms to allow such complexity to continue over a sustained period. The means of doing so, furthermore, while perhaps present for a time at Poverty Point at its height, does not appear to have been either exported or appreciated elsewhere. The Late Archaic and Early Woodland peoples of the region, quite simply, do not appear to have been capable of, or seen the necessity for, sustaining other such social experiments.¹⁴

But why don't grandiose primate centers occur continuously, if not in the same place, then within a region? A number of reasons suggest themselves, one of which is related to the role dominant centers or areas play in a regional landscape. *Quite simply, once a dominant center like Poverty Point or Cahokia collapsed, it could not be easily or readily replaced. When such a center went down, what made it work went down with it: the kin, marriage and alliance networks, trading partnerships and expeditions, scheduled and impromptu pilgrimages, missionary parties and activities, collective labor arrangements, and all the other things that made it a center. Such relationships are unlikely to easily reconstitute themselves, especially if they must be formed by new peoples at new locations.*¹⁵ Such networks, ethnographic studies suggest, (1) took time to develop, on the order of decades to centuries, (2) involved multiple partnerships between individuals, with no single person understanding or controlling the whole system, and (3) were often highly struc-

tured in terms of what was circulated and what was expected of participants (Malinowski, 1922; Wiessner, 2002: 237ff). Such networks were not easily produced or reproduced, and their influence extended to many aspects of behavior. The Tee trading cycle among the Enga of Highland Papua New Guinea, for example, grew up over many generations, and was linked to both religious cults and warfare, institutions that trade helped to spread and sponsor, respectively (Wiessner, 2002: 240–242). The mobilization of resources to support these activities involved all members of society, despite the fact that a much smaller percentage of people actually shaped specific trends and events. Like the Tee or Kula cycles, in which exchange fluctuated in intensity, we must determine how much long-distance exchange took place at various points of time during the later Archaic and, like these two ethnographic examples, whether it occurred in a punctuated fashion.

An examination of possible interaction pathways, or trail networks in the Eastern Woodlands (Anderson et al., 2007c) can help us to understand what happens when a major center is abandoned. Least cost pathways were created to explore the flow of raw materials into and finished goods out from three major centers or core areas, Poverty Point, the Scioto Valley (i.e., Ohio Hopewell), and Cahokia (fig. 15.3). Not surprisingly, save for limited areas of overlap shaped by physiographic considerations, the networks were quite different. That is, interaction networks in eastern North America were profoundly shaped by regional political geography, were situational, and changed over time. While all “All roads may lead to Rome,” the road networks change when a new “Rome” appears somewhere else. Thus, when a major center declined, the physical and human networks centered upon it had to be reconstituted, something that does not appear to occur quickly. In the case of Poverty Point, the network of interactions that came together at the site, in the absence of similar centers elsewhere, could not be easily transferred and reconstituted.

Other findings of the analysis were that (1) interaction between centers was sometimes very different than interaction for raw material acquisition (i.e., the routes were typically different, since raw material sources were not always where other centers were located), (2) raw materials moved on different routes depending

on where they came from, and (3) the same raw material might move on very different routes depending on whether it took a least cost path, or was routed through an intervening center. The pathway soapstone took getting from the south Appalachians to Poverty Point, for example, was very different if it was routed through Jaketown in the interior or Claiborne on the Gulf coast (see also O’Donoughue and Meeks, 2007). The analyses thus indicate that interaction patterns and pathways can change dramatically as centers emerge and decline on a regional landscape. And, since centers are defined in part in terms of their relations with their peripheries, the loss of a center does not just mean the loss of

one place, but of ties with *many* places.¹⁶ Such networks, ethnographic studies indicate, take time to develop and can also be quite fragile, depending on relationships between individuals and groups that, once broken or lost, may prove difficult to reestablish.¹⁷

THE END OF THE SOUTHEASTERN ARCHAIC: WHEN IS A MIDDEN ALSO A MONUMENT?

After 6000 years ago accumulations of shell, or earth and shell, appear along the Gulf and Atlantic coasts and near coastal rivers of Florida and adjoining areas, to the mouth of the

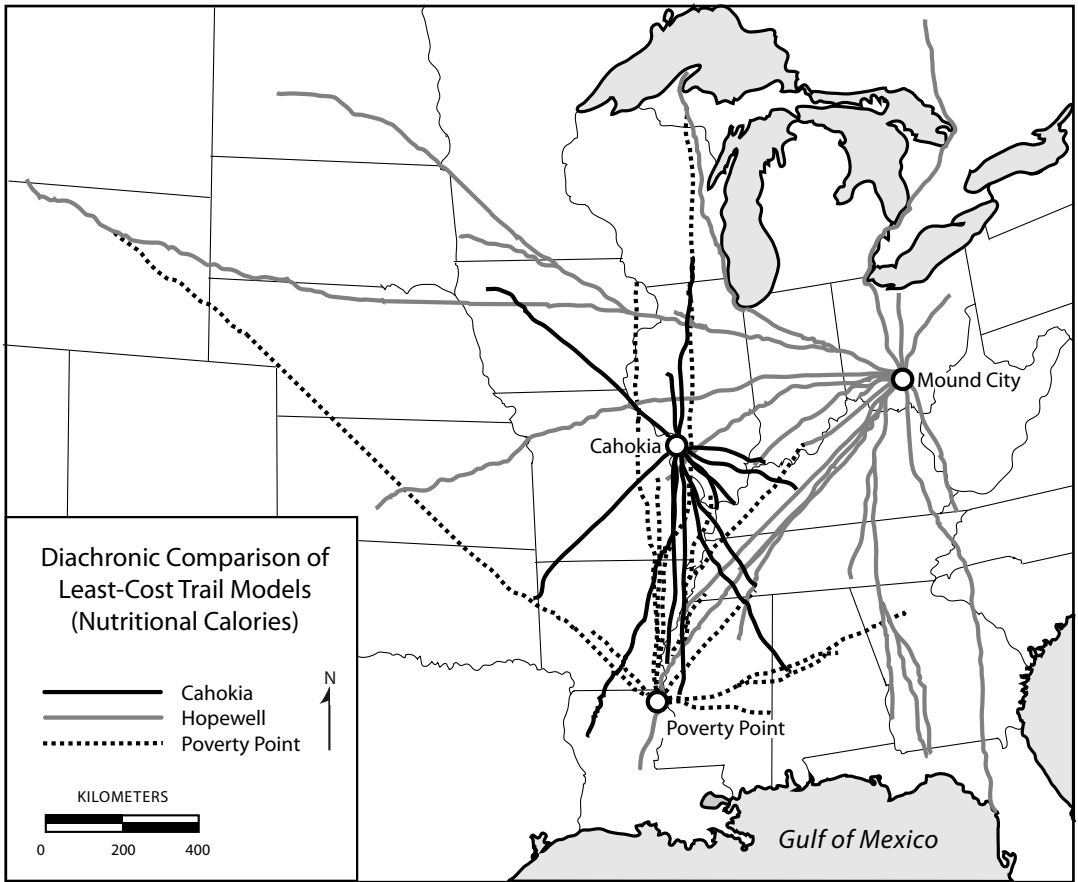


Fig. 15.3. Inferred trail networks at three times in the eastern Woodlands: Poverty Point, Hopewell, and Cahokia. (Adapted from Anderson et al., 2007c, map courtesy Chris Gillam)

Pearl River in Mississippi and along the Atlantic coast to central South Carolina, encompassing a diverse array of sizes, shapes, and functions (Russo, 1994a, 1994b, 1996b, 2004b, 2008, chap. 7, this volume; Sassaman, 1993a, 2004a, 2006b, 2010, chap. 11, this volume; Randall, 2008, Kidder and Sassaman, 2009; Anderson, 2009). Smaller accumulations appear to represent routine subsistence debris, house floors, platforms lacking evidence for structures, or burial mounds (Randall, 2008: 15). Much larger, circular and U-shaped structures were also present, particularly after 5000 years ago until about 3000 years ago, some of which appear to have been built near or on top of older settlement or mortuary facilities (R. Saunders and Russo, 2002; Russo, 2004b, 2006, 2008; Randall, 2008: 16). Some of the ring structures appear to have been built over circular villages subsequently covered with shell, while others were placed in previously presumably unoccupied areas (Russo, 2008: 18). The middens, whether U-shaped or circular, defined large plaza areas, recreating in shell an arrangement similar to that obtained using earth at sites like Watson Brake in northeast Louisiana. Whether cultural developments in the lower Mississippi Valley influenced those in the Atlantic and eastern Gulf coastal regions is unknown, but an architectural grammar detailing what properly constituted a center may have been widely, if not always perfectly, shared.

It has been suggested that the shell used at some coastal sites was obtained, in part, from feasting or other ceremonial behavior, and that the asymmetry evident in the occurrence of shell within these sites, like the difference in the sizes of earthen mounds at mid-Holocene sites in northeast Louisiana, was linked to differences in status between social groups, or perhaps tribal segments, that participated in their construction (Russo, 2004b, 2008). When carefully mapped, the coastal middens are not uniform in size and shape, but are instead characterized by significant differences in the quantities of shellfish present in different areas, with the largest amounts inferred to have been where more feasting occurred or people of higher status lived (Grøn, 1991; Russo, 2004b, 2008). Some coastal shell middens are truly massive and complex constructions, with numerous ring- or U-shaped enclosures present, or both, as at Rollins or Fig Island, suggesting spaces created for and used by a number of differing segments of society (R. Saunders, 2004b;

Russo, 2004b, 2008; Sassaman, 2006b: 136–140, chap. 11, this volume). If this line of reasoning is correct, it also means that some societal segments were able to involve or mobilize larger numbers of people in earth moving or feasting activity than others, and these differences are reflected in the sizes of discrete mounds or shell accumulations within these site complexes.

In some of the major rivers of the interior Southeast, like the Tennessee River in northern Alabama and Tennessee or the Green River in Kentucky, shell or shell and earthen mounds are also found in an array of sizes, although none, interestingly, have the circular or U shapes characteristic of some sites in coastal regions, or the mound and plaza arrangements first observed in northeast Louisiana (Marquardt and Watson, 1983, 2005; Dye, 1996; Crothers, 1999, 2004; Anderson, 2009). Many of these shell middens have associated human burials, and for the past two decades, appreciable debate has occurred as to whether these sites and their associated burials represent deliberate monuments or mortuary complexes, perhaps marking territories, or instead are accumulations from routine habitation and subsistence activities (cf., Claassen, 1991, 1996; Milner and Jefferies, 1998; Milner, 2004b: 301–305; Marquardt and Watson, 2005; Marquardt, chap. 14, this volume). Relatively uncomplicated and egalitarian social formations are inferred (e.g., Marquardt and Watson, 1983, 2005; Milner, 2004a, 2004b), primarily because the architectural correlates of complexity seen in some coastal areas and in the lower Mississippi Valley—large mound or U- and ring-shaped complexes of earth or shell, often with well-defined plazas or open areas—appear to be lacking. Other evidence for complexity is found within the interior Shell Mound Archaic cultures, however, including the following: (1) an involvement in long-distance exchange; (2) status differentiation among burials albeit with no evidence for hereditary inequality; (3) trauma on skeletons suggesting fairly intensive conflict; and (4) suggestions of distinct social groups, as indicated by restricted distributions of specialized artifact forms like projectile points, atlatl weights, and bone pins (Jefferies, 1995, 1996, 2004a; Sassaman, 1996, 2010; Sassaman and Anderson, 2004; Kidder and Sassaman, 2009).

Even given other signs of complexity, appreciable differences of opinion exist about the extent to which monumentality and feasting behav-

ior can be identified in the archaeological record where shell middens are concerned (cf., Marquardt and Russo, chaps. 14 and 7, this volume, who exemplify these differing positions; see also Milner, 2004b: 301–305 and Claassen, 1996 for very different positions on this matter). Russo (2004b, chap. 7, this volume), has argued that midden creation was an act of display, a statement about the provisioning abilities of groups or group segments. The sizes of the middens or piles of shell thus stand as a proxy for the labor that it took to collect them, and, where it can be shown that shellfish were eaten, the subsistence contributions obtained from them. Marrinan (chap. 4, this volume) calls large shell middens “intentional constructions of celebratory debris” and Russo (chap. 7, this volume) variously calls them “hypertrophic mound pilings,” “food piled in display,” or “shellfish . . . collected or displayed in large piles.” To Marquardt (chap. 14, this volume) in contrast, these middens “are evidence not of purposeful construction but instead of domestic accumulation and discard.” All of these authors, of course, are in agreement that their inferences must be subject to evaluation. Regardless of where one stands, a major question that must be considered is why, at certain times and places, people in the Southeast arranged shell in large and sometimes geometrical-shaped accumulations, while in others they didn’t, but instead scattered it haphazardly or in such a way as to leave no trace, presumably back into the creeks and marshes. I personally think that many Archaic shell or shell and earth middens were intentional and planned rather than accidental or haphazard creations and, following Russo (2004b, chap. 7, this volume), that variability in their deposits can inform on social organization. I also, however, concur with Marquardt, Russo, and others in this volume that much more systematic research is needed on these sites and questions and, ideally, more unambiguous examples one way or the other.¹⁸

The end of the southeastern Archaic is reflected on portions of the landscape by the disappearance of the massive ring and U-shaped accumulations that had been present in previous millennia. Shell or earth and shell middens continued to be created in some coastal and riverine settings, although these accumulations, while sometimes occurring in linear or ring shape, were typically nowhere near the size and complexity of those of the preceding Archaic period. Ring middens have been noted

in Florida among later Woodland Deptford and Weeden Island communities, for example, but the amount of subsistence debris making them up was much reduced in scale and visibility (Bense, 1994; Peacock, 2002; Stephenson et al., 2002; Russo, chap. 7, this volume). Russo argues that subsistence uncertainty brought on by changes in climate and sea level in turn lead to changes in communal emphases. In Russo’s view, large-scale community feasting events hosted by aggrandizers and leaving massive piles of debris were replaced by more family-based activities centered in part on ancestor worship that left much less pronounced archaeological signatures. Instead of shell and other subsistence debris, earth and wood in mounds and structures formed the basis for display.

THE END OF THE SOUTHEASTERN ARCHAIC: A BRIEF NOTE ON THE POSSIBLE ROLE OF WARFARE

Whether warfare had much if anything to do with the end of the southeastern Archaic is unknown, but seems unlikely. There is no evidence at present to suggest that Poverty Point or any of the other major sites and centers of the terminal Archaic were sacked and their inhabitants massacred. Given the appreciable evidence for weapons trauma that is observed in at least some parts of the region where well-preserved human remains have been found (e.g., M. Smith, 1996), some form of regular or recurring conflict seems probable, but how it was structured is unknown. Low-intensity raiding or ambush tactics are assumed to have occurred since at least the Middle Holocene, but how common or widespread this behavior was, or the purposes it served, remains largely unknown. Archaic period warfare may have been a means by which individuals achieved higher status, a means of maintaining control over scarce resources, or perhaps a way of creating and maintaining buffer zones between groups (e.g., M. Smith, 1996; Dye, 2009).

The role of ritual combat has received little attention in discussions related to the southeastern Archaic or Early Woodland; perhaps it should be, given the appreciable evidence for weapons trauma that is observed in at least some parts of the region where well-preserved human remains have been found (e.g., M. Smith, 1996). Poverty Point and other large centers, including the coastal ring- and U-shaped midden complexes,

may have been not only places of aggregation or pilgrimage or where trade fairs, feasting, or religious ceremonies took place, but also where ritual combat or even staged battles occurred or at least were promoted. Among the western Enga in Papua New Guinea, for example, cults arose as an alternative to more intensive conflict (Wiessner, 2002: 243), and conflict itself, when it occurred, was often carefully controlled multigroup aggregation, important for reasons other than the acquisition of resources or territory. Among the Enga:

“tournament wars” were organized in which emphasis was placed on display rather than defeat and festivities rather than fighting. It was said that the Great Wars were “planted like a garden for the harvest that would follow” during the subsequent exchanges (Wiessner, 2002: 242).

The stick or ball games common in North America in the centuries after European contact were at their most intensive little removed from actual conflict. Activities at later Archaic centers with their large, open plazalike areas, may have been as much about channeling rivalries through sporting or martial activities as they were about feasting and ceremony, as a palliative to more intensive combat, and as a means of bringing together people who might have otherwise remained apart.

THE END OF THE SOUTHEASTERN ARCHAIC: COMMENTS ON INDIVIDUAL PAPERS

Before bringing this essay to a conclusion, a number of more specific observations were triggered as I listened to and then subsequently read the papers that make up this volume. My comments on Kidder’s “Climate Hypothesis” as currently expressed (2006, chap. 1, this volume) were presented in detail previously, so I will begin with the second formal paper, by Jon Gibson (chap. 2, this volume), who exemplifies the tradition of distinguished archaeologists from the lower Mississippi valley, bringing a humanistic and humorous touch to their writings.¹⁹ Gibson notes that megaflooding was occurring locally when Poverty Point was apparently flourishing at ca. 3500 cal B.P., and again probably a century or more after it had ended, from ca. 3000 to 2500

cal B.P. As noted previously, he thus doesn’t think flooding had much to do with either the rise or fall of Poverty Point, whose inhabitants were, in any event, elevated well above the floodwaters. He instead suggests that the creation or existence of a large lake nearby explains the general location of the site; the exact placement of the complex was dictated by topographic conditions along Macon Ridge, notably where the best view of the horizon and sky was possible.²⁰

Gibson makes the particular point that “the natural world they [the people of Poverty Point] were engaging was a *watery one*” (italics in original). Gibson also believes Poverty Point both emerged and ended quickly, perhaps with the creation and catastrophic drainage of the nearby lake. He argues that floods were unlikely to bother people used to living where they did, and that the swamp and lake environment helped them to define who they were, their “personhood” or identity. Even in extreme cases like those observed at Oak Island on the coast, where hurricane damage was extensive, the people rebuilt. As he puts it, a storm may have “wiped out a village *but not a people or their way of life*” (italics in original). Given this, I would suggest that any temporary or partial loss to their subsistence base that the Poverty Point people may have experienced from megaflooding or the draining of a nearby lake may have been far less damaging to their society’s continued existence than the impact such events might have had on their collective psyche and ideological underpinnings.²¹ That the site was not reused to any great extent after being abandoned may be a testament to how great its loss may have been perceived by descendant populations; from the “Wonderful Place” everyone visited, it became a place to be seemingly actively avoided.²²

Gibson’s discussion herein of how Poverty Point’s peoples obtained their food includes the critically important observation that starch analyses can help document the kinds of plants that were being used without the need to find carbonized or otherwise preserved macrofossil remains (Cummings, 2006). This form of research should be routinely considered in paleosubsistence analyses. That plants like cattails or lotus root were likely being eaten, as well as other root crops, is something that has not been given perhaps as much consideration as it should in discussions of prehistoric subsistence in the Southeast.

Sanger and Thomas (chap. 3, this volume) in

a description of their work on the St. Catherines and McQueen shell rings, note that decorated St. Simons fiber-tempered pottery is far more common at the latter site, which is ca. 2.3 km away from the former on the ocean or eastern side of the island. The lithic assemblage from the McQueen shell ring is far more diverse, with numerous pieces of extralocal material present. Baked clay objects, in contrast, are common at the St. Catherine's ring, and uncommon at McQueen. Radiocarbon determinations indicate that these rings were contemporaneous, with McQueen continuing slightly later, but they appear to have been used very differently, perhaps by different peoples using different methods of food preparation and display. Was there a sacred/special versus secular/mundane dichotomy in the use of space, sites and centers, and specific artifacts in this, and perhaps other Late Archaic societies, a pattern observed later in time in the region (Sears, 1973; Schwadron, this volume, chap. 6)?

The location of the McQueen Shell Ring overlooking the ocean may have meant that it was more readily accessible to people coming from greater distances, using seagoing watercraft; navigating the creeks of the tidal marshlands can be a challenging affair, with dead ends and misdirection commonly occurring if one is unfamiliar with local conditions (Thomas and Blair, 2008). Dugout canoes were certainly present by this time (Wheeler et al., 2003), and both zooarchaeological remains (Marrinan, chap. 4, this volume) and early historic accounts suggest that Native Americans were using watercraft capable of holding at least several people in near-shore waters (Thomas and Blair, 2008: 113–116). Marrinan's analysis (chap. 4, this volume), indicates that river mouth species were not being taken, at least by the people who built the Cannon's Point and West Rings on St. Simon's Island, which suggests that travel to and from the interior along rivers may have been comparatively infrequent. Could it be that interaction events with people coming from a distance, if that is what was occurring, were spatially separated from the locations of routine daily life on St. Catherines at this time? If so, could similar arrangements occur elsewhere in other coastal Archaic sites or settlement localities?

The large pits found in the center of the St. Catherines Island rings are interpreted as possible storage or cooking features (Sanger and

Thomas, chap. 3, this volume; Marrinan, chap. 4, this volume), or alternatively as possible fresh-water wells (Marquardt, chap. 14, this volume). Their prominent location suggests they may have been used for communal food storage or preparation, perhaps in feasting behavior. If feasting took place at both rings, it may have involved local people at the St. Catherines Ring and people from farther away at McQueen. The occurrence of evidence for earth oven or hot rock (actually, hot baked clay object) cooking primarily at the St. Catherines Ring, suggests this technology may have been preferred for ordinary cooking or communal consumption events. Cooking at the other ring, if evidence for earth ovens or hot-rock cooking is not ultimately found, in contrast, may have been conducted differently, perhaps over open fires, which would have also been a source of light if feasting occurred here and at night, as it may have at special places on special occasions. Finally, if the McQueen Shell Ring construction began a century or so later than at the St. Catherines Ring (Thomas, chap. 8, this volume; Sanger, chap. 9, this volume)—although both rings appear to have been abandoned about the same time—it may suggest that both local ceremony and external connections take a while to become established in shell ring society. That is, the more varied and elaborate ceramic and lithic remains at McQueen may reflect a community that, having been in place for a good while, was better known and had broader ties across the surrounding region. Building up such relationships, like reconstituting them once they had been lost, undoubtedly took time, as argued previously.

Shell ring and midden sites, although frequently damaged or destroyed for their fill or as a source of lime since the 18th century, have never been subject to much looting, given their dearth of artifacts and burials. C.B. Moore (1897), who dug more mounds than anyone in American archaeology, avoided the shell ring sites of the Georgia and South Carolina coast, following early work at Sapelo Island. While the shell rings and middens of the southeastern coast may not suffer as much from looting as other categories of sites, such as mounds, they are critically endangered by sea level rise. Indeed, much of the near-coastal archaeological record of our species may be lost or inundated in the next century or so, making the work accomplished now all the more important (Anderson et al., 2007a: 15).²³

Marrinan (chap. 4, this volume) provides

a useful discussion of the field procedures employed during her excavations at the Cannon's Point shell ring. Documenting procedures and logistics is a critically important part of archaeological reporting, if for no other reason than to avoid having to reinvent or rediscovery procedures year after year. In particular, Marrinan early on recognized the importance of using fine screen for the recovery of faunal remains, since much important information is lost when coarser mesh (i.e., $\frac{1}{4}$ in. or larger) is employed. About the same time Marrinan was conducting her work in the mid-1970s, Dan and Phyllis Morse (1980) were conducting similar screen size experiments at the Zebree site in northeast Arkansas, over a wide range of artifact categories, including ceramics, lithics, and floral and faunal remains, the latter by major taxonomic class. At Zebree, sand-tempered Late Woodland ceramics broke up more readily, and into smaller pieces, than shell-tempered Mississippian sherds in certain depositional environments, such as in the plow zone or general midden. Much more of sand-tempered ceramics, by weight, passed through standard $\frac{1}{4}$ inch mesh, rendering comparison between ceramic categories by either count or weight suspect (Anderson, 1980: 8–20; Roth et al., 1980: 7–14). The point to be made is that field recovery procedures must be evaluated through experimental means wherever possible. Processing fine-screened samples can be time consuming but may have unanticipated payoffs. At Zebree, use of systematic fine-screened small-scale (i.e., two gallon soil) samples was found to be about as accurate as much larger test units for documenting the distribution of artifacts in the site midden (Roth et al., 1980: 7–10 to 7–19).

At Cannon's Point, Marrinan found Early Woodland remains in the marsh around the ring, as well as fragmentary human remains. People were still using the ring area, even if they were apparently not eating shellfish, which due to lowered sea levels were too far away to be easily available. Whether the human remains dated to the earlier period when the ring was under construction is unknown, but their discovery illustrates another important point . . . we need to be looking at other parts of the landscape. In a classic paper, Mark Mathis (1994) showed how stripping large areas adjacent to and immediately away from shell middens in coastal North Carolina exposed large numbers of cultural features that would have never been found had excavations

focused solely on the midden deposits.

Marrinan (chap. 4, this volume), citing R. Saunders (2002: 127), also suggests that variation in bone pins or ceramics may help reveal patterns of cultural affinity and interaction along the southeastern coast; similar ideas have been advanced about the variation observed on bone pins found on Shell Mound Archaic sites in the Midsouth (Jefferies, 1996, 1997, 2004a). As she notes, a “stylistic study of decorative motifs from the shell rings . . . might suggest whether motifs are clustered or widely distributed in occurrence,” as well as document their longevity within the region. The data to conduct such a study are at hand, and preliminary analyses along these lines have already occurred (e.g., Trinkley, 1980; Sassaman, 1993a). I would predict that major physiographic features, such as sounds or rivers, may mark points where such distributional breaks or centers are likely, given their role as barriers or aides to regular movement across or along them, respectively.

Schwadron's paper (chap. 5, this volume) illustrates the impressive amount of research that can be accomplished when land management agencies support archaeology . . . a point that people working on or for other state or federal land or projects should emulate. A lesson from her tree-island work, as noted previously, is don't stop digging when you reach what you think is the bottom of the cultural deposits, even if the matrix closely resembles concrete. Her work also demonstrates a fine integration of paleoclimate and paleovegetation data; long pollen sequences and their record of vegetation change can offer great insight into prehistoric land use patterns, and charcoal particulates in the cores can also be used to monitor fire frequency. The use of shell for something other than mounds, middens, rings, or U's—for things like watercourts, causeways, walls, canals, etc.—furthermore demonstrates the cultural knowledge that existed enabling people to use shell to construct a wide range of structures and features, and produce a dramatic built landscape. There was nothing haphazard or fortuitous about much of the shell mounding that occurred in south Florida.

Schwadron also notes that the spacing of large shell works in south Florida was every few miles. If the largest sites were, as she argues, population and political/ceremonial centers, then the spacing is certainly much closer than predicted if these were the centers of independent societies,

which tend to be separated by greater distances (e.g., Renfrew, 1974; Hally, 1993; Livingood, 2009). How the shell work-creating societies of south Florida were internally organized and externally configured, of course, is not currently well understood. Does the exploitation of marine resources or the occurrence of terrain characteristics making water transport critically important result in a different spacing of centers on the landscape than that observed in societies located in other environments or supported by other means, such as by rainfall or irrigation agriculture? This raises a host of questions about the spacing, and reasons for the spacing, of later Archaic centers over the southeastern landscape. What factors shaped this placement? To explore this question, we need to conduct site locational analyses like those by Thomas (2008e; chap. 8, this volume) on St. Catherines Island at a much larger scale, examining the occurrence of rings, mounds, and middens over time in relation to features like marshes, rivers, sounds, and vegetational communities (see also Marrinan, chap. 4, this volume).

Russo (chap. 7) argues convincingly that the end of the Archaic was characterized in many areas by a replacement of large-scale ceremonial feasting by ancestor veneration and burial mound construction, a change he ties to the environmental and cultural perturbations of the period. Climate change in general, and sea level fluctuations in particular, specifically the lowering after 3800 cal yr B.P. compromised coastal communities' "abilities to host feasts" on a large scale.²⁴ Whether people followed the receding shoreline is unknown, but Russo (chap. 7, this volume) argues that as traditional feasting and aggrandizing behavior became harder and harder to conduct, a loss of faith in these once dominant individuals occurred. As with the collapse of interaction networks, I would argue that once such patterns of behavior break down, and new traditions take their place, it becomes difficult to go back to them, to reconstitute the old ways, even if the resources are once again available to permit such a return. As changes begin, a "cascade effect" (Sanger, chap. 9, this volume) may occur, effecting sites and people who might otherwise have been able to continue unaffected by the climate or cultural triggers involved.

People along the southeastern coasts frequently lived on high ground adjacent to and quite close to tidal marshes, as several of the authors herein

have observed. Thomas's (2008e, chap.8, this volume) research on settlement location on St. Catherines, in fact, models this quite nicely, noting that marshside settlements occur "along the stabilized dune remnants that fringe the maritime forest, immediately adjacent to the salt marshes and the tidal streams that drain them."²⁵ As sea levels fluctuated, the location of these edges, or favored zones, would move as well (see in particular papers by Russo and Sanger, chaps. 7 and 9, this volume)²⁶. In areas of low relief, and where near-shore gradients are minimal, small changes in sea level can mean that marshlands may relocate appreciable distances. If we wish to find offshore archaeological sites, we must look for them in settings comparable to those predicted by Thomas, which, if surviving, may be appreciable distances out to sea. If a sea level drop of even 2 to 3 m can result in a movement of the shoreline up to several kilometers offshore from its present location (e.g., Thomas, chap. 8, this volume; Marquardt, chap. 14, this volume), we need to be considering how far offshore this shoreline is, and whether sites may exist near it, something that only underwater archaeology may be able to determine (e.g., Faught, 2004). The hiatus in shell midden deposition on St. Catherines Island during the early part of the Woodland period (Thomas, 2008b: 459–464, 2008d: 1005–1007, chap. 8, this volume) becomes more understandable if the estuaries were themselves located at some distance away during this interval, as the author himself recognizes.

I admire the effort Thomas (2008f: 348–359) has put forth to determine the local marine reservoir correction factor for St. Catherines Island. Unless or until a comparable level of effort can occur for individual coastal research areas, AMS determinations on charcoal, and ideally the seeds of annual plants, should be the preferred method of dating wherever possible if good context can be obtained. This could lead to high-precision dating without the ambiguities associated with the dating of marine shell, in the absence of analyses resolving the necessary correction. Unfortunately, finding charcoal in good context is not always easy, and the shell is usually deposited immediately after collection, making it contextually an ideal material for archaeological dating purposes.

