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The Land Remembers: The Construction of Movement Possibility among Woodland Period Communities of the Virginia Peninsula

Josue Roberto Nieves

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The Land Remembers: The Construction of Movement Possibility among Woodland-Period Communities of the Virginia Peninsula

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A Thesis presented to the Graduate Faculty of the College of William and Mary in Candidacy for the Degree of Master of Arts

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Master of Arts

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ABSTRACT

Within Virginia's archaeological community, Woodland communal movement and mobility often emerge as tangential research topics under the scope of settlement pattern studies. Within this situation, the theoretical perspective of cultural ecology dominates archaeological discourse, leading to a series of interpretations that tend to privilege notions of systemic human behavior and environmental adaptation. Recently, broader anthropological discourses on movement and mobility have problematized the conclusions of antecedent disciplinary perspectives, such as cultural ecology, and promoted more nuanced analyses of the history and socially generative potential of mobile practices. In order to negotiate these theoretical divisions I call for the adoption of a new approach to prehistoric archaeology that highlights movement and mobility as the primary object of observation and object of study, respectively. In particular, this endeavor consists of a siteless distribution of place organizational construct, an integration of Gell's (1985) components of "navigation", and a consideration of the theoretical construct of motility. I argue that by combining these three ideas into a single interpretive framework, analysis of Woodland site distributions can reveal evidence of past movement possibilities, what I define as internally fluctuating catchments of non-discrete human mobile practices.
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This M.A. is dedicated to my parents who have helped me countless times along the way...
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Introduction

For the Woodland Period of Virginia, archaeologists have engaged with the concepts of movement and mobility uncritically and insufficiently. Both terms occupy secondary roles within interpretive frameworks that commonly privilege settlement patterns, energy exchange, and resource extraction as the primary concerns of research (Binford 1980; Blanton 1992; Custer 1986; Turner III 1992; Hantman and Klein 1992). Also within this perspective, human behaviors represent the catalysts by which individuals or communities gain or lose mobility or movement (see below for definitions); for example, choices in subsistence practices, such as agriculture or hunting and gathering, are viewed as operating within a singular continuum that places sedentism and mobility on opposing, contradictory ends. As such, mobility and movement rarely serve as independent research foci that require explicit study into their origins, development, or manifestations within the archaeological record.

Explicit discussions of movement or mobility are largely absent within Virginia-based research, a shortcoming that stems from the theoretical foundations surrounding scholarly notions of environment and landscape. The research program of cultural ecology (Steward 1977) influenced a majority of the state’s academic and cultural resource management investigations of movements or mobilities. This produced a series of findings that prioritized universal notions of human behavior influenced by evolutionary-based concerns regarding societal adaptations to environmental or social

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1 These notions were commonly influenced by discoveries in the natural sciences (e.g. Newton’s Laws of Motion)
stimuli. Gardner (1982, 1984, 1986, 2013), commonly identified as the patriarch of the archaeological research program’s development within Virginia, extended this paradigm by highlighting cultural ecology as an approach to explore culture systems of an area, the environments that affected them, and the results of the interactions between such culture systems and environments. This theorization produced a plethora of regionally oriented research that still serves as the foundation for contemporary analyses of Virginia-based settlement, subsistence, and socio-political processes concerning prehistoric indigenous communities (e.g. Stewart 1981; Nash 2009; Wholey 2013; Custer 1986).

Within the past several decades, an expanding body of anthropological and sociological literature, primarily outside Virginia’s borders, emerged that began to re-evaluate the social significance of movement and mobility (Deleuze and Guattari 2005; Braidotti 1994; Massumi 2002). Central to this project has been a concern for the qualitative aspects of bodily movement, the social factors affecting its manifestation, and the historical consequences it may have had for populations through time. In essence, the research program privileges the socially constructive elements of mobile practices as the main concern of anthropological and archaeological analysis. The object of investigation for many of these approaches are primarily individual agents (Browning 1995; Downey 2005), or discrete, small-scale communities that exhibit clear, unique differentiation from other ethnic groups with which they engage (Henderson 2013; Pena 2011). These current perspectives provide a more nuanced, balanced perspective of mobile practices in contrast to established scholarship and its common emphasis on systemic human behaviors. Adaptation to a specific location, a central concern for
cultural ecologists, has been recognized as problematized within this body of work because it conflicts with the transient nature of mobility and its aversion to broad, normative conclusions (Massumi 2002:8-11). As a result, proponents of what I label as the *qualitative mobility* perspective, an interpretive orientation that presumes mobility primarily arises from the limitless potential of human agents, commonly present themselves as antithetical to adaptation-based perspectives that view movement as a universal human behavior.

