

ARTICLE

# Tracking Mississippian Migrations from the Central Mississippi Valley to the Ridge and Valley with a Unified Absolute Chronology

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## Abstract

As regional chronologies become better defined, we are better able to track large-scale population movements and related cultural change. A dataset of 156 radiocarbon dates from the Middle Cumberland Region (MCR), evaluated with 199 more dates from the Ridge and Valley portions of northern Georgia and East Tennessee, enable modeling of population movements from the Central Mississippi Valley into the MCR, as well as subsequent movements and effects in the Ridge and Valley between AD 1200 and 1450. The dissolution of Cahokia is of particular interest, because the MCR falls geographically between the American Bottom and the Ridge and Valley province. This large-scale chronological perspective places key events in this part of the Southeast and Midwest into a unified historical framework that increases our understanding of the timing of cultural events. A related goal is to sort out possible external events and influences that may have affected this large region. This study makes apparent the relationships between cultural events and natural events, such as the drought sequences reported for the Central Mississippi Valley and beyond.

## Resumen

La capacidad de rastrear los movimientos de población a gran escala y los cambios culturales relacionados se hace posible a medida que se definen mejor las cronologías regionales. Un conjunto de datos de 156 fechas de radiocarbono, de la región de Middle Cumberland (MCR), evaluado con 199 fechas más de las porciones de Ridge y Valley del norte de Georgia y el este de Tennessee, permiten modelar los movimientos de población desde Central Mississippi Valley hacia MCR, y los movimientos y efectos posteriores en Ridge y Valley entre 1200 y 1450 dC. La disolución de Cahokia es de particular interés, ya que la región de Middle Cumberland se encuentra geográficamente entre las provincias de American Bottom y Ridge and Valley. Esta perspectiva cronológica a gran escala coloca eventos clave en esta parte del sureste y el medio oeste en un marco histórico unificado para comprender mejor el momento de los eventos culturales. Un objetivo relacionado es comenzar a clasificar los posibles eventos e influencias externos que pueden haber afectado a esta gran región. Este estudio pone de manifiesto las relaciones entre los eventos culturales y los eventos naturales, como las secuencias de sequía reportadas para el Valle Central del Mississippi y más allá.

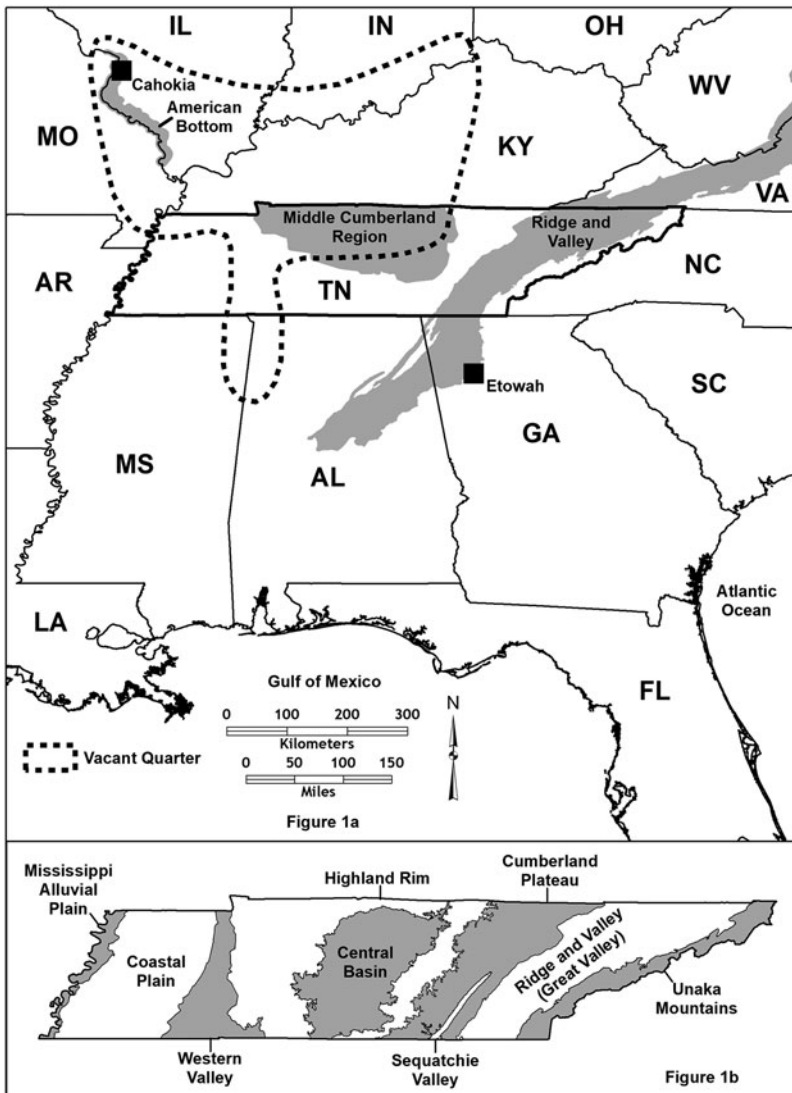
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**Palabras clave:** Misisipí; migraciones; cronología; Sureste; Medio Oeste; Cahokia; Tennessee

Across human history in many parts of the world, migration has been a significant factor in cultural origins, expansion, and change. The relationship of migration to such developments in precontact Mississippian cultures (about AD 1000–1500) of the Midwest and Southeast has again become an

important topic in archaeological discussions of those regions. For example, recent models of the emergence of the city of Cahokia, in the American Bottom of the Central Mississippi Valley (Figure 1a–b), explicitly engage the movement of large numbers of people into the urban center (Slater et al. 2014).