Matt Sanger's paper (chap. 9, this volume) provides a broad synthetic picture of ring occupational histories, a perspective essential to

help us to make sense of disparate site data. His analysis indicates that these sites were not initiated or abandoned at the same time, but instead that three abandonment waves occurred: (1) ca. 2450–2140 cal B.C./around ca. 2280 cal B.C.; (2) 2120–1850 cal B.C./around ca. 2020 cal B.C.; and (3) 1830–1570 cal B.C./around ca. 1720 cal B.C. Employing a local examination of Holocene sea level fluctuations (Gayes et al., 1992; Thomas, 2008c: 46), he attributes the first two episodes of ring abandonment, at least in part, to episodes of sea level rise and fall, respectively; the third wave of abandonment appears unrelated to sea level change. Bond event #3 occurs roughly co-eval with the first wave of abandonments (Bond et al., 2001), which in the reconstruction Sanger is employing is also about the time of, or slightly before, a major (ca. 2 m) drop in sea level locally, after several centuries of rising waters. Sanger suggests that the settlements associated with wave 1 rings were quite literally flooded out by a marine high stand, causing the people who built them to relocate; wave 2 rings, in contrast, were abandoned because falling sea level isolated the people living in and near them from estuarine resources. Reasons for the third abandonment are stated to be unknown, yet appeared to be unrelated to sea level change.

Marquardt (chap. 14, this volume) made use of a somewhat different sea level reconstruction (Tanner, 1993, 2000), which has the first two abandonment waves both associated with low-water stands, with the third and final wave occurring during a time of rapidly rising seas, which fell again a few centuries later in the initial Woodland period. Without making too fine a point of it, the fact that two somewhat different reconstructions exist for something as important as where sea level stood along the southeastern coast during the last few millennia, and that these reconstructions can differ from one another by up to several meters at certain times, means we have a serious gap in our knowledge in need of resolution. I am not qualified to evaluate either of these models, and suspect it will take a lot of primary field research to do so. Paleoenvironmental research directed to constructing local sea level curves and hence past shorelines would appear, like efforts directed to delimiting marine reservoir correction factors, to be something that will need to be explored in specific areas to be most effective.

Importantly, Sanger (chap. 9, this volume)

notes that the apparent final abandonment of the rings around 1720 cal B.C. does not mean that St. Catherines Island itself was depopulated; smaller shell midden sites exist on the eastern side of the island that have been dated to the centuries after ca. 1500 cal B.C., perhaps located on that side to be closer to the remaining marshes if a drop in sea level occurred at this time. The use of earlier rings, or the construction of new ones after ca. 1500 cal B.C. is not indicated; communal energies were apparently directed elsewhere, although towards what goals is unknown. Again, as with the predictive modeling effort, the work on St. Catherines highlights the importance of conducting intensive survey activity away from the large and spectacular shell sites that occupy much current research attention. It must be stressed, however, that much more work is needed to locate and document even the largest of the ring and midden sites, many of which are buried in marshes, or are eroded or damaged by historic development, and an appreciable fraction of which have only been found in recent decades (e.g., Russo, 2006).

The fact that some ring populations were able to continue to maintain residency in the face of challenging environmental factors (i.e., at Fig Island 1), while others were not and the sites were abandoned, Sanger (chap. 9, this volume) argues, means we cannot assume human responses will be the same everywhere. The second wave of ring abandonment Sanger documents, about 2020 cal B.C., is associated with either a major drop or low stand in sea level, depending on which reconstruction is employed; as during the initial centuries of the Woodland era, this may mean that at least some sites occupied immediately after this time may now be located up to several kilometers offshore, an inference amenable to testing. The third wave of shell ring abandonment, however, occurs at ca. 1720 cal B.C., while sea level is low or starting to rise appreciably, suggesting that the reason that the rings were abandoned was either because they were “left high and dry” or because they were being flooded out. To Sanger, (chap. 9, this volume) other (unknown and possibly cultural) factors may also be in play.

What might these be? The fact that coastal shell ring sites across much of the lower Southeast were abandoned in most areas after ca. 3800 cal B.P./1720 cal B.C. (Russo, chap. 7, this volume; Sanger, chap. 9, this volume), save for south Florida—and the fact that the Stallings

Island culture in the interior along the central Savannah River collapsed about this same time (Sassaman, 2006b: 154 ff., chap. 11, this volume; Sassaman et al., 2006: 551, 562)—suggested to Russo that prestige-based feasting and personal aggrandizement, coupled with public displays that included mounding shellfish, ended about this time in much of this part of the Southeast, except in south Florida. What happened about this time to bring such a change about? Megaflooding is reported in the northern Gulf of Mexico at ca. 3500 cal B.P. (Brown et al., 1999, referenced in R. Saunders, chap. 5, this volume), which might relate the abandonment to climate. Alternatively, if sea level was indeed rising, as Marquardt (chap. 14, this volume) suggests, the third wave of site abandonment, and not the first two, may have been the one where the rings were flooded out.

Perhaps the most interesting thing about the centuries immediately after ca. 3800 cal B.P., is that it is associated with major construction and long-distance exchange in the sites making up the Poverty Point culture, and at the type site itself (Gibson, 2000, 2004, 2007, chap. 2, this volume; Kidder, 2002a; Kidder et al., 2004, 2008). Sassaman (2006b: 173), in fact, has suggested “the rise of soapstone vessel exchange [linked to Poverty Point] may have been among the straws that broke the Stallings back.” Poverty Point may have offered a new model of public interaction and ceremony to peoples of the Southeast that may have been more attractive than the system or systems in place. As another possible cultural factor in play, I would suggest that some of the periods of occupation and abandonment Sanger identifies may be tied to patterns of warfare and possibly associated buffer zone formation and maintenance, which in turn may be linked to a need to maintain prey reservoirs and hunting territories, a pattern observed in the late prehistoric and early historic eras across much of the East (Hickerson, 1965; Gramly, 1977; Anderson, 1994: 39–41, 263–274; Dye, 2009). Conflict is quite common in some parts of the region in the later Archaic, and may be a factor motivating site placement and spacing. As other authors have suggested herein, I think it would be fascinating to look at the spacing of contemporary rings or ring clusters within the region and see what items of material culture were associated with each. It would also be intriguing in such an analysis to look at the spacing of sites by the founding, midpoint, and abandonment dates for

each site. I suspect that such an effort could help us understand the political history of the later Archaic along the south Atlantic coast.²⁷

Victor Thompson’s ideas (chap. 10, this volume) about tempo and timing, the periodicity by which sites are used or occupied—as he puts it, “an understanding of the cultural variability at multiple temporal and spatial scales that existed during these periods”—is a refreshing approach that we need to think about more.²⁸ He makes the very good point that the creation and use of what become or are now interpreted as monuments—the shell and earthen middens and mounds of the later Archaic—were created in different ways at different times and in different regions in terms of how space was used, and the intervals at which it was used. Archaic complexity, he argues, and as the papers in this volume illustrate, meant very different things at different times and places. His observation that the function of sites can change dramatically over time is, of course, something implicitly recognized by most scholars, although examples identified archaeologically remain relatively uncommon.²⁹ Thompson’s argument that shell ring formation might be the result of multiple kinds of activities, from feasting to routine subsistence, and that these may change dramatically over time, has direct relevance for the interpretation of the St. Catherines Island shell rings, which although only a few kilometers apart and largely contemporary, certainly appear to have been used very differently (Sanger and Thomas, chap. 3, this volume). His approach also forces us to think more carefully about the kind of formation processes that resulted in the Southeast’s rings and mounds.³⁰ That is, resolving behavioral episodes individually and collectively, and over time at such sites, can tell us a great deal about the societies that created these “persistent places” and “palimpsests” (Thompson, chap. 10, this volume).³¹

Sassaman’s comparison (chap. 11, this volume) of broad historical trajectories between the Eastern Woodlands and the European Neolithic shows us that the spread of monumentality or agriculture can play out very differently in different regions. Like Thompson, Sassaman argues that to understand a question like “What happened to the southeastern Archaic?” we must construct and compare detailed local histories of southeastern later Archaic and initial Woodland societies. As the papers in this volume indicate, many such local histories are emerging, among the most impressively detailed of which are those generated

by Sassaman and his colleagues from work in the Savannah and St. John's river valleys (e.g., Sassaman, 1993a, 2006b, 2010, chap. 11, this volume; Sassaman et al., 2006; Randall, 2008). Sassaman is engaging ethnography and history in suggesting that some later Archaic monuments or cultures represent the coalescence of differing peoples, and it is important to note that he uses archaeological artifact, feature, and site data and not simply plausibility arguments to make his points (e.g., Sassaman, 1993a, 2006b: 77, 140, 157; Sassaman et al., 2006: 557–560).³² Finally, like several other authors in the volume, Sassaman sees significant changes occurring in cultures in many parts of the region around and immediately after ca. 3800 cal B.P., which he argues may be linked to changes in climate, but are also likely to be “coincident due to linkages among all constituent societies in the greater Southeast.”

Joe Saunders (chap. 12, this volume) does an excellent job of documenting the age of Archaic mounds in the lower Mississippi valley, the foundation for the observation that a hiatus in mound building apparently occurred in this area from ca. 4700 to 3700 cal B.P. Mound building may have ceased during this interval, but he makes the case that people were still present, using Evans points³³, making effigy beads, and firing small blocks of clay that may have been precursors of Poverty Point objects. Saunders' research also reinforces the point, made by a number of the authors of the volume, that unilineal evolutionary schemes implying similar levels of accomplishment over large areas no longer have much utility in southeastern archaeology. The moundbuilding hiatus in northeastern Louisiana, for example, is a time when massive shell midden monuments were being built along the south Atlantic and Gulf coasts. There was no unbroken march toward ever greater complexity, ever larger mounds, or ever more efficient exploitation of the subsistence potential of the region. Instead, variability is now accepted as the goal we should strive to recognize and understand in prehistory. In this regard, we have indeed come a long way from the ideas of earlier generations of archaeologists, including Joe Caldwell, whom we honor with this series of conferences

Unfortunately, as Joe Saunders observes, excavations at most of Louisiana's Archaic mounds have been minimal to date, and are dwarfed by the size of these complexes. While much has been learned from the mapping, coring,

and limited test pitting that has occurred, more investigation is clearly needed. Whether the mound centers were “entities unto themselves,” as Saunders (chap. 12, this volume) suggests, or were integrated together into some larger social or ceremonial collective is unknown. Sassaman and Heckenberger (2004: 228) argue that the mound-terrace alignments at four early Louisiana mound sites—Caney, Frenchman's Bend, Insley, and Watson Brake—are integrated into “a regional pattern of alignment [which] suggests that entire landscapes of monumental architecture, and not just individual sites, were planned constructions.” Whether this level of foresight and planning in site construction actually occurred in the Middle and later Archaic Southeast remains a subject for some debate (cf., Clark, 2004; Sassaman, 2005, 2010; Sassaman and Heckenberger, 2004, with Milner, 2004b; Gibson, 2007). If it did occur, perhaps we should be looking for similar patterns later in prehistory and in other regions.

Chester DePratter (chap. 13, this volume) makes the point that earlier Paleoindian and Archaic sites probably exist on St. Catherines Island, and are most likely to occur where fresh water would have been present when sea levels were much lower, in the central lacustrine zone, or where former stream or river channels were located. Decades of large-scale intensive survey and testing in interior coastal plain settings in the Carolinas and Georgia—primarily on military bases, in national forests or wildlife refuges, or on other government installations like the Savannah River Site in South Carolina—has shown that early prehistoric sites are rare in such areas away from major drainages and, when present, are typically isolated artifacts or small specialized activity scatters (e.g., Anderson and Logan, 1981; Sassaman et al., 1990; O'Donoghue, 2008). Recent discoveries of Paleoindian and Early Archaic sites around Carolina Bays in the interior coastal plain (Eberhard et al., 1994; Brooks et al., 1996; Cable et al., 1998) suggest that effort directed to former bays or ponded environments will be productive, assuming that these environments existed in the more remote past. Given the effects of bioturbation, wind action, and gravity on the sandy upper sediments of the coastal plain, however, early archaeological deposits in such locations may be at a depth of a meter or more (Michie, 1990; Leigh, 1998).

DePratter also suggests that we need to

examine more ethnobotanical remains from coastal archaeological sites—among other things, to answer questions such as when and whether domesticates were first used. The late adoption of domesticates in coastal and other resource-rich parts of the region (B. Smith, 1992; Fritz and Kidder, 1993; Gremillion, 2002), including on St. Catherines Island (Thomas, 2008d: 1033–1034), leads me to suspect that earlier Archaic or Early/Middle Woodland use of Eastern Agricultural Complex domesticates would be most unlikely, although this is something that needs to be tested and not assumed. Unlike both DePratter and Marquardt (chap. 14, this volume), I suspect that the large central pits in the rings on St. Catherines Island were supports for large posts, like those that adorned Mississippian plazas millennia later, or else were communal cooking or storage features, as noted previously.³⁴

Marquardt³⁵ (chap. 14, this volume) argues that climate change plays an important role in shaping human culture, and that archaeologists need to be familiar with research on paleoclimatology, as well as pay more attention to how culture and environment exist “in a dialectical, mutually constitutive relation with one another.” Furthermore, not only archaeologists but I would argue, all members of our society, need to be aware of the rapidity and extent to which climate can change, with potentially profound implications for human cultures.³⁶ As global climate changes progressively faster in the years to come, interest in such matters will undoubtedly increase, especially concerning the relationships between planetary warming, rainfall patterns, and sea level, given the way these variables shape agricultural productivity, fresh water availability, and areas suitable for human habitation (e.g., IPCC, 2007). Sea level fluctuations had a pronounced effect on human societies dependent on marine resources throughout our species history, shaping patterns of migration and adaptation; awareness of these patterns, as several papers in this volume demonstrate, is critical to understanding southeastern prehistory. As Marquardt argues persuasively, we need fine-grained and accurate reconstructions of past sea levels, including where shorelines would be during higher and lower stands, in each region or area where we work (DePratter, chap. 13, this volume, makes the same point in his comments). I would suggest that we should not only work with the best data currently available, but strive to see that such studies are funded, and do our

best to enlist paleoenvironmental scientists to work in our areas. Given the budgets available for cultural resources management work, and continuing interest in documenting the effects of climate change, justifying paleoenvironmental research should be fairly straightforward. Such information would allow us to better situate past human cultures on the landscape, and in the process facilitate better contemporary management of environmental resources.

Marquardt and I will simply have to agree to disagree about whether shell middens and rings can be monuments; I have no doubt that they can be, for reasons discussed above, although I also agree that their intentionality and complexity must be demonstrated, rather than simply assumed. As Russo, Thompson, and others in this volume argue, these sites can be both domestic middens and purposeful constructions simultaneously, whose function and method of construction can change over time. I agree with Marquardt that the use of phrases like “clean shell” is confusing, but would note that a large-scale feasting event involving the cooking and consumption of dozens of bushels of oysters—as happened at the Saturday evening cookout associated with the 2005 meeting of the Southeastern Archaeological Conference in Columbia, South Carolina—can result in the rapid production of appreciable quantities of what might be called “clean” shellfish debris. Where and how such debris is handled makes all the difference: it can be discarded unobtrusively, or piled and displayed. And whether or not other subsistence remains are included is irrelevant . . . —in Mississippian mounds, as I know from experience working at Shiloh, some stages may be built from carefully selected fill, devoid of artifacts and of a particular color or texture, while other stages are more haphazardly constructed, with fill coming from any of a number of sources, including from nearby midden areas with subsistence remains common. Over the history of any large monument, changes in construction and maintenance practices may have occurred, meaning how they were built and used must be demonstrated rather than assumed (Pursell, 2004; Welch, 2005).

Marquardt suggests that the circular shape of southeastern ring middens may have facilitated access to or storage of fresh water, which was unquestionably an important resource for people living in a coastal environment.³⁷ Historic accounts suggest another, equally practical

function, the protection of their inhabitants from hurricane storm surges, which can be deadly, especially for prehistoric peoples with no easy means of evacuation from coastal areas. Drayton (1972[1802]: 57) reports that an early resident near Charleston built his house within the Lighthouse Point shell ring enclosure for precisely this reason: flood waters “are said to have been completely banked out by this work.” The question remains, of course, that if these rings were useful as sources of fresh water or for storm protection, why didn’t later cultures build them or, at least—given the occurrence of more or less ephemeral ring middens in the later Woodland Weeden Island Culture in northern Florida (Russo, chap. 7, this volume)—build them to the same massive scale?

CONCLUSIONS: CALDWELL’S LEGACY LIVES ON

So what happened to the southeastern Archaic? The transition from the Archaic to the Woodland period, we have seen, played out in varied ways across the region. To understand what happened, the papers in this volume have shown, we must adopt a multiscale research approach that considers broad trends and traditions while paying careful attention to documenting what happened in specific areas and places. As Caldwell (1958: 2) noted:

what the archaeologist does discover may well be a contextual history, based on patterns seen limned against a matrix of other patterns and from which we are to infer events and processes in the context of the others. What the future could see added to studies of culture history—aside from its certain limitations and impersonality—is historical flow, the constant generation of events out of previous contexts, in effect, the very dynamism now to be found in the usual histories based on written records. Perhaps we hope for too much. In any case the approach we are proposing does at least lead directly to interpretation and inference and not, praise God, to still another classification. Patterns which can be distinguished . . . demand explanation of their significance for history or process.

These words hold as true today as they did 50 years ago. As Jon Gibson eloquently notes in his chapter, we must create “histories so precise that we can almost see the faces of those who lived them, and we must contextualize the local histories we create within the broader scope of a regional history.” At the rate new knowledge is being generated and thought about, I suspect that in another 50 years we will have the kind of fine-grained social and political histories of the later Archaic and initial Woodland period Southeast, linked to broader patterns of climate and cultural change, that Caldwell would have wanted to see.³⁸

NOTES

1. As an aside, we also learned at the workshop—following proper scientific experimental procedures, of course—that alcohol as well as food is an important constituent of feasting behavior (e.g., Dietler, 1990), and the former also seems to help facilitate interaction and innovative thinking, at least up to a point! Another aspect of the workshop of relevance was that the people participating came together to share esoteric knowledge, something unlikely to leave much of a trace in the archaeological record—however visible the remains of our feasting might be to some future archaeologist exploring the island.
2. Of course, the fact that I have helped edit three volumes on the Paleoindian and Early Archaic, the mid-Holocene, and the Woodland Southeast has something to do with my thinking. These books were intended from the start to be summaries of cultural developments during specific periods of time, however, and each included discussions about the problems uncritical use of stage terminology could generate (Anderson et al., 1996:7–15; Sassaman and Anderson, 1995: xvii–xviii; Anderson and Mainfort, 2002b: 3).
3. Projectile points, unlike pottery, do not receive much attention in discussions of the transition from the Archaic to the Woodland, save that they tend to be increasingly made of local materials, presumably as long-distance interaction and exchange declined. There is little or no evidence for dramatic morphological change in point forms in many areas, although a gradual decrease in size is observed in the South Appalachian region, where stemmed forms like the Savannah River, Small Savannah River, and a range of still smaller square to rounded stemmed points occur from ca. 4000 to 2000 cal B.P. (Oliver, 1981). It is only in the later Woodland period that distinctly smaller points appear in most parts of the Southeast, something thought related to the widespread adoption of the bow and arrow (Blitz, 1988, Nassaney and Pyle, 1999). Perhaps the size reduction in Woodland points, long attributed to functional considerations such as the adoption of the bow and arrow or use solely as a projectile tip rather than as a projectile tip and a multipurpose cutting tool, may instead reflect a lessening in individual need for hypertrophic display, if aggrandizing behavior became less important as exchange networks declined. While bifaces were used throughout most

of prehistory in Eastern North America, change in their size and morphology has tended to be examined primarily for chronological purposes. It would be interesting to see when and under what circumstances larger as opposed to smaller bifaces tend to occur; perhaps more larger specimens would be expected during periods of greater long distance exchange and interaction, such as during the later Archaic or Middle Woodland, for example, than during the Early Archaic or Early Woodland. Alternatively, in an explanation that may be somewhat related, Fiedel (2009) has recently suggested that changes in projectile point styles during the Eastern Archaic reflect a disruption of traditional patterns of interaction within regions, which he equates with the replacement of one group of people by another. He links these changes to major climatic events, such as the Bond and Dansgaard-Oeschger cycles.

4. Regular interaction in long-distance exchange does not mean that everything spreads over the network, only those things of interest or value to the participants. Thus, in our modern world, Chinese material goods may spread widely, but other aspects of the culture, such as Mandarin, are adopted and used by a much smaller fraction of the population. Pottery technology may not have been so much suppressed by participants in exchange networks as having been viewed as impractical or irrelevant to everyday life. To mobile foragers, pottery would have likely been considered a fragile and somewhat unreliable technology; only as mobility decreased and sites where it could be cached became more common or more frequently revisited may pottery have been considered more useful. Coastal areas where people may have been living within comparatively small areas or even at specific sites year round, not surprisingly, are where some of the earliest pottery has been found worldwide (e.g., Barnett and Hoopes, 1995; Saunders and Hays, 2004b).

5. Mound burial is reported from the Midwest well back into the Archaic in Illinois (Charles and Buikstra, 1983). In the lower Southeast, the earliest mounded mortuary complex currently recognized, dating from ca. 6300 to 5750 cal. B.P., comes from Harris Creek Mound on Tick Island, Florida, where ca. 175 individuals were placed in two stratigraphically successive mortuary deposits interspersed within or capped by layers of sand, shell, earth, and midden debris (Aten, 1999; Randall, 2008:14; Kidder and Sassaman, 2009: 674).

6. Thompson, chapter 10, this volume, accepts the idea of tribal cycling, but suggests that the best way to explore it is to examine the details of what was actually happening: the archaeological record at particular places and over differing temporal scales and comparing it with other such trajectories, employing a macroregional perspective. Use of a label like cycling, he effectively argues, doesn't really tell us the details of what was happening, and I completely agree. Of course, those of us who have explored the process in the Southeast and beyond (Anderson, 1994; Blitz, 1999; Parkinson, 2002) would like to think we have considered the details, but any couching of such arguments using a neoevolutionary framework tends to imply a uniformity or sameness to the sites and societies in the models that likely never existed in reality (see also Pauketat, 2007).

7. Gibson (chap. 2, this volume) makes a reasoned argument to the contrary, that "megaflooding did not spoil the swamp or keep people out of it." While the climate episode he is directly referring to in the quote is at 3500 cal

B.P. and hence not the one that ended Poverty Point, Gibson makes clear that the effect would have been the same for the later flooding, between ca. 3000 and 2500 cal B.P.

8. That is, when it comes to climate, we must think globally but also examine how it acts, and societies react to it, locally.

9. As part of a major river basin survey in northeast Arkansas that I conducted in 1987 encompassing 90 miles on both sides of the L'Anguille River main channel, funding was obtained for palynological research under the justification that understanding past climate and vegetation was critical to interpreting the local archaeological record (Delcourt et al., 1989). The same approach was used again in the examination of Mississippian period Mound A at Shiloh in western Tennessee, in which a several thousand-year pollen record was found in a pond just off the main plaza, and within the prehistoric palisade line surrounding the mound complex (Meeks, 2005). More publicly funded archaeological projects, which frequently involve large sums of money, should include provisions for the generation of paleoenvironmental data.

10. Kidder (chap. 1, this volume) makes it clear that associations between climatic and cultural events are matters to be tested, not assumed.

11. When Poverty Point declined, did people lose a good place to go to party, or a place where they could obtain spiritual reinforcement, or both? In the spirit of the Caldwell conferences, did they lose a St. Catherines Island of the Late Archaic?

12. Cahokia, like Poverty Point two and a half millennia earlier, was a unique site within eastern North America, an order of magnitude larger than other contemporaneous centers in terms of the size and volume of its earthworks. The people at such sites would have dominated their surroundings if for no other reason than by living at a place people would have wanted to visit, perhaps for religious reasons, or simply to see what the rumors and excitement were all about. The unique size of centers like Poverty Point and Cahokia strongly suggests that they held disproportionate sway over other surrounding societies; that is, their very existence shaped the nature, extent, and routes interaction took over the landscape. Cahokia is thought, at least by some archaeologists, to have influenced developments over much of the Mississippian world simply by serving as a compelling example of what could be accomplished, rather than through any form of outright domination, at least very far from the center (e.g., Anderson, 1997; Pauketat and Emerson, 1997; Pauketat, 2004, 2007). Poverty Point, and perhaps the earlier mound complexes of northwest Louisiana, may have shaped Archaic developments over a much larger area in a similar fashion, simply by example, by showing what was possible, perhaps in combination with an effective ideology and the exchange of objects materializing those beliefs.

13. Interestingly, exchange in segmentary societies can foster conditions giving rise to patterns of social inequality (i.e., by facilitating the emergence of dominant individuals or lineages) that, if an egalitarian ethos was prevalent, may not have been long tolerated (e.g., Kelly, 1985, 1993; Wiessner, 2002: 251–252). At Poverty Point, if such processes were in play, specifically a trend toward nonegalitarian relationships, the resulting social tension may have contributed to the dissolution of the society.

14. Poverty Point thus exemplifies a pattern seen a

number of times in the Eastern Woodlands and, indeed, in many parts of the world. A primate or foremost center emerges, dominates its surroundings for a few centuries, and then collapses; in the long run nothing recedes quite so dramatically in the archaeological record as seemingly unparalleled success. In some cases the decline of the primate center was related to the existence or emergence of other centers, as perhaps occurred with Cahokia. That is, the organization, monumentality, and the idea of the primate center may be emulated, leading to the rise of other centers over time. Competition between them may result in the dissipation or reduction of the ideological significance and necessity for the primate center, with the result that what begins as emulation may lead to the decline or replacement of that being emulated. This pattern was not universal in eastern Woodlands prehistory, however. With Poverty Point and Cahokia, no other comparable contemporaneous or immediately successor primate centers are known, but in the case of Middle Woodland Hopewellian culture, in contrast, there was no one dominant center, but instead many more or less comparable centers, with emulation and interaction between them widespread, at least for a time.

15. Thompson (chap. 10, this volume) eloquently argues for much the same process, when he notes that “what happened to the Archaic was really the collapse of these persistent places and their associated interaction networks.” It is the societal responses that we should be examining, and the time it takes for such places and networks to reconstitute, if indeed they ever do. Sassaman (chap. 11, this volume) makes a similar argument, noting many later Archaic societies were linked together through alliances and exchange, and that episodes of change observed over large areas could have been caused, at least in part, by a realignment of these networks. My thoughts on the cultural adjustments and temporal scales involved in the formation and reformulation of interaction networks expressed here owe a debt to both of these scholars, as well as to the other participants in this Caldwell Conference.

16. With the decline of Poverty Point, the Alexander phase in the lower midsouth of Mississippi and Alabama seemingly takes off, with one hallmark of the culture being the widespread use of soapstone and sandstone vessels (Brown, 2004: 575–576; Sassaman and Anderson, 2004: 103–104). As Sassaman (chap. 11, this volume, see also O’Donoghue and Meeks, 2007) argues, these peoples may have taken over soapstone exchange formerly directed to Poverty Point. Alexander, however, never replaced Poverty Point; no major centers anywhere near the scale of Poverty Point are known from this culture, nor was exchange extensive or geographically widespread. The highly decorated pottery vessels that characterize Alexander, however, are anomalous in the Early Woodland Southeast, a time when most ceramic assemblages were characterized by uniform and anonymous plain, simple stamped, or cord- and fabric-impressed vessel finishes (Griffin, 1967; Bense, 1994; Jefferies, 2004b: 115–119; Sassaman and Anderson, 2004: 111–113; Sassaman, chap. 11, this volume). Alexander pottery may have been decorated in an attempt to maintain the diversity of individual expression (and aggrandizement?) that appears to have characterized earlier Archaic period ceramic traditions, such as Stalling, St. Simons, Orange, and Thom’s Creek (Sassaman, 1993, chap. 11, this volume), something that may have also been manifest in other media (baked clay balls; effigy beads?) in the preceding Poverty

Point culture.

17. Thompson (chap. 10, this volume) makes the excellent point that the collapse of long-distance exchange would have also likely affected information exchange and mating networks over large areas. He suggests that increased mobility might be one means by which people overcame this loss (see also Thompson and Turck, 2009: 258). Such a pattern may indeed be indicated in some parts of the Southeast in both the early and later Woodland, following the decline of Poverty Point and Middle Woodland Hopewellian related interaction, respectively. Analyses of bone chemistry offer promise for revealing the extent of mobility of individuals within these societies, and suggest that some people during the later Archaic were moving fairly appreciable distances over the course of their lifetime, ending up hundreds of kilometers from where they were likely born (e.g., Quinn et al., 2008).

18. At the Fig Island 1 ring on the southern South Carolina coast, what appears to be clear evidence for the intentional mounding of shell debris originally deposited elsewhere has been found (R. Saunders, 2002, referenced in Sanger, chap. 9, this volume); the redeposited shell was placed in such a way as to elevate the ring crest above rising sea levels.

19. Others in this tradition include Robert S. (‘Stu’) Neitzel and William G. (“Bill”) Haag.

20. Morse (1980) made a similar argument for the location of the initial Mississippian period Zebree site in northeast Arkansas, arguing that the formation of Big Lake made the area especially rich in subsistence resources, an inference tentatively supported by a number of specialized analyses (Morse and Morse, 1980). This hypothesis was advanced by the geologist Roger Saucier (1970), and while plausible, remains incompletely evaluated. A pollen core taken in the lake bed suggests instead that it formed about the time of the New Madrid earthquake, a competing hypothesis (King, 1980). The point is that demonstrating the occurrence of a lake near an archaeological site can take a great deal of time and effort, for which the Zebree project can serve as a good example of how to proceed.

21. It may even be possible to suggest what their cosmology may have been based upon. John Clark (2004, 2006; Clark and Knoll, 2005: 300–301) has argued that Poverty Point may have contributed much to the ancient civilizations of Mesoamerica, including serving as an inspiration for the monumental architecture, astronomy, and cosmology that was so evident a few centuries later further south around the Gulf of Mexico among the Olmecs at San Lorenzo and in subsequent cultures. As Clark (2006) has suggested, perhaps Poverty Point, with its large mounds and nearby lake and swamp, was the first “altepetl” or water-mountain—the first grouping of peoples into what we think of as a town or city, and where the tree of life may have emerged—a place where the creation of much more took place than what we have traditionally assumed in southeastern archaeology.