Although the perspectives of cultural ecology and *qualitative mobility* exhibit clear theoretical tensions, these tensions are not insurmountable, and as I will argue, the two can be combined into a functional-qualitative approach. In this paper, I address four key provisions to elaborate this claim. First, I provide a concise overview of each approach and outline their major theoretical tenants in the study of mobility and their major divergences. Next, I shift to a discussion of three useful concepts, siteless archaeology, navigation, and motility, to address points of disagreement between the two above perspectives. Thirdly, I offer a case study discussing Woodland archaeological sites at Mulberry Island (Fort Eustis) and the Naval Weapons Station Yorktown (NWSY) to exemplify a unified functional-qualitative approach predicated on the three concepts. Finally, I conclude with a discussion of the study’s findings in relation to broad historical developments affecting Woodland communal mobility (see below for definition). Central to the above discussions are the introduction of an innovative approach to mobility-oriented archaeological research consisting of the *siteless distribution of place*, a methodological perspective that combines siteless and site-based notions of the
archaeological record, and the theoretical ideas of Gell’s “navigation” (Gell 1985; see below for discussion) and Kaufman et al.’s “motility” (Kaufman et al. 2004; see below for discussion). I argue that by combining these three ideas (siteless distribution of place, navigation, and motility) into a single interpretive framework, analysis of Woodland site distributions can reveal evidence of past movement possibilities, which I will define below.

What is Movement and Mobility?

Orienting the theoretical approach of this work are distinct notions of the terms “communal movement” and “mobility”. I define “communal movement” as the diverse set of practices by which a group of subjects, in this case humans, transition from one spatial location to another. Over time, these behaviors may remain locally circumscribed, in the case of social sub-groups, or expand to society-wide scales. I define “mobility” as the intangible, unobservable product of mobile practices; it represents the broader theoretical construct that embodies a society’s collective understandings of how an individual or group moves within a specific social circumstance.

Never interchangeable, mobility and movement are unique, but inextricably linked topics; they require a two-part organizational schema, notably one that differentiates between an “object of study” and “object of observation”. Trouillot deftly elaborates the significance of this relationship, defining the former as a theoretical construct that exists intangibly within the world, both past and present, and the latter as the observable manifestations of that construct’s existence (Trouillot 2001:135-137,
In this view, mobility, as an object of study, represents the broad collection of human cultural processes and behaviors that exist within history (or prehistory) and contemporary society, while the observable practices that take place within a society that reflect the theories of mobility are movements, the objects of observation. In essence, evidence of movement, the object of observation, is the point of departure by which interpretations of mobility, the object of study, can emerge (cf. Marshall and Lelievre 2010).

Movement and Mobility, Past and Present: What We Know and Its Anthropological Implications

Cultural ecology's most explicit and exhaustive engagement with Woodland-period mobility and movement appears within its analyses of settlement systems by processual archaeologists. Within this research paradigm, mobility and movement serve as interchangeable vocabulary that highlight mechanisms of resource acquisition, essentially human behavioral responses, to a socially-determined subsistence practice and its environmental considerations. Although minor regional differences existed throughout the Woodland period and among Virginia's physiographic regions, specifically in regards to reliance on seasonal hunting and gathering or permanent agricultural village strategies, archaeological analysis from this perspective has tended to regard movement and mobility only on large-scale, systematic terms (see Blanton 1992; Custer 1986; Hantman and Klein 1992; Hodges 1991; Klein and Klatka 1991; Turner III 1992; Walker and Miller 1992).
An additional unifying theme among the various cultural ecological settlement patterns is an interpretation of movement/mobility as a phenomenon devoid of social significance beyond its basic role as a solution for natural resource and subsistence demands. Cultural ecologists often depict the concepts uncritically in models and charts, transforming the complexities of mobility into simple, and presumably self-evident, lines between the more important subjects of place, or archaeological sites (Blanton 1992:70, 72; Custer and Griffith 1986:42-43). A primary influence in this development was the popularity of Systems Theory (Schiffer 1996a, 1999), which privileged rational, optimizing assumptions of human behavior predicated on minimizing potential risk or labor factors during an activity and maximizing returns\(^2\). As a result, the non-functional social roles of a community’s mobile practices commonly remain unidentified.