Here, we are particularly interested in the dissolution of Cahokia (McNutt and Parish 2020). Between around AD 1100 and 1450, west-central Illinois experienced decades of sustained drought (Benson et al. 2007, 2009; Bird et al. 2017; Cook and Comstock 2022; Meeks 2009; Meeks and Anderson 2013). Throughout this time, people began exiting Cahokia in complex ways in a Cahokian diaspora that influenced Mississippian development throughout the Southeast (Baltus et al. 2020). By AD 1200, Cahokia’s population had decreased by about 50%, and by AD 1350, Cahokia and much of the Central Mississippi Valley had been depopulated (Pauketat 2023). The droughts also spread to the Southeast and were related to a phenomenon that has become known as the “Vacant Quarter,” a large, significantly depopulated area encompassing not only Cahokia



**Figure 1.** Major geographic areas and sites: (a) Vacant Quarter in relation to Cahokia, Etowah, the Middle Cumberland Region, and the Ridge and Valley; (b) physiography within Tennessee.

and much of the Central Mississippi Valley but also the Middle Cumberland Region (MCR) in central Tennessee (Figure 1a). Although examinations of the abandonment of Cahokia and the formation of the Vacant Quarter also imply large-scale out-migration, these studies rarely address where people might have gone (Cobb and Butler 2002; Krus and Cobb 2018; Meeks 2009; Meeks and Anderson 2013; Smith and Moore 2018; Williams 1990).

In this article, we investigate chronological, material cultural, and other evidence for the movements of people from Cahokia into the MCR and the subsequent movement of peoples out of the MCR and into the Ridge and Valley areas of the Great Valley of East Tennessee and northern Georgia, areas that were less affected by the droughts (Figure 1a–b). We also bring together, for the first time, the radiocarbon chronologies for these regions. With the aid of AMS dating, refinements to Mississippian period chronologies have been made in all these regions, most recently in the MCR and Ridge and Valley (e.g., Beahm 2013; Braly 2013; Cobb et al. 2023; Dalton-Carriger 2011; Harle 2003; King 2003, 2007; Koerner 2005; Koerner and Dalton-Carriger 2016; Krus and Cobb 2018; Lulewicz 2017, 2018, 2019a, 2019b; Patch et al. 2017, 2018; Smith and Moore 2018; Sullivan 2007, 2016, 2018a; Sullivan et al. 2022). The improved chronologies have been used in studies of under- or unanalyzed relevant objects made in the homeland as compared with imitations made elsewhere (e.g., Dye 2021; Jones 2018; King 2020; King and Sawyer 2017; Marceaux and Dye 2007; Sharp et al. 2020; Smith 2020; Smith and Miller 2009; Smith and Moore 2018), revisits to major sites using modern field techniques including geophysics (Bigman et al. 2011; King et al. 2011; Lowry et al. 2019, 2017; Patch and Lowry 2014; Patch et al. 2015, 2016), and bioarchaeological studies (e.g., Harle 2010; Kelso 2013, 2018; McCarthy 2011).

Although one of the goals of using large-scale chronological perspectives is to place key events in this large region into a unified historical framework to better understand the timing of cultural events, a related goal is to begin to sort out possible external events and influences that may have affected this part of the Southeast. As large-scale, high-resolution radiocarbon records continue to increase in the context of specific regional studies, it is important that we begin to cross-reference these new, robust chronologies across continental-scale geographic contexts in a multiscale approach that examines both “big history” and “human lives” (Robb and Pauketat 2013). Only in this way can we begin to understand the complex connections across and between regions and to address significant issues such as large-scale population movements that are inherently situated at these vast spatial scales. Additionally, we highlight the critical need to rely on, and more substantively consult, the absolute radiocarbon record in conjunction with the traditional reliance on ceramic typologies that have tenuous associations to absolute calendar dates.

Our use of large-scale chronological perspectives has generated new ideas about some dramatic changes that may be related to migrations beginning in the thirteenth century. The timing of the dispersal of the Cahokia population corresponds to the rapid expansion of populations in the MCR. In East Tennessee, people began to move into palisaded towns (Sullivan 2016, 2018a). In northern Georgia, the large Etowah mound center was violently attacked and rapidly depopulated (King 2003, 2007, 2020). King (2020) also has noted the potential processes of population movements and interactions between the American Bottom and the MCR and the repercussions that such movements and interactions may have had on interactions between peoples of the MCR and Ridge and Valley. These interactions are especially important for interpreting observed cultural changes in the Ridge and Valley to the east.

We begin with a brief history of archaeological thought in relation to migration in Mississippian studies, followed by abbreviated overviews of the Mississippian period in the MCR and Ridge and Valley regions. The subsequent discussion of the timing and alignments of events in these regions includes some site-specific data, both archaeological and biological, that are relevant to observed changes or patterns within these regions. We then look to the timing of events in the Central Mississippi Valley and American Bottom and how they may interface with events in the other regions. Figure 1 provides maps showing locations of the Cahokia site in the American Bottom of the Central Mississippi Valley, the MCR in the northern portion of the Central Basin in Tennessee (Figure 1a), and the Etowah site in northern Georgia, as well as the Ridge and Valley physiographic province, within

**Table 1.** Regional Late Woodland through European Contact Archaeological Chronology and Phases.

Calendar Dates	Periods	American Bottom Phases	Middle Cumberland Phases	East Tennessee Phases	North Georgia Phases
AD 1540	European Contact	Oneota	Early contact	Early contact	Lamar / Barnett / Brewster
AD 1400	Mississippian Late	Sand Prairie		Mouse Creek / Dallas	
AD 1300		Moorehead	Late Thruston	Early Dallas	Savannah / Late Wilbanks
AD 1200	Middle	Stirling	Early Thruston	Late Hiwassee Island	Savannah / Early Wilbanks
AD 1100 AD 1000	Early / Terminal Late Woodland	Lohmann Edelhardt / Lindeman Merrell / George Reeves Lloyd / Range Collinsville / Dohack	Dowd Spencer	Early Hiwassee Island / Martin Farm	Late Etowah Early Etowah
AD 900	Woodland Late	Sponemann Patrick	Undesignated	Hamilton	Woodstock Napier
AD 500		Cunningham / Mund			Swift Creek

which the focus is on eastern Tennessee (the Great Valley, [Figure 1b](#)) and northern Georgia. The Cumberland Plateau—part of the Appalachian Plateaus province—separates the lower lands of the MCR from the Great Valley. The large Etowah mound center, near the conjunction of the Ridge and Valley, Piedmont, and Unaka Mountains/Blue Ridge provinces, is included not only because of its influence and location but also because the timing of its destruction is relevant to regional interactions. Basic chronologies and phase designations for these regions can be found in [Table 1](#). We use an historical approach (Ethridge et al. 2020) to interpret these data and so highlight the human agency and diversity in the events and cultural responses that transpired across this large region between around AD 1200 and 1450.

