COMMENTARY

Social networks and the archaeology of the Native American South

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At the point of early European colonization of the Americas, there were many Native American chiefdoms and chiefly provinces in what is now the southeastern United States associated with what is known to archaeologists as the Mississippian cultural tradition, dating from roughly AD 1000 through the 16th century (1). Archaeology sheds light on Mississippian society, economy, politics, and ideology and lends important insight into the development, collapse, and regeneration of Mississippian chiefdoms, both before and after European contact. Analytical approaches to studying patterns of interaction as well as the diverse and overlapping networks connecting people and groups within the Mississippian cultural landscape (and elsewhere) are critical to studying these aspects of life in the past. Social network analysis (SNA), as outlined by Lulewicz (2) in his insightful and innovative PNAS paper, "The social networks and structural variation of Mississippian sociopolitics in the southeastern United States," has great potential to spark further research and findings in the field.

Archaeology of Social Networks

SNA approaches in archaeology identify relational ties among actors, the structure of those relationships and associations, and patterns of continuity and change in networks through time (3–9). As outlined by Mills (10), archaeological applications of SNA generally identify and interpret evidence of historical, spatial, or material networks, although networks (and different kinds of networks) can overlap and all networks have historical, spatial, and material components. Historical networks are sometimes manifested in hieroglyphic inscriptions, including those that make reference to cycles of warfare and diplomacy between cities and polities. Although some forms of visual imagery—rock art, painted designs on pottery, geometric patterns in basketry, and tattooing—are not the same as actual writing, similarities in iconography might reflect important connections between groups, as evident from Mississippian iconography depicted on engraved marine shell pendants known as gorgets (11) and from similarities in iconography depicted on pottery from sites attributed to the Swift Creek culture and the Middle Woodland Period (midfirst millennium AD) in the Southeast (12, 13). Spatial networks connect people and groups at different points within landscapes and are evident in the pathways and conduits of movement at local and regional scales, in the visibility and intervisibility between sites and landmarks, and in the placements of trading centers, political centers, and pilgrimage centers. Material networks are manifested in similarities in or the shared provenance of raw materials in lithic and ceramic artifacts and in similarities in stylistic elements of material culture presumed to reflect social and political interactions between groups.

Archaeologists interested in several areas and eras of cultural history in Native North America have applied SNA toward considerations of several topics, including social connections and patterns of movement and migration in the Ancestral Pueblo Southwest (14–17), pathways and social relations between houses and households in pre-Hispanic Hohokam communities of southern Arizona (18), social connectedness and political relationships among Iroquoian villages in the Northeast and Great Lakes (19, 20), intervisibility of political centers and hilltop signaling stations in the Casas Grandes region of northern Mexico (21), and circulation of stone and development of regional cultural traditions in the late Ice Age Americas (22). SNA is not at present widespread in the archaeology of the Native American South. One exception is the gorget study just noted (11), and another is recent arguments about social networks developed through ritual practice at mound sites in the Lower Mississippi Valley associated with the Coles Creek culture of the Late Woodland period, from the late first through early second millennium AD (23).

Lulewicz (2) applies techniques and perspectives of SNA to study pottery from archaeological sites in northern Georgia and eastern Tennessee and to reconstruct material networks (10) in the greater southern Appalachian region from AD 800 through 1650. Lulewicz analyzes ceramic data from hundreds of archaeological sites, focusing on low-visibility characteristics of temper (aplastic materials added to clay paste) and on

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high-visibility characteristics of surface treatment related to social signaling (visual motifs "stamped" on the outer surfaces of pots, for example, or smoothed and burnished surface finishes). Similarities in paste composition are thought to reflect communities of practice in which potters learned and practiced similar techniques in early stages of preparing materials and making pots, partly if not largely because of kin relationships and other modes of social proximity among potters. Similarities in surface treatments also reflect those kinds of networks as well as interactions among groups and people separated by greater social and geographic distances. Lulewicz relates these networks to what archaeologists know about the long-term trends in the development and collapse of Mississippian chiefdoms in the greater southern Appalachian region from the late first millennium AD through the mid-16th century.