Recently, numerous anthropologists and sociologists have challenged cultural ecology’s passive engagement with mobility and movement. At the core of this paradigm is a critical focus on the animate subject and the subject’s generative role in the creation of social landscapes. This focus itself stems from an expanding corpus of ethnographic literature that encompasses phenomenological worldview. For example, Sheets-Johnstone has identified animation, or physical bodily movement, as the prime mechanism by which organisms become aware of their own existence and surroundings (Sheets-Johnstone 1999:135). I interpret her conclusions to suggest that humans, animals, plants, and any other potentially animate subject never exist in a state of passive fixity. Rather, members of each category experience themselves and each other in distinct ways, shaping the

\(^2\) Commonly, risk and labor factors relate to biological energy investments that are most evolutionary adaptive to a context.
manner in which interactions with the past, the present, and the future occur. From this perspective, qualitative, or non-systemic-based, notions of movement emerge as a more appropriate avenue of inquiry.

Within the qualitative theoretical camp, the role of "place", a major cornerstone in cultural ecology’s understanding of Woodland archaeology, occupies a precarious situation. Best summarized by Cresswell, place implies a morally charged connection to notions of "home", "roots", and "significance" (Cresswell 2002:14). Opposing these views, mobility, especially within the Western ontological framework, connotes ideas of deviance, shiftlessness, and disrepute; it allegedly violates the presumption of a human universality and creates a series of irrational and shallow landscapes devoid of meaning (Creswell 2002:14-15). Within a qualitative perspective, the historic dichotomy between place and mobility that Cresswell identifies obscures the more nuanced social complexity that may exist within a society. For Malkki specifically, this is reflects the "sedentarist metaphysic", or a moral worldview that uncritically imposes sedentism as the self-evident goal of all societies, both past and present "(Malkki 1992:31). In essence, studies of "place" often become a prime battleground on which researchers can affirm the validity and the superiority of their own contemporary world. Instead of attempting to understand the social product as culturally-relative phenomenon, anthropologists and archaeologists commonly supplant a priori ideas of contemporary sedentism, the presumed antithesis to movement and mobility, as the standard by which past peoples strive to emulate.

Regardless of these issues, the construction and analysis of place does not inherently contradict a study of movement and mobility. For Cresswell, the value of place
lies in its “processual nature”: instead of existing as a “secure ontological thing”, it represents a repository of numerous practices, such as the gathering of things, thoughts, and memories, that are always developing and never truly complete (Cresswell 2002:20, 25). The boundaries of this process, the common interfaces where contemporary researchers implant modern sedentarist bias, are still existent, but reflect the social circumstances of the population that creates them. The lines or shapes of movement that can emerge through archaeological analysis must explicitly account for the potentially porous, flexible nature of locational borders that may not be readily apparent from that static material record. In this view, place, and by association interstitial space (or areas in-between places), must primarily serve as a departure point from which archaeologists and anthropologists orient, but never confine, investigations of movement and mobility.

To ameliorate the above tensions, I offer a synthetic approach to the perspectives and concerns of both cultural ecology and qualitative mobility paradigms below. Particularly, this construct entails a reimagining of the archaeological site and a consideration of the theoretical concepts of “navigation” and “motility” as optimal alternatives for Woodland archaeological research with an explicit focus on movement (object of observation) and mobility (object of study).