22. Poverty Point may have been avoided because bad things may have been done by the peoples living at the site at its peak or as it went into decline, and not because of any changes in the natural environment. If a nonegalitarian ethos had taken hold, for example, it may have been actively resisted. The ensuing societal collapse may have been accompanied by a desire by those remaining to avoid anything further to do with the place that symbolized these

problems. This argument has been classically used to explain why sites like Tell el Amarna (Akhetaten's capitol) and Chaco Canyon were not reoccupied (Lekson, 1999; Watters, 1999).

23. This assumes, of course, that well-preserved former terrestrial sites cannot survive intact or minimally disturbed in offshore waters; if they do, it would indicate that sea level rise need not be totally catastrophic to the archaeological record. Evaluating this possibility is increasingly the subject of research (e.g., Hall, 1999; Lewis, 2000; Faught, 2004).

24. Russo (chap. 7, this volume), like Kidder, is cautious about arguing for a direct relationship between specific episodes of global climate change or sea level fluctuation and the ending of feasting and aggrandizing behavior and its replacement by ancestor veneration/mound building. His argument is that these changes did not play out at the same time in every area, and indeed in some areas, like south Florida, there is little evidence for discontinuity.

25. An important finding and cautionary tale from the St. Catherines research was the discovery of settlements in the center of the island, in areas supporting freshwater ponds (Thomas, 2008e: 933–934, chap. 8, this volume). Archaeological research focusing on the marshside areas where sites are known or assumed to be present can cause researchers to miss sites in other areas. Our predictive models, Thomas (2008e) shows us, are only as good as the data used to generate them, and the assumptions we bring to the analysis. The fact that additional fieldwork has been directed to these inland lacustrine locations is commendable; even more so is the honesty and detail in the reporting, which allows other researchers to learn from and build on this effort. As a final comment, I would suggest that another factor dictating site location adjacent to marshlands would be the occurrence of major (i.e., dugout navigable) creeks, something DePratter (chap. 13, this volume) also notes. These make access to the site and marshlands easier for both ring inhabitants and visitors alike. In my own visits to shell rings and middens on the central South Carolina coast, taking a boat was far easier and safer than wading or sloggging through the marsh, something I am certain prehistoric peoples were equally well aware, as were modern optimal forager-archaeologists on St. Catherines Island (Thomas and Blair, 2008: 84).

26. Russo, in an earlier version of his paper, in a literary allusion that I like called this “a strategy to follow the movable feasts as shorelines prograded.”

27. Sassaman (chap. 11, this volume) has noted a regular ca. 30–40 km spacing to major U-shaped middens after ca. 4700 cal B.P. in the middle St. Johns, and Schwadron (chap. 6, this volume) has noted a much closer, but still somewhat regular spacing of large sites in south Florida. Hally (1993: 165) has argued that, at least in the Mississippian period of Georgia, sites within ca. 18 km of one another are part of the same polity, while those more than 32 km apart likely belong to different ones. If equally true for preagricultural coastal populations, the St. Johns sites may reflect relatively autonomous groups, while those in south Florida would be so close as to almost mandate some form of possible integration between them, be it through sodalities and other egalitarian formations, or a more vertical hierarchy. The greater spacing between the St. Johns sites may reflect lower population levels, permitting more spacing between centers, or alternatively may suggest a greater importance of watercraft in daily movement, which would have likely

expanded the area of active foraging (Thomas and Blair, 2008; Thomas, 2008d, 2008e, chap. 8, this volume).

28. Thompson's comment that we need to avoid “focusing on trajectories of neo-evolutionary types” is something I agree with completely, even though I have argued that some southeastern Archaic societies were tribal social formations (Anderson, 2002, 2004). The point in my papers, however, was not that we should classify a society as a “tribe” or “chiefdom” and move on, but that Archaic societies were likely organized and operated on scales that seem to be rarely considered by archaeologists working within the region (Morse, 1977, is an important exception). Until this lesson is understood, we will continue to interpret the region's prehistory in terms of events at individual sites or small areas, using models of behavior that ignore the very differing structural poses (*sensu* Gearing, 1958), or the fluidity and flexibility in the scale of organization that can occur within these societies. Thompson's analysis of the variability in the temporal scales by which what he calls “persistent places” (after Schlanger, 1992: 97) were formed is a particularly effective and important way to explore such a perspective.

29. The change in the use of Moundville, from a burgeoning political and population center to a largely unoccupied mortuary compound/sacred precinct is a classic example from the Mississippian period Southeast (Knight and Steponaitis, 1998).

30. Research on the time it took to lay down shell or earthen deposits, through seasonality studies of associated shellfish, plants, and fauna or through geochronological analyses, offers a useful means of evaluating how quickly these monuments may have gone up (Thompson, chap. 10, this volume; Thompson and Andrus, 2006). Kidder and his colleagues (2008a) have examined erosional episodes associated with mound construction at Poverty Point, for example, to suggest that at least some major building episodes at the site likely occurred quite quickly.

31. Thompson's argument that we need to adopt a macroregional and multiscalar perspective is another positive recommendation, although I would argue that the concept is not entirely foreign to the Southeast, and that we need not look to research in Mesoamerica for all of our inspiration (e.g., Anderson, 1991, 1994, 1999; Neitzel and Anderson, 1999; Blitz, 1999; Hally, 1993, 1996; Milner et al., 2001; Sassaman, 2004a; Chamblee, 2006; Livingood, 2009).

32. In the case of the creation of Poverty Point, however, his idea that the site represents the merging of differing groups remains the subject of spirited but collegial debate (cf., Sassaman, 2005, 2010; Gibson 2007, chap. 2, this volume).

33. Few studies like that by Saunders and Allen (1997) working with Evans and related points have attempted to examine the occurrence of specific categories of stone tools over large areas, particularly within and between the cultures that built the mounds and middens of the later Archaic Southeast. Sassaman's (1996, see also Knoblock, 1939) work examining the variation in bannerstone morphology is an important exception, as is Fiedel's (2001:108–112, 2009) examination of projectile points in the Northeast.

34. DePratter suggests that these pits may have had completely unanticipated functions, and while his boyhood example—being told by his father to dig holes to bury food waste—is one possibility, I have a hard time believing people would dig holes to bury food processing debris when a marsh and tidal creek was at hand. To be fair, DePratter

thinks his idea smells a bit too, just as the pits would have in prehistory, which makes me doubt this particular explanation. The presence of a few human bones or teeth might suggest that they were burial or defleshing pits, but there is no evidence for that function at present.

35. Bill Marquardt, Chester DePratter, Jon Gibson, and I were asked to comment on the papers in the volume and, being the last to submit thanks to an unexpected bout of mononucleosis, I had the opportunity to comment on their comments.

36. Archaeologists working on the Paleoindian period are perhaps the most familiar with such rapid change, given that events like the Younger Dryas, a period of intense cold and highly variable climate dating to ca. 12,850 to 11,650 cal B.P., apparently began and ended within a few years at most (Alley et al., 1993; Björck et al., 1996; Graftenstein et al., 1999; NRC, 2002).

37. This inference is testable through geoarchaeological analyses, although whether pits in the center of rings could have served as sources of water, or the rings themselves

served as water courts, would also depend on where the water table was at particular times (and sea level stands) in the past. Any replication experiments that are conducted should bear that in mind. With lowered sea levels, pits that today might yield brackish water may have yielded fresh water in the past.

38. I thank Matt Sanger and Dave Thomas for the invitation to participate in the Third Caldwell Conference, and for making my first visit to St. Catherines Island a truly memorable experience. They also have my undying thanks for their patience in awaiting this manuscript, whose completion was delayed by an unexpected bout of mononucleosis. I also thank the other participants of the volume for their conversation and comments, both at the workshop and down through the years. They are all exceptional colleagues, ever willing to share ideas and information, whether we agree or disagree about a particular point or a larger theoretical perspective. The responsibility for the presentation and interpretation of the ideas herein, many of which are derived from their fine work, rests with me.

REFERENCES

- Adelsberger, K.A., and T.R. Kidder. 2007. Climate change, landscape evolution, and human settlement in the lower Mississippi Valley, 5500–2400 Cal B.P. *In* L. Wilson, P. Dickinson, and J. Jeandon (editors), *Reconstructing human-landscape interactions: 84–108*. Newcastle upon Tyne: Cambridge Scholars Publishing.
- Allen, E., T.M. Thurman, and E.F. Reynolds. 1987. Soil survey of East Carroll Parish, Louisiana. Washington, DC: Soil Conservation Service, U.S. Department of Agriculture.
- Alley, R.B., et al. 1993. Abrupt increase in Greenland snow accumulation at the end of the Younger Dryas event. *Nature* 362: 527–529.
- Anderson, D.G. 1980. Post-depositional modification of the Zebree behavioral record. *In* D.F. Morse and P.A. Morse (editors), *Zebree archaeological project: excavation, data interpretation, and report on the Zebree homestead site, Mississippi County, Arkansas: 8-1 to 8-28*. Memphis, TN: Arkansas Archeological Survey Final Report, Contract DACW 66-76-C-0006, submitted to the Memphis District, U.S. Army Corps of Engineers.
- Anderson, D.G. 1991. Examining prehistoric settlement distribution in eastern North America. *Archaeology of Eastern North America* 19: 1–22.
- Anderson, D.G. 1994. The Savannah River chiefdoms: political change in the late prehistoric southeast. Tuscaloosa: University of Alabama Press.
- Anderson, D.G. 1996a. Models of Palaeoindian and Early Archaic settlement in the southeastern United States. *In* K.E. Sassaman and D.G. Anderson (editors), *The Palaeoindian and Early Archaic southeast: 29–57*. Tuscaloosa: University of Alabama Press.
- Anderson, D.G. 1996b. Modeling regional settlement in the Archaic period southeast. *In* K. E. Sassaman and D. G. Anderson (editors), *Archaeology of the mid-Holocene southeast: 157–176*. Gainesville: University Press of Florida.
- Anderson, D.G. 1996c. Chiefly cycling and large-scale abandonments as viewed from the Savannah River basin. *In* J. F. Scarry (editor), *Political structure and change in the prehistoric southeastern United States: 150–191*. Gainesville: University Press of Florida.
- Anderson, D.G. 1997. The role of Cahokia in the evolution of Mississippian society. *In* T.R. Pauketat and T.E. Emerson (editors), *Cahokia: domination and ideology in the Mississippian world: 248–268*. Lincoln: University of Nebraska Press.
- Anderson, D.G. 1999. Examining chiefdoms in the southeast: an application of multiscalar analysis. *In* J.E. Neitzel (editor), *Great towns and regional polities in the prehistoric American southwest and southeast: 215–241*. Amerind Foundation New World Studies Series 3. Albuquerque, NM: University of New Mexico Press.
- Anderson, D.G. 2001. Climate and culture change in prehistoric and early historic eastern North America. *Archaeology of Eastern North America* 29: 143–186.
- Anderson, D.G. 2002. Evolution of tribal social organization in the southeast. *In* W.A. Parkinson (editor), *The archaeology of tribal societies: 246–277*. Ann Arbor, MI: International Monographs in Prehistory.
- Anderson, D.G. 2004. Archaic mounds and the archaeology of southeastern tribal societies. *In* J.L. Gibson and P.J. Carr (editors), *Signs of power: the rise of cultural complexity in the southeast: 270–299*. Tuscaloosa: University of Alabama Press.
- Anderson, D.G. 2009. Caminos hacia el poder en el sureste de Norteamérica. *In* P. Kaulicke and T.D. Dillehay (editors), *Procesos y expresiones de poder, identidad y orden tempranos en Sudamérica. Segunda parte. Boletín de Arqueología PUCP* 11: 205–232. Fondo Editorial de la Pontificia Universidad Católica del Perú.
- Anderson, D.G., and J. Joseph. 1988. Prehistory and history along the upper Savannah River: Technical synthesis of cultural resource investigations, Richard B. Russell Multiple Resource Area. Atlanta: Russell Papers,

- Interagency Archeological Services Division, National Park Service.
- Anderson, D.G., and P.A. Logan. 1981. Francis Marion National Forest: cultural resources overview. Washington, DC: USDA Forest Service.
- Anderson, D.G., and R.C. Mainfort. 2002a. The Woodland Southeast. Tuscaloosa: University of Alabama Press.
- Anderson D.G., and R.C. Mainfort. 2002b. An introduction to Woodland archaeology in the southeast. In D.G. Anderson and R.C. Mainfort (editors), *The Woodland Southeast: 1–19*. Tuscaloosa: University of Alabama Press.
- Anderson, D.G., and K.E. Sassaman. 2004. Early and middle Holocene periods, 9500–3750 B.C. In R.D. Fogelson (editor), *Southeast volume, Smithsonian handbook of North American Indians: 87–100*. Washington, DC: Smithsonian Institution Press.
- Anderson, D.G., C.E. Cantley, and A.L. Novick. 1982. The Mattassee Lake sites: Archaeological investigations along the lower Santee River in the coastal plain of South Carolina. Special Bulletin 1. Archaeological Services Branch. Atlanta, GA: National Park Service.
- Anderson, D.G., D.W. Stahle, and M.W. Cleaveland. 1995. Paleoclimate and the potential food reserves of Mississippian societies: a case study from the Savannah River Valley. *American Antiquity* 60: 258–286.
- Anderson, D.G., L.D. O’Steen, and K.E. Sassaman. 1996. Chronological and cultural considerations. In K.E. Sassaman and D.G. Anderson (editors), *The Paleoindian and Early Archaic Southeast: 1–15*. Tuscaloosa: University of Alabama Press.
- Anderson D.G., K.A. Maasch, D.H. Sandweiss, and P.A. Mayewski. 2007a. Climate and culture change: exploring Holocene transitions. In D.G. Anderson, K.A. Maasch, and D.H. Sandweiss (editors), *Climate change and culture dynamics: A global perspective on mid-Holocene transitions: 1–24*. Oxford: Academic Press.
- Anderson, D.G., K.A. Maasch, and D.H. Sandweiss. 2007b. Mid-Holocene cultural dynamics in southeastern North America. In D.G. Anderson, K.A. Maasch, and D.H. Sandweiss (editors), *Climate change and culture dynamics: a global perspective on mid-Holocene transitions: 457–489*. Amsterdam: Academic Press.
- Anderson, D.G., J.C. Gillam, C. Carr, T.E. Emerson, and J.L. Gibson. 2007c. Resolving interaction networks in eastern North America. Paper presented at the 72nd Annual Meeting of the Society for American Archaeology, Austin, Texas.
- Andrus, C.F.T., and D.E. Crowe. 2008. Isotope analysis as a means for determining season of capture for *Mercenaria*. In D.H. Thomas, Native American landscapes of St. Catherines Island, Georgia. *Anthropological Papers of the American Museum of Natural History* 88: 498–519. [<http://hdl.handle.net/2246/5955>]
- Arco, L. 2009. Geoaarchaeology of the buried Poverty Point landscape at Jaketown. Paper presented at the 66th annual meeting of the Southeastern Archaeological Conference, Mobile, Alabama.
- Arco, L.J., K.A. Adelsberger, L. Hung, and T.R. Kidder. 2006. Alluvial geoaarchaeology of a Middle Archaic mound complex in the lower Mississippi valley, U.S.A. *Geoaarchaeology* 21 (6): 591–614.
- Asch, D.L., and N.B. Asch. 1985. Prehistoric plant cultivation in west-central Illinois: In R. Ford (editor), *Prehistoric food production in North America*. University of Michigan, Museum of Anthropology, *Anthropological Papers* 75.
- Ashley, K.H., V.L. Rolland, and R.A. Marrinan. 2007. A grand site: archaeological testing of the Grand Shell Ring (8Du1). ms on file, Tallahassee: Bureau of Archaeological Research, Division of Historical Resources, Florida Department of State.
- Aspinall, A., C. Gaffney, et al. 2008. *Magnetometry for archaeologists*, New York: AltaMira.
- Aten, L.E. 1999. Middle Archaic ceremonialism at Tick Island, Florida: Ripley P. Bullen’s 1961 excavations at the Harris Creek site. *Florida Anthropologist* 52 (3): 131–200.
- Athens, W.P. 1983. The spatial distribution of Glades Period archeological sites within the Big Cypress National Preserve, Florida. Master’s thesis, Tallahassee: Florida State University.
- Atkins, S., and J. MacMahan. 1967. The Zabski site, Merrit Island, Florida. *Florida Anthropologist* 20 (3–4): 133–145.
- Augustin, L., et al. 2004. Eight glacial cycles from an Antarctic ice core. *Nature* 429: 623–628.

- Bahr, L.M., and W.P. Lanier. 1981. The ecology of inter-tidal oyster reefs of the south Atlantic coast: a community profile. U.S. Department of the Interior, Fish and Wildlife Service. Los Angeles: Slidell.
- Bailey, G. 1983. Concepts of time in Quaternary prehistory. *Annual Review of Anthropology* 6: 165–192.
- Bailey, G. 2007. Time perspectives, palimpsests and the archaeology of time. *Journal of Anthropological Archaeology* 26: 198–223.
- Baillie, M.G.L. 1988. Irish oaks record volcanic dust veils drama. *Archaeology Ireland* 2 (2): 71–74.
- Baillie, M.G.L. 1991. Marking in marker dates: towards an archaeology with historical precision. *World Archaeology* 23: 233–243.
- Baillie, M.G.L. 1999. Exodus to Arthur: catastrophic encounters with comets. London: B. T. Batsford.
- Balée, W. 1998. Introduction. *In* W. Balée (editor), *Advances in historical ecology*: 1–10. New York: Columbia University Press.
- Balsillie, J. H., and J. F. Donoghue. 2004. High resolution sea-level history for the Gulf of Mexico since the last glacial maximum. Tallahassee: Florida Geological Survey Report of Investigations No. 103.
- Bard, E., B. Hamelin, et al. 1996. Deglacial sea-level record from Tahiti corals and the timing of global meltwater discharge. *Nature* 382: 241–244.
- Barlow, K.R., and M. Heck. 2002. More on acorn eating during the Natufian: expected patterning in diet and the archaeological record of subsistence. *In* L.R. Mason and J.G. Hather (editors), *Hunter-gatherer ethnobotany*: 128–145. London: Institute of Archaeology, University College.
- Barnett, W.K., and J.W. Hoopes (editors). 1995. *The emergence of pottery: technology and innovation*. Washington, DC: Smithsonian Institution Press.
- Benison, C.J. 1999. Burned rock complexes, baked clay objects, steatite, and ceramics: evolutionary implications for Plains/Eastern Woodlands cooking technologies. *North American Archaeologist* 204: 287–317.
- Bense, J.A. (editor). 1985. *Hawkshaw: prehistory and history in an urban neighborhood in Pensacola, Florida*. Reports of Investigations 7. Office of Cultural and Archaeological Research, University of West Florida, Pensacola.
- Bense, J.A. 1994. *Archaeology of the southeastern United States: Paleoindian to World War I*. San Diego: Academic Press.
- Beriault, J.G., R.S. Carr, M. Lance, and S. Bertone. 2003. A phase I archaeological assessment of the Ten Thousand Islands, Collier County, Florida (DHR Grant No. FO221). AHC Technical Report 434. Davie: Archaeological and Historical Conservancy.
- Bernhardt, C.E., D.A. Willard, B.P. Horton, and M. Schwadron. 2006. Climate variability, Native American tree island occupation, and wetland development in the Florida Everglades. Paper 83-89. Poster presented at the Geological Society of America, Philadelphia.
- Binford, L.R. 1980. Willow smoke and dogs' tails: hunter-gatherer settlement systems and archaeological sites formation. *American Antiquity* 45 (1): 4–20.
- Binford, L. 1981. Behavioral archaeology and the "Pompeii premise." *Journal of Anthropological Archaeology* 1: 195–208.
- Binford, L. 1982. The archaeology of place. *Journal of Anthropological Archaeology* 1 (1): 5–31.
- Bird, D., R.B. Bird, and J. Richardson. 2004. Meriam ethnoarchaeology: shellfishing and shellmiddens. *Memoire of Queensland Museum* 3 (1): 183–197.
- Bishop, G.A., et al. 2007. Fieldtrip 1: Transgressive barrier island features of St. Catherines Island, Georgia. *In* F.J. Rich (editor), *Fieldtrips of the 2007 Annual Meeting, Southeastern Section, Geological Society of America*. Statesboro: Georgia Southern University: 39–85.
- Björck, S., et al. 1996. Synchronized terrestrial-atmospheric deglacial records around the north Atlantic. *Science* 274: 1155–1160.
- Blanton, D.B., and D.H. Thomas. 2008. Paleoclimates and human responses along the central Georgia coast: a tree-ring perspective. *In* D.H. Thomas, *Native American landscapes of St. Catherines Island, Georgia*. *Anthropological Papers of the American Museum of Natural History*, 88 (no. 3): 799–806. [<http://hdl.handle.net/2246/5955>]
- Blessing, M.E. 2008. *The ecological parameters of freshwater shellfishing in the middle St. Johns River Valley*. Ph.D. prospectus on file, Gainesville: Laboratory of Southeastern Archaeology, University of Florida Department

- of Anthropology.
- Blessing, M.E. 2009. The snails' tale: the isotopic record of freshwater gastropods in Archaic shell deposits of northeast Florida. Paper presented at the 66th Annual Meeting of the Southeastern Archaeological Conference, Mobile, Alabama.
- Blitz, J.H. 1988. Adoption of the Bow in Prehistoric North America. *North American Archaeologist* 9:123-145.
- Blitz, J.H. 1993. Big pots for big shots: feasting and storage in Mississippian community. *American Antiquity* 58 (1): 80-96.
- Blitz, J.H. 1999. Mississippian chiefdoms and the fission: fusion process. *American Antiquity* 64: 577-592.
- Blum, M.D., and T.E. Törnqvist. 2000. Fluvial responses to climate and sea-level change: a review and look forward. *Sedimentology* 47 (suppl. 1): 2-48.
- Blum, M.D., A.E. Sivers, T. Zayac, and R.J. Goble. 2003. Middle Holocene sea-level and evolution of the Gulf of Mexico coast. *Transactions Gulf Coast Association of Geological Societies* 53: 64-77.
- Blum, M.D., et al. 2001. Middle Holocene sea-level rise and highstand at +2 m, central Texas coast. *Journal of Sedimentary Research* 71: 581-588.
- Bond, G., and R. Lotti. 1995. Iceberg discharges into the north Atlantic on millennial time scales during the last glaciation. *Science* 267: 1005-1010.
- Bond, G., et al. 1997. A pervasive millennial-scale cycle in north Atlantic Holocene and glacial climates. *Science* 278: 1257-1266.
- Bond, G., et al. 2001. Persistent solar influence on north Atlantic climate during the Holocene. *Science* 294: 2130-2136.
- Booth, R.K. 1998. Palynology and environments of deposition of sediments from two barrier islands: St. Catherines Island and Skidaway Island, Georgia, USA. Master's thesis, Statesboro: Georgia Southern University.
- Booth, R.K., F.J. Rich, and G.A. Bishop. 1999a. Palynology and depositional history of late Pleistocene and Holocene coastal sediments from St. Catherines Island, Georgia, U.S.A. *Palynology* 23: 67-86.
- Booth, R.K., F.J. Rich, G.A. Bishop, and N.A. Brannen. 1999b. Evolution of a freshwater barrier-island marsh in coastal Georgia, United States. *Wetlands* 19 (3): 570-577.
- Braley, C.O. 1991. Sandhills archaeology in South Carolina and Georgia. Paper presented at the Annual Meeting of the Archaeological Society of South Carolina, Columbia.
- Bradley R. 1998. The significance of monuments: on the shaping of human experience in Neolithic and Bronze Age Europe. London: Routledge.
- Bradley, R. 2003. A life less ordinary: the ritualization of the domestic sphere in later prehistoric Europe. *Cambridge Archaeological Journal* 13: 5-23.
- Bradley, R.S., K.R. Briffa, J.E. Cole, M.K. Hughes, and T.J. Osborn. 2003. The climate of the last millennium. In K. Alverson, R.S. Bradley, and T.F. Pedersen (editors), *Paleoclimate, global change and the future: 105-141*. Berlin: Springer Verlag.
- Brandau, B.L., and J.E. Noakes 1972. University of Georgia radiocarbon dates II. *Radiocarbon* 142: 486-497.
- Brasher, T.J. 1973. An investigation of some central functions of Poverty Point. Master's thesis, Northwestern State University, Natchitoches, LA.
- Braudel, F. 1972 [1949]. *The Mediterranean and the Mediterranean world in the age of Philip II* (translated by Sian Reynolds). 2 vols. New York: Harper and Row.
- Braudel, F. 1980 [1958]. *History and the social sciences: the longue durée*. In S. Matthews (translator), *On history: 25-54*. Chicago: University of Chicago Press.
- Broecker, W.S. 2003. Does the trigger for abrupt climate change reside in the oceans or in the atmosphere? *Science* 300: 1519-1522.
- Broecker, W.S., and E.A. Olson 1961. Lamont radiocarbon measurements VIII. *Radiocarbon* 3: 176-204.
- Brooks, M.J., and G.T. Hanson. 1987. Late Archaic-Late Woodland adaptive stability and change in the Steel Creek Watershed, South Carolina. Draft report submitted to Savannah River Operations Office, U.S. Department of Energy. MS on file, Savannah River Archaeological Research Program, South Carolina Institute of Archaeology and Anthropology, University of South Carolina.
- Brooks, M.J., B.E. Taylor, and J.A. Grant. 1996. Carolina Bay geoarchaeology and Holocene landscape evolution on the upper coastal plain of South Carolina. *Geoarchaeology* 11: 481-504.

- Brooks, M.J., P.A. Stone, D.J. Colquhoun, and J.G. Brown. 1989. Sea level change, estuary development and temporal variability in Woodland period subsistence–settlement patterning on the lower coastal plain of South Carolina. *In* A.C. Goodyear III and G.T. Hanson (editors), *Studies in South Carolina archaeology: essays in honor of Robert L. Stephenson*: 91–100. *Anthropological Studies* 9, Occasional Papers of the South Carolina Institute of Archaeology and Anthropology, University of South Carolina.
- Brooks, M.J., P.A. Stone, D.J. Colquhoun, J.G. Brown, and K.B. Steele. 1986. Geoarchaeological research in the coastal plain portion of the Savannah River Valley. *Geoarchaeology* 1 (3): 293–307.
- Brookes, S.O. 2004. Cultural Complexity in the Middle Archaic of Mississippi. *In* J.L. Gibson and P.J. Carr (editors), *Signs of power: the rise of cultural complexity in the southeast*: 97–113. Tuscaloosa: University of Alabama Press.
- Brose, D.S. 1979. A speculative model on the role of exchange in the prehistory of the Eastern Woodlands. *In* D.S. Brose and N.O. Greber (editors), *Hopewell archaeology: the Chillicothe conference*: 3–8. Kent, OH: Kent State University Press.
- Brose, D.S., and N.O. Greber (editors). 1979. *Hopewell archaeology: the Chillicothe conference*. Kent, OH: Kent State University Press.
- Brown, I.W. 2004. Prehistory of the Gulf coastal plain after 500 B.C. *In* R.D. Fogelson (editor), *Southeast volume, Smithsonian handbook of North American Indians*: 574–585. Washington, DC: Smithsonian Institution Press.
- Brown, J. 1985. Long-term trends to sedentism and the emergence of complexity in the American Midwest. *In* T. Price and J. Brown (editors), *Prehistoric hunter-gatherers: the emergence of cultural complexity*: 181–224. Orlando: Academic Press.
- Brown, J., and R. Vierra. 1983. What happened in the Middle Archaic. Introduction to the ecological approach to Koster site archaeology. *In* J. Phillips and J. Brown (editors), *Archaic hunters and gatherers in the American Midwest*: 165–195. New York: Academic Press.
- Brown, P., J.P. Kennett, and B.L. Ingram. 1999. Marine evidence for episodic Holocene megafloods in North America and the northern Gulf of Mexico. *Paleoceanography* 14 (4): 498–510.
- Bruseth, J.E. 1991. Poverty Point development as seen at the Cedarland and Claiborne sites, Southern Mississippi. *In* K.M. Byrd (editor), *The Poverty Point culture, local manifestations, subsistence practices, and trade networks*: 7–24. *Geoscience & Man* 29. Baton Rouge: Louisiana State University.
- Bullen, A.K., and R.P. Bullen. 1953. The Battery Point site, Bayport, Hernando County, Florida. *Florida Anthropologist* 6 (3): 85–92.
- Bullen, R.P. 1959. The Transitional period in Florida. *Southeastern Archaeological Conference Newsletter* 6: 42–53.
- Bullen, R.P. 1971. The Transitional period of the southern southeastern United State as viewed from Florida, or the roots of the Gulf Tradition. *Southeastern Archaeological Conference Bulletin* 13: 63–70.
- Bullen, R.P. 1972. The Orange period of peninsular Florida. *Florida Anthropologist* 25 (2), part 2: 9–33.
- Bullen, R.P. 1975. A guide to the identification of Florida projectile points. Gainesville, FL: Kendall Books.
- Bullen, R.P., and A.K. Bullen. 1976. The Palmer site. *Florida Anthropological Society Publications* 8, issued as *Florida Anthropologist* 29 (2), part 2.
- Bullen, R.P., W. Askew, L.M. Fedder, and R.L. McDonnell. 1978. The Canton Street site, St. Petersburg, Florida. *Florida Anthropologist Society Publications* 9.
- Burke, A. 2002. The Tchefuncte occupation of the Tensas Basin. Bachelor's thesis, Tulane University Department of Anthropology, New Orleans.
- Byrd, K.M. 1991. The Poverty Point culture, local manifestations, subsistence practices, and trade networks. *Geoscience & Man* 29. Baton Rouge: Louisiana State University.
- Byrd, K.M. 1994. Tchefuncte subsistence patterns at the Morton Shell Mound, Iberia Parish, Louisiana. *Louisiana Archaeology* 16: 1–128.
- Byrd, K.M., and R.W. Neuman. 1978. Archaeological data relative to prehistoric subsistence in the lower Mississippi River alluvial valley. *In* S.B. Hilliard (editor), *Man and environment in the lower Mississippi*