## Background

Scholarly debates on the relative significance of migration in the origins and expansion of Mississippian culture in eastern North America date back to the nineteenth century. At that time, antiquarians imagined a simple explanation of migrations connecting Mississippians to then- undated Mexican cultures. As archaeological knowledge expanded in the first half of the twentieth century, debates became more refined and sometimes heated. Two primary camps engaged opposing models of “cultural colonization” or “site unit intrusion,” such as migration and an interaction sphere model in which local development and diffusion contributed to regional change. Migration models dominated the literature through the 1960s: Mississippian culture developed in the Mississippi River Valley, and because it was “adaptive” in a cultural evolutionary sense, it allowed groups to radiate outward and establish colonies throughout the southeastern United States (Smith 1984). During the 1970s, the theoretical pendulum swung against Mississippian “site unit intrusion” to favor “simultaneous area development” (Morse 1978; Smith 1984). Migration was largely rejected as an explanatory model in favor of notions of trade, exchange, and interaction that did not require the movements of peoples—only the movement of ideas resulting in the copying of objects (often in the context of

the Southern Cult or Southeastern Ceremonial Complex). More recently, the pendulum has begun to swing back toward models that involve migration, as mentioned in relation to Cahokia origins.

Interactions among Late Mississippian (around AD 1200–1500) peoples in the MCR and those of the Upper Tennessee Valley and northern Georgia were recognized by regional archaeologists as early as the 1940s (Lewis and Kneberg 1946). Although styles and distributions of pottery, iconic artifacts, and architecture suggested close relationships between these regions, the nature and timing of interactions remained poorly understood. Actual migrations from the MCR to East Tennessee were first proposed in the 1940s by Thomas M. N. Lewis and Madeline Kneberg (1946). They interpreted the Late Mississippian cultures (Dallas and Mouse Creek) of East Tennessee, dating from AD 1300 to 1600, as an intrusion of people from the MCR. Earlier connections between northern Georgia and East Tennessee as evidenced by shared stamped designs on pottery were also noted by WPA-era archaeologists (Lewis and Kneberg 1946; Lewis and Lewis 1995; Sullivan 2007, 2016, 2019). Lewis Larson suggested that there were direct connections between the MCR and northern Georgia, in part, based on the shared tradition of ancestor statues, including the famous marble pair from Etowah (Kelly and Larson 1957) and the many examples from the MCR (Smith and Miller 2009).

The current understanding of events in each region after AD 1200 can be summarized as follows. In the MCR, Smith and Moore (2018) note a population expansion after AD 1200 during the Dowd phase, indicated by the construction of a large number of mound centers, many with multiple mounds including platform and burial mounds. Population also increased during the subsequent Thruston phase. After AD 1350 populations began to nucleate into large palisaded villages, but mound construction became less frequent. Cemeteries were used rather than burial mounds, and architecture shifted from wall-trench to single-post construction. By the end of the Thruston phase, from AD 1425 to 1475, there was a major decline in regional population (Beahm 2013; Cobb et al. 2023; Krus and Cobb 2018; Smith and Moore 2018).

In East Tennessee, the late thirteenth through early fourteenth centuries was a time of turbulence, upheaval, and change. By the early AD 1300s, this turmoil resulted in people moving out of the dispersed farmsteads and hamlets that surrounded the burial mounds and platform mounds of the Hiwassee Island phase (Davis 1990; Sullivan 2016) and into palisaded towns like the Dallas site near present-day Chattanooga (for which the phase is named; Lewis and Lewis 1995; Sullivan 2018a). Conical burial mounds, built since the Late Woodland, were no longer used when people moved into the palisaded towns and began burying their dead in and around houses that surrounded a plaza (Polhemus 1987; Schroedl et al. 1990; Sullivan 1995). These towns had platform mounds topped by single large structures; some later towns had no mounds but retained a single large structure on the central plaza (Sullivan 1987, 2016, 2018a, 2018b).

In northern Georgia, conflict between groups is evident after AD 900, and the threat of warfare and violence, likely from outside the region, began to increase around AD 1250, as evidenced by the construction of fortifications (Birch et al. 2016; Cobb and Garrow 1996; King 2003; Krus 2016; Little 1999; Markin 2007). The Etowah polity reached its maximum fluorescence between roughly AD 1250 and 1325, when it likely had occupants from the Central Mississippi Valley and possibly East Tennessee (King 2010, 2020:354); it entered a steep decline and was abandoned under violent and hostile circumstances between AD 1325 and 1375 (Dye and King 2007; King 2007; LeDoux 2010; Lulewicz 2019a). By AD 1400, Etowah once again was reoccupied and was one of multiple, moderately sized sociopolitical centers in the region (Hally and Chamblee 2019; King 2003, 2020).

### The Middle Cumberland and Ridge and Valley Chronologies

Our study builds on a base of 355 radiometric dates from the three major study regions: 104 from East Tennessee, 95 from the northern Georgia region (compiled in Lulewicz 2018:Appendix B), and 156 from the MCR (see Supplemental Table 1). Most of these dates were accumulated over several decades by many investigators and resulted from projects ranging from dissertations to mitigation projects for large reservoirs. Building on previous work, Lulewicz (2018) compiled the existing dates from the northern Georgia and East Tennessee regions and obtained 70 new AMS dates as part of his dissertation research. All these dates were used as data for Bayesian models. His dissertation and subsequent

research additionally included studies of platform mound stratigraphies and a ceramic seriation (Lulewicz 2017, 2018, 2019a, 2019b). For the purposes of this study, we compared the results of the MCR chronology analysis discussed next with the results of Lulewicz's chronology.