**Paving the Middle Path – Creating a Means of Identifying and Analyzing Woodland Mobility**

Significant to the evaluation of Early, Middle, and Late Woodland mobility is the scale and definition of the objects of analysis: individual and groups of archaeological
sites at the geographic meso-scale\(^3\) (Dincauze 2006:25). Commonly, the definition of a "site" within Virginian archaeological analyses conforms to the institutional standard of the state's Department of Historical Resources:

> In general terms, an archaeological site is defined as the physical remains of any area of human activity greater than fifty years of age for which a boundary can be established[...]. Under the general definition, a broad range of site types would qualify as archaeological sites without the identification of any artifacts (DHR 2011: 46).

In practice, archaeologists often set additional implicit criteria, material and numerically based (e.g. a location must contain X amount of Y type of artifacts), which qualify whether a concentration of excavated anthropogenic remains constitutes a significant phenomenon worthy of consideration (Dunnell and Dancey 1983:271). The product of this system of organization is a series of isolated physical spaces with fixed boundaries, defined by Binford as structured deposits of material remains that serve as "natural units" of comparative archaeological investigation (Binford 1964:428).

Though the conventional practice of site-based research enables and facilitates broad analytical linkages within and between zones of archaeological interest, several problematic circumstances exist within this methodology. Firstly, by focusing exclusively on the site, previous work has overlooked the significance of interstitial space. As Dunnell and Dancey discuss:

> Most sites in a traditional sense represent domestic or activity loci from which the exploitation of the surrounding environment took place[...]. Using *site* to structure recovery limits data collection to a small fraction of the total area occupied by any past cultural system and systematically excludes nearly all direct

\(^3\) Meso-scale represents an area greater than 1-km\(^2\), but less than 10,000-km\(^2\)

Within a research program that privileges mobility as the *object of study*, this issue is significant. Ignoring interstitial space, or treating it as a secondary concern, overlooks the central setting by which past anthropogenic movement occurs.

A second major consequence of the site-based methodology is its uncritical, highly subjective implementation. Although the definitions used by DHR (2011) and Binford (1964) serve as guides, many Virginia-based archaeologists operate with individual, non-universal conventions. Previous regional studies have defined archaeological sites in numerous fashions. In the local literature, archaeological sites have been defined as singular features similar to historic buildings and monuments (Gardner 1977), structured concentrations of high quantities of portable artifacts (Gardner 1982; Waselkov 1982), and discrete sections of environmental territory exhibiting temporally-intensive human intrusion (Stewart 1981). Such diversity is unsurprising considering the complexity of excavation conditions, the nature of research questions, and the repertoire of research technology and techniques. From an optimistic perspective, the ability to construct and to redefine core elements of the discipline demonstrates a keen sense of the profession’s methodological adaptability. However, explicit attention and discussion of conventional organizing concepts is necessary if contemporary research desires to expand upon our current understanding of Woodland-period mobility practices.

A radical alternative to the customary site-based approach is the perspective of the *siteless* archaeology. According to Dunnell and Dancey (1983), a “siteless” perspective
provides researchers with a model of the archaeological record that exhibits fewer biases than its methodological counterpart. As the authors elaborate, "the archaeological record is most usefully conceived as a more or less continuous distribution of artifacts over the land surface with highly variable density characteristics [...] Variability in artifact density is a reflection of the character and frequency of land use, and as such, is one of the more important variables that could be measured" (Dunnell and Dancey 1983:272). Implementation of these ideas requires an extensive survey strategy and either full-coverage or stratified sampling of the survey universe. Both approaches prioritize the documentation of artifacts and their spatial variations within a survey universe that consists of modern land use practices and development that disregard the importance of place, or sites (Galaty 2005:30). Ideally, these directives offer the potential to reveal the full range of human behaviors that permeate a historic landscape (Gibson 2007:8).