- Valley: 9–21. *Geoscience & Man* 29. Baton Rouge: Louisiana State University.
- Cable, J.S., C.E. Cantley, M.T. Bonhage-Fruend, M.J. Brooks, L.R. Gardner. 1998. Archeological data recovery at sites 38SU45, 38SU133, and 38SU145, with results of test excavations conducted at sites 38SU136, 38SU137, and 38SU141, poinsett electronic combat range, Sumter County, South Carolina. Plano, TX: Geomarine, Inc.
- Caldwell, J.R. 1958. Trend and tradition in the prehistory of the eastern United States. *Memoir* 88. American Anthropological Association.
- Caldwell, J.R. 1971. Chronology of the Georgia coast. *Southeastern Archaeological Conference Bulletin* 13: 89–91.
- Caldwell, J.R., and C. McCann. 1941. Irene Mound site. Athens: University of Georgia Press.
- Calmes, A.R. 1967. Test excavations at two Late Archaic sites on Hilton Head Island, Beaufort County, S.C. ms on file, Columbia: Institute of Archaeology and Anthropology, University of South Carolina.
- Calmes, A.R. 1968. Test excavations at three Late Archaic shell-ring mounds on Hilton Head Island, Beaufort County, South Carolina. *Bulletin of the Southeastern Archaeological Conference* 8: 45–48.
- Campbell, L.J., P.M. Thomas, Jr., and J.H. Matthews. 2004. Fiber-tempered pottery and cultural interaction on the northwest Florida Gulf Coast. *In* R. Saunders and C.T. Hays (editors), *Early pottery: technology, function, style, and interaction in the lower southeast*: 129–149. Tuscaloosa: University of Alabama Press.
- Cannon, A. 2000. Settlement and sea-levels on the central coast of British Columbia: evidence from shell midden cores. *American Antiquity* 65(1): 67–77.
- Carneiro, R.L. 2002. The tribal village and its culture: an evolutionary stage in the history of human society. *In* W.A. Parkinson (editor), *The archaeology of tribal societies*: 34–52. *Archaeological Series* 15, Ann Arbor: International Monographs in Prehistory.
- Carr, C. 1995. Mortuary practices: their social, philosophical-religious, circumstantial and physical determinants. *Journal of Archaeological Method and Theory* 2: 105–200.
- Carr, C., and D.T. Case, (editors). 2005. *Gathering Hopewell: society, ritual and ritual interaction*. New York: Plenum.
- Carr, P.J., and L.H. Stewart. 2004. Poverty Point chipped-stone tool raw materials: inferring social and economic strategies. *In* J.L. Gibson and P.J. Carr (editors), *Signs of power: the rise of cultural complexity in the southeast*: 129–145. Tuscaloosa: University of Alabama Press.
- Carr, R.S. 1988. *An archaeological survey of Collier County, Florida*. Davie, FL: Archaeological and Historical Conservancy, Inc.
- Carr, R.S., and J.B. Beriault. 1984. Prehistoric man in south Florida. *In* P.J. Gleason (editor), *Environments of south Florida, past and present*: 1–14. Miami Geological Society.
- Chamblee, J.F. 2006. *Landscape patches, macroregional exchanges and pre-Columbian political economy in southwestern Georgia*. Ph.D. dissertation, Tucson: University of Arizona.
- Chapman, J., and A. B. Shea 1981. The archaeological record: Early Archaic period to contact in the lower Little Tennessee River Valley. *Tennessee Archaeologist* 6: 61–84.
- Charles, D.K., and J.E. Buikstra. 1983. Archaic mortuary behavior in the central Mississippi drainage: distribution, structure, and behavioral implications. *In* J.L. Phillips and J.A. Brown (editors), *Archaic hunters and gatherers in the American Midwest*: 66–72. New York: Academic Press.
- Charles, D.K., and J.E. Buikstra. 2006. *Recreating Hopewell*. Gainesville: University Press of Florida.
- Chmura, G.L. 1994. Palynomorph distribution in marsh environments in the modern Mississippi Delta plain. *Geological Society of America Bulletin* 106: 705–714.
- Claassen, C. 1991. New hypothesis for the demise of the Shell Mound Archaic. *In* C.H. McNutt (editor), *The Archaic in the mid-south*: 66–71. *Archaeology Report* 24. Jackson: Mississippi Department of Archives and History.
- Claassen, C.P. 1992. Shell mounds as burial mounds: a revision of the Shell Mound Archaic. *In* D. Pollack and A.G. Henderson (editors), *Current archaeological research in Kentucky*: 1–12. Frankfort: Kentucky Heritage Council.
- Claassen, C.P. 1996. A consideration of the social organization of the Shell Mound Archaic. *In*

- K. Sassaman and D.G. Anderson (editors), *Archaeology of the mid-Holocene Southeast: 235–258*. Gainesville: University Press of Florida.
- Claffin, W., Jr. 1931. The Stalling's Island mound, Columbia County, Georgia. *Peabody Museum of American Archaeology and Ethnology Papers* 14 (1).
- Clark, J.E. 2004. Surrounding the sacred: geometry and design of early mound groups as meaning and function. In J.L. Gibson and P.J. Carr (editors), *Signs of power: the rise of cultural complexity in the southeast: 162–213*. Tuscaloosa: University of Alabama Press.
- Clark, J.E. 2006. The advent of Mesoamerica's cosmos. Paper presented at the 71st Annual Meeting of the Society for American Archaeology, San Juan, Puerto Rico.
- Clark, J.E., and M. Knoll. 2005. The American formative revisited. In N.M. White (editor), *Gulf Coast archaeology, the southeastern U.S. and Mexico: 281–303*. Gainesville: University Press of Florida.
- Clark, J.E., J.L. Gibson, and J.A. Zeidler. In press. First towns in the Americas: Searching for agriculture and other enabling conditions. In M.S. Bandy and J.R. Fox (editors), *Becoming villagers*. Tucson: University of Arizona Press.
- Clausen, C.J., A.D. Cohen, C. Emiliani, J.A. Holman, and J.J. Stipp. 1979. Little Salt Spring, Florida – unique underwater site. *Science* 203: 609–614.
- Clay, R.B. 1986. Adena ritual spaces. In K.B. Farnsworth and T.E. Emerson (editors), *Early Woodland archaeology: 581–595*. Kampsville, IL: Center for American Archaeology Press.
- Clay, R.B. 1987. Circles and ovals: two types of Adena space. *Southeastern Archaeology* 6: 46–56.
- Clay, R.B. 1998. The essential features of Adena ritual and their implications. *Southeastern Archaeology* 17: 1–21.
- Clay, R.B. 2002. Deconstructing the Woodland sequence from the heartland: A review of recent research directions in the upper Ohio valley. In D.G. Anderson and R.C. Mainfort (editors), *The Woodland Southeast: 162–184*. Tuscaloosa: University of Alabama Press.
- Clayton, T.D., et al. 1992. *Living with the Georgia shore*. Durham: Duke University Press.
- Cobb, C.R. 1998. Social reproduction and the longue durée in the prehistory of the midcontinental United States. In R.W. Preucel (editor), *Processual and postprocessual archaeologies: multiple ways of knowing the past: 168–182*. Center for Archaeological Investigations, Occasional Paper 10. Carbondale: Southern Illinois University.
- Cobb, C.R., and B.M. Butler. 2002. The vacant quarter revisited: Late Mississippian abandonment of the lower Ohio Valley. *American Antiquity* 67: 625–641.
- Cockrell, W.A. 1970. *Glades I and pre-Glades settlement and subsistence patterns on Marco Island (Collier County, Florida)*. Master's thesis, Tallahassee: Florida State University.
- Colannino-Meeks, C. 2010. *Zooarchaeological vertebrate remains from five Late Archaic shell rings of the Georgia coast*. Ph.D. dissertation, Department of Anthropology, University of Georgia.
- Cologne Radiocarbon. 2007. Calpal (radiocarbon date calibration program). Cologne radiocarbon calibration and paleoclimate research package. Internet resource (<http://www.calpal-online.de/index.html>).
- Colquhoun, D.J., and M.J. Brooks. 1986. New evidence from the Southeastern United States for eustatic components in the late Holocene sea levels. *Geoarchaeology* 1 (3): 275–291.
- Colquhoun, D.J., et al. 1980. Principles and problems in establishing a Holocene sea level curve for South Carolina. In J.D. Howard, C.B. DePratter, and W.R. Frey (editors), *Archaeology—geology of the Georgia coast*. Georgia Geological Survey Guidebook 20: 143–159.
- Colquhoun, D.J., et al. 1981. Location of archaeological sites with respect to sea level in the southeastern United States. In L.K. Königsson and K. Paabo (editors), *Florilegium Florinis Dedicatum, Striae* 14: 144–150.
- Colwell-Chanthaphonh, C., and T. J. Ferguson 2006. Rethinking abandonment in archaeological contexts. *SAA Archaeological Record* 6 (1): 37–41.
- Connaway, J.M., S.O. McGahey, and C.H. Webb. 1977. *Teoc Creek: a Poverty Point site in Carroll County Mississippi*. Archaeological Report 3. Jackson: Mississippi Department of Archives and History.
- Connerton, P. 1989. *How societies remember*. London: Cambridge University Press.
- Connolly, R.P. 2002. Annual report: station archaeology program at Poverty Point State

- Historic site. Department of Geosciences, University of Louisiana at Monroe.
- Connolly, R.P. 2006. An assessment of radiocarbon age results from the Poverty Point site. *Louisiana Archaeology* 27 (for 2000): 1–14.
- Conyers, L.B. 2004. *Ground-penetrating radar for archaeology*, New York: AltaMira.
- Conyers, L.B., and D. Goodman 1997. *Ground-penetrating radar: an introduction for archaeologists*. New York: AltaMira.
- Cordell, A.S. 2004. Paste variability and possible manufacturing origins of Late Archaic fiber-tempered pottery from selected sites in peninsular Florida. In R. Saunders and C. Hayes (editors), *Early pottery: technology, function, style, and interaction in the lower southeast*: 63–105. Tuscaloosa: University of Alabama Press.
- Coultas, C.L., M. Schwadron, and J.M. Galbraith. 2008. Petrocalcic Horizon formation and prehistoric people's effect on Everglades tree island soils, Florida. *Soil Survey Horizons* 49 (1): 16–21.
- Cowgill, G.L. 1975. On causes and consequences of ancient and modern population changes. *American Anthropologist* 77: 505–525.
- Crusoe, D., and C.B. DePratter 1976. A new look at the Georgia coastal Shell Mound Archaic. *Florida Anthropologist* 29 (1): 1–23.
- Crawford, J. 2003. *Archaic effigy beads: a new look at some old beads*. Master's thesis, Oxford: University of Mississippi, Department of Anthropology.
- Crothers, G.M. 1999. *Prehistoric hunters and gatherers, and the Archaic period Green River shell middens of western Kentucky*. Ph.D. dissertation, Department of Anthropology, Washington University, St. Louis.
- Crothers, G.M. 2004. The Green River in comparison to the lower Mississippi Valley during the Archaic: to build mounds or not to build mounds. In J.L. Gibson and P.J. Carr (editors), *Signs of power: the rise of complexity in the southeast*: 86–96. Tuscaloosa: University of Alabama Press.
- Crothers, G.M. 2008. The emergence of exclusive property rights in Kentucky prehistory. In L. Cliggett and C. Pool, *Economics and the transformation of landscape*: 127–147. *Society for Economic Anthropology Monographs* 25. Lanham, MD: AltaMira.
- Crothers, G., and R. Bernbeck. 2004. The foraging mode of production: The case of the Green River Archaic shell middens. In G. Crothers (editor), *Hunters and gatherers in theory and archaeology*: 401–422. Center for Archaeological Investigations Paper 31. Carbondale: Southern Illinois University.
- Crumley, C.L. (editor). 1994. *Historical ecology: Cultural knowledge and changing landscapes*. Santa Fe, NM: School of American Research Press.
- Crumley, C.L. 2007. Historical ecology: Integrated thinking at multiple temporal and spatial scales. In A. Hornborg and C.L. Crumley (editors), *The world system and the earth system: global environmental change and sustainability since the Neolithic*: 15–28. Walnut Creek, CA: Left Coast Press.
- Crusoe, D.L., and C.B. DePratter. 1972. A new look at the Georgia Shell Mound Archaic. Paper presented at the Annual Meeting of the Southeastern Archaeological Conference, Morgantown, West Virginia.
- Crusoe, D.L., and C.B. DePratter. 1976. A new look at the Georgia coastal Shellmound Archaic. *Florida Anthropologist* 29 (1): 1–23.
- Cruz-Uribe, K. 1988. The use and meaning of species diversity and richness in archaeological faunas. *Journal of Archaeological Science* 15 (2): 179–196.
- Cumbaa, S.L. 1972. *An intensive harvest economy in north central Florida*. Master's thesis, Department of Anthropology, University of Florida, Gainesville.
- Cummings, L.S. 2006. Box 9.3. Poverty Point objects. In R. Torrence and H. Barton (editors), *Ancient starch research*: 182–184. Walnut Creek, CA: Left Coast Press.
- Curren, C., C. Claassen, L.A. Newsom, and M. Russo. 1987. *Archaeology at Bluewater Bay (8)k102, a Late Archaic period site in northwest Florida*. Report of Investigations 9. Office of Cultural and Archaeological Research. Pensacola: University of West Florida.
- Cushing, F.H. 1897. *Exploration of ancient Key-dwellers' remains on the Gulf Coast of Florida*. Philadelphia: MacCalla.
- Cushing, F.H. 2000. *Exploration of ancient Key-dweller remains on the Gulf Coast of Florida*. Gainesville: University Press of Florida.
- Dahlberg, M.E. 1972. An ecological study of Georgia coastal fishes. *Fishery Bulletin* 70 (2): 323–353.

- Dancy, W.S. 2005. The enigmatic Hopewell of the Eastern Woodlands. *In* T.R. Pauketat and D. DiPaolo (editors), *North American archaeology*: 108–137. Malden, MA: Blackwell Publishing, Ltd.
- Dansgaard, W., J.W.C. White, and S.J. Johnsen. 1989. The abrupt termination of the Younger Dryas climate event. *Nature* 339: 532–533.
- Dansgaard, W., et al. 1993. Evidence for general instability of past climate from a 250 kyr ice core. *Nature* 364: 218–219.
- Dark, P. 2006. Climate deterioration and land-use change in the first millennium B.C.: perspectives from the British palynological record. *Journal of Archaeological Science* 33: 1381–1395.
- Davis, R.A. 1985. *Coastal sedimentary environments*. 2nd ed. revised, expanded. New York: Springer-Verlag.
- Davis, R.A. 1997. Geology of the Florida coast. *In* A.F. Randazzo and D.S. Jones (editors), *The geology of Florida*: 155–168. Gainesville: University Press of Florida.
- Davis, R.A., and D.M. FitzGerald. 2004. *Beaches and coasts*. Malden, MA: Blackwell Publishing.
- Davis, R.A., and M.O. Hayes. 1984. What is a wave-dominated coast? *Marine Geology* 60: 313–329.
- Deetz, J.F. 1968. The inference of residence and descent rules from archaeological data. *In* S.R. Binford and L.R. Binford (editors), *New perspectives in archeology*: 41–48. Chicago: Aldine.
- deFrance, S.D., and K. J. Walker. In prep. The zooarchaeology of Pineland. *In* *The archaeology of Pineland: A coastal southwest Florida site complex, A.D. 50–1710*. Institute of Archaeology and Paleoenvironmental Studies, Monograph 4. Gainesville: University of Florida.
- Delcourt, H.R., and P.A. Delcourt. 1989. Palynological and plant macrofossil analysis: Hood Lake, Poinsett County, Arkansas. *In* D.G. Anderson, H.R. Delcourt, P.A. Delcourt, J.E. Foss, and P.A. Morse (editors). *Cultural resource investigations in the L'Anquille River basin, Lee, St. Francis, Cross, and Poinsett counties, Arkansas*: 16–31. Memphis, TN: Garrow & Associates, Inc.
- de Menocal, P., J. Ortiz, T. Guilderson, and M. Sarnthein. 2000. Coherent high- and low-altitude climate variability during the Holocene warm period. *Science* 288: 2198–2202.
- DePratter, C.B. 1975. An archaeological survey of P.H. Lewis Property, Skidaway Island, Chatham County, Georgia: preliminary report. Athens: University of Georgia Laboratory of Archaeological Research 343.
- DePratter, C. B. 1976. The Refuge phase on the coastal plain of Georgia. *Early Georgia* 4: 1–13.
- DePratter, C.B. 1977. Environmental changes on the Georgia coast during the prehistoric period. *Early Georgia* 5 (1–2).
- DePratter, C.B. 1979a. Ceramics. *In* D.H. Thomas and C.S. Larsen, *The anthropology of St. Catherines Island: 2. The Refuge-Deptford mortuary complex*. *Anthropological Papers of the American Museum of Natural History* 56 (1): 109–132. [<http://hdl.handle.net/2246/305>]
- DePratter, C.B. 1979b. Shellmound Archaic on the Georgia coast. *South Carolina Antiquities* 11: 1–69.
- DePratter, C.B. 1991. W.P.A. archaeological excavations in Chatham County, Georgia: 1937–1942. University of Georgia, Laboratory of Archaeology Series Report 29.
- DePratter, C.B., and J.D. Howard. 1977. History of shoreline changes determined by archaeological dating: Georgia coast, United States. University of Georgia Marine Institute 337.
- DePratter, C.B., and J.D. Howard. 1980. Indian occupation and geologic history of the Georgia coast: a 5000 year summary. *In* J.D. Howard, C.B. DePratter, and R.W. Frey (editors), *Excursions in southeastern geology: the archaeology—geology of the Georgia coast*. Geological Society of America Guidebook 20: 1–65. Atlanta: Georgia Department of Natural Resources.
- DePratter, C.B., and J.D. Howard. 1981. Evidence for a sea level low stand between 4500 and 2400 years B.P. on the southeast coast of the United States. *Journal of Sedimentary Petrology* 51: 1287–1296.
- Dickel, D. 1992. An archaeological and historical survey of Bonita Springs, Parcel Three, Lee County, Florida. AHC Technical Report 43. Davie, FL: Archaeological and Historical Conservancy.
- Dickens, R.S., and L. Carnes. 1983. Preliminary investigations at Soapstone Ridge, DeKalb County, Georgia. *Southeastern Archaeological*

- Conference Bulletin 20 & 21: 81–97.
- Dietler, M. 1990. Driven by drink: the role of drinking in the political economy and the case of early Iron-Age France. *Journal of Anthropological Archaeology* 9: 352–406.
- Dietler, M., and B. Hayden (editors). 2001. *Archaeological and ethnographic perspectives on food, politics, and power*. Washington, DC: Smithsonian Institution Press.
- Dillehay, T.D. 1992. Keeping outsiders out: public ceremony, resource rights, and hierarchy in historic and contemporary Mapuche society. *In* *Wealth and hierarchy in the intermediate area: a symposium at Dumbarton Oaks, 10th and 11th October 1987*: Washington, DC: Dumbarton Oaks.
- Dolan, R., B. Hayden, G. Hornberger, J. Zieman, and M. Vincent. 1972. Classification of the coastal environments of the world. Part I, the Americas. Technical Report No. 1. ONR Contract 389-159. Charlottesville: University of Virginia.
- Donders, T.H., F. Wagner, D.L. Dilcher, and H. Visscher. 2005. Mid- to late-Holocene El Niño-southern oscillation dynamics reflected in the subtropical terrestrial realm. *Proceedings of the National Academy of Sciences* 102 (3): 10904-10908.
- Doran, G.H. (editor). 2002. *Windover: multidisciplinary investigations of an Early Archaic Florida cemetery*. Gainesville: University Press of Florida.
- Drayton, J. 1802. A view of South-Carolina, as respects her natural and civil concerns, No. 41. Broad-Street: WP Young.
- Drayton, J. 1972 [1802]. *A view of South Carolina, as respects her natural and civil concerns*. Charleston, SC: W.P. Young. Reprinted Spartanburg, SC: Reprint Company.
- Drysdale, R., et al. 2006. Late Holocene drought responsible for the collapse of Old World civilizations is recorded in an Italian cave flowstone. *Geology* 34: 101–104.
- Dunbar, J.S., S.D. Webb, and M. Faught. 1991. Inundated prehistoric sites in Apalachee Bay, Florida, and the search for the Clovis shoreline. *In* L.L. Johnson and M. Stright (editors), *Paleoshorelines and prehistory: an investigation of method*: 117–148. Boca Raton, FL: CRC Press.
- Dunbar, W. 1804 (1904). The exploration of the Red, the Black, and the Washita rivers. *In* *American Philosophical Society* (compiler), Documents relating to the purchase and exploration of Louisiana, part 2. New York: Houghton Mifflin.
- Dunnell, R.C. 1999. The concept of waste in an evolutionary archaeology. *Journal of Anthropological Archaeology* 18: 243–250.
- Dye, D.S. 1996. Riverine adaptation in the midsouth. *In* K.C. Carstens and P.J. Watson (editors), *Of caves and shell mounds*: 140–158. Tuscaloosa: University of Alabama Press.
- Dye, D.H. 2009. War paths, peace paths: an archaeology of cooperation and conflict in native eastern North America. Lanham, MD: AltaMira.
- Eberhard, K., K.E. Sassaman, and M.J. Brooks. 1994. Crosby Bay (38AK682): Paleoindian and Early Archaic occupations at a Carolina Bay in Aiken County, South Carolina. *South Carolina Antiquities* 26: 33–46.
- Edwards, R. L., J. W. Beck, et al. 1993. A large drop in atmospheric ^{14}C / ^{12}C and reduced melting in the Younger Dryas, documented with ages of corals. *Science* 260: 962–968.
- Edwards, W.E. 1965. A preliminary report on the Sewee Mound shell ring midden, Charleston County, South Carolina. ms on file, Tallahassee, FL: Southeast Archeological Center, National Park Service.
- Eiriksson, J., K.L. Knudsen, H. Hafliðason, and J. Heinemeier. 2000. Chronology of late Holocene climatic events in the northern North Atlantic based on AMS ^{14}C dates and tephra markers from the volcano Hekla, Iceland. *Journal of Quaternary Science* 15 (6): 573–580.
- Elliott, D., and K. Sassaman. 1995a. Archaic period archaeology of the Georgia coastal plain and coastal zone. Laboratory of Archaeology Series Report 35. Athens: University of Georgia.
- Elliott, D.T., and K.E. Sassaman 1995b. Archaic period archaeology of the Georgia coastal plain and coastal zone. Georgia Archaeological Research Design Paper 11. Athens: University of Georgia.
- Emerson, T.E., and A.C. Fortier. 1986. Early Woodland cultural variation, subsistence, and archaeology. *In* K.B. Farnsworth and T.E. Emerson (editors), *Early Woodland archaeology*: 475–522. Kampsville, IL: Center for American Archaeology Press.
- Emerson, T.E., and D.L. McElrath. 2001. Interpreting discontinuity and historical process in

- midcontinental Late Archaic and Early Woodland societies. *In* T.R. Pauketat (editor), *The archaeology of traditions: agency and history before and after Columbus: 195–217*. Gainesville: University Press of Florida.
- Endonino, J. 2008a. Complex neighbors to the north: hunter-gatherers, monuments, and mortuary mounds in the St. Johns River Valley, Florida. Paper presented at the 73rd Annual Meeting of the Society for American Archaeology, Vancouver, Canada.
- Endonino, J. 2008b. The Thornhill Lake archaeological research project: Mount Taylor mortuary mounds and monumental architecture in the St. Johns River Valley. Florida Archaeological Council, Inc., Newsletter 70: 22–28.
- Endonino, J. C. 2008c. The Thornhill Lake archaeological project: 2005–2008. *The Florida Anthropologist* 61:149–165.
- Fairbridge, R.W. 1961a. Eustatic changes in sea level. *Physics and chemistry of the Earth*. 4: 99–185.
- Fairbridge, R.W. 1961b. *Encyclopedia of geomorphology*. New York: Reinhold.
- Fairbridge, R.W. 1984. Holocene sea level record in south Florida. *In* P. Gleason (editor), *Environments of south Florida present and past*, 2nd ed.: 427–436. Coral Gables: Miami Geological Survey.
- Farnsworth, K.B., and T.E. Emerson (editors). 1986. *Early Woodland archaeology. Kampsville seminars in archeology 2*. Kampsville, IL: Center for American Archeology Press.
- Faught, M.K. 2004. Submerged Paleoindian and Archaic sites of the Big Bend, Florida. *Journal of Field Archaeology* 29 (2002–2004): 273–290.
- Feinman, G.M. 1999. The changing structure of macroregional Mesoamerica: the classic-postclassic transition in the valley of Oaxaca. *In* P.N. Kardulias (editor), *World-systems theory in practice: Leadership, production, and exchange: 53–62*. Lanham, MD: Rowman and Littlefield.
- Fiedel, S. J. 2001. What happened in the Early Woodland? *Archaeology of eastern North America* 29: 101–142.
- Fiedel, S.J. 2009. Abrupt changes of climate and of point styles in the eastern US: how were they connected? Paper presented at the 74th Annual Meeting of the Society for American Archaeology, Atlanta, Georgia.
- Flannery, R. 1943. Some notes on a few sites in Beaufort, South Carolina. *Bureau of American Ethnology, Bulletin* 133: 147–153. Washington, DC: Smithsonian Institution.
- Ford, J.A. 1969. A comparison of formative cultures in the Americas. Washington, DC: Smithsonian Contributions to Anthropology 11.
- Ford, J.A., and G.I. Quimby, Jr. 1945. The Tchefuncte culture, an early occupation of the lower Mississippi Valley. *Memoir* 2. Menasha, WI: Society for American Archaeology.
- Ford, J.A., and C.H. Webb. 1956. Poverty Point, a Late Archaic site in Louisiana. New York: *Anthropological Papers of the American Museum of Natural History* 46 (1).
- Ford, J.A., and G.R. Willey. 1941. An interpretation of the prehistory of the eastern United States. *American Anthropologist* 43 (3): 325–363.
- Ford, J.A., P. Phillips, and W.G. Haag. 1955. The Jaketown site in west-central Mississippi. New York: *Anthropological Papers of the American Museum of Natural History* 45 (1).
- Forman, S.L., R.M. Oglesby, V. Graf, and T. Stafford. 1995. Paleoclimatic significance of late Quaternary eolian deposition on the Piedmont and High Plains, central United States. *Global and Planetary Change* 11: 35–55.
- Fortier, A.C. 2001. A tradition of discontinuity: American Bottom Early and Middle Woodland culture history reexamined. *In* T. R. Pauketat (editor), *The archaeology of traditions: agency and history before and after Columbus: 174–194*. Gainesville: University Press of Florida.
- Fradkin, A. 1976. The Wightman site: A study of prehistoric culture and environment on Sanibel Island, Lee County, Florida. Master's thesis, University of Florida, Gainesville.
- Fradkin, A. 2007. (Draft) Animal resource use among early human inhabitants of the "River of Grass": The faunal assemblage from Heartleaf Hammock (8da2192). *In* *Archeological assessment of the eastern Everglades expansion lands, Everglades National Park, Fl.* Tallahassee: National Park Service, Southeast Archeological Center.
- Fritz, G.J. 1990. Multiple pathways to farming in precontact eastern North America. *Journal of World Prehistory* 4: 387–435.
- Fritz, G.J., and T.R. Kidder. 1993. Recent

- investigations into early agriculture in the lower Mississippi Valley. *Southeastern Archaeology* 12: 1–14.
- Funk, R.E. 1978. The northeastern United States. *In* J.D. Jennings (editor), *Ancient North Americans*: 303–371. New York: W.H. Freeman.
- Futato, E. 2000. Reanalysis of chipped stone tools from 1LU23 and shoals area Archaic settlement patterns. Paper presented at the 57th Annual Meeting of the Southeastern Archaeological Conference, Macon, GA.
- Gage, M.D., and J. Keeling. 2004. Archaeological investigations at the Whitesburg Bridge site. Office of Archaeological Research, University of Alabama. Internet resource (<http://museums.ua.edu/oar/ma10.html>).
- Gagliano, S.M. 1963. A survey of Preceramic occupations in portions of south Louisiana and south Mississippi. *Florida Anthropologist* 16 (4): 105–132.
- Gagliano, S.M., and C.H. Webb. 1970. Archaic–Poverty Point transition at the Pearl River mouth. *In* B.J. Broyles and C.H. Webb (editors), *The Poverty Point culture*: 47–72. *Southeastern Archaeological Conference Bulletin* 12.
- Gardner, P.S. 1992. Diet optimization models and prehistoric subsistence change in the Eastern Woodlands. Ph.D. dissertation, University of North Carolina, Chapel Hill.
- Gayes, P.T., D.B. Scott, E.S. Collins, and D.D. Nelson. 1992. A late Holocene sea-level fluctuation in South Carolina. *In* *Quaternary coasts of the United States: Marine and lacustrine systems*: 155–160. Tulsa, OK: Society for Sedimentary Geology, Special Publication 48.
- Gearing, F. 1958. The structural poses of 18th-century Cherokee villages. *American Anthropologist* 60: 1148–1156.
- Gehrels, W.R. 1999. Middle and late Holocene sea-level changes in eastern Maine reconstructed from foraminiferal saltmarsh stratigraphy and AMS ¹⁴C dates on basal peat. *Quaternary Research* 52(3): 350–359.
- Gibson, J.L. 1974. The rise and decline of Poverty Point. *Louisiana Archaeology* 1: 8–33.
- Gibson, J.L. 1975. Fire pits at Mount Bayou (16CT35), Catahoula Parish, Louisiana. *Louisiana Archaeology* 2: 201–218.
- Gibson, J.L. 1976. Archeological survey of Bayou Teche, Vermilion River, and Freshwater Bayou, south central Louisiana. Center for Archaeological Studies, Report 2. Lafayette: University of Southwestern Louisiana.
- Gibson, J.L. 1977. Archaeological survey of portions of Little River, Boeuf River, and Big Creek, east central and northeastern Louisiana. Center for Archaeological Studies, Lafayette: University of Southwestern Louisiana.
- Gibson, J.L. 1979. Poverty Point trade in south central Louisiana: an illustration from Beau Rivage. *Louisiana Archaeology* 4 (for 1977): 91–116.
- Gibson, J.L. (editor). 1982. Archaeology and ethnology on the edges of the Atchafalaya Basin, south central Louisiana. MS on file, U.S. Army Corps of Engineers, New Orleans.
- Gibson, J.L. 1984. The earthen face of civilization: mapping and testing at Poverty Point, 1983. MS on file, Poverty Point State Historic site, Epps, Louisiana.
- Gibson, J.L. 1985a. An evaluatory history of archaeology in the Ouachita Valley of Louisiana. *Louisiana Archaeology* 10: 25–101.
- Gibson, J.L. 1985b. Ouachita prehistory. *Louisiana Archaeology* 10: 319–335.
- Gibson, J.L. 1987. The Poverty Point earthworks reconsidered. *Mississippi Archaeology* 22: 14–31.
- Gibson, J.L. 1990. Search for the lost Sixth Ridge, the 1989 excavations at Poverty Point. Center for Archaeological Studies Report 9. Lafayette: University of Southwestern Louisiana.
- Gibson, J.L. 1991. Catahoula—an amphibious Poverty Point period manifestation in eastern Louisiana. *In* K.M. Byrd (editor), *The Poverty Point culture, local manifestations, subsistence practices, and trade networks*: 61–87. *Geoscience & Man* 29. Baton Rouge: Louisiana State University.
- Gibson, J.L. 1992. Prehistory of the Piney Woods Hills and Bottoms in north central Louisiana. *In* J.L. Gibson, P.C. Cook, C.A. Brasseur, F.L. Martin, and E.L. Gibson, *Cultural resources inventory LA-US 167 & LA-US 425*. Baton Rouge: State of Louisiana Department of Transportation and Development.
- Gibson, J.L. 1994a. Empirical characterization of exchange systems in lower Mississippi Valley prehistory. *In* T.G. Baugh and J.E. Ericson (editors), *Prehistoric exchange systems in North America*: 127–175. New York:

- Plenum.
- Gibson, J.L. 1994b. Lower Mississippi Valley exchange at 1100 B.C. *Louisiana Archaeology* 17: 1–11.
- Gibson, J.L. 1994c. Over the mountain and across the sea: regional Poverty Point exchange. *Louisiana Archaeology* 17: 251–299.
- Gibson J.L. 1994d. Before their time? Early mounds in the lower Mississippi Valley. *Southeastern Archaeology* 13: 162–186.
- Gibson, J.L. 1995. Things that count: mean vertical positions and Poverty Point archaeology. *In* J.L. Gibson and R.W. Neuman, and R.A. Weinstein (editors), “An’ stuff like that there,” in appreciation of William G. Haag: 51–84. *Louisiana Archaeology* 18. Lafayette: Louisiana Archaeological Society.
- Gibson, J.L. 1996a. Ancient earthworks of the Ouachita Valley in Louisiana. Technical Reports 5. Tallahassee, FL: Southeast Archeological Center.
- Gibson J.L. 1996b. Poverty Point and the greater southeastern prehistory: the culture that did not fit. *In* K. Sassaman and D. Anderson (editors), *Archaeology of the mid-Holocene southeast*: 288–306. Gainesville: University Press of Florida.
- Gibson, J.L. 1996c. The Orvis Scott site: a Poverty Point component on Joes Bayou, East Carroll Parish, Louisiana. *Midcontinental Journal of Archaeology* 21 (1): 1–48.
- Gibson, J.L. 1998a. Elements and organization of Poverty Point political economy: high-water fish, exotic rocks, and sacred earth. *Research in Economic Anthropology* 19: 291–340.
- Gibson J.L. 1998b. Broken circles, owl monsters, and black earth midden: separating sacred and secular at Poverty Point. *In* R. Mainfort, and L. Sullivan (editors), *Ancient earthen enclosures of the Eastern Woodlands*: 17–30. Gainesville: University Press of Florida.
- Gibson, J.L. 1998c. Tchefuncte Culture. *In* G. Gibbon (editor), *Archaeology of prehistoric Native America: an encyclopedia*: 831–832. New York: Garland Publishing.
- Gibson, J.L. 2000. Ancient mounds of Poverty Point: place of rings. Gainesville: University Press of Florida.
- Gibson, J.L. 2001. *The ancient mounds of Poverty Point: place of rings* (paperback). Gainesville: University Press of Florida.
- Gibson, J.L. 2004. The power of beneficent obligation in first mound-building societies. *In* J.L. Gibson and P.J. Carr (editors), *Signs of power: the rise of complexity in the southeast*: 255–269. Tuscaloosa: University of Alabama Press.
- Gibson, J.L. 2006. Navels of the earth: Sedentism in early mound-building cultures in the lower Mississippi Valley. *In* Y. Marshall (editor), *Sedentism in non-agricultural societies*. *World Archaeology* 38: 310–329.
- Gibson, J.L. 2007. “Formed from the earth of that place”: the material side of community at Poverty Point. *American Antiquity* 72 (3): 509–523.
- Gibson, J.L. 2008. Navel to navel: luck, logistics, or legacy in building Poverty Point. Paper presented at the 73rd Annual Meeting of the Society for American Archaeology, Vancouver, Canada.
- Gibson, J.L. 2009 *Poverty Point Redux*. In press. *In* M.A. Rees (editor), *Archaeology of Louisiana*. Baton Rouge: Louisiana State University Press.
- Gibson, J.L., and P.J. Carr (editors). 2004. *Signs of power: the rise of cultural complexity in the southeast*. Tuscaloosa: University of Alabama Press.
- Gibson, J.L., and M.A. Melancon. 2004. In the beginning: social contexts of first pottery in the lower Mississippi Valley. *In* R. Saunders and C.T. Hays (editors), *Early pottery: technology, function, style, and interaction in the lower southeast*: 169–192. Tuscaloosa: University of Alabama Press.
- Girard, J.S. 2000. Regional archaeology program, Management Unit 1, 11th annual report. Baton Rouge: Louisiana Division of Archaeology, Department of Culture, Recreation, and Tourism.
- Goad, S.I. 1979. Middle Woodland exchange in the prehistoric southeastern United States. *In* D.S. Brose and N.O. Greber (editors), *Hopewell archaeology: the Chillicothe conference*: 239–246. Kent, OH: Kent State University Press.
- Goggin, J.M. 1947. A preliminary definition of archaeological areas and periods in Florida. *American Antiquity* 13 (2): 114–127.
- Goggin, J.M. 1948a. Culture and geography in Florida prehistory. Ph.D. dissertation. New Haven, CT: Yale University.
- Goggin, J.M. 1948b. Florida archaeology and recent ecological changes. *Journal of the Washington Academy of Sciences* 39:

- 225–233.
- Goggin, J.M. 1949a. Cultural traditions in Florida prehistory. *In* J.W. Griffin (editor), *The Florida Indian and his neighbors*: 13–44. Inter-American Center, Winter Park, FL: Rollins College.
- Goggin, J.M. 1949b. Cultural occupation at Goodland Point, Florida. *Florida Anthropologist* 2 (Nos. 3–4): 65–91.
- Goggin, J.M. 1950. Stratigraphic tests in the Everglades National Park. *American Antiquity* 3: 228–246.
- Goggin, J.M. 1951. Archeological notes on lower Fisheating Creek. *Florida Anthropologist* 4: 50–66.
- Goggin, J.M. 1952. Space and time perspectives in northern St. Johns archaeology, Florida. *Yale University Publications in Anthropology* 47.
- Goggin, J.M. n.d. The archeology of the Glades area, southern Florida. Unpublished MS, Yale University Department of Anthropology. On file, Tallahassee: Florida State Museum.
- Goggin, J.M., and W.C. Sturtevant. 1964. *The Calusa: a stratified, nonagricultural society (with notes on sibling marriage)*. New York: McGraw-Hill.
- Goodyear, A.C. 1988. On the study of technological change. *Current Anthropology* 29: 320–323.
- Graf, M.T., M. Schwadron, P.A. Stone, M. Ross, and G.L. Chumura. 2008. An enigmatic carbonate layer in Everglades tree island peats. *EOS (American Geophysical Union)* 89 (12): 117–124.
- Grafenstein, U. von, H. Erlenkeuser, A. Brauer, J. Jouzel, and S.J. Johnson. 1999. A mid-European decadal isotope-climate record from 15,500 to 5000 years B.P. *Science* 284: 1654–1657.
- Gramly, R.M. 1977. Deerskins and hunting territories: competition for a scarce resource of the Northeastern Woodlands. *American Antiquity* 42: 601–605.
- Graves, O.C. 1982. *The Rolling Oaks II site (8Bd73): a Tequesta sub-area habitation site*. Master's thesis, Boca Raton: Florida Atlantic University.
- Grayson, D.K. 1984. *Quantitative zooarchaeology: topics in the analysis of archaeological faunas*. New York: Academic Press.
- Greene, G.S. 1985. The Deep Six paleosol, the incipient Poverty Point occupation. MS on file, Poverty Point State Historic site, Epps, Louisiana.
- Greenlee, D., and J. Saunders. 2008. Is earthwork construction in the lower Mississippi Valley discontinuous, or does it only appear that way? Poster presented at the 65th Annual Meeting of the Southeastern Archaeological Conference, Charlotte, NC.
- Greenlee, D., and J. Saunders. 2009. Radiocarbon data file. Available on request. Epps, LA: Poverty Point Station Archaeology Program, Poverty Point State Park.
- Gregory, H.F., Jr. 1991. Terral Lewis: recapitulation. *In* K.M. Byrd (editor), *The Poverty Point culture, local manifestations, subsistence practices, and trade networks*: 121–127. *Geoscience & Man*. 29. Baton Rouge: Louisiana State University.
- Gregory, H.F., Jr., L.C. Davis, and D. Hunter. 1970. The Terral Lewis site: a Poverty Point activity facies in Madison Parish, Louisiana. *In* B.J. Broyles and C.H. Webb (editors), *The Poverty Point culture*: 35–46. Morgantown, WV: Southeastern Archaeological Conference Bulletin 12.
- Gregory, et al. 1987. A survey of Catahoula Basin, 1987. MS on file, Louisiana Division of Archaeology, Baton Rouge.
- Gremillion, K.J. 1996. The paleoethnobotanical record for the mid-Holocene southeast. *In* K.E. Sassaman and D.G. Anderson (editors), *Archaeology of the mid-Holocene southeast*: 99–114. Gainesville: University Press of Florida.
- Gremillion, K. J. 1998. Changing roles of wild and cultivated plant resources among early farmers of eastern Kentucky. *Southeast Archaeology* 17: 140–157.
- Gremillion, K.J. 2002. The development and dispersal of agricultural systems in the Woodland period southeast. *In* D.G. Anderson and R.J. Mainfort (editors), *The Woodland Southeast*: 483–501. Tuscaloosa: University of Alabama Press.
- Griffin, J.B. 1946. Cultural change and continuity in eastern United States archaeology. *In* F. Johnson (editor), *Man in northeastern North America*: 7–95. Andover, MA: Robert S. Peabody Foundation.
- Griffin, J.B. 1967. Eastern North American archaeology: a summary. *Science* 156: 175–191.
- Griffin, J.B. 1978. The midlands. *In* J.D. Jennings

- (editor), *Ancient North Americans*: 243–301. New York: W.H. Freeman.
- Griffin, J.B. 1986. Comments on the Kampsville Early Woodland conference. *In* K.B. Farnsworth and T.E. Emerson (editors), *Early Woodland archeology*: 609–620. Kampsville Seminars in Archeology 2. Evanston, IL: Center for American Archeology Press.
- Griffin, J.W. 1996. A summary of Florida archaeology. *In* P.C. Griffin (editor), *Fifty years of southeastern archaeology: selected works of John W. Griffin*: 45–52. Gainesville: University Press of Florida.
- Griffin, J.W. 2002. *Archaeology of the Everglades*. Gainesville: University Press of Florida.
- Grissino-Mayer, H.D. 2009. An introduction to dendroarchaeology in the southeastern United States. *Tree-Ring Research* 65 (1): 5–10.
- Grosjean, M., M.A. Geyh, B. Messerli, and U. Schotterer. 1995. Late-glacial and early Holocene lake-sediments, groundwater formation and climate in the Atacama-Altiplano 22–24° S. *Journal of Paleolimnology* 14 (3): 241–252.
- Grosjean, M., et al. 1997. Mid- and late-Holocene limnogeology of Laguna del Negro Francisco, northern Chile, and its palaeoclimatic implications. *Holocene* 7 (2): 151–159.
- Grøn, O. 1991. A method for reconstruction of social organization in prehistoric societies and examples of practical application. *In* O. Grøn, E. Engelsted, and I. Lindblom (editors), *Social space human spatial behavior in dwellings and settlements*: 100–117. Odense, Denmark: Odense University Press.
- Gunn, J.D. 1996. A framework for the Paleoindian Early Archaic transition. *In* D.G. Anderson and K.A. Sassaman (editors), *The Paleoindian and Early Archaic southeast*. Tuscaloosa: University of Alabama Press.
- Gunn, J.D. 1997. Framework for the middle-late Holocene transition: astronomical and geophysical conditions. *Southeastern Archaeology* 16: 134–151.
- Habu, J., and B. Fitzhugh. 2002. Introduction. *In* B. Fitzhugh and J. Habu (editors), *Beyond foraging and collecting: evolutionary change in hunter-gatherer settlement systems*: 1–11. New York: Kluwer Academic.
- Hall, J. 1999. The impact of sea-level rise on the archaeological record of the Moreton region, Southeast Queensland. *In* J. Hall and I. J. McNiven (editors), *Australian coastal archaeology*: 169–184. Canberra: ANH Publications, Australian National University.
- Hally, D.J. 1993. The territorial size of Mississippian chiefdoms. *In* J.B. Stoltman (editor), *Archaeology of eastern North America papers in honor of Stephen Williams*: 143–168. Archaeological Report 25. Jackson: Mississippi Department of Archives and History.
- Hally, D.J. 1996. Platform mound construction and the political stability of Mississippian chiefdoms. *In* J.F. Scarry (editor), *Political structure and change in the prehistoric southeastern United States*: 92–127. Gainesville: University Press of Florida.
- Hamilton, F.E. 1999. Southeastern Archaic mound: examples of elaboration in a temporally fluctuating environment? *Journal of Anthropological Archaeology* 18: 344–355.
- Harrell, B.C. 2005. Early Woodland subsistence and settlement: evidence from the Williams site (8TA32), Taylor County, Florida. Master's thesis, Department of Anthropology, Florida State University, Tallahassee.
- Haskins, V., and N. Herrmann. 1996. Shell mound bioarchaeology. *In* K. Carstens and P.J. Watson (editors), *Of caves and shell mounds*: 107–119. Tuscaloosa: University of Alabama Press.
- Haug, G.H., K.A. Hughen, D.M. Sigman, L.C. Peterson, and U. Rohl. 2001. Southward migration of the intertropical convergence zone through the Holocene. *Science* 293: 1304–1308.
- Hayden, B. 1996a. Feasting in prehistoric and traditional societies. *In* P. Wiessner and W. Schieffenhovel (editors), *Food and the status quest: an interdisciplinary perspective*: 127–147. Providence: Berghahn Books.
- Hayden, B. 1996b. Thresholds of power in emergent complex societies. *In* J. Arnold (editor), *Emergent complexity: the evolution of intermediate societies*: 50–58. Ann Arbor, MI: International Monographs in Prehistory.
- Hayden, B. 2004. Fabulous feasts: A prolegomenon to the importance of feasting. *In* M. Dietler and B. Hayden (editors), *Feasts: archaeological and ethnographic perspectives on food, politics, and power*: 23–64. Washington, DC: Smithsonian Institution Press.
- Hayes, M.O. 1979. Barrier island morphology as

- a function of tidal and wave regime. *In* S.P. Leatheriman (editor), *Barrier islands from the Gulf of St. Lawrence to the Gulf of Mexico: 1–27*. New York: Academic Press.
- Hayes, M.O. 1994. The Georgia Bight barrier system. *In* R.A. Davis (editor), *Geology of Holocene barrier island systems: 223–304*. New York: Springer-Verlag.
- Haynes, C.V. 2008. Younger Dryas black mats and the Rancholabrean termination in North America. *Proceedings of the National Academy of Sciences* 105 (18): 6520–6525.
- Hays, C.T., and R.A. Weinstein. 1996. Perspectives of Tchefuncte cultural chronology: a view from the Bayou Jasmine site, St. John the Baptist Parish, Louisiana. *Louisiana Archaeology* 23: 49–89.
- Hays, C.T., and R.A. Weinstein. 2004. Early pottery at Poverty Point: origins and functions. *In* R. Saunders and C.T. Hays (editors), *Early pottery: technology, function, style, and interaction in the lower southeast: 150–168*. Tuscaloosa: University of Alabama Press.
- Hays, J.D., J. Imbrie, and N.J. Shackleton. 1976. Variations of the Earth's orbital parameters: pacemaker of the ice ages. *Science* 194: 1121–1132.
- Heide, G. 2000. An overview of selected radiocarbon dates between 4000 B.P. and 2900 B.P. in Florida. *In* M. Russo and G. Heide, *The Joseph Reed Shell ring: 71–82*. Tallahassee, FL: Southeast Archeological Center, National Park Service.
- Heide, G.M., and M. Russo. 2003. Investigation of the Coosaw Island Shell Ring Complex (38BU1866). Tallahassee, FL: Southeast Archeological Center, National Park Service.
- Heinrich, H. 1988. Origin and consequences of cyclic ice rafting in the northeast Atlantic Ocean during the past 130,000 years. *Quaternary Research* 29: 142–152.
- Heizer, R. 1937. Baked-clay objects of the lower Sacramento Valley, California. *American Antiquity* 3 (1): 34–50.
- Hemming, S.R. 2004. Heinrich events: massive late Pleistocene detritus layers of the North Atlantic and their global climate imprint. *Reviews of Geophysics* 42: 1–43.
- Hemmings, E.T. 1970a. Emergence of formative life on the Atlantic coast of the southeast. *Southeastern Archaeological Conference Bulletin* 13: 51–55.
- Hemmings, E.T. 1970b. Preliminary report of excavations at Fig Island, South Carolina. Notebook 2 (9): 9–15. Columbia: Institute of Archaeology and Anthropology, University of South Carolina.
- Hemmings, E.T. 1970c. Auld Mound or Yough Hall Plantation shell ring 38CH41, National Register of Historic Places Inventory Nomination Form. National Park Service.
- Hemmings, E.T. 1970d. Sewee Shell Ring 38CH45, National Register of Historic Places Inventory – Nomination Form. United States Department of the Interior, National Park Service.
- Herrmann, N.P. 2002. Biological affinities of Archaic period populations from west-central Kentucky and Tennessee. Ph.D. dissertation, University of Tennessee, Knoxville.
- Herrmann, N.P. 2007. New radiocarbon dates from three Archaic shell middens in west-central Kentucky: Indian Knoll (15oh2), Ward (15mcl11) and Barrett (15mcl4). *In* S.E. Miller, D. Pollack, K. Carstens, C.R. Moore (editors), *Current archaeological research in Kentucky 8: 77–90*. Frankfort: Kentucky Heritage Council.
- Hickerson, H. 1965. The Virginia deer and intertribal buffer zones in the upper Mississippi Valley. *In* A.L. Vayda and A.P. Vayda (editors), *Man, culture, and animals: 43–65*. Washington, DC: AAAS Monograph.
- Hodder, I. 1991. *The domestication of Europe*. London: Blackwell.
- Hoese, H.D., and R.H. Moore. 1998. *Fishes of the Gulf of Mexico: Texas, Louisiana, and adjacent waters*. 2nd ed. College Station: Texas A&M University Press.
- Houck, B. A. 1993. Archaeological excavations at 8LL717, Bonita Springs, Lee County, Florida. AHC Technical Report 78, Davie, FL: Archaeological and Historical Conservancy.
- Houck, B.A. 1996. Archaeological investigations at 8LL717, Bonita Springs, Lee County, Florida. Submitted to Bonita Bay Properties. Bureau of Research, Florida Division of Historic Resources, Tallahassee.
- Howard, J.D., and R.W. Frey. 1980. Holocene depositional environments of the Georgia coast and continental shelf. *In* J.D. Howard, C.P. DePratter, and R.W. Frey, (editors), *Excursions in southeastern geology: the archaeology-geology of the Georgia coast*. Geological Society of America Guidebook 20: 66–134.

- Hughen, K.A., et al. 2004. Marine04 marine terrestrial radiocarbon age calibration, 0–26 kyr BP. *Radiocarbon* 46: 1029–1958.
- Hughes, D. 1996. Archaeological excavations of the proposed Estero Bay Park parking area, Lee County, Florida. Tallahassee: Archaeological Historical Conservancy, Bureau of Archaeological Research, Florida Division of Historical Resources.
- Hughes, D. 1998. Excavations at 8LL717, Bonita Springs, Florida. Gainesville: Florida Anthropology Society Meetings.
- Humphreys, A.A., and H.L. Abbot. 1861. Report on the physics and hydraulics of the Mississippi River. Professional Papers of the Corps of Topographical Engineers 4. United States Army. Philadelphia: Lippincott.
- Ingold, T. 2000. The perception of the environment, essays on livelihood, dwelling, and skill. London: Routledge.
- IPCC [Intergovernmental Panel on Climate Change]. 2007. Summary for policymakers. In S. Solomon et al. (editors), *Climate change 2007: the physical science basis. Contribution of working group I to the fourth assessment report of the IPCC*: 1–18. Cambridge: Cambridge University Press.
- IntCal Marine Reservoir Correction Database. 2009. Internet resource (<http://intcal.qub.ac.uk/marine/>), accessed April 14, 2009.
- Jackson, H.E. 1986. Sedentism and hunter-gatherer adaptations in the lower Mississippi Valley: subsistence strategies during the Poverty Point period. Ph.D. dissertation, Ann Arbor: University of Michigan Department of Anthropology.
- Jackson, H.E. 1989a. Poverty Point adaptive systems in the lower Mississippi Valley: subsistence remains from the J.W. Copes site. *North American Archaeologist* 10: 173–204.
- Jackson, H.E. 1989b. The trouble with transformations: effects of sample size and sample composition on meat weight estimates based on skeletal mass allometry. *Journal of Archaeological Science* 16: 601–610.
- Jackson, H.E. 1991a. The trade fair in hunter-gatherer interaction: the role of intersocietal trade in the evolution of Poverty Point culture. In S.A. Gregg (editor), *Between bands and states*. Carbondale: Center for Archaeological Investigations, Southern Illinois University at Carbondale.
- Jackson, H.E. 1991b. Bottomland resources and exploitation strategies during the Poverty Point period: implications of the archaeological record from the J.W. Copes site. In K.M. Byrd (editor), *The Poverty Point culture, local manifestations, subsistence practices, and trade networks*: 131–153. Geoscience & Man. 29. Baton Rouge: Louisiana State University.
- Jackson, H.E. 2003. Patterns of elite faunal utilization at Moundville, Alabama. *American Antiquity* 68 (3): 552–572.
- Jackson, H.E., and M.D. Jeter. 1994. Preceramic earthworks in Arkansas: a report on the Poverty Point period Lake Enterprise Mound (3AS379). *Southeastern Archaeology* 13: 153–162.
- Jackson, H.E., and S.L. Scott 1995. The faunal record of the southeastern elite: the implications of economy, social relations, and ideology. *Southeastern Archaeology* 14 (2): 103–119.
- Jackson, H.E., and S.L. Scott. 2003. Patterns of elite faunal utilization at Moundville, Alabama. *American Antiquity* 68 (3): 552–572.
- Jackson, H.E., M.L. Higgins, and R.E. Reams. 2002. Woodland cultural and chronological trends in the southern Gulf coastal plain: recent research in the Pine Hills of southeastern Mississippi. In D.G. Anderson and R.C. Mainfort (editors), *The Woodland Southeast*: 228–248. Tuscaloosa: University of Alabama Press.
- Jahn, O.L., and R.P. Bullen. 1978. The Tick Island site, St. Johns River, Florida. *Florida Anthropologist* 31 (4–2).
- Janus Research, Inc. 1998. Cultural resource assessment survey of the Indian Riverside Park in Martin County, Florida. Submitted to Martin County; available from Janus Research, St. Petersburg.
- Jefferies, R.W. 1996. The emergence of long distance exchange networks in the southeastern United States. In K. E. Sassaman and D. G. Anderson (editors), *Archaeology of the mid-Holocene Southeast*: 224–234. Gainesville: University Press of Florida.
- Jefferies, R.W. 1997. Middle Archaic bone pins: evidence of mid-Holocene regional-scale social groups in the southern Midwest. *American Antiquity* 62: 464–487.
- Jefferies, R.W. 2004a. Regional-scale interaction networks and the emergence of cultural complexity along the northern margins of the southeast. In J.L. Gibson and P.J.

- Carr (editors), *Signs of power: the rise of cultural complexity in the southeast*: 71–85. Tuscaloosa: University of Alabama Press.
- Jefferies, R.W. 2004b. Regional cultures, 700 B.C.– A.D. 1000. *In* R.D. Fogelson (editor), *Southeast volume, Smithsonian Handbook of North American Indians*: 115–127. Washington, DC: Smithsonian Institution Press.
- Jefferies, R.W., and B. M. Butler. 1982. The Carrier Mills archaeological project: human adaptation in the Saline Valley, Illinois I, II. Center for Archaeological Investigations Research Paper 33. Carbondale: Southern Illinois University.
- Jefferies, R.W., V.D. Thompson, and G.R. Milner. 2002. Cypress Creek archaeological project: Archaic adaptive strategies in west central Kentucky. Frankfort: Kentucky Heritage Council.
- Jefferies, R.W., V.D. Thompson, and G. Milner. 2005. Archaic hunter-gatherer landscape use in west-central Kentucky. *Journal of Field Archaeology* 30: 3–23.
- Jefferies, R.W., V.D. Thompson, G.R. Milner, R.M. Bonzani, and T.M. Peres. 2007. Cypress Creek revisited: settlement and subsistence in west-central Kentucky. *In* S.E. Miller, D. Pollack, K. Carstens, and C.R. Moore (editors), *Current archaeological research in Kentucky* 8: 37–76. Frankfort: Kentucky Heritage Council.
- Jenkins, N.J., D.H. Dye, and J.A. Walthall. 1986. Early ceramic development in the Gulf coastal plain. *In* K.B. Farnsworth and T.E. Emerson (editors), *Early Woodland archaeology*: 546–563. Kampsville Seminars in Archeology 2. Kampsville, IL: Center for American Archeology Press.
- Jennings, J.D. 1957. Danger Cave. University of Utah Anthropological Papers 27.
- Jeter, M.D., J.C. Rose, G.I. Williams, Jr., and A.M. Harmon. 1989. Archeology and bioarcheology of the lower Mississippi Valley and trans-Mississippi south in Arkansas and Louisiana. Fayetteville: Arkansas Archeological Survey.
- Johnson, J.K. 1994. Prehistoric exchange in the southeast. *In* T.G. Baugh and J.E. Ericson (editors), *Prehistoric exchange systems in North America*: 99–125. New York: Plenum.
- Johnson, J.K. 2000. Beads, microdrills, bifaces, and blades from Watson Brake. *Southeastern Archaeology* 19 (2): 95–104.
- Johnson, J.K., and S.O. Brookes. 1989. Benton points, turkey tails and cache blades: Middle Archaic exchange in the southeast. *Southeastern Archaeology* 8: 134–145.
- Johnson, L.L., and M. Stright. 1991. Paleoshorelines and prehistory: an investigation of method. Boca Raton: CRC Press.
- Johnson, S.A., H.O. Hillestad, S.F. Shanholtzer, and G.F. Shanholtzer. 1974. An ecological survey of the coastal region of Georgia. Washington, DC: National Park Service Scientific Monograph Series 3.
- Johnstone, E., M.G. Macklin, and J. Lewin. 2006. The development and application of a database of radiocarbon-dated Holocene fluvial deposit in Great Britain. *Catena* 66: 14–23.
- Keel, F.J., Jr. 1990. A comparison of subsistence strategies in coastal and inland sites, South Florida. Master's thesis, Department of Anthropology, Florida State University, Tallahassee.
- Kellogg, D.C. 1994. Why did they choose to live here? Ceramic period settlement in the Boothbay region of Maine? *Northeast Anthropology* 48: 25–60.
- Kelly, L.S. 2001. A case of ritual feasting at the Cahokia site. *In* M. Dietler and B. Hayden (editors), *Feasts: archaeological and ethnographic perspectives on food, politics, and power*: 334–367. Washington, DC: Smithsonian Institution Press.
- Kelly, R. 1985. *The Nuer conquest: the structure and development of an expansionist system*. Ann Arbor: University of Michigan Press.
- Kelly, R. 1993. *Constructing inequality: the fabrication of a hierarchy of virtue among the Etoro*. Ann Arbor: University of Michigan Press.
- Kelly, R.L. 1980. Hunter-gatherer settlement systems. Master's thesis, University of New Mexico, Albuquerque.
- Kelly, R.L. 1983. Hunter-gatherer mobility strategies. *Journal of Anthropological Research* 39: 277–306.
- Kelly, R.L. 1995. *The foraging spectrum: diversity in hunter-gatherer lifeways*. Washington, DC: Smithsonian Institution Press.
- Kennett, D.J. 2005. *The island Chumash: behavior ecology of a maritime society*. Berkeley: University of California Press.
- Kidder, T.R. 1986. Final report on archaeological test excavations in the central Boeuf Basin, Louisiana, 1985. *Bulletin* 10. Lower