### *The Middle Cumberland Region Chronology*

Meeks and Smith compiled 200 radiocarbon determinations representing 38 Mississippian period sites in the MCR. Forty-four dates were excluded from the analyses presented here because the material that was dated or the provenience of the sample was unknown or from funerary contexts. These exclusions reduced the number of dates to 156 and the represented sites to 29. The programming code used to model these dates is presented in Supplemental Table 2 and can be run in the free OxCal software (Bronk Ramsey 2009).

Because we are most interested in broad regional trends, rather than individual site histories, the 156 dates were grouped into a single phase within a Bayesian model. We assumed that all dates were related to the same event: the Mississippian period occupation of the MCR. Using the distribution of dates together with their associated calibrated probability distributions, we created a simple Bayesian chronological model. This model produced a start boundary for the Mississippian occupation and a modeled end boundary; it also highlighted statistical fluctuations in the distributions of modeled dates throughout the time of interest.

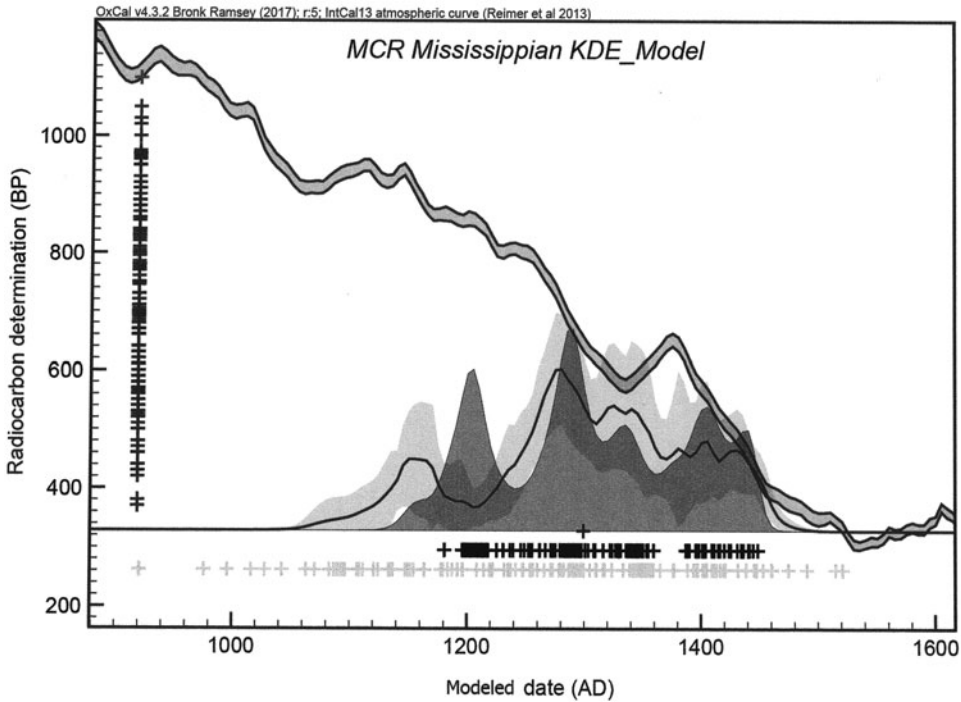
The purpose of these modeling efforts was to produce a general chronological framework for the MCR in which we could organize and easily visualize temporal relationships between major cultural and natural changes across the three regions in question. Alongside other independent archaeological datasets, the dates serve as a very rough proxy for population fluctuations over time. We used kernel density estimation (KDE) modeling (e.g., Bronk Ramsey 2017; Brunner et al. 2020; Feeser et al. 2019; Hennius 2020) to visualize fluctuations in the regional radiocarbon record or the underlying distribution of dates across the Mississippian period archaeological record of the MCR. KDE modeling differs from traditional summed probability distribution approaches in that it combines both frequentist and Bayesian approaches for modeling dates while taking into account the density of dates at particular points in time. We recognize the complexities with any direct correlation between the underlying distribution of the regional radiocarbon record and fluctuations in population estimates (Armit et al. 2013; Bamforth and Grund 2012; Contreras and Meadows 2014; Meeks 2009; Timpson et al. 2015; Torfing 2015; Williams 2012). We simply propose that, in a general manner, the radiocarbon record for the MCR indeed tracks with expectations consistent with population fluctuations, given the chronological relationships between natural and cultural events based on independent archaeological datasets such as settlement patterns, village reorganizations, artifact styles, and burial traditions.

Between AD 1100 and 1200, there is a steep rise in modeled radiocarbon density across the region (Figure 2), likely corresponding to an increase in population and mound centers during the Dowd phase. The peak at around AD 1275 corresponds with a population increase that lasted throughout the Thruston phase, followed by a steep decline about AD 1320. The final drop-off is around AD 1450, a pattern that has been well demonstrated at individual MCR sites (Cobb et al. 2015; Krus and Cobb 2018). The peaks at AD 1200 and 1275, and the steep drop around AD 1320 also align with cultural changes occurring in the American Bottom to the west and across the Ridge and Valley to the east. We return to these correlations, but first, we discuss the cultural changes that took place across the MCR and the Ridge and Valley.