The "siteless" perspective, an innovative solution to the implicit consequences of site-based research, is not immune to limiting factors. Specifically, the prescribed style of survey appears to reflect a theoretical ideal that ignores pragmatic considerations. Although some geographic contexts may demonstrate the potential for complete systematic surface or test-pit investigations, many archaeologists do not encounter such circumstances luxury. Numerous factors (including modern settlements, financial constraints, and limited labor resources) restrict the scale and the scope of archaeological surveys. The apparent solution to this dilemma, strategic sampling, is no less problematic (Dunnell and Dancey 1983:268). In order to construct a statistically confident "siteless" test, an individual would require complete knowledge of a defined space's total
archaeological remains. While this requirement is not insurmountable and is commonly successful at the intrasite level (within site boundaries), it is excessively idealistic and presumes regional scale archaeology can ignore the real social and environmental constraints of contemporary landscapes.

Considering the benefits and limitations of site-based and “siteless” perspectives to the archaeological record, this project adopts a synthetic approach, the *siteless* distribution of place. In particular, this viewpoint envisions “places”, formerly archaeological sites, as areas demonstrating significant human occupation in the form of dense artifactual remains, which follows the definition parameters of Virginia’s DHR. However, the framework also views the bounded phenomenon solely as a point of departure in which meso-scale studies, the organizational category at which cultural processes occur on an inter-generational level, can operate (Nash 2009:372). In addition, the *siteless distribution of place* recognizes the individuality and practicality of survey sample strategies (e.g. Plog et al. 1978), although they may not accurately represent a statistically robust sample of the survey area.

By treating archaeological sites as “siteless” data, three noteworthy benefits are immediately apparent for mobility research: 1) it forces a conscious consideration of the significance of interstitial space, 2) it preserves the comparative familiarity of the site-based approach, and 3) it provides a framework in which current research can address the links between distributional variability of archaeological sites and single cultural practices. Caraher et al. provide an example that emphasizes the basic essence of these points (2006). Although the authors do not utilize previously identified archaeological
sites within their work, their Eastern Korinthia Archaeological Survey (EKAS) operates with a consideration of discrete analytical units, specifically artifact classes, and their distributional relationship along a continuous landscape (Caraher et al. 2006:34). The results of the study (a series of separate and intersecting artifact concentrations that crosscut previous archaeological site boundaries) illuminated previously unknown spatial and temporal extents of demographic shifts and economic practices, specifically related to subsistence of craft specialization, among Classical to Late Roman occupants of the landscape. For a study of regional prehistoric mobility, which requires explicit attention to the relationships between places, space, and the local geography, these findings offer an overview of a siteless distribution of place framework’s form and its promising potential.

Although the siteless distribution of place perspective offers a unique way of orienting archaeological data toward a mobility-privileged research program, it does not offer an inherent method of translating research findings into movement. A potential solution to this dilemma exists within discussions of human navigation. Developed by Gell, “navigation” theory posits that a study of movement consists of three components, a territory, a map of the territory, and images of the territory (Gell 1985:280). Representing a synthesis of “mental map” theory (Gould and White 2005) and practice theory (Bourdieu 2013), Gell posits that in order to analyze the movement research must focus on the relationship between a “real world”, or the environmental setting of a society, a “map” consisting of non-token-indexical spatial beliefs, or fixed spatial constructs, and the “images”, or contextual interactions, that arise when an individual or group engages
with the “real world” and its constructed landscape (Gell 1985:280). In this schema, places often represent the non-token-indexical statements of a real world either through physical, artifactual means or through mental constructions. Important, however, is the potential dynamic, changing nature of territories and their effects on the navigational procedures. Gell addresses this concern by emphasizing that maps, compilations of fixed spatial constructs (or non-token-indexical statements), do not alter because of an individual’s spatial position within a landscape, but only when a physical geographic transformation of the real world occurs (Gell 1985:274). Until such an event, individuals move through their world with fixed physical or mental organizational schemes, in the form of physical and “mental maps”, which serve as a referential system for successful movement to any place on a landscape (Gell 1985:279).