- Mississippi Survey, Peabody Museum. Cambridge, MA: Harvard University.
- Kidder, T.R. 1991. New directions in Poverty Point settlement archaeology: An example from northeast Louisiana. *In* K.M. Byrd (editor), *Poverty Point culture: its local manifestations, subsistence practices, and trade networks*: 27–53. Baton Rouge: Louisiana State University, Department of Geography and Anthropology.
- Kidder, T.R. 2002a. Mapping Poverty Point. *American Antiquity* 67: 89–102.
- Kidder, T.R. 2002b. Woodland period archaeology of the lower Mississippi Valley. *In* D.G. Anderson and R.C. Mainfort, Jr. (editors), *The Woodland Southeast*: 66–90. Tuscaloosa: University of Alabama Press.
- Kidder, T.R. 2004. Plazas as architecture: an example from the Raffman site, northeast Louisiana. *American Antiquity* 69: 514–532.
- Kidder, T.R. 2006. Climate change and the Archaic to Woodland transition (3000–2600 cal B.P.) in the Mississippi River basin. *American Antiquity* 71: 195–231.
- Kidder, T.R. In press a. Transforming hunter-gatherer history at Poverty Point. *In* K. E. Sassaman and D. H. Holley, Jr. (editors), *Hunter-gatherer archaeology as historical process*. Tucson, AZ: Amerind Foundation and University of Arizona Press.
- Kidder, T.R. In press b. Hunter-gatherer ritual and complexity: new evidence from Poverty Point, Louisiana. *In* S. Alt (editor), *Confounding categories and conceptualizing complexities*. Salt Lake City: University of Utah Press.
- Kidder, T.R., K.A. Adelsberger, L.J. Arco, and T.M. Schilling. 2008a. Basin-scale reconstruction of the geological context of human settlement: An example from northeast Louisiana, USA. *Quaternary Science Reviews* 27: 1255–1270.
- Kidder, T.R., A. Ortmann, and T. Allen. 2004. Testing mounds B and E at Poverty Point. *Southeastern Archaeology* 23: 98–113.
- Kidder, T.R., A.L. Ortmann, and L.J. Arco. 2008b. Poverty Point and the archaeology of singularity. *SAA Archaeological Record* 8 (5): 9–12.
- Kidder, T. R., L. Roe, and T. M. Schilling. In press. Early Woodland settlement in the upper Tensas Basin, northeast Louisiana. *Southeastern Archaeology* 28.
- Kidder, T.R., and K.E. Sassaman. 2009. The view from the Southeast. *In* T.E. Emerson, D.L. McElrath, and A.C. Fortier (editors), *Archaic societies: diversity and complexity across the midcontinent*: 667–694. New York: SUNY Press.
- Kidder, T. R., et al. 2009. Poverty Point Mound A: final report of the 2005 and 2006 Field Seasons. Baton Rouge: Louisiana Division of Archaeology and the Louisiana Archaeological Survey and Antiquities Commission.
- King, J.E. 1980. Palynological Studies of Big Lake, Arkansas. *In* D.F. Morse and P.A. Morse (editors), *Zebree archaeological project: excavation, data interpretation, and report on the Zebree homestead site*, Mississippi County, Arkansas: 4-1 to 4-12. Memphis, TN: Arkansas Archeological Survey Final Report, Contract DACW 66-76-C-0006, submitted to the Memphis District, U.S. Army Corps of Engineers.
- Knight, V.J., and V.P. Steponaitis. 1998. A new history of Moundville. *In* V.J. Knight and V.P. Steponaitis (editors), *Archaeology of the Moundville chiefdom*: 1–25. Washington, DC: Smithsonian Institution Press.
- Knoblock, B.W. 1939. *Banner-stones of the North American Indian*. Lagrange, IL: self-published by author.
- Kowalewski, S.A. 1995. Large-scale ecology in aboriginal eastern North America. *In* M.S. Nassaney and K.E. Sassaman (editors), *Native American interactions: multiscale analyses and interpretations in the Eastern Woodlands*: 147–173. Knoxville: University of Tennessee Press.
- Kowalewski, S.A. 2004. The new past: from region to macroregion. *Journal of Social Evolution and History* 3: 81–105.
- Kratt, H.J., Jr. 2005. *The Lewis Camp mound (8JE182), Jefferson County, Florida*. Master's thesis, Department of Anthropology, Florida State University, Tallahassee.
- Kristiansen, S.M., et al. 2003. Dating of prehistoric burial mounds by ¹⁴C analysis of soil organic matter fractions. *Radiocarbon* 45 (1): 101–112.
- Kroeber, A.L. 1939. *Cultural and natural areas of native North America*. Berkeley: University of California Press.
- Lafferty, R.H. 1994. Prehistoric exchange in the lower Mississippi valley. *In* T.G. Baugh and J.E. Ericson (editors), *Prehistoric exchange systems in North America*: 177–213. New

- York: Plenum Press.
- Larsen, C.S. 1982. The anthropology of St. Catherines Island: 3. Prehistoric human adaptation. *Anthropological Papers of the American Museum of Natural History* 57 (3): 155–270. [<http://hdl.handle.net/2246/306>]
- Larsen, C.S. 1990. The archaeology of mission Santa Catalina de Guale: 2. Biocultural interpretations of a population in transition. *Anthropological Papers of the American Museum of Natural History* 68. [<http://hdl.handle.net/2246/252>]
- Larsen, C.S. 2001. Bioarchaeology of Spanish Florida. In C.S. Larsen (editor), *Bioarchaeology of Spanish Florida: the impact of colonialism: 22–51*. Gainesville: University Press of Florida.
- Larsen, C.S., and D.H. Thomas. 1982. The anthropology of St. Catherines Island: 4. The St. Catherines period mortuary complex. *Anthropological Papers of the American Museum of Natural History* 57 (4): 271–342. [<http://hdl.handle.net/2246/306>]
- Larson, L.R. 1958. Cultural relationships between the northern St. Johns area and the Georgia coast. *Florida Anthropologist* 11 (1): 11–22.
- Lasley, S.E. 1983. Particle induced x-ray emissions (PIXE): analysis of trade items from Poverty Point, Louisiana. Senior honor's thesis, University of Southwestern Louisiana, Lafayette.
- Laxson, D.D. 1962. Excavation in Dade and Broward counties: 1959–1961. *Florida Anthropologist* 15 (1): 1–10.
- Laxson, D.D. 1970. Seven sawgrass middens in Dade and Broward counties, Florida. *Florida Anthropologist* 23 (4): 151–158.
- Lazarus, W.C. 1965. Effects of land subsidence and sea level changes on elevation of archaeological sites on the Florida Gulf Coast. *Florida Anthropologist* 18 (1): 40–48.
- Lee, A.R., J.G. Beriault, W. Buschelman, and J. Belknap. 1993. A small site—Mulberry Midden, 8Cr697—contributes to knowledge of Transition period. *Florida Anthropologist* 46 (1): 43–52.
- Lee, A.R., et al. 1998. Heineken Hammock, 8CR231: a Late Archaic corridor site in Collier County. *Florida Anthropologist* 51 (4): 223–240.
- Leigh, D.S. 1998. Evaluating artifact burial by eolian versus bioturbation processes, South Carolina Sandhills, USA. *Geoarchaeology* 13: 309–330.
- Lekson, S.H. 1999. *The Chaco meridian: centers of political power in the ancient southwest*. Lanham, MD: AltaMira.
- Lewis, R.B. 2000. Sea level rise and subsidence effects on Gulf Coast archaeological site distributions. *American Antiquity* 65: 525–541.
- Li, Y.-X., Z. Yu, and K.P. Kodama 2007. Sensitive moisture response to Holocene millennial-scale climate variations in the mid-Atlantic region, USA. *Holocene* 17 (1): 3–8.
- Li, Y.Y., K.J. Willis, L.P. Zhou, and H.T. Cui. 2006. The impact of ancient civilization on the northeastern Chinese landscape: palaeoecological evidence from the western Liaohe River Basin, Inner Mongolia. *Holocene* 16 (8): 1109–1121.
- Linsley, D.M. 1993. *Depositional environments of St. Catherines Island: their relationship to late Quaternary sea-level change and application to late Paleozoic cyclic stratigraphy*. Ph.D. dissertation, University of Pittsburgh.
- Little, K.J. 2003. Late Holocene climate fluctuations and culture change in southeastern North America. *Southeastern Archaeology* 22: 9–32.
- Littleton, J., and H. Allen. 2007. Hunter-gatherer burials and the creation of persistent places in southeastern Australia. *Journal of Anthropological Archaeology* 26: 283–298.
- Liu, K.-b. 2004. Paleotempestology: principles, methods, and examples from Gulf Coast sediments. In R.J. Murnane and K.-b. Liu (editors), *Hurricanes and typhoons: past, present, and future: 13–57*. New York: Columbia University Press.
- Liu, K.-b., and M.L. Fearn. 2000. Reconstruction of prehistoric landfall frequencies of catastrophic hurricanes in northwestern Florida from lake sediment records. *Quaternary Research* 54: 238–245.
- Livingood, P. 2009. Down the river and through the woods: cost-distance calculations of travel time in the Mississippian. Paper presented at the 74th Annual Meeting of Society for American Archaeology, Atlanta, Georgia.
- Livingston, R.J., R.L. Howell, X. Niu, F.G. Lewis III, and G.C. Woodsum. 1999. Recovery of oyster reefs (*Crassostrea virginica*) in a gulf estuary following disturbance by two hurricanes. *Bulletin of Marine Science* 64: 465–483.

- Luer, G.M. 1989. Calusa canals in southwestern Florida: routes of tribute and exchange. *Florida Anthropologist* 42: 89–130.
- Luer, G.M. 1998. The Naples Canal: a deep Indian canoe canal in southwestern Florida. *Florida Anthropologist* 51 (1): 25–36.
- Luer, G.M., and L.M. Archibald. 1988. An assessment of known archaeological sites in Charlotte Harbor State Reserve. Miami, FL: Archaeological and Historical Conservancy, Inc.
- MacArthur, R.F., and E.O. Wilson. 1967. The theory of island biogeography. Princeton, NJ: Princeton University Press.
- Maceina, M.J., D.N. Hata, T.L. Linton, and A.M. Landry, Jr. 1987. Age and growth analysis of spotted seatrout from Galveston Bay, Texas. *Transactions of the American Fisheries Society* 116 (1): 54–59.
- Maher, B.A., and M. Hu. 2006. A high-resolution record of Holocene rainfall variation from the western Chinese loess plateau: antiphase behaviour of the Africa/Indian and east Asian summer monsoons. *Holocene* 16: 309–319.
- Mahood, R.K., C.D. Harris, J.L. Music, Jr., and B.A. Palmer. 1974. Survey of the fisheries resources in Georgia's estuarine and inshore ocean waters, part I: southern section, St. Andrews Sound and St. Simons Sound estuaries. Georgia Department of Natural Resources, Game and Fish Division, Coastal Fisheries Office, Contribution Series 22.
- Mainfort, R.C., Jr. 1986. Pre- and early Marksville ceramics and chronology in the mid-South: a perspective from Pinson Mounds. In D.H. Dye and R.C. Brister (editors), *The Tchula period in the mid-South and lower Mississippi Valley*: 52–62. Archaeological Report 17. Jackson: Mississippi Department of Archives and History.
- Mainfort, R.C., Jr., and J.S. Chapman. 1994. West Tennessee ceramic typology: part I, Tchula and Middle Woodland periods. *Tennessee Anthropologist* 19: 148–179.
- Malinowski, B. 1922. *Argonauts of the western Pacific*. London: Routledge.
- Marcus, J. 1998. The peaks and valleys of Archaic states an extension of the dynamic model. In G. Feinman and J. Marcus (editors), *Archaic states*: 59–94. Santa Fe, New Mexico: School of American Research Press.
- Marcus, J., and K.V. Flannery. 1996. Zapotec civilization: how urban society evolved in Mexico's Oaxaca Valley. London: Thames and Hudson.
- Marquardt, W.H. 1984. The Josslyn Island mound and its role in the investigation of southwest Florida's past. Department of Anthropology, Miscellaneous Project Report Series 22. Gainesville: Florida State Museum.
- Marquardt, W.H. 1985. Complexity and scale in the study of fisher-gatherer-hunters: an example from the eastern United States. In T.D. Price and J.A. Brown (editors), *Prehistoric hunter-gatherers: the emergence of cultural complexity*: 59–98. Orlando, FL: Academic Press.
- Marquardt, W.H. 1987. The Calusa social formation in protohistoric south Florida. In T.C. Patterson and C.W. Gailey (editors), *Power relations and state formation*: 98–116. Washington, DC: American Anthropological Association.
- Marquardt, W.H. 1988. Politics and production among the Calusa of south Florida. In T. Ingold, D. Riches, and J. Woodburn (editors), *Hunters and gatherers, vol. 1: history, evolution, and social change in hunting and gathering societies*: 161–188. London: Berg Publishers.
- Marquardt, W.H. 1988. Politics and production among the Calusa of south Florida. In T.T. Ingold, D. Riches, and J. Woodburn (editors), *History, evolution and social change*: 161–188. New York: Oxford.
- Marquardt, W.H. 1991. Introduction. In *Missions to the Calusa*, by J. H. Hann: xv–xix. Gainesville: University of Florida Press.
- Marquardt, W.H. (editor). 1992a. *Culture and environment in the domain of the Calusa*. Monograph 1, Institute of Archaeology and Paleoenvironmental Studies. Gainesville: University of Florida.
- Marquardt, W.H. 1992b. Dialectical archaeology. In M. Schiffer (editor), *Archaeological method and theory 4*: 101–140. Tucson: University of Arizona Press.
- Marquardt, W.H. 2008. Epistemological considerations in shell mound interpretation. Paper presented November 12, 2008, at the 65th Annual Southeastern Archaeological Conference, Charlotte, North Carolina.
- Marquardt, W.H., and C.L. Crumley. 1987. Theoretical issues in the analysis of spatial patterning. In C.L. Crumley and W.H. Marquardt (editors), *Regional dynamics: Burgundian*

- landscapes in historical perspective: 1–18. San Diego: Academic Press.
- Marquardt, W.H., and K.J. Walker. 2001. Pineland: a coastal wet site in southwest Florida. *In* B.A. Purdy (editor), *Enduring records: the environmental and cultural heritage of wetlands*: 48–60. Oakville, CT: Oxbow Books.
- Marquardt, W.H., and K.J. Walker. In prep. An introduction to the Pineland site complex and its environmental and cultural contexts. *In* *The archaeology of Pineland: a coastal southwest Florida Site Complex, A.D. 50–1710*. Institute of Archaeology and Paleoenvironmental Studies Monograph 4. Gainesville: University of Florida.
- Marquardt, W.H., and P.J. Watson. 1983. The shellmound Archaic of western Kentucky. *In* J. Philips and J. Brown (editors), *Archaic hunters and gatherers in the American Midwest*: 323–339. New York: Academic Press.
- Marquardt, W.H., and P.J. Watson (editors). 2005a. *Archaeology of the middle Green River region, Kentucky*. Institute of Archaeology and Paleoenvironmental Studies Monograph 5. Gainesville: University Press of Florida.
- Marquardt, W.H., and P.J. Watson. 2005b. The Green River Shell Mound Archaic: conclusions. *In* W.H. Marquardt and P.J. Watson (editors), *Archaeology of the middle Green River region, Kentucky*: 629–647. Institute of Archaeology and Paleoenvironmental Studies Monograph 5. Gainesville: University Press of Florida.
- Marquardt, W.H., and P.J. Watson. 2005c. The shell mound archaeological project: chronology of fieldwork. *In* W.H. Marquardt and P.J. Watson (editors), *Archaeology of the middle Green River region, Kentucky*: 13–17. Institute of Archaeology and Paleoenvironmental Studies Monograph 5. Gainesville: University Press of Florida.
- Marquardt, W.H., and P.J. Watson. 2005d. SMAP investigations at the Carlston Annis site, 15Bt5. *In* W.H. Marquardt and P.J. Watson (editors), *Archaeology of the middle Green River region, Kentucky*: 87–120. Institute of Archaeology and Paleoenvironmental Studies Monograph 5. Gainesville: University Press of Florida.
- Marquardt, W.H., and P.J. Watson. 2005e. Regional survey and testing. *In* W.H. Marquardt and P.J. Watson (editors), *Archaeology of the middle Green River region, Kentucky*: 41–70. Institute of Archaeology and Paleoenvironmental Studies Monograph 5. Gainesville: University of Florida.
- Marrinan, R.A. 1973. The cultural ecology of fiber-tempered ceramic sites: South Carolina and Georgia. Master's thesis, Department of Anthropology, Tulane University, New Orleans.
- Marrinan, R.A. 1975. Molluscs, ceramics, and sedentism: the Late Archaic period on the Georgia Coast. Ph.D. dissertation, Department of Anthropology, University of Florida, Gainesville.
- Marrinan, R.A. 1976. Assessment of subsistence strategies as evidenced by shell ring sites. *Southeastern Archaeological Conference Bulletin* 19: 61–63.
- Marrinan, R.A. 1990. Subsistence strategies in Late Archaic period shell ring sites, Georgia, U.S.A. Paper presented at the International Conference on Archaeozoology. Washington, DC: Smithsonian Institution.
- Marrinan, R.A. 2005. Early Mississippian faunal remains from Shields Mound (8Du12). *Florida Anthropologist* 58 (3–4): 175–210.
- Martin, C., and W. Johnson. 1995. Variation in radiocarbon ages of soil organic matter fractions from late Quaternary buried soils. *Quaternary Research* 43: 232–237.
- Mason, J.A., and M.S. Kuzila. 2007. Episodic Holocene loess deposition in central Nebraska. *Quaternary International* 67: 119–131.
- Masson, M.A., R.S. Carr, and D.S. Goldman. 1988. The Taylor's Head site (8BD74): sampling a prehistoric midden on an Everglades tree island. *Florida Anthropologist* 41 (3): 336–350.
- Mathis, M.A. 1994. Broad reach: the truth about what we've missed. *In* D.G. Anderson and V. Horak (editors), *Site destruction in Georgia and the Carolina*: 39–48. Readings in Archeological Resource Protection Series 2. Atlanta, GA: Interagency Archeological Services Division, National Park Service.
- Mayewski, P.A. 2009. Ancient American paleoclimate from ice cores: a framework for archaeological interpretations. *In* D.H. Sandweiss and J. Quilter (editors), *El Niño, catastrophism, and culture change in ancient America*. Washington, DC: Dumbarton Oaks.
- Mayewski, P.A., et al. 2004. Holocene climate

- variability. *Quaternary Research* 62: 243–255.
- McFadgen, B.G., F.R. Knox, and R.L. Cole. 1994. Radiocarbon calibration curve variations and their implications for the interpretation of New Zealand prehistory. *Radiocarbon* 36 (2): 221–236.
- McGahey, S.O. 2000. Mississippi projectile point guide. Archaeological Report 31. Jackson: Mississippi Department of Archives and History.
- McGimsey, C.R., and J. van der Koogh. 2001. Louisiana's archaeological radiometric database. Special Publication 3. Baton Rouge: Louisiana Archaeological Society.
- McKinley, W. 1873. Mounds in Georgia. Annual Report of the Board of Regents of the Smithsonian Institution (for the Year 1872) 22: 422–428.
- McMichael, A.E. 1982. A cultural resource assessment of Horrs Island, Collier County, Florida. Ph.D. dissertation, Gainesville: University of Florida.
- McNutt, C. H. 2008. The Benton phenomenon and middle archaic chronology in adjacent portions of Tennessee, Mississippi, and Alabama. *Southeastern Archaeology* 27:45–60.
- Meeks, S.C. 2000. The use and function of Late Middle Archaic projectile points in the midsouth. Report of Investigations 77. Moundville: Office of Archaeological Services University of Alabama Museums.
- Meeks, S.C. 2005. Late prehistoric disturbance regimes in the southeastern United States: paleoecological analysis of the Shiloh Mound G pond core in regional context. Paper presented at the 2005 Southeastern Archaeological Conference, Columbia, South Carolina.
- Meeks, S.C., and D.G. Anderson. 2007. Large scale late prehistoric abandonments in the southeastern United States: examining Mississippian demographic shifts from an ecological perspective. Paper presented at the 72nd Annual Meeting of the Society for American Archaeology, Austin, Texas.
- Memory, M., J. Lammers, and W. Stanton. 2000. A second progress report (1998–1999) on the Wacissa River survey, including historical notes, Aucilla Wildlife Management Area, Jefferson County, Florida. CARL Archaeological Survey. Report on file. Tallahassee, FL: Bureau of Archaeological Research, Division of Historical Resources.
- Miao, X., J.A. Mason, W.C. Johnson, and H. Wang. 2007. High-resolution proxy record of Holocene climate from a loess section in southwestern Nebraska, USA. *Palaeogeography, Palaeoclimatology, Palaeoecology* 245: 368–381.
- Michie, J.L. 1979. The Bass Pond dam site, intensive archaeological testing at a formative period base camp on Kiawah Island, South Carolina. Research Manuscript Series 154. Columbia, SC: Institute of Archaeology and Anthropology University of South Carolina.
- Michie, J.L. 1990. Bioturbation and gravity as a potential site formation process: the open air site 28GE261, Georgetown County, South Carolina. *South Carolina Antiquities* 22: 27–46.
- Michie, J.L. 2000. The Daws Island Shell Midden: cultural diversity on the lower South Carolina coast during the Late Archaic period. In C. Judge and C. Steen (editors), *The Daw's Island volume: a tribute to the career of James L. Michie*. *South Carolina Antiquities* 32 (1 & 2).
- Mikell, G.A., and R. Saunders. 2007. Coastal Archaic sites in southern Walton County, Florida: implications concerning estuarine adaptation on the northern Gulf Coast. *Southeastern Archaeology* 26 (2): 169–195.
- Mikell, G.L., J. Campbell, and P. M. Thomas. 1989. Archaeological site recording and testing at Tyndall Air Force Base, Florida. New World Research Report of Investigations 183. Submitted to the National Park Service, Southeast Region (CX5000-8-0029) for Tyndall Air Force Base by New World Research, Ft. Walton, Florida.
- Milanich, J.T. 1994. *Archaeology of precolumbian Florida*. Gainesville: University Press of Florida.
- Milanich, J.T., and C.H. Fairbanks. 1980. *Florida archaeology*. Orlando, FL: Academic Press.
- Miller, J.J. 1998. *An environmental history of northeast Florida*. Gainesville: University Press of Florida.
- Mills, B.J. 2002. Recent research on Chaco: changing views on economy, ritual and society. *Journal of Archaeological Research* 10: 65–117.
- Milner, G.R. 2004a. *The mound builder ancient peoples of eastern North America*. London: Thames and Hudson.

- Milner, G.R. 2004b. Old mounds, ancient hunter-gatherers, and modern archaeologists. *In* J.L. Gibson and P.J. Carr (editors), *Signs of power: the rise of complexity in the southeast*: 300–315. Tuscaloosa: University of Alabama Press.
- Milner, G.R., and R. Jefferies. 1998. The Read Archaic shell midden in Kentucky. *Southeastern Archaeology* 17: 119–132.
- Milner, G.R., D.G. Anderson, and M.T. Smith. 2001. The distribution of Eastern Woodlands peoples at the prehistoric and historic interface. *In* D.S. Brose, C.W. Cowan, and R.C. Mainfort (editors), *Societies in eclipse: archaeology of the Eastern Woodland Indians, A.D. 1400–1700*: 9–18. Washington, DC: Smithsonian Institution Press.
- Moore, C.B. 1892–94. Certain shell heaps of the St. John's River, Florida, hitherto unexplored. Reprint. *American Naturalist*, November 1892: 912–922; January 1893: 8–13; February 1893: 113–117; July 1893: 605–624; August 1893: 709–733; January 1894: 15–26.
- Moore, C.B. 1897. Certain aboriginal mounds of the Georgia Coast. *Journal of the Academy of Natural Science of Philadelphia* 11 (1): 4–138.
- Moore, C.B. 1905. Miscellaneous investigation in Florida. *Academy of Natural Sciences Journal* 13: 299–325.
- Morey, D., and G.M. Crothers. 1998. Clearing up clouded waters: palaeoenvironmental analysis of freshwater mussel assemblages from the Green River shell middens, western Kentucky. *Journal of Archaeological Science* 25: 907–926.
- Moros, M., K.G. Jensen, and A. Kuijpers. 2006. Mid- to late-Holocene hydrological and climatic variability in Disko Bugt, central west Greenland. *Holocene* 16: 357–367.
- Morse, D.F. 1977. The penetration of northeast Arkansas by Mississippian culture. *In* C.E. Cleland (editor), *For the director: research essays in honor of James B. Griffin*: 186–211. *Anthropological Papers* 61. Ann Arbor: University of Michigan Museum of Anthropology.
- Morse, D.F. 1980. Environmental problems. *In* D.F. Morse and P.A. Morse (editors), *Zebree archaeological project: excavation, data interpretation, and report on the Zebree homestead site, Mississippi County, Arkansas*: 4-1 to 4-12. Memphis, TN: Arkansas Archeological Survey Final Report, Contract DACW 66-76-C-0006, submitted to the Memphis District, U.S. Army Corps of Engineers.
- Morse, D.F., and P.A. Morse (editors). 1980. Zebree archaeological project: excavation, data interpretation, and report on the Zebree homestead site, Mississippi County, Arkansas. Memphis, TN: Arkansas Archeological Survey Final Report, Contract DACW 66-76-C-0006, submitted to the Memphis District, U.S. Army Corps of Engineers.
- Morton, R.A., et al. 2000. Responses of stable bay-margin and barrier-island systems to Holocene sea-level highstands, western Gulf of Mexico. *Journal of Sedimentary Research* 70 (3): 478–490.
- Mowers, B. 1972. Concretion associated with Glades prehistoric sites. *Florida Anthropologist* 25 (3): 129–131.
- Mowers, B., and W.B. Williams. 1972. The Peace Camp site, Broward County, Florida. *Florida Anthropologist* 25 (1): 1–20.
- Mowers, B., and W.B. Williams. 1974. Cagles Hammock, Coral Springs site no. 5. *Florida Anthropologist* 27 (4): 171–179.
- Murray, T. 1999. A return to the “Pompeii premise.” *In* T. Murray (editor), *Time and archaeology*: 1–8. London: One World Archaeology.
- National Research Council. 2002. *Abrupt climate change: inevitable surprises*. Committee on Abrupt Climate Change, Ocean Studies Board, Polar Research Board, Board on Atmospheric Sciences, and Climate Division on Earth and Life Studies, National Research Council. Washington, DC: National Academy Press.
- Nassaney, M.S., and K. Pyle. 1999. The adoption of the bow and arrow in eastern North America: a view from central Arkansas. *American Antiquity* 64 (2): 243–263.
- Neitzel, J.E., and D.G. Anderson. 1999. Multiscalar analyses of middle-range societies: comparing the late prehistoric southwest and southeast. *In* J.E. Neitzel (editor), *Great towns and regional polities in the prehistoric American southwest and southeast*: 243–254. *Amerind Foundation New World Studies Series* 3. Albuquerque: University of New Mexico Press.
- Neuman, R.W. 1984. *An introduction to Louisiana archaeology*. 1st ed. Baton Rouge: Louisiana State University Press.

- Neusius, S.W., and G.T. Gross. 2002. Abrupt climate change: inevitable surprises. Washington, DC: National Academy Press.
- Neusius, S.W., and G.T. Gross. 2007. Seeking our past: an introduction to North American archaeology. Oxford: Oxford University Press.
- Nieland, D.L., R.G. Thomas, and C.A. Wilson. 2002. Age, growth, and reproduction of spotted seatrout in Barataria Bay, Louisiana. *Transactions of the American Fisheries Society* 131 (2): 245–259.
- Nijboer, A.J., J. van der Plicht, A.M. Bietti-Sestieri, and A. de Santis. 2001. A high chronology for the early Iron Age in central Italy. *Paleohistoria* 41/42 (1999–2000): 163–176.
- O'Brien, D.M., and D.H. Thomas. 2008. The molluscan incremental sequence. *In* D.H. Thomas, *Native American landscapes of St. Catherines Island, Georgia*. *Anthropological Papers of the American Museum of Natural History*, 88: 475–497. [<http://hdl.handle.net/2246/5955>]
- O'Donoghue, J. 2008. Living in the low country: modeling archaeological site location in the Francis Marion National Forest, South Carolina. Unpublished master's thesis, Department of Anthropology, University of Tennessee, Knoxville.
- O'Donoghue, J., and S. Meeks. 2007. Exchange practices and the formulation of group identity: examining the Late Archaic social landscape in the Tennessee River Valley. Paper presented at the 4th Annual Meeting of the Southeastern Archaeological Conference, Knoxville, Tennessee.
- Oertel, G.F. 1975. Post-pleistocene island and inlet adjustment along the Georgia coast. *Journal of Sedimentary Petrology* 45 150–159.
- Oertel, G.F. 1979. Barrier island development during the Holocene regression, southeastern United States. *In* S.P. Leatherman (editor), *Barrier islands from the Gulf of St. Lawrence to the Gulf of Mexico*: 273–290. New York: Academic Press.
- Oliver, B.L. 1981. The piedmont tradition: refinement of the Savannah River stemmed point type. Master's thesis, Department of Anthropology, University of North Carolina, Chapel Hill.
- Ortmann, A.L., and T.R. Kidder. 2004. Petrographic thin-section analysis of Poverty Point pottery. *In* R. Saunders and C.T. Hays (editors), *Early pottery: technology, function, style, and interaction in the lower Southeast*: 193–209. Tuscaloosa: University of Alabama Press.
- Otvos, E. 2002. Letter to the editor: discussion of "Prehistoric landfall frequencies of catastrophic hurricanes. . ." (Liu and Fearn, 2000). *Quaternary Research* 57: 425–428.
- Otto, M.P., and B. G. Redmond (editors). 2008. *Transitions: Archaic and Early Woodland research in the Ohio Country*. Athens: Ohio University Press.
- Pace, R.E. 1984. Preliminary report of archaeological reconnaissance, East Carroll Parish, Louisiana. ms on file, Poverty Point State Historic site, Epps, Louisiana.
- Parkinson, W. 2002. Integration, interaction, and tribal 'cycling': the transition to the copper Aegean the great Hungarian plain. *In* W. Parkinson (editor), *The archaeology of tribal societies*: 391–438. Ann Arbor, MI: International Monographs in Prehistory.
- Patten, B. 2007a. Taking measure of the Maya world. ms on file with author, Lakewood, Colorado.
- Patten, B. 2007b. Graphical astronomy at Poverty Point. Internet resource (<http://www.stonedagger.com/PovertyPoint>), accessed February 16, 2010.
- Patton, R.B. 2000. The Charlotte Harbor mounds survey, phase II. Report of investigations. Gainesville: Florida Museum of Natural History.
- Patton, R.B. 2001. Spatial structure and process of nonagricultural production. Ph.D. dissertation, University of Florida, Gainesville.
- Pauketat, T.R. (editor). 2001. *The archaeology of traditions: agency and history before and after Columbus*. Gainesville: University Press of Florida.
- Pauketat, T.R. 2004. *Ancient Cahokia and the Mississippians*. Cambridge: Cambridge University Press.
- Pauketat, T.R. 2007. *Chiefdoms and other archaeological delusions*. Lanham, MD: AltaMira.
- Pauketat, T.R., and T.E. Emerson (editors). 1997. *Cahokia: domination and ideology in the Mississippian world*. Lincoln: University of Nebraska Press.
- Peacock, E. 2002. Shellfish use during the Woodland period in the middle south. *In* D.G.