### *Cultural Changes within the Ridge and Valley*

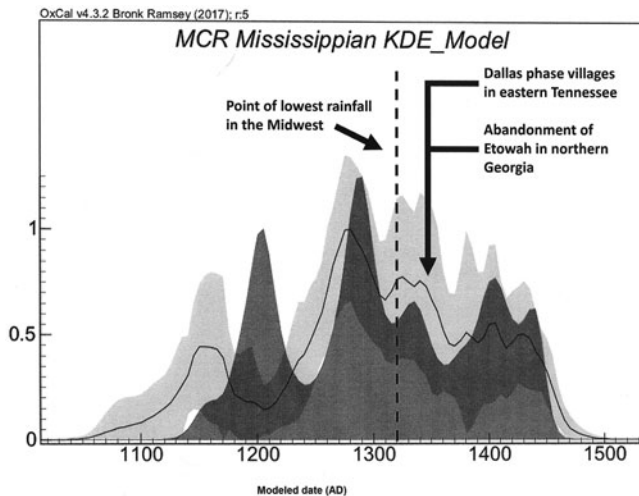
The timing of events in the MCR correlates with significant events in the Ridge and Valley regions of East Tennessee and northern Georgia (Figure 3). The construction of palisades in the Ridge and Valley escalates in the mid to late 1200s. Palisade construction sequences are well documented for this period in East Tennessee at the Hiwassee Island and Bell sites (Patch et al. 2017, 2018; Sullivan 2018a; Sullivan et al. 2022) and in northern Georgia with the rise of Etowah (King 2003; Krus 2016). In East Tennessee, the use of communal Hamilton burial mounds ceases by AD 1275, as people begin to move into palisaded villages (Schroedl et al. 1990; Sullivan 2016, 2018a).





**Figure 2.** Kernel density estimation (KDE) model. Black crosses to the left represent the medians for raw radiocarbon ages. Light-gray crosses on the bottom represent median ages for calibrated radiocarbon ages. Black crosses on the bottom represent median ages for modeled radiocarbon dates. The dark-gray probability distribution represents the modeled distribution of radiocarbon ages for the Middle Cumberland region. The black line that tracks this probability distribution is the KDE for the underlying distribution of radiocarbon ages. The shaded line running from top left to bottom right is the calibration curve.

Between AD 1325 and 1375, the Etowah polity was in collapse. Use of Mound C, an elaborate burial mound with more than 400 burials, ceased to be used during this period (King 2007; Lulewicz 2017, 2018, 2019a). In East Tennessee, use of the Hixon mound, which compares favorably with many aspects of Etowah’s Mound C, including associated artifacts and construction techniques, began about the same time that Etowah’s Mound C was abandoned (Lulewicz 2018; Sullivan 2007, 2016).



**Figure 3.** Bayesian chronological model for the Middle Cumberland Region as compared with Midwestern drought and Ridge and Valley phases and events.

The Hixon mound sequence suggests a lapse in use and then a short period of reuse and abandonment (Sullivan 2007). No residential area has been identified as associated with the Hixon mound (Lewis and Lewis 1995). Meanwhile, occupation of the large palisaded Dallas site began in the same river bottom as Hixon about the same time that the Hixon mound fell into disuse, around AD 1325 (Lulewicz 2018; Sullivan 2016). Nucleated and palisaded town sites quickly became the norm throughout the Ridge and Valley of East Tennessee and northern Georgia. These sites had central plazas fronting either a platform mound topped by a large, council house-like structure or just the large building without the mound. Such towns continued in use in the Ridge and Valley until after European contact (Hally 2008; Koerner et al 2011; Rodning and Sullivan 2020; Smith 2000; Sullivan 1987, 1995, 2016, 2019).

As previously discussed, by AD 1450, there was a major depopulation of the MCR, but this process likely started earlier and proceeded at a slower pace. Stone-box graves, triskele gorgets, and carafe neck, negative-painted bottles show up in the Ridge and Valley by AD 1350 (Lulewicz 2019a; Smith 2020; Sullivan et al. 2022); palisaded Dallas towns replaced Hiwassee Island dispersed settlements in the early AD 1300s (Lulewicz 2018; Sullivan 2007, 2016, 2018a). We turn now to events in the Central Mississippi Valley and the alignment with the MCR, before returning to ideas about interactions across the MCR and Ridge and Valley.

### The Cahokia Dispersal, Drought, and the Domino Effect

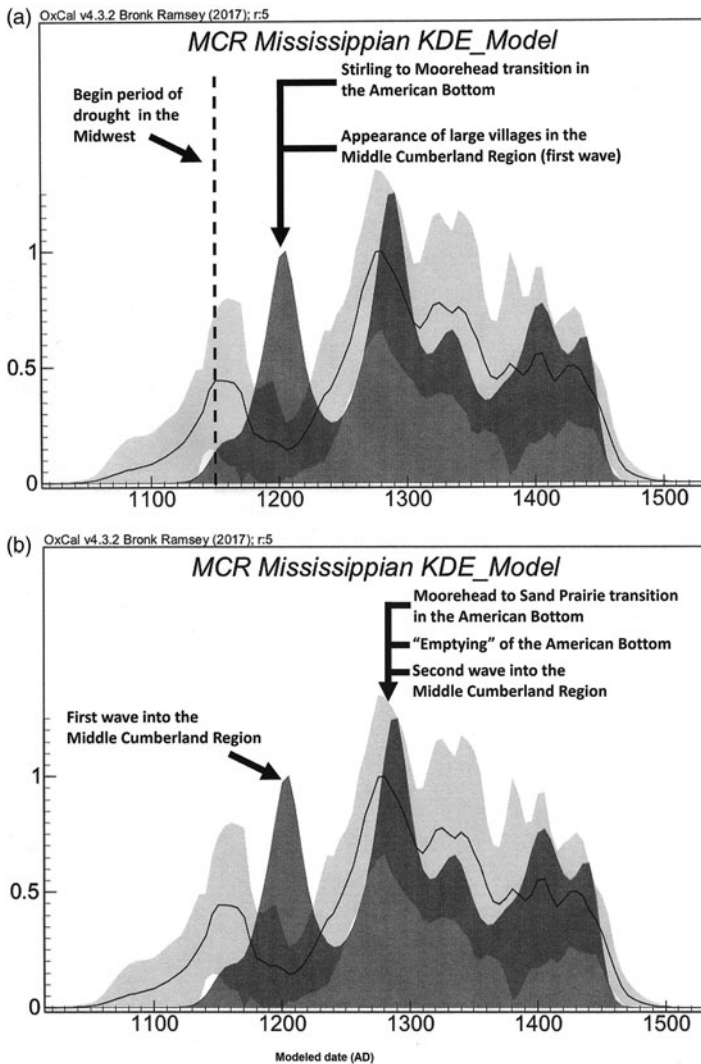
The cultural chronology for the American Bottom has long been established, based on both AMS dating and a refined ceramic chronology (Fortier et al. 2006; Table 1). Coming back to the regional chronology for the MCR, the first peak in the radiocarbon data, which is centered on AD 1200, lines up with the proposed transition from the Stirling to the Moorehead phase in the American Bottom that is characterized by the first wave of major sociopolitical reorganization and population decline (Figure 4a). The second peak at AD 1275 in the MCR is coeval with the transition in the American Bottom from the Moorehead to Sand Prairie phase, when both the true end to Cahokia and the final major wave of population dispersal occurred (Figure 4b).