This period encompasses considerable changes: the transition from hunting and gathering and mobile settlement patterns to life in sedentary farming villages; the emergence of permanent villages enclosed by log stockades; the development of chiefdoms of varying geographic and geopolitical scales centered at sites with monumental earthen mounds and plazas; the cyclical collapse of chiefdoms and abandonment of chiefly mound centers; and early contacts between Mississippian peoples and European colonists. During the course of these broad geopolitical changes, the underlying social networks within the greater southern Appalachian region were durable and resilient. If underlying social networks were relatively stable during periods of profound geopolitical change and community reorganization, then what led to those changes? How did geopolitical changes affect, or not, social relations within communities, and what impacts did those transformations have on everyday lives? Perhaps patterns of continuity and change at one scale (at the level of regional chiefdoms, for example, or constellations of chiefdoms from different and sometimes distant provinces) were different from continuity and change at another scale, including the scales of local communities and households.

Social Networks in Native North America

With respect to the archaeology of the Native American South, the paper by Lulewicz (2) makes several important contributions. First, underlying social networks were durable and resilient, even as chiefdoms emerged and collapsed and as the dynamics of the geopolitical landscape changed and the epicenters of chiefdoms shifted from one mound center to another. Second, those dynamics and developments set the stage for Native American (Mississippian) responses to early encounters and entanglements with Spanish colonists and with French and English colonists later on. Third, the durability of networks within the southern Appalachian region reflects both bridging and bonding ties, the former related to broad religious or political institutions and the latter related to kinship and ethnicity. Fourth, networks linking distant points and groups within the greater southern Appalachian region had lengthy histories and were probably fundamental to community identities. There are echoes of the importance of interaction networks in Native American maps depicting the cultural geography of the American South. There is not an extensive corpus of indigenous cartography from the Native American South, although Native Americans undoubtedly had other ways of conceptualizing and characterizing geography that are either not preserved or not adequately recognized as such. During the 18th century, colonial traders periodically asked Native Americans to draw maps of their world, and maps drawn on deerskins represent individual groups as circles, connected to other groups by pathways (24). From this perspective, trade and interaction were fundamental to cultural geography and fundamental to community identity. The cloak, or mantle, associated with the paramount chief known as Powhatan, the father of the "real" Pocahontas and a periodic ally and sometime rival of the English colony at Jamestown, may have depicted a map of sorts of his own claims to political and perhaps even cosmological power (24). Lulewicz (2) identifies archaeological data (through analyzing pottery) about similar kinds of social phenomena, including social relations among people and groups as they related to (or sometimes may not have related to) political relations between communities and leaders.

Lulewicz applies techniques and perspectives of SNA to study pottery from archaeological sites in northern Georgia and eastern Tennessee and to reconstruct material networks in the greater southern Appalachian region from AD 800 through 1650.

With respect to archaeology beyond the US Southeast, this paper illustrates the benefits of compiling data from many different sites, facilitated by databases and software applications that enable analyses of large and diverse datasets. Different sites are sometimes excavated with very different interests and topics in mind, and many sites are excavated because they are threatened by modern development, but, ideally, all of the data collected are published and preserved, making them available for other researchers. Generating large datasets and maintaining accessibility to them presents some challenges, and not all big data is necessarily good data without considering context and comparability, but Lulewicz (2) illustrates how we can identify meaningful patterns in large datasets and develop provocative ideas and compelling arguments about them.

An important aspect of contemporary anthropological archaeology is an appreciation for and an interest in the diverse ontological frameworks present in different cultural traditions in the past. From Native American perspectives, some elements of and places within the natural landscape (mountains, springs, and so on, and caves or boulders marked with rock art) are known to possess animistic and even spiritual powers, as are some aspects of the built environment (including earthen mounds and structures housing central hearths and sacred fires), bundles of disparate elements whose powers can be activated by people with proper knowledge about them (25), and some animals and plants. Nonhuman actors within such animated landscapes can affect the course of history and culture change, and, indeed, there are no sharp distinctions between culture and nature in many indigenous cultural traditions (26). Native North American ontologies also often emphasize relatedness rather than boundedness of entities, actors, agents, and communities within the world (27). From an SNA perspective, entities within networks have a sort of agency themselves, and the actors and agents of cultural practice and culture change are aspects of the material world. There is considerable room to incorporate indigenous ontologies into SNA frameworks (10). The kinds of social networks revealed through these analyses are likely to unearth clues about forms of agency and change that we might otherwise overlook, and these perspectives are likely to shed much light on the emergence and collapse of Mississippian chiefdoms and the nature of Native American responses to European contact and colonialism in the American South.

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