- Anderson and R.C. Mainfort (editors), *The Woodland Southeast: 444–460*. Tuscaloosa: University of Alabama Press.
- Peck, V.L., et al. 2007. The relationship of Heinrich events and their European precursors over the past 60 ka BP: a multi-proxy ice-rafted debris provenance study in the North East Atlantic. *Quaternary Science Reviews* 26: 862–875.
- Peiser, B.J., T. Palmer, and M.E. Bailey (editors), *Natural catastrophes during Bronze Age civilizations: 162–168*. BAR International Series 728. Oxford: Archaeopress.
- Phillips, P. 1970. Archaeological survey in the lower Yazoo Basin, Mississippi, 1949–1955. *Papers of the Peabody Museum of Archaeology and Ethnology* 60. Cambridge: Harvard University.
- Phillips, P., J.A. Ford, and J.B. Griffin. 1951. Archaeological survey in the lower Mississippi Valley, 1940–1947. *Papers of the Peabody Museum of Archaeology and Ethnology* 25. Cambridge: Harvard University.
- Piatek, B.J. 1994. *The Tomoka mound complex in northeast Florida*. Tuscaloosa: University of Alabama Press.
- Pilkey, O.H. 2003. *A celebration of the world's barrier island*. New York: Columbia University Press.
- Pirazzoli, P.A. and Pleut, J. 1991. World atlas of Holocene sea-level changes. *Elsevier Oceanography Series* 58: 1–280.
- Plunkett, G. 2006. Tephra-linked peat humification records from Irish ombrotrophic bogs question nature of solar forcing at 850 cal. yr B.C. *Journal of Quaternary Science* 21: 9–16.
- Powell, M.L. 1996. Health and disease in the Green River Archaic. *In* K.C. Carstens and P.J. Watson (editors), *Of caves and shell mounds: 119–131*. Tuscaloosa: University of Alabama Press.
- Price, T., and J. Brown (editors). 1985. *Prehistoric hunter-gatherers: The emergence of cultural complexity*. Orlando: Academic Press.
- Purdue, J.R. 1980. Climatic variation of some mammals during the Holocene in Missouri. *Quaternary Research* 13: 242–258.
- Purdue, J.R., and E.J. Reitz. 1993. Decrease in body size of white-tailed deer (*Odocoileus virginianus*) during the late Holocene of South Carolina and Georgia. *In* R.A. Martin and A.D. Barnosky (editors), *Morphological change in quaternary mammals of North America: 281–298*. Cambridge: Cambridge University Press.
- Pursell, C.C. 2004. *Geographic distribution and symbolism of colored mound architecture in the Mississippian southeast*. Unpublished master's thesis, Department of Anthropology, Southern Illinois University, Carbondale.
- Quinn, R.L., B.D. Tucker, and J. Krigbaum. 2008. Diet and mobility in Middle Archaic Florida: stable isotope and faunal data from the Harris Creek archaeological site (8vo24), Tick Island. *Journal of Archaeological Science* 35: 2346–2356.
- Quitmyer, I.R. 2002. *The zooarchaeology of a middle-Holocene archaeological site along the Mitchell River (8WL1278): subsistence, seasonality, and paleoenvironment in the Late Archaic (ca. 5000 B.P.)*. Gainesville: Environmental Archaeology Laboratory, Florida Museum of Natural History.
- Quitmyer, I.R., H.S. Hale, and D.S. Jones. 1985. Paleoseasonality determination based on incremental shell growth in the hard clam, *Mercenaria*, and its implications for the analysis of three southeast Georgia shell middens. *Southeastern Archaeology* 4 (1): 27–40.
- Rafferty, J. 2002. Woodland period settlement patterning in the northern gulf coastal plain of Alabama, Mississippi, and Tennessee. *In* D.G. Anderson and R.C. Mainfort, Jr. (editors), *The Woodland Southeast 204–227*. Tuscaloosa: University of Alabama Press.
- Railey, J.A. 1991. Woodland settlement trends and symbolic architecture in the Kentucky bluegrass. *In* C.B. Stout and C.K. Hensley (editors), *The human landscape in Kentucky's past: 56–77*. Frankfort: Kentucky Heritage Council.
- Railey, J.A. 1996. Woodland cultivators. *In* R.B. Lewis (editor), *Kentucky archaeology: 79–125*. Lexington: University Press of Kentucky.
- Ramenofsky, A.F. 1991. Investigating settlement strategies at Cowpen Slough, a Late Archaic–Poverty Point site in Louisiana. *In* K. Byrd (editor), *The Poverty Point culture: local manifestations, subsistence practices, and trade networks: 156–172*. *Geoscience & Man* 29. Baton Rouge: Louisiana State University.
- Ramenofsky, A.F., and A.M. Mires. 1985. *The archaeology of Cowpen Slough, 16CT147*. Report on file, Baton Rouge: Department of

- Culture, Recreation, and Tourism.
- Randall, A.R. 2007. St. Johns archaeological field school 2005: Hontoon Island State Park. Technical Report 7. Gainesville: Laboratory of Southeastern Archaeology, University of Florida Department of Anthropology.
- Randall, A.R. 2008. Archaic shell mounds of the St. Johns River, Florida. *The SAA Archaeological Record* 8 (5): 13–17.
- Randall, A.R. In prep. Remapping histories: Archaic period community construction along the St. Johns River, Florida. Ph.D. dissertation, Department of Anthropology, University of Florida, Gainesville.
- Randall, A.R., and K.E. Sassaman. 2005. St. Johns archaeological field school 2003–2004: Hontoon Island State Park. Technical Report 6. Gainesville: Laboratory of Southeastern Archaeology, University of Florida Department of Anthropology.
- Reichel-Dolmatoff, G. 1972. The cultural context of early fiber-tempered pottery in northern Colombia. *Florida Anthropologist* 25 (2–3): 1–8.
- Reimer, P.J., et al. 2004. IntCal04 terrestrial radiocarbon age calibration, 0–26 cal kyr BP. *Radiocarbon* 46: 1029–1058.
- Reitz, E.J. 1982. Vertebrate fauna from four coastal Mississippian sites. *Journal of Ethnobiology* 2 (1): 39–61.
- Reitz, E.J. 1988. Evidence for coastal adaptations in Georgia and South Carolina. *Archaeology of Eastern North America* 16: 137–158.
- Reitz, E. 2008. Nonhuman vertebrate remains. In D.H. Thomas, *Native American landscapes of St. Catherines Island, Georgia*. *Anthropological Papers of the American Museum of Natural History*, 88: 615–665. [<http://hdl.handle.net/2246/5955>]
- Reitz, E., and Duke. 2008. Change and stability in vertebrate use between the Irene period and the Mission period: Nonhuman vertebrate remains from Meeting House Field and Fallen Tree. In D.H. Thomas, *Native American landscapes of St. Catherines Island, Georgia*. *Anthropological Papers of the American Museum of Natural History*, 88: 778–798. [<http://hdl.handle.net/2246/5955>]
- Reitz, E.J., and I.R. Quitmyer. 1988. Faunal remains from two coastal Georgia Swift Creek sites. *Southeastern Archaeology* 7 (2): 95–108.
- Reitz, E.J., and E.S. Wing. 2008. *Zooarchaeology*. 2nd ed. Cambridge: Cambridge University Press.
- Reitz, E.J., I.R. Quitmyer, H.S. Hale, S.J. Scudder, and E.S. Wing. 1987. Application of allometry to zooarchaeology. *American Antiquity* 52 (2): 304–317.
- Renfrew, C. 1974. Beyond a subsistence economy: the evolution of prehistoric social organization in prehistoric Europe. In C. B. Moore (editor), *Reconstructing complex societies*: 69–95. *Bulletin Supplement no. 20*. Cambridge, MA: American Schools of Oriental Research.
- Renfrew, C. 2001a. Production and consumption in a sacred economy: The material correlates of high devotional expression at Chaco Canyon. *American Antiquity* 66: 14–25.
- Renfrew, C. 2001b. Commodification and institution in group-oriented and individualizing societies. In W.G. Runciman (editor), *The origins of human institutions*: 93–117. London: British Academy.
- Rice, P.M. 1999. The origins of pottery. *Journal of Archaeological Method and Theory* 6: 1–54.
- Rick, J.W. 1987. Dates as data: an examination of the Peruvian Preceramic radiocarbon record. *American Antiquity* 52 (1): 55–73.
- Riehl, S., and K. Pustovoytov. 2006. Comment on van Geel et al., *Journal of Archaeological Science* 31 (2004) “Climate change and the expansion of the Scythian culture after 850 BC: a hypothesis.” *Journal of Archaeological Science* 33: 143–144.
- Roe, L. 2006. Coles Creek antecedents of Plaquemine mound construction: evidence from the Raffman site. In M. Rees and P. Livingood (editors), *Plaquemine archaeology*: 20–37. Tuscaloosa: University of Alabama Press.
- Rolingson, M.A. 1967. Temporal perspective on the Archaic cultures of the middle Green River region. Ph.D. dissertation, University of Michigan, Ann Arbor.
- Rolland, V.L. 2005. An investigation of St. Johns and Ocmulgee series pottery recovered from the Shields site (8Du12). *Florida Anthropologist* 58 (3–4): 211–237.
- Rollins, H.B., D.H. Sandweiss, and J.C. Rollins. 1990. Mollusks and coastal archaeology: a review. In N.P. Lasca and J. Donahue (editors), *Archaeological geology of North America*. Boulder, CO: Geological Society of America.
- Rosen, A.M. 2007. *Civilizing climate: Social*

- responses to climate changes in the ancient Near East. Lanham, MD: AltaMira.
- Ross, S.W. 1988. Age, growth, and mortality of Atlantic Croaker in North Carolina, with comments on population dynamics. *Transactions of the American Fisheries Society* 117 (4): 461–473.
- Roth, E., D.G. Anderson, M. Sierzchula, and D.F. Morse. 1980. In D.F. Morse and P.A. Morse (editors), *Zebree archaeological project: excavation, data interpretation, and report on the Zebree homestead site, Mississippi County, Arkansas: 7-1 to 7-12*. Memphis, Tennessee: Arkansas Archeological Survey Final Report, Contract DACW 66-76-C-0006, submitted to the Memphis District, U.S. Army Corps of Engineers.
- Russo, M. 1989. Phase III archaeological excavations at Edgewater Landing, Volusia County, Florida. St. Petersburg: Piper Archaeological Research Inc.
- Russo, M. 1991a. Archaic sedentism on the Florida coast: a case study from Horr's Island. Ph.D. dissertation, Department of Anthropology, University of Florida, Gainesville.
- Russo, M. 1991b. A method for the measurement of season and duration of oyster collection: two case studies from the prehistoric southeast United States Coast. *Journal of Archaeological Science* 18: 205–221.
- Russo, M. 1992. 1992 Annual report for management unit 3. Regional Archaeology Program, Department of Sociology/Anthropology, University of Southwestern Louisiana. MS on file, Louisiana Division of Archaeology, Baton Rouge.
- Russo, M. 1994a. A brief introduction to the study of Archaic mounds in the southeast. *Southeastern Archaeology* 13 (2): 89–93.
- Russo, M. 1994b. Why we don't believe in Archaic ceremonial mounds and why we should: the case from Florida. *Southeastern Archaeology* 13 (2): 93–109.
- Russo, M. 1996a. Southeastern Archaic mounds. In K.E. Sassaman and D.G. Anderson (editors), *Archaeology of the mid-Holocene southeast: 259–287*. Gainesville: University Press of Florida.
- Russo, M. 1996b. Southeastern mid-Holocene coastal settlements. In K.E. Sassaman and D.G. Anderson (editors), *Archaeology of the mid-Holocene southeast: 177–199*. Gainesville: University Press of Florida.
- Russo, M. 1998. Measuring sedentism with fauna: Archaic cultures along the southwest Florida coast. In T.R. Rocek and O. Bar-Yosef (editors), *Seasonality and sedentism: archaeological perspectives from Old and New World sites: 143–164*. Cambridge, MA: Harvard University Peabody Museum.
- Russo, M. 2002a. Architectural features at Fig Island. In R. Saunders (editor), *The Fig Island ring complex (38CH42): coastal adaptation and the questions of ring function in the Late Archaic: 85–97*. Columbia, SC: Report prepared for the South Carolina Department of Archives and History, Grant #45-01-16441.
- Russo, M. 2002b. Faunal analysis at Fig Island. In R. Saunders and M. Russo (editors), *The Fig Island ring complex (38CH42): coastal adaptation and the question of ring function in the Late Archaic: 141–153*. Columbia, SC: Report prepared for the South Carolina Department of Archives and History, Grant #45-01-16441.
- Russo, M. 2004a. Notes on South Carolina and Florida shell rings. Internet resource (<http://www.cr.nps.gov/seac/course-of-study/FLvsSCrings.doc>).
- Russo, M. 2004b. Measuring shell rings for social inequality. In J.L. Gibson and P.J. Carr (editors), *Signs of power: the rise of cultural complexity in the southeast: 26–70*. Tuscaloosa: University of Alabama Press.
- Russo, M. 2005. Zooarchaeology of tree islands. In M. Schwadron, *Archeological assessment of the eastern Everglades expansion lands, Everglades National Park, Florida: 207–260*. SEAC Accession Number 1928, EVER Accession Number 771. MS on file. Tallahassee, FL: Southeast Archeological Center, National Park Service.
- Russo, M. 2006. Archaic shell rings of the southeast U.S. theme study. National Register of Historic Places, Southeastern Archeological Center. Tallahassee, FL: National Park Service.
- Russo, M. 2008. Late Archaic shell rings and society in the southeast U.S. *The SAA Archaeological Record* 8 (5): 18–22.
- Russo, M., and G. Heide. 2000. Joseph Reed shell ring. Southeast Archeological Center, National Park Service submitted to Hobe Sound National Wildlife Refuge. Tallahassee.
- Russo, M., and G. Heide. 2001. Shell rings of the southeast US. *Antiquity* 75: 491–492.

- Russo, M., and G. Heide. 2002. The Joseph Reed Shell Ring. *Florida Anthropologist* 55 (2): 67–87.
- Russo, M., and G. Heide. 2003. Mapping the Sewee Shell Ring. Southeast Archeological Center, Tallahassee: National Park Service.
- Russo, M., and G. Heide. 2004. The emergence of pottery in south Florida. In R. Saunders and R. Hayes (editors), *Early pottery*: 105–129. Tuscaloosa: University of Alabama Press.
- Russo, M., and C. F. Lawson. 2007. Tyndall Air Force Base preliminary report, Hare Hammock survey. Tallahassee, FL: Southeast Archeological Center, National Park Service.
- Russo, M., B.A. Purdy, L.A. Newsom, and R.M. McGee. 1992. A reinterpretation of Late Archaic adaptations in central-east Florida: Groves' Orange midden (8Vo2601). *Southeastern Archaeology* 11: 95–108.
- Russo, M., and I.R. Quitmyer. 2008. Developing models of settlement for the Florida Gulf coast. In E. Reitz, C.M. Scarry, and S. Scudder (editors), *Case studies in environmental archaeology*, 2nd ed.: 235–254. New York: Springer.
- Russo, M., and R. Saunders. 1999. Identifying the early use of coastal fisheries and the rise of social complexity in shell rings and arcuate middens on Florida's northeast coast. Report Submitted to the National Geographic Society, Southeast Archeological Center. Tallahassee: National Park Service.
- Russo, M., A.S. Cordell, L.A. Newsom, and R. Austin. 1989. Phase III archaeological excavations at Edgewater Landing, Volusia County, Florida. St. Petersburg: Piper Archaeological Research, Inc.
- Russo, M., A.S. Cordell, and D.L. Ruhl. 1993. The Timucuan ecological and historic preserve, Phase III final report. Tallahassee: Southeast Archeological Center, National Park Service.
- Russo, M., G. Heide, and V. Rolland. 2003. The Guana shell ring. Historic Preservation Grant F0126. Tallahassee: Florida Division of Historical Resources, Bureau of Archaeological Resources.
- Russo, M., C.S. Hadden, C. Dengel. 2009. Archeological investigations of mounds and ring middens at Hare Hammock. Report submitted to Tyndall Air Force Base by the National Park Service Southeast Archeological Center, Tallahassee.
- Sahlins, M.D. 1968. *Tribesmen*. Englewood Cliffs, NJ: Prentice-Hall.
- Sampson, C.G. 2008. Middle Archaic mounds in the American southeast and the onset of mid-Holocene El Niño/ENSO events: is there a connection? In Z.S. and A.J. Tomaszewski (editors), *Man-millennia-environment*: 133–145. Warsaw: Institute of Archaeology and Ethnology Polish Academy of Sciences.
- Sandweiss, D.H. 1996. Environmental change and its consequences for human society on the central Andean coast. In E.J. Reitz, L.A. Newsom, and S.J. Scudder (editors), *Case studies in environmental archaeology*: 127–146. New York: Plenum.
- Sandweiss, D.H., and J. Quilter (editors). 2009. *El Niño, catastrophism, and culture change in ancient America*. Washington, DC: Dumbarton Oaks.
- Sandweiss, D.H., J.B. Richardson, E.J. Reitz, H.B. Rollins, and K.A. Maasch. 1996. –Geoarchaeological evidence from Peru for a 5000 years B.P. onset of El Niño. *Science* 273: 1531–1533.
- Sandweiss, D.H., et al. 2001. Variation in Holocene El Niño frequencies: climate records and cultural consequences in ancient Peru. *Geology* 29: 603–606.
- Sandweiss, D.H., et al. 2007. Mid-Holocene climate and culture change in coastal Peru. In D.G. Anderson, K.A. Maasch, and D.H. Sandweiss (editors), *Climate change and cultural dynamics: a global perspective on mid-Holocene transitions*: 25–50. Boston: Academic Press.
- Sanger, D. 1996. Testing the models: hunter-gatherer use of space in the gulf of Maine, USA. *World Archaeology* 27 (3): 512–526.
- Sassaman, K.E. 1993a. Early pottery in the southeast: Tradition and innovation in cooking technology. Tuscaloosa: University of Alabama Press.
- Sassaman, K.E. 1993b. Early Woodland settlement in the Aiken Plateau: archaeological investigations at 38AK157, Savannah River site, Aiken County, South Carolina. *Savannah River Archaeological Research Papers* 3. Columbia: South Carolina Institute of Archaeology and Anthropology, University of South Carolina.
- Sassaman, K.E. 1995. Cultural diversity among mid-Holocene societies. In M.S. Nassaney and K.E. Sassaman (editors), *Native*

- American interactions multiscalar analyses and interpretations in the Eastern Woodlands. Knoxville: University of Tennessee Press.
- Sassaman, K.E. 1996. Technological innovations in economic and social contexts. *In* K.E. Sassaman and D.G. Anderson (editors), *Archaeology of the mid-Holocene southeast*: 57–74. Gainesville: University Press of Florida.
- Sassaman, K.E. 2001. Hunter-gatherers and traditions of resistance. *In* T.R. Pauketat (editor), *The archaeology of traditions: agency and history before and after Columbus*: 318–336. Gainesville: University Press of Florida.
- Sassaman, K. A. 2002. Woodland ceramic beginnings. *In* D.G. Anderson and R.C. Mainfort (editors), *The Woodland Southeast*. Tuscaloosa: University of Alabama Press.
- Sassaman, K.E. 2003a. New AMS dates on orange fiber-tempered pottery from the middle St. Johns valley and their implications for culture history in northeast Florida. *Florida Anthropologist* 56: 5–14.
- Sassaman, K.E. 2003b. St. Johns archaeological field school 2000–2001: Blue Spring and Hontoon Island state parks. *Laboratory of Southeastern Archaeology Technical Report 4*. Gainesville: University of Florida Department of Anthropology.
- Sassaman, K.E. 2004a. Complex hunter-gatherers in evolution and history: a North American perspective. *Journal of Anthropological Research* 12: 227–280.
- Sassaman, K. A. 2004b. Common origins and divergent histories in the early pottery traditions of the American southeast. *In* R. Saunders and C. Hays (editors), *Early pottery*. Tuscaloosa: University of Alabama Press.
- Sassaman, K.E. 2005. Poverty Point as structure, event, process. *Journal of Archaeological Method and Theory* 12: 335–364.
- Sassaman, K.E. 2006a. Dating and explaining soapstone vessels: a comment on Truncer. *American Antiquity* 71: 141–156.
- Sassaman, K.E. 2006b. *People of the shoals: Stallings culture of the Savannah River Valley*. Gainesville: University Press of Florida.
- Sassaman, K.E. 2010. *The eastern Archaic historicized*. Lanham, MD: AltaMira Press.
- Sassaman, K.E., and D.G. Anderson 1995. Middle and Late Archaic archaeological records of South Carolina: a synthesis for research and resource management. *Savannah River Archaeological Research Papers 6*. Columbia: South Carolina Institute of Archaeology and Anthropology, University of South Carolina.
- Sassaman, K.E., and D.G. Anderson. 2004. Late Holocene period, 3750 to 650 B.C. *In* R.D. Fogelson (editor), *Southeast volume, Smithsonian handbook of North American Indians*: 101–114. Washington, DC: Smithsonian Institution Press.
- Sassaman, K. E., and M. J. Brooks 1993. Early Woodland settlement in the Aiken Plateau: archaeological investigations at 38AK157, Savannah River site, Aiken County, South Carolina, Savannah River Archaeological Research Program. Columbia: South Carolina Institute of Archaeology and Anthropology, University of South Carolina.
- Sassaman, K.E., and M.J. Heckenberger. 2004a. Crossing the symbolic Rubicon in the southeast. *In* J. Gibson and P. Carr (editors), *Signs of power: the rise of cultural complexity in the southeast*: 214–233. Tuscaloosa: University of Alabama Press.
- Sassaman, K.E., and M.J. Heckenberger. 2004b. Roots of the theocratic formative of the Archaic southeast. *In* G. Crothers (editor), *Hunters and gatherers in theory and archaeology*: 423–444. Carbondale: Center for Archaeological Investigations Southern Illinois University.
- Sassaman, K.E., and J.R. Ledbetter. 1996. Middle and Late Archaic architecture. *In* K. Sassaman and D. Anderson (editors), *Archaeology of the mid-Holocene Southeast*: 75–95. Gainesville: University Press of Florida.
- Sassaman, K.E., M. Blessing, and A. Randall. 2006. Stallings Island revisited: new evidence for occupational history, community pattern and subsistence technology. *American Antiquity* 71: 539–566.
- Sassaman, K.E., M.J. Brooks, G.T. Hanson, and D.G. Anderson. 1990. Native American prehistory of the middle Savannah River Valley: a synthesis of archaeological investigations on the Savannah River site, Aiken and Barnwell Counties, South Carolina. *Savannah River Archaeological Research Papers 6*. Columbia: South Carolina Institute of Archaeology and Anthropology, University of South Carolina.
- Saucier, R. 1970. Origin of the St. Francis sunk lands, Arkansas and Missouri. *Geological Society of America Bulletin* 81: 2847–2854.
- Saunders, J. 2001. An assessment of the antiquity

- of the lower Jackson mound. *Southeastern Archaeology* 20: 67–77.
- Saunders, J. 2004. Are we fixing to make the same mistake again? *In* J.L. Gibson and P.J. Carr (editors), *Signs of power: the rise of cultural complexity in the southeast*: 146–161. Tuscaloosa: University of Alabama Press
- Saunders, J., and E.T. Allen. 1997. The Archaic period. *Louisiana Archaeology* 22: 1–30.
- Saunders, J., and E.T. Allen. 2003. Jaketown revisited. *Southeastern Archaeology* 22 (2): 155–164.
- Saunders, J., and D. Greenlee. 2008. Radiocarbon data from Louisiana and Mississippi. Report on file, Regional Archaeology Program, University of Louisiana at Monroe, Department of Geosciences.
- Saunders, J., E.T. Allen, and R.T. Saucier. 1994. Four Archaic? Mound complexes in northeast Louisiana. *Southeastern Archaeology* 13: 134–152.
- Saunders, J., R.B. Jones, and E.T. Allen. 2005. 2005 annual report for Management Unit 2. Report on file, Division of Archaeology, Department of Culture, Recreation, and Tourism, Baton Rouge, Louisiana.
- Saunders, J., R.B. Jones, and E.T. Allen. 2007. 2007 annual report for Management Unit 2. Report on file, Division of Archaeology, Department of Culture, Recreation, and Tourism, Baton Rouge, Louisiana.
- Saunders, J., R.B. Jones, and E.T. Allen. 2008. 2008 annual report for Management Unit 2. Report on file, Division of Archaeology, Department of Culture, Recreation, and Tourism, Baton Rouge, Louisiana.
- Saunders, J., E.T. Allen, D. LaBatt, R. Jones, and D. Griffing. 2001. An assessment of the antiquity of Lower Jackson Mound. *Southeastern Archaeology* 20 (1): 67–77.
- Saunders, J., et al. 1997. A 5400–5000 B.P. mound complex in Louisiana. *Science* 277: 1796–1799.
- Saunders, J., et al. 2005. Watson Brake, a Middle Archaic mound complex in northeast Louisiana. *American Antiquity* 70: 631–668.
- Saunders, R. 1994. The case for Archaic period mounds in southeastern Louisiana. *Southeastern Archaeology* 13 (2): 118–134.
- Saunders, R. 2004a. Spatial variation in Orange Culture pottery. *In* R. Saunders and C.T. Hays (editors), *Early pottery: technology, function, style, and interaction in the lower Southeast*: 40–62. Tuscaloosa: University of Alabama Press.
- Saunders, R. 2004b. The stratigraphic sequence at Rollins shell ring: implications for ring function. *Florida Anthropologist* 57 (4): 249–268.
- Saunders, R., and C. Hays 2004a. Themes in early pottery research. *In* R. Saunders and C. Hayes (editors), *Early pottery: technology, function, style, and interaction in the lower southeast*. Tuscaloosa, University of Alabama Press.
- Saunders, R., and C. Hays. 2004b. *Early pottery: technology, function, style, and interaction in the lower southeast*. Tuscaloosa: University of Alabama Press.
- Saunders, R., and V. Rolland. 2005. Exploring the interior of the Guana River Shell Ring. Report on file, Louisiana Museum of Natural Science, Baton Rouge.
- Saunders, R., and V. Rolland 2006. Exploring the interior of the Guana River shell ring. Submitted to the Florida Department of State, Division of Historical Resources, Tallahassee.
- Saunders, R., and M. Russo. 2002. The Fig Island Ring Complex (38CH42): Coastal adaptation and the question of ring function in the Late Archaic. Grant 45-01-016441 report submitted to the South Carolina Department of Archives and History, Columbia.
- Saunders, R., J. Wrenn, W. Krebs, and V. M. Bryant. 2009. Coastal dynamics and cultural occupations on Choctawhatchee Bay, Florida. *Palynology*: 33 (2): 135–156.
- Saunders, W.B., E. Greengest-Allen, D.M. Work, and S.V. Nikolaeva. 2008. Morphologic and taxonomic history of Paleozoic ammonoids in time and morphospace. *Paebiology* 34: 128–154.
- Schambach, F.F. 2005. Gulf Coast shell and the Poverty Point interaction sphere. *In* P. Farnsworth, C.H. McNutt, and S. Williams (editors), *The William G. (Bill) Haag Honorary Symposium*: 42–54. Occasional Paper 26. Memphis, TN: University of Memphis Anthropological Research Center.
- Schiffer, M. 1983. Toward the identification of formation processes. *American Antiquity* 8: 675–706.
- Schiffer, M. 1985. Is there a “Pompeii premise” in archaeology? *Journal of Anthropological Archaeology* 41: 18–41.
- Schlanger, S.H. 1992. Recognizing persistent

- places in Anasazi. *In* J. Rossignol and L. Wandsnider (editors), *Space, time, and archaeological landscapes*: 91–113. New York: Plenum.
- Schoeninger, M.J., N.J. van der Merwe, K. Moore, J. Lee-Thorp, and C.S. Larsen. 1990. Decrease in diet quality between the prehistoric and contact periods. *In* C.S. Larsen (editor), *The archaeology of Mission Santa Catalina de Guale: 2. Biocultural interpretations of a population in transition*: 78–93. *Anthropological Papers of the American Museum of Natural History* No. 68. [<http://hdl.handle.net/2246/252>]
- Schwadron, M. 2006a. Everglades tree islands prehistory: archaeological evidence for regional Holocene variability and early human settlement. *Antiquity* 80 (310). [<http://antiquity.ac.uk/projgall/schwadron/index.html>]
- Schwadron, M. 2006b. Investigation of Ten Thousand Islands shell work sites for National Historic Landmark eligibility, Everglades National Park, FL. Tallahassee: National Park Service, Southeast Archeological Center.
- Schwadron, M. 2008. Shell work landscapes and emergent complexity in the Ten Thousand Islands, Florida. Paper presented at the 73rd Annual Meeting of the Society for American Archaeology, Vancouver, BC.
- Schwadron, M. In press. Prehistoric shell architecture in the southeast. *In* F. McManaman (editor), *Archaeology in America: an encyclopedia*. Westport, CT: Greenwood Publishing.
- Schwartz, M.L. 1973. *Barrier islands*. Stroudsburg, PA: Dowden, Hutchinson, and Ross.
- Sears, W.H. 1962. Hopewell affiliations of certain sites on the Gulf Coast of Florida. *American Antiquity* 28: 5–18.
- Sears, W.H. 1973. The sacred and the secular in prehistoric ceramics. *In* D.W. Lathrap and J. Douglas (editors), *Variation in anthropology: essays in honor of John C McGregor*: 31–42. Urbana: Illinois Archaeological Survey.
- Sears, W.H. 1982. Fort Center: an archaeological site in the Lake Okeechobee basin. Gainesville: University Presses of Florida.
- Sears, W.H., and J.B. Griffin 1950. Fiber-tempered pottery of the southeast. *In* J.B. Griffin (assembler), *Prehistoric pottery of the eastern United States*. Ann Arbor: University of Michigan.
- Shenkel, J.R. 1974. Big Oak and Little Oak Islands: excavations and interpretations. *Louisiana Archaeology* 1: 37–65.
- Shenkel, J.R. 1980. Oak Island archaeology, prehistoric estuarine adaptations in the lower Mississippi Delta. Unpublished ms, submitted to Jean Lafitte National Historical Park, New Orleans.
- Shenkel, J.R. 1982. Pontchartrain Tchefuncte site differentiation. *Louisiana Archaeology* 8 (for 1981): 21–35.
- Shenkel, J.R. 1984. Early Woodland in coastal Louisiana. *In* D.D. Davis (editor), *Perspectives on Gulf Coast prehistory*: 41–71. Gainesville: University Presses of Florida.
- Shenkel, J.R., and J.L. Gibson. 1974. Big Oak Island: a historical perspective of changing site function. *Louisiana Studies* 8: 173–186.
- Siddall, M., et al. 2003. Sea-level fluctuations during the last Glacial cycle. *Nature* 423: 853–858.
- Sims, D.C., and J.M. Connaway. 2000. Updated chronometric database for Mississippi. *Mississippi Archaeology* 35: 208–269.
- Smith, B.D. 1986. The archaeology of the southeastern United States: from Dalton to De Soto, 10,500–500 B.P. *Advances in World Archaeology* 5: 1–92.
- Smith, B.D. (editor). 1992. *Rivers of change: essays on early agriculture in eastern North America*. Washington, DC: Smithsonian Institution Press.
- Smith, B.D. 2004. Low-level food production. *Journal of Archaeological Research* 9: 1–43.
- Smith, B.D. 2006. Eastern North America as an independent center of plant domestication. *Proceedings of the National Academy of Sciences* 103 (33): 12,223–12,228.
- Smith, M. 1996. Biocultural inquiry into Archaic period populations of the Southeast: trauma and occupational stress. *In* K.E. Sassaman and D.G. Anderson (editors), *Archaeology of the mid-Holocene Southeast*: 134–154. Gainesville: University Press of Florida.
- Spencer, W., and J.S. Perry. 1978. The Dragline site, a small Poverty Point site in Catahoula Parish, Louisiana – preliminary report. *Southern Archaeological Research*. ms on file, Division of Archaeology. Baton Rouge, LA: Department of Culture, Recreation, and Tourism.
- Stanyard, W. F. 2002. Archaic period archaeology of northern Georgia. *Georgia Archaeological*