Pauketat (2023) makes the case that the rise and dispersal of Cahokia were related to climate change, including the Medieval Climate Anomaly (around AD 900 to the early 1100s), which provided optimal wet and warm conditions for agriculture, and the subsequent Little Ice Age when climatic instability including a series of droughts began to affect the region's farmers. Dendrochronological studies (Benson et al. 2007, 2009) and analyses of lake sediments (Bird et al. 2017) document these climatic shifts. During the Medieval Climate Anomaly, Cahokia experienced intense population growth, but after AD 1100, west-central Illinois suffered from decades of drought. Two serious droughts occurred between AD 1150 and 1200, followed by a brief recovery, and then another serious drought happened around AD 1275. Prolonged drought began after AD 1300 and continued for about 150 years. Throughout this time, people began exiting Cahokia. By the end of the Stirling phase (AD 1200), which coincides with end of the first two serious droughts, Cahokia's population had decreased by about 50%. By AD 1350, Cahokia and much of the Central Mississippi valley had been abandoned (Pauketat 2023).

Fritz (2019) points out that droughts that affected maize yields would not necessarily have created serious food shortages because of the diversified crops cultivated by Cahokia's female farmers. Perhaps, as Pauketat (2023) suggests, the droughts also produced environmental changes that had serious social consequences. For example, the drier conditions could no longer support established rituals and spiritual practices that depended on abundant water. By AD 1200, circular buildings and mounds, used for religious rituals related to water and rain, were no longer being built or used (Pauketat 2023). Perhaps such disruption in ritual practices was a source of additional social stress and strife that exacerbated problems that rituals and their practitioners could no longer seem to alleviate.

Regardless of the impetus, we propose the possibility that the first departures of populations from the Central Mississippi Valley could have resulted in some of these people initially moving into the MCR during the drought period between AD 1200 and 1275. The presence of Late Stirling / Early Moorehead ceramics at Mound Bottom and elsewhere in the MCR accords with this scenario, as





**Figure 4.** Bayesian chronological model for the Middle Cumberland Region as compared with Midwestern drought and American Bottom phase dates: (a) Stirling to Moorehead; (b) Moorehead to Sand Prairie.

do ceramics from southeast Missouri and the lower Ohio Valley (Moore et al. 2016; Moore and Smith 2009; Sharp et al. 2020; Smith 2023). As previously noted, the population in the MCR peaked by AD 1275.

The drought in the Central Mississippi Valley worsened and spread southeast into the Ohio Valley and then to the MCR. After a steep population decline around AD 1320, the MCR also became depopulated by about AD 1450 (Cobb et al. 2015; Krus and Cobb 2018). As the population movements increased from these regions, this migration led to population increases and possible conflict elsewhere, creating a “domino effect” from the Central Mississippi Valley to the MCR and then other places. For example, events at Etowah may be related to the interactions and events that led to movements of Middle Cumberland peoples into northern Georgia. It may not be a coincidence that the appearance of Middle Cumberland ceremonial objects in the Ridge and Valley coincided with the abandonment of Mound C at Etowah and that settlement’s violent demise as a major social and political center (King 2007; Lulewicz 2019b; Sullivan et al. 2022).

Ware (2018:643–645) offers a thought-provoking example of how social rank in another matrilineal, ranked-descent-group society is related to fission when there were food shortages. In Pueblo communities the lower-rank households and lineage segments may leave first to help establish new communities or to join existing ones elsewhere. The highest-rank descent groups that own or control the most

productive farmland and the most important ceremonies are the last to leave. Such a scenario is interesting to consider based on circumstantial evidence in the case of the matrilineal ranked societies of the Central Mississippi Valley and the MCR. The initial slow trickle of emigrants may have been from lower-ranked descent groups, but as the situation worsened, higher-ranking groups that controlled important ceremonies, including the necessary regalia and other ritual paraphernalia and accoutrements, would have taken these important objects with them. This process might account for the “lag” between the initial out-trickle in the AD 1200s that spurred palisade construction and, as the situation continued to deteriorate, the appearance of iconic Middle Cumberland artifacts in the Ridge and Valley in the late AD 1200s to early 1300s.

Although traditionally perceived as trade goods within the context of Saxe-Binford model (Brown 1995) exchange systems, we interpret several artifact types as “inalienable goods”: a class of item that may circulate but is not typically exchanged (Dye 2022; Weiner 1985, 1992). In other words, these objects are the paraphernalia associated with sodalities and their rituals originating in a specific geographic region, and they can only move with the members (practitioners) of those sodalities. After the sodality and corresponding ritual items are transferred to a new geographic area, the ritual objects may then experience reinterpretation within a coalescent community.

Based on iconic MCR marine-shell gorgets and negative-painted ceramics, Smith (2019, 2020) argues for the migration of both small and larger social groups, including ritual specialists and artisans, from the MCR to the Ridge and Valley during the fourteenth century. Specifically, Nashville Scalloped Triskelion gorgets and Crested Bird gorgets appeared earliest in the MCR and had origins at workshops in the Cumberland River Valley. By AD 1300, these same gorget styles “suddenly” appear in *unmodified* form in southeastern Tennessee and northern Georgia (Smith 2019, 2020), where the style is subsequently modified through disjuncture, hybridization, or both to become recognizably derivative styles (Knight 2013). Gorgets collected by an antiquarian from Williams Island, in the Tennessee River near present-day Chattanooga (MacCurdy 1917), provide some especially compelling artifactual evidence of MCR migrations and subsequent integration into coalescent communities (Smith 2020:120). These MCR gorgets likely moved with people rather than between people, or alternatively, the migrants included one or more artisans from MCR workshops. The dating of the gorgets and relevant sites suggests that population movements from the MCR to southeastern Tennessee began as early as the mid-1200s and continued for about a century (Smith 2020).

A particularly notable example of the migration of MCR ceramics and the reinterpretation of MCR gorgets in the Ridge and Valley can be found at the Toqua site in the Little Tennessee River (Polhemus 1987). Around AD 1400, a negative-painted “dog pot” clearly executed in the Nashville style—and likely heirloomed as indicated by the extensive use wear—was interred there. In addition, a female interment included a necklace featuring a key “spider gorget” and 10 “Lick Creek” rattlesnake gorgets. The spider gorget includes an ophidian band derived from the Nashville triskeles. Smith (2020) also suggests that the Lick Creek snake gorgets emerge from the Nashville triskeles in a process engaging classic art-historical notions of disjuncture and hybridization (Knight 2013).

The Hixon mound in southeastern Tennessee, also near Chattanooga, may offer some clues about Etowah’s demise and subsequent effects to the north into the Ridge and Valley. McCarthy’s (2011) findings from a biological distance study that compared individuals interred at Hixon with those from three nearby Late Mississippian sites, including the Dallas site, show that the individuals at Hixon are biologically different from those in the other sites, where the people are biologically related. The timing of events suggests that the individuals interred at Hixon may represent refugees from northern Georgia, perhaps even Etowah itself, given the similarities of the mortuary program at Hixon with Mound C (King 2007, 2010; Lulewicz 2019b; McCarthy 2011; Sullivan 2007, 2016). This speculative relationship could be confirmed through comparative studies of Hixon with Etowah and other northern Georgia sites. It is noteworthy that construction of the Hixon mound seems to have been tolerated by the residents of the mostly small and dispersed Mississippian communities in southeastern Tennessee, likely because of the long-standing relationships between communities in northern Georgia and southeastern Tennessee as evidenced by shared and hybrid pottery styles (Sullivan 2016; Sullivan et al. 2022). Other evidence of Etowah-related ceremonial objects comes from

the Citico mound near downtown Chattanooga (Sullivan 2019) and from farther north at the Long Island site, at the base of the Cumberland Plateau on the Tennessee River near the confluence with the Clinch River. At Long Island, three large copper axes, an embossed copper headdress, and an Etowah-style stone palette were found, as were a Middle Cumberland ancestor statue and effigy ceramics (Lowry et al. 2017; Sullivan et al. 2022).

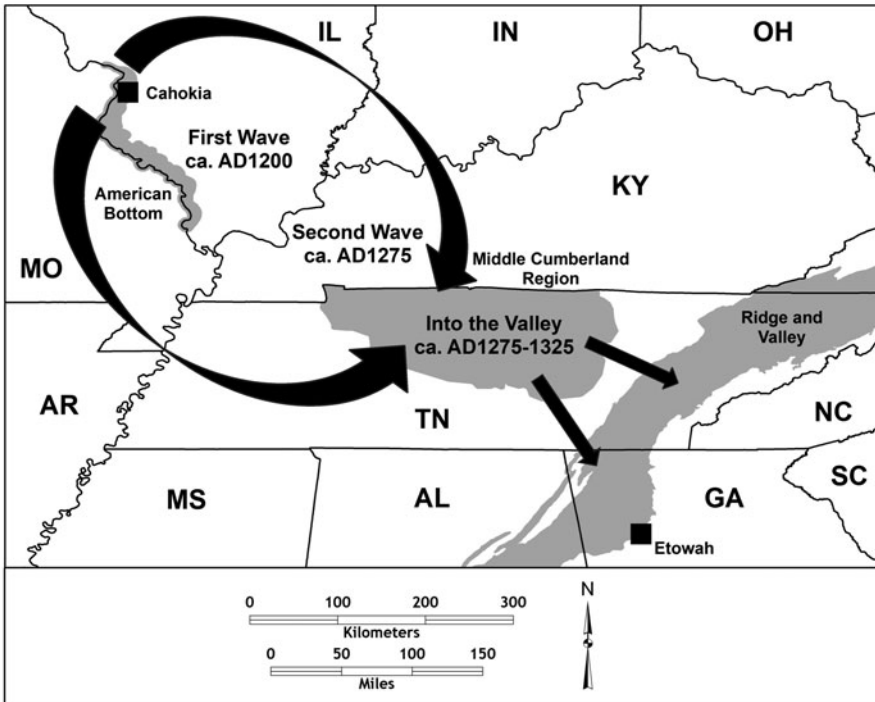
Perhaps some of the most compelling artifactual evidence for migration also comes from the Long Island site, in the form of pottery sherds and architecture that are compatible with the Thruston phase (AD 1200–1400) in the MCR. Sherds of domestic pottery recovered by the WPA crew from a wall-trench structure are not characteristic of the Hiwassee Island phase (AD 1000–1200) ceramic assemblage that typically is associated with these structures in East Tennessee. Instead of the loop handles, red-filmed or red-on-buff sherds, and highly excurved rim jars characteristic of Hiwassee Island ceramics (Lewis and Kneberg 1946), the Long Island assemblage is characterized by filleted and vertical rims, strap-handled jars, effigy heads, and a lack of cordmarking. Single-set, large post structures were built and used throughout East Tennessee by the time Mississippian ceramics with these attributes were in general use in the region. The pottery from the wall-trench structure also compares favorably with that from the platform mounds at the Long Island site where the Middle Cumberland ancestor statue was found. In contrast to East Tennessee, wall-trench structures continued to be used later into the fourteenth century in the MCR (Beahm 2013:252; Moore and Smith 2009:210). The Middle Cumberland-style domestic pottery at the Long Island site suggests that women from that region were there, whereas the relatively late wall-trench structure at Long Island suggests the presence of people, likely men, who still built this type of architecture and did the heavy construction work (Sullivan et al. 2022).