- Research Design Paper 13. University of Georgia, Laboratory of Archaeology Report 38.
- Stapor, F.W., Jr., T.D. Mathews, and F.E. Lindfors-Kearns. 1991. Barrier island progradation and Holocene sea-level history in southwest Florida. *Journal of Coastal Research* 7 (3): 815–838.
- Steier, P., and W. Rom. 2000. The use of Bayesian statistics for ^{14}C dates of chronologically ordered samples: a critical analysis. *Radiocarbon* 42 (2): 183–198.
- Stephens, D.W., and J.R. Krebs. 1986. *Foraging theory*. Princeton, NJ: Princeton University Press.
- Stephenson, K.L., J.A. Bense, and F. Snow. 2002. Some aspects of Deptford and Swift Creek of the south Atlantic and Gulf coastal plains. In D.G. Anderson and R.C. Mainfort (editors), *The Woodland Southeast*: 318–351. Tuscaloosa: University of Alabama Press.
- Steponaitis, V. 1986. Prehistoric archaeology in the southeastern United States 1970–1985. *Annual Review of Anthropology* 15: 363–404.
- Steward, J.H. 1938. Basin-plateau aboriginal socio-political groups. *Bureau of American Ethnology Bulletin* 120. Washington, DC: Smithsonian Institution.
- Stirling, M.W. 1935. Smithsonian archeological projects conducted under the Federal Emergency Relief Administration, 1933–1934. Washington, DC: Smithsonian Institution Annual Report 1934.
- Stirling, M.W. 1936. Florida cultural affiliations in relation to adjacent areas. In R.H. Lowie (editor), *Essays in anthropology in honor of Alfred Louis Kroeber*: 351–357. Berkeley: University of California Press.
- Stoltman, J.B. 1974. *Groton Plantation: an archaeological study of a South Carolina locality*. Monograph 1. Cambridge, MA: Peabody Museum.
- Stoltman, J. B. 2004. Did Poverty Pointers make pots? In R. Saunders and C.T. Hays (editors), *Early pottery: technology, function, style, and interaction in the lower southeast*: 210–222. Tuscaloosa: University of Alabama Press.
- Stone, P.A., M. Schwadron, M. Ross, P. Ruiz, and G.L. Chumura 2006. Diverse mineral layers within peaty sediments of Everglades tree-islands. Poster presented at the Greater Everglades Ecosystem Restoration Conference, Orlando, FL.
- Stright, M.J. 1990. Archaeological sites on the North American continental shelf. In *Archaeological geology of North America*. Geological Society of America, Centennial Special 4: 439–465.
- Struever, S. 1972. Implications of vegetal remains from an Illinois Hopewell site. In S. Struever (editor), *Prehistoric agriculture*: 383–390. Garden City, NJ: Natural History Press.
- Stuiver, M., and T. F. Braziunas. 1993. Modeling atmospheric ^{14}C influences and ^{14}C ages of marine samples to 10,000 B.C. *Radiocarbon* 35: 137–189.
- Stuiver, M., and H. A. Polach 1977. Discussion: reporting of ^{14}C data. *Radiocarbon* 19 (3): 355–363.
- Stuiver, M., and P.J. Reimer. 2005. CALIB 5.1. radiocarbon calibration program. Internet resource (<http://calib.qub.ac.uk/calib/>), accessed April 2008.
- Stuiver, M., et al. 1998. INTCAL98 radiocarbon age calibration, 24,000–0 cal BP. *Radiocarbon* 40 (3).
- Suguio, K., L. Martin, and J.-M. Flexor. 1992. Paleoshorelines and the Sambaquis of Brazil. In L.L. Johnson and M. Stright (editors), *Paleoshorelines and prehistory: an investigation of method*: 83–99. Boca Raton, FL: CRC Press.
- Swanton, J. 1946. *The Indians of the Southeastern United States*. Smithsonian Institution Bureau of American Ethnology. Washington, DC: U.S. Government Printing Office.
- Tanner, W.F. 1991. The “Gulf of Mexico” late Holocene sea level curve and river delta history. *Transactions of the Gulf Coast Association of Geological Societies* 41: 583–589.
- Tanner, W.F. 1993. An 8000-year record of sea-level change from grain-size parameters: Data from beach ridges in Denmark. *Holocene* 3: 220–231.
- Tanner, W.F. 2000. Beach ridge history, sea level change, and the A.D. 536 event. In J.D. Gunn (editor), *The years without summer: tracing A.D. 536 and its aftermath*: 89–97. BAR International Series 872. Oakville, CT: David Brown Book Company.
- Taylor, R.C. 1984. *Everglades National Park archeological inventory and assessment, season 2*. Tallahassee: National Park Service, Southeast Archeological Center.
- Taylor, R.C. 1985. *Everglades National Park*,

- archeological inventory and assessment season 3: Interim report. Tallahassee: National Park Service, Southeast Archeological Center.
- Taylor, R.E. 1987. Radiocarbon dating: an archaeological perspective. Orlando, FL: Academic Press.
- Taylor, R.E., M. Stuiver, and P.J. Reimer. 1996. *Quaternary Science Reviews* 15: 655–668.
- Thomas, D.H. 1981. Complexity among Great Basin Shoshoneans: the world's least affluent hunter-gatherers? *In* S. Koyama and D.H. Thomas (editors.), *Affluent foragers: Pacific coasts east and west*. Osaka: Senri Ethnological Studies 9: 19–52.
- Thomas, D.H. 1983. The archaeology of Monitor Valley: 1. Epistemology. *Anthropological Papers of the American Museum of Natural History* 58 (1): 1–194. [<http://hdl.handle.net/2246/268>]
- Thomas, D.H. (editor). 1985. The archaeology of Hidden Cave, Nevada. *Anthropological Papers of the American Museum of Natural History* 61 (1). [<http://hdl.handle.net/2246/240>]
- Thomas, D.H. 2008a. Native American landscapes of St. Catherines Island, Georgia. *Anthropological Papers of the American Museum of Natural History*, 88 (nos. 1–3). [<http://hdl.handle.net/2246/5955>]
- Thomas, D.H. 2008b: Addressing variability in the pooled radiocarbon record of St. Catherines Island. *In* D.H. Thomas, *Native American landscapes of St. Catherines Island, Georgia*. *Anthropological Papers of the American Museum of Natural History*, 88 (nos. 1–3): 435–474. [<http://hdl.handle.net/2246/5955>]
- Thomas, D.H. 2008c. Late Holocene sea levels and the changing archaeological landscape of St. Catherines Island. *In* D.H. Thomas, *Native American landscapes of St. Catherines Island, Georgia*. *Anthropological Papers of the American Museum of Natural History*, 88 (nos. 1–3): 42–47. [<http://hdl.handle.net/2246/5955>]
- Thomas, D.H. 2008d. Synthesis: the aboriginal landscape of St. Catherines Island. *In* D.H. Thomas, *Native American landscapes of St. Catherines Island, Georgia*. *Anthropological Papers of the American Museum of Natural History*, 88 (nos. 1–3): 990–1045. [<http://hdl.handle.net/2246/5955>]
- Thomas, D.H. 2008e. Central place and patch choice modeling on St. Catherines Island. *In* D.H. Thomas, *Native American landscapes of St. Catherines Island, Georgia*. *Anthropological Papers of the American Museum of Natural History*, 88 (nos. 1–3): 859–935. [<http://hdl.handle.net/2246/5955>]
- Thomas, D.H. 2008f. Radiocarbon dating on St. Catherines Island. *In* D.H. Thomas, *Native American landscapes of St. Catherines Island, Georgia*. *Anthropological Papers of the American Museum of Natural History*, 88 (nos. 1–3): 345–371. [<http://hdl.handle.net/2246/5955>]
- Thomas, D.H., and E. Blair. 2008. Marine foraging on St. Catherines Island. *In* D.H. Thomas, *Native American landscapes of St. Catherines Island, Georgia*. *Anthropological Papers of the American Museum of Natural History*, 88 (nos. 1–3): 74–133. [<http://hdl.handle.net/2246/5955>]
- Thomas, D.H., and C.S. Larsen. 1979. The anthropology of St. Catherines Island: 2. The Refuge-Deptford mortuary complex. *Anthropological Papers of the American Museum of Natural History* 56 (1). New York: American Museum of Natural History. [<http://hdl.handle.net/2246/305>]
- Thomas, D.H., and M. Sanger. 2008. What happened to the Late Archaic? Deconstructing the Late Archaic/Early Woodland transition. Prefatory remarks presented at the 3rd Annual Caldwell Conference, St. Catherines Island, Georgia.
- Thomas, D.H., H.B. Rollins, and C.B. DePratter. 2008 The changing shape of St. Catherine's Island. *In* D.H. Thomas, *Native American landscapes of St. Catherines Island, Georgia*. *Anthropological Papers of the American Museum of Natural History*, 88 (nos. 1–3): 835–858. [<http://hdl.handle.net/2246/5955>]
- Thomas, J. 1991. *Rethinking the Neolithic*. London: Cambridge University Press.
- Thomas, P.M., Jr. 1993. Eglin Air Force Base: historical preservation plan, technical synthesis of cultural investigations at Eglin, Santa Rosa, Okaloosa, and Walton counties, Florida. Report of Investigations 192, submitted to National Park Service. Southeast Region, Atlanta.
- Thomas, P.M., Jr., and L.J. Campbell (editors). 1978. *The peripheries of Poverty Point*. Report of Investigations 12. New World Research Inc., Pollock, Louisiana.
- Thomas, P.M., Jr., and J.L. Campbell. 1991. *The Elliott's Point complex: new data regarding*

- the localized Poverty Point expression on the northwest Florida Gulf coast, 2000 B.C.–500 B.C. *In* K.M. Byrd (editor), *The Poverty Point culture: local manifestations, subsistence practices, and trade networks*: 103–119. *Geoscience & Man* 29. Baton Rouge: Louisiana State University.
- Thomas, P.M., Jr., and J.L. Campbell (editors). 1993. Air Force Base historic preservation plan, Technical Synthesis Appendices. New World Research, Inc., Report of Investigations 192. Prepared for National Park Service, Southeast Region (CX5000-2-0497). Submitted to Eglin Air Force Base by New World Research, Inc., Ft. Walton.
- Thompson, L.G., et al. 2006. Abrupt tropical climate change: past and present. *Proceedings of the National Academy of Sciences* 103: 10536–10543.
- Thompson, V.D., et al. 2004. The Sapelo Island shell rings: shallow geophysics on a Georgia sea island. *Southeastern Archaeology* 23: 192–201.
- Thompson, V.D. 2006. Questioning complexity: the prehistoric hunter-gatherers of Sapelo Island, Georgia. Ph.D. dissertation, Lexington: University of Kentucky.
- Thompson, V.D. 2007. Articulating activity areas and formation processes at the Sapelo Island shell ring complex. *Southeastern Archaeology* 26: 91–107.
- Thompson, V. 2009. Adaptive cycles of coastal hunter-gatherers. *American Antiquity* 74 (2): 255–278.
- Thompson, V.D., and C.F.T. Andrus. 2006. Monument, midden, or both: evaluating coastal Georgia shell rings through stable isotope geochemistry. *In* M.D. Gaspar and D. Sandweiss (organizers), Paper presented in the symposium “New World shellmounds and shellmiddens: a bicoastal comparison.” 71st Annual Meeting of the Society for American Archaeology, San Juan, Puerto Rico.
- Thompson, V.D., and C.F.T. Andrus. 2007. Our season of death on the Georgia coast: a geochemical analysis of clams and oysters from shell rings and middens. Paper presented at the 64th Southeastern Archaeology Conference, Knoxville, Tennessee.
- Thompson, V.D., and C.F.T. Andrus. In press. Evaluating time, monumentality, and feasting at the Sapelo Shell Ring Complex. *American Antiquity*.
- Thompson, V.D., et al. 2004. The Sapelo Shell Ring Complex: shallow geophysics on a Georgia Sea Island. *Southeastern Archaeology* 23 (2): 192–201.
- Thompson, V.D., W.D. Stoner, and H.D. Rowe. 2008. Early hunter-gatherer pottery along the Atlantic coast of the southeastern United States: a ceramic compositional study. *Journal of Island and Coastal Archaeology* 3 (2): 191–213.
- Thompson, V.D., and J. Turck. 2009. Adaptive cycles of coastal hunter-gatherers. *American Antiquity* 74: 255–278.
- Thorndycraft, V.R., and G. Benito. 2006. The Holocene fluvial chronology of Spain: evidence from a newly compiled radiocarbon database. *Quaternary Science Reviews* 25: 223–234.
- Törnqvist, T.E., et al. 2004. Deciphering Holocene sea-level history on the U.S. Gulf coast: a high-resolution record from the Mississippi delta. *Bulletin of the Geological Society of America* 116: 1026–1039.
- Torrence, C.M. 1996. From objects to the cultural system: a Middle Archaic columella extraction site on Useppa Island, Florida. Master’s thesis, University of Florida, Gainesville.
- Torrence, C.M. 2003. Report on the results of topographic mapping of the Catfish Point Site (8CH9), Placida, Florida. Fort Myers: Florida Gulf Coast University.
- Trinkley, M.B. 1975. Preliminary report of archaeological excavations at Lighthouse Point shell ring, South Carolina. *Southern Indian Studies* 27.
- Trinkley, M.B. 1980. Investigation of the Woodland period along the South Carolina coast. Ph.D. dissertation, University of North Carolina, Chapel Hill.
- Trinkley, M. 1985. The form and function of South Carolina’s Early Woodland shell rings. *In* R.S.J. Dickens and T. Ward (editors), *Structure and process in southeastern archaeology*: 102–118. Tuscaloosa: University of Alabama Press.
- Truncer, J. 2004. Steatite vessel age and occurrence in temperate eastern North America. *American Antiquity* 69: 487–513.
- Truncer, J. 2006. Taking variation seriously: the case of Steatite vessel manufacture. *American Antiquity* 71 (1): 157–163.
- Turney, C.S.M., M.G.L. Baillie, J. Palmer, and D. Brown. 2006. Holocene climatic change

- and past Irish societal response. *Journal of Archaeological Science* 33: 34–38.
- Turney, C., et al. 2005. Testing solar forcing of pervasive Holocene climate cycles. *Journal of Quaternary Science* 20: 511–518.
- Twain, M. 1979 (1883). *Life on the Mississippi*. In L. Teacher (editor), *The unabridged Mark Twain*: 205–512. Philadelphia, PA: Running Press.
- Ubelaker, D.H. 1974. Reconstruction of demographic profiles from ossuary skeletal samples: a case study from the Tidewater Potomac. *Smithsonian Contributions to Anthropology* 18: 1–79.
- van Geel, B., and H. Renssen. 1998. Abrupt climate change around 2,650 BP in north-west Europe: evidence for climatic teleconnections and a tentative explanation. In A.S. Issar and N. Brown (editors), *Water, environment and society in times of climatic change*: 21–41. Dordrecht: Kluwer Academic.
- van Geel, B., C.J. Heusser, H. Renssen, and C.J.E. Schuurmans. 2000. Climatic change in Chile at around 2700 BP and global evidence for solar forcing: a hypothesis. *Holocene* 10: 659–664.
- van Geel, B., et al. 1998. The sharp rise of $\Delta^{14}\text{C}$ ca. 800 cal BC: possible causes, related climatic teleconnections and the impact on human environments. *Radiocarbon* 40: 535–550.
- van Geel, B., et al. 2003. The sun climate change and the expansion of Scythian culture after 850 BC. In E.M. Scott, A.Y. Alekseev and G.I. Zaitseva (editors), *The impact of the environment on human migrations in Eurasia*: 151–159. Dordrecht: Kluwer Academic.
- van Geel, B., et al. 2004. Climate change and the expansion of the Scythian culture after 850 BC: A hypothesis. *Journal of Archaeological Science* 31: 1735–1742.
- van Geel, B., et al. 2006. Reply to S. Riehl and K. Pustovoytov (*Journal of Archaeological Science* 2006. 33: 143–144). *Journal of Archaeological Science* 33: 145–148.
- Vogel, G. 2006. Historical metrology and a reconsideration of the Toltec module. *Southeastern Archaeology* 25: 6–19.
- Voigt, R. 2006. Settlement history as reflection of climate change: the case study of Lake Jues (Harz Mountains, Germany). *Geografiska Annaler Series A Physical Geography* 88 (2): 97–105.
- Walker, K.J. 1992a. The zooarchaeology of Charlotte Harbor's prehistoric maritime adaptation: spatial and temporal perspectives. In W.H. Marquardt (editor), *Culture and environment in the domain of the Calusa*: 265–373. Institute of Archaeology and Paleoenvironmental Studies Monograph 1. Gainesville: University of Florida.
- Walker, K.J. 1992b. The zooarchaeology of Charlotte Harbor's prehistoric maritime adaptation: spatial and temporal perspectives. Ph.D. dissertation, University of Florida, Gainesville.
- Walker, K.J., and W.H. Marquardt. In prep a. The Pineland site complex: an environmental and cultural history. In *The archaeology of Pineland: a coastal southwest Florida Site complex, A.D. 50–1710*. Institute of Archaeology and Paleoenvironmental Studies Monograph 4. Gainesville: University of Florida.
- Walker, K. J., and W. H. Marquardt. In prep b. Excavations and chronostratigraphy at southwest Florida's Pineland site complex: 1988–1995. In *The archaeology of Pineland: a coastal southwest Florida site complex, A.D. 50–1710*. Institute of Archaeology and Paleoenvironmental Studies Monograph 4. Gainesville: University of Florida.
- Walker, K.J., and D. Surge. 2006. Developing oxygen isotope proxies from archaeological sources for the study of Late Holocene human-climate interactions in coastal southwest Florida. *Quaternary International* 150: 3–11.
- Walker, K.J., F.W. Stapor, Jr., and W.H. Marquardt. 1994. Episodic sea levels and human occupation at southwest Florida's Wightman site. *Florida Anthropologist* 47: 161–179.
- Walker, K.J., F.W. Stapor, Jr., and W.H. Marquardt. 1995. Archaeological evidence for a 1750–1450 B.P. higher-than-present sea level along Florida's Gulf Coast. In C.W. Finkl, Jr. (editor), *Holocene cycles: climate, sea levels, and sedimentation*: 205–218. *Journal of Coastal Research Special Issue* 17.
- Ward, H.D. 1998. The paleobotanical record of the Poverty Point culture: implications of past and current research. *Southeastern Archaeology* 17: 166–173.
- Waring, A.J., Jr. 1968a. 1940. The Bilbo site, Chatham County, Georgia. In S. Williams (editor), *The Waring papers: the collected works of Antonio J. Waring, Jr.*: 152–197. *Papers of the Peabody Museum of Archaeology*

- and Ethnology 58. Cambridge, MA: Harvard University.
- Waring, A.J., Jr. 1968b. The Archaic hunting and gathering cultures: the Archaic and some shell rings. *In* S. Williams (editor), *The Waring papers: the collected works of Antonio J. Waring, Jr.*: 243–246. Papers of the Peabody Museum of Archaeology and Ethnology 58. Cambridge, MA: Harvard University.
- Waring, A.J., Jr. 1968c. The archaeological importance of “Irene” (originally 1937). *In* S. Williams (editor), *The Waring papers: the collected works of Antonio J. Waring Jr.*: 107–109. Papers of the Peabody Museum of Archaeology and Ethnology 58. Cambridge, MA: Harvard University.
- Waring, A.J., Jr., and L.H. Larson, Jr. 1968 (1955–60). The shell ring on Sapelo Island. *In* S. Williams (editor), *The Waring papers: the collected works of Antonio J. Waring, Jr.*: 263–278. Papers of the Peabody Museum of Archaeology and Ethnology 58. Cambridge, MA: Harvard University.
- Watterson, B. 1999. *Amarna: ancient Egypt’s age of revolution*. Mount Pleasant, SC: Arcadia Publishing.
- Webb, C.H. 1968. The extent and content of Poverty Point culture. *American Antiquity* 33: 297–321.
- Webb, C.H. 1975. The wonderful world of Poverty Point: dugout canoes and adzes in the prehistoric southeast. *Newsletter of the Louisiana Archaeological Society* 2 (1): 7.
- Webb, C.H. 1982. *The Poverty Point culture*. Geoscience & Man 17. 2nd ed., revised. Geoscience Publications. Baton Rouge: Louisiana State University Department of Geography and Anthropology.
- Webb, C.H. 1991. Poverty Point culture and site: definitions. *In* K.M. Byrd (editor), *The Poverty Point culture, local manifestations, subsistence practices, and trade networks*: 3–5. Geoscience & Man 29. Baton Rouge: Louisiana State University.
- Webb, P., and C.B. DePratter. 1982. Excavations at 9Ch113, Skidaway Island, Chatham County, Georgia. Laboratory of Archaeology Research Manuscript 337. Athens: University of Georgia.
- Webb, W.S. 1950. The Read shell midden, Site 10, Butler County, Kentucky. *Reports in Anthropology and Archaeology* 7 (5). Lexington: University of Kentucky.
- Webb, W.S., and D.L. DeJarnette. 1948. The Flint River site Ma⁴⁸. Alabama Museum of Natural History, Museum Paper 23. Tuscaloosa, AL: University of Alabama.
- Webb, W.S., and W.G. Haag. 1939. The Chigger-ville site. Lexington: University of Kentucky.
- Webb, W.S., and W.G. Hagg. 1940. Cypress Creek Villages sites 11 and 12, McLean County, Kentucky. *Reports in Anthropology* 7 (1). Lexington: University of Kentucky.
- Webb, W.S., and W.G. Haag. 1947. Archaic sites in McLean County, Kentucky. Lexington: *Reports in Anthropology and Archaeology* 7 (1). University of Kentucky.
- Weber, J.C., and C.H. Webb. 1970. Thermoluminescent dating of Poverty Point objects. *In* B.J. Broyles and C.H. Webb (editors), *The Poverty Point culture*: 102–103. Bulletin 12. Southeastern Archaeological Conference, Morgantown, West Virginia.
- Weinand, D.C., C.F.T. Andrus, and M.R. Crook, Jr. 2000. The identification of cownose ray (*Rhinoptera bonasus*) as a seasonal indicator species and implications for coastal Mississippian subsistence modeling. *Southeastern Archaeology* 19 (2): 156–162.
- Weinstein, R.A. 1986. Tchefuncte occupation in the lower Mississippi delta and adjacent coastal zone. *In* D.H. Dye and R.C. Bister (editors), *The Tchula period in the mid-south and lower Mississippi valley*: 102–127. Proceedings of the 1982 Mid-South Archaeological Conference Archaeological Report 17. Jackson: Mississippi Department of Archives and History.
- Weinstein, R.A. 1995. The Tchula period in the lower Mississippi valley and adjacent coastal zone: A brief summary. *In* J.L. Gibson, R.W. Neuman, and R.A. Weinstein (editors), “An’ Stuff Like That There,” In appreciation of William G. Haag: 153–187. *Louisiana Archaeology* 18 (for 1991). Lafayette: Louisiana Archaeological Society.
- Weinstein, R.A. 1996. Archaeological investigations at the Lee Site, east Baton Rouge Parish, Louisiana [including appendix A: vertebrate fauna, by D. Kelley, and appendix B: pollen analysis of the Lee Site, East Baton Rouge Parish, Louisiana, by F.M. Wiseman]. *Louisiana Archaeology* 21: 1–64.
- Weinstein, R.A., and D.B. Kelley. 1984. Archaeology and paleogeography of the upper Felsenthal region: cultural resources

- investigations in the Calion navigation pool, south-central Arkansas. Baton Rouge, LA: Coastal Environments, Inc.
- Weinstein, R.A., and P.G. Rivet. 1978. Beau Mire: a late Tchula period site of the Tchefuncte culture, Ascension Parish, Louisiana. *Anthropological Papers 1*. Baton Rouge: Louisiana Archaeological Survey and Antiquities Commission.
- Weisman, B.R. 1995. Crystal River: a ceremonial mound center on the Florida Gulf Coast. Tallahassee: Florida Archaeology, Bureau of Archaeological Research.
- Welch, P.D. 2005. *Archaeology at Shiloh Indian mounds, 1899–1999*. Tuscaloosa: University of Alabama Press.
- West, R.R., H.B. Rollins, and R.M. Busch. 1990. Taphonomy and an intertidal palimpsest surface: implications for the fossil record. *In* W. Miller, III (editor), *Paleocommunity temporal dynamics: the long-term development of multispecies assemblies*. Paleontological Society Special Publication 5: 351–369.
- Whallon, R. 2006. Social networks and information: Non-“utilitarian” mobility among hunter-gatherers. *Journal of Anthropological Archaeology* 25: 259–270.
- Wheeler, R.J. 2005. Mud Lake Canal National Historic Landmark Nomination. Tallahassee: Florida Department of State.
- Wheeler, R.J., and R.M. McGee. 2004. Report of preliminary zooarchaeological analysis: Groves’ Orange midden. *Florida Anthropologist* 47 (4): 404–417.
- Wheeler, R.J., et al. 2003. Archaic period canoes from Newnan’s Lake, Florida. *American Antiquity* 68 (3): 533–551.
- White, N.M. 2003. Late Archaic in the Apalachicola/lower Chattahoochee valley, northwest Florida, southwest Georgia, and southeast Alabama. *Florida Anthropologist* 56 (2): 69–90.
- White, N.M., and R.W. Estabrook. 1994. Sam’s Cutoff shell mound and the Late Archaic Elliotts Point complex in the Apalachicola Delta, northwest Florida. *Florida Anthropologist* 47 (2): 61–78.
- White, T.E. 1953. A method of calculating the dietary percentage of various food animals utilized by aboriginal peoples. *American Antiquity* 19 (2): 160–164.
- Widmer, R.J. 1974. A survey and assessment of archaeological resources on Marco Island, Collier County Florida. Tallahassee: Bureau of Historic Sites and Properties, Division of Archives, History and Records Management, Florida Department of State Miscellaneous Projects Report Series 19.
- Widmer, R.J. 1983. The evolution of the Calusa, a non-agricultural chiefdom on the southwest Florida coast. Ph.D. dissertation, Pennsylvania State University, University Park.
- Widmer, R.J. 1988. The evolution of the Calusa: A nonagricultural chiefdom on the southwest Florida coast. Tuscaloosa: University of Alabama Press.
- Widmer, R.J. 2002. The Woodland archaeology of south Florida. *In* D.G. Anderson and R.C. Mainfort (editors), *The Woodland Southeast: 373–397*. Tuscaloosa: University of Alabama Press.
- Widmer, R.J. 2005. A new look at the Gulf Coast formative. *In* N.M. White (editor), *Gulf Coast archaeology: the southeastern United States and Mexico: 68–86*. Gainesville: University Press of Florida.
- Wiessner, P. 2002. Vines of complexity: egalitarian structures and the institutionalization of inequality among the Enga. *Current Anthropology* 43 (2): 233–269.
- Wiley, G.R. 1949. *Archeology of the Florida Gulf coast*. Washington, DC: Smithsonian Miscellaneous Collections 113.
- Wiley, G.R. 1966. *An introduction to American archaeology. 1. North and middle America*. Englewood Cliffs, NJ: Prentice-Hall.
- Wiley, G.R., and P. Phillips. 1958. *Method and theory in American archaeology*. Chicago: University of Chicago Press.
- Williams, S. 1963. The eastern United States. *In* W.G. Haag (editor), *Early Indian farmers and villages and communities: 267–325*. Washington, DC: U.S. Department of the Interior, National Park Service.
- Williams, S. 1968. The Waring papers: The collected works of Antonio J. Waring, Jr. *Papers for the Peabody Museum of Archaeology and Ethnology* 58. Cambridge, MA: Harvard University.
- Williams, W.B., and B. Mowers. 1977. Markham Park Mound No. 2 Broward County, Florida. *Florida Anthropologist* 30 (2): 56–78.
- Williams, W.B., and B. Mowers. 1979. Bishops Hammock, Broward County, Florida. *Florida Anthropologist* 32 (1): 17–32.

- Wright, H.T. 1977. Recent research on the origin of the state. *Annual Review of Anthropology* 6: 379–397.
- Wright, H.T. 1984. Prestate political formations. *In* T.K. Earle (editor), *On the evolution of complex societies essays in honor of Harry Hoijer 1982*: 43–77. Malibu: Undena Publications.
- Wyman, J. 1875. Fresh-water shell mounds of the St. Johns River, Florida. Salem, MA: Peabody Academy of Science Memoir 4.
- Zeigler, J.M. 1959. Origin of the Sea Islands of the southeastern United States. *Geographical Review* 49 (2): 222–237.
- Zeanah, D.W. 2004. Sexual division of labor and central place foraging: a model for the Carson Desert of western Nevada. *Journal of Anthropological Archaeology* 23: 1–32.
- Zooarchaeology Laboratory. 1970. Accession #0114, Fig Island Shell Ring, SC. Florida Museum of Natural History, Environmental Archaeology, Gainesville.