### Cultural Change and Coalescence

By aligning the chronologies for the Ridge and Valley, the MCR, and the American Bottom, we are able to offer several hypotheses about the relationships between social, political, and economic histories of these regions. Climatic conditions may not have directly affected the populations of the Ridge and Valley, but the effects of serious, sustained droughts in the Midwest, especially in the Central Mississippi Valley, certainly played an indirect role in subsequent large-scale population movements that seem to have characterized the sociopolitical histories of the Middle Cumberland and Ridge and Valley regions after AD 1200 (Figure 5). We hypothesize that these population movements from the Central Mississippi Valley, as well as the eastward expanding drought, would have put pressure on Middle Cumberland populations, which subsequently flowed into the Ridge and Valley region around AD 1275–1325 and likely continued into the AD 1400s. Most scholars have focused on defining the beginning of the Vacant Quarter, or the point at which the MCR was completely abandoned, but we have shown that movements out of the MCR may have begun up to 175 years before the total abandonment of this region, as populations slowly immigrated into neighboring regions. This scenario is compatible with that proposed by Kelso (2013, 2018), based on biological data from Middle Cumberland and Eastern Tennessee Mississippian populations that are incompatible with large-scale migrations in a short period of time.

The nature of the immigrants' impacts on the resident populations likely depended on the number of people arriving together, the available quantities of necessary resources, and the compatibility of social and political practices and beliefs. The beginnings of the emigration from the MCR were contemporaneous with the collapse of Etowah; the emergence of compact, palisaded, Dallas phase villages with large, council-house type structures; and the ending of Late Woodland communal burial mound practices. These dramatic changes, especially the construction of palisades at many sites and the defeat of Etowah, suggest that relationships between residents and immigrants initially were not necessarily peaceful.

Clues to this migration may be seen in changes in artifact style, the appearance of stone-box graves, and other cultural features in the Ridge and Valley that are similar with cultural features in the MCR, including Nashville-style gorgets that are associated with sites in southeastern Tennessee (Smith 2020). It is noteworthy that, except for a few biconcave chungke stones, artifacts that can be associated with



**Figure 5.** Proposed timing of migrations from the American Bottom to the Middle Cumberland Region, to the Ridge and Valley between around AD 1200 and 1325.

Cahokia are not found in the Ridge and Valley; yet Cahokia-style ceramics and chungke stones are found at sites in the western portion of the MCR (Sharp et al. 2020; Smith and Moore 2018).

There also are tantalizing supporting hints from early Spanish records that might have some bearing on the migration of outsiders into the southeastern Tennessee region, although some modern scholars question the veracity of the event (Galloway 2006). A Spanish-assisted Indigenous expedition led by Tristan de Luna in 1560 against the Napochies, thought to be near Chattanooga, is thoroughly documented, and the account identifies the Napochies as “newcomers” to the region (Hudson, 1988, 1997; Hudson et al. 1989; Smith 2000; Worth 2003). The ancestors of the Napochies are a possible candidate for an emigrant group from the MCR, and there is a cluster of several sites in the Chattanooga area with late sixteenth- to early seventeenth-century artifacts and dates (Smith 2000:78–79; Sullivan 2018b). Unfortunately, most of these sites have been seriously damaged or destroyed.

An important observation is that one result of the turmoil and realignments associated with the stream of migrants into the Ridge and Valley was the end of powerful regional leaders (Lulewicz 2019b; Sullivan 2018a). Etowah became just one of many similar regional centers in northern Georgia (King 2003). Platform mounds, once topped with multiple buildings that may have housed leaders, temples, or both, were altered to support large, council house-style buildings; in some towns only the large structure was constructed, with no mound (Hally 2008; Rodning 2015; Rodning and Sullivan 2020; Sullivan 1987, 2018a). Instead of powerful elites who could order mass sacrifices, as at Cahokia (Emerson et al 2016; Fowler et al. 1999), or preside over large regions as at Etowah (King 2003), town councils met to discuss town affairs and make decisions (Sullivan 2018a; Thompson et al. 2022). The immigrants were assimilated into coalescent societies. In East Tennessee, the result was a highly integrated network of largely autonomous communities, whereas communities in northern Georgia seemed to retain some aspects of hierarchy and less social integration than in East Tennessee (Lulewicz 2018; Sullivan 2016, 2018a, 2024). Harle’s (2010) biological

distance study of post-AD 1400 Late Mississippian populations throughout East Tennessee and contemporaneous populations in northern Georgia, including the King site, is relevant to these developments. Her findings show interrelatedness of the East Tennessee residents but little to no evidence for mate exchange with northern Georgia residents.

By the time of Spanish contact, which again created chaos, the turmoil that started in the 1200s had ended. Council houses had replaced powerful chiefs, and social and political configurations in the Ridge and Valley were transformed as people settled into new cultural practices, new ways of managing their communities, and, as King (2020:365) suggests, new ideas about their identities. These newly constituted coalescent societies of southern Appalachia had emerged from centuries of strife, discord, and negotiation. But once again, they faced an influx of people who would transform their world in inconceivable ways.

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Supplemental Table 1. Compiled Radiocarbon Dates and Source References for the Middle Cumberland Region.

Supplemental Table 2. OxCal Code Used for KDE Plot for MCR Dates.

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