The value of Gell’s perspective on navigation is that it offers a set of distinguishable criteria that can potentially translate the static findings of archaeology into products of dynamic movement practices. Particularly, the three components of the theory, a real world, a map of spatial relationships with fixed conditions, and a perceptually based image of the map, represent discrete categories for archaeological data correlation. This view posits that if an archaeologist can identify material proxies of the real world, map, and image and perform an analysis on the relationship between the three features, then the ultimate product of the procedure will reflect the archaeological remnants of past anthropogenic navigations. I argue that this perspective is synonymous with the concept of communal movement introduced earlier.
Gell provides a potential rubric for this procedure in his discussion of the Micronesian *etak* voyaging system (Gell 1985:280-281). Specifically, he argues that Micronesians conceive of the various Micronesian islands (Woleai, Olimarao, and Faraulep) to represent the “real world”, the observable star courses to serve as “mental maps”, and the individualized journeys of the sailors to reflect tangible “images” of the “mental map”. A prehistoric Mid-Atlantic archaeological example of the *etak* system that reflects all of these points is the Middle Woodland “simple-logistical” settlement model. According to Blanton, the “simple-logistical” model represents a subsistence strategy by which communities abandon and reoccupy central base camps within a predefined territory in a consistent seasonal round. From the central camp, smaller groups of individuals, likely nuclear families, establish foray expeditions to collect resources for the central camp and all of its inhabitants (Blanton 1992:69; see also Binford 1980). In this circumstance, the terrain(s) Middle Woodland communities occupy seasonally represent the “real world”, the seasonally re-occupied/abandoned base camps comprise the “mental maps”, and the various forays represent the contextual “images” of communal interaction with their “mental maps”.

The final concern of a potential cultural ecology-*qualitative* middle-ground approach to mobility is identifying the optimal explanatory device for possible archaeological evidence of Woodland communal movements. Considering the variety of subsistence practices used during the Woodland period, specifically hunting, gathering, and incipient agriculture, and settlement strategies, each of which entail potentially diverse forms of mobile practices, the solution device must consist of a flexible, but
clearly definable quality. One such notion is “motility”. According to the Kaufmann et al., “Motility can be defined as the capacity of entities (e.g. goods, information or persons) to be mobile in social and geographic space, or as the way in which entities access and appropriate the capacity for socio-spatial mobility according to their circumstances” (Kaufmann et al. 2004:750). Moreover, individuals and groups engage in a consistent social negotiation in which a range of possibilities, competency, and appropriation interact simultaneously to influence the manifestation of particular mobile practices (Kaufmann et al. 2004:750).

The value of Kaufmann et al.’s conception of motility lies in its ability to bridge the theoretical divide between the siteless distribution of place framework and Gell’s categories of navigation. Together, these three components provide a testable archaeological framework that aims to identify past movements and interpret their significance in terms of communal mobility. Specifically, the siteless distribution of place approach provides a framework to organize archaeological data in such a way that they explicitly account for archaeological site distributional variability through time and space, which a study of mobility requires. Gell’s navigation theory best serves as a translation device for the results of the siteless distribution of place organization, offering three explicit requirements that the archaeology must meet in order to represent the remains of dynamic movement. Presuming that the archaeological data meet these demands, the product of this model, which emphasizes distributional analysis, will likely reflect instances of communal motility, or specific sets of socially defined spatial-temporal configurations for mobile practices. What now follows is a case study that tests
the outlined three-step approach during the Early, Middle, and Late Woodland periods at Fort Eustis and NWSY.

**Introduction to Areas of Study**

Mulberry Island lies within the current boundaries of the U.S. Air Force administrative partition of Fort Eustis. Consisting of approximately 6,000 acres, Mulberry Island is located along the Virginia Peninsula between the James and Warwick river systems in the historically defined Warwick County (McDaid 2011). Historically, human occupation of the island has been far-reaching and relatively consistent. Of the 232 distinct sites that currently exist within the Air Force’s cultural resource listings, evidence of anthropogenic settlement occurs in archaeological remains dating to the Archaic Period (8000-1200 B.C.), the Woodland Period (1200 B.C.- A.D.1606), the “Settlement to Society” period (A.D.1607- 1750), and beyond (DHR 2011; McDaid 2011). Importantly, the majority of the 232 sites identified are multi-component. In the case of sites demonstrating evidence of Woodland-period occupation, diagnostic evidence from each temporal sub-division (Early: 1200 B.C.- A.D. 300, Middle: A.D. 300-1000, Late: A.D. 1000-1606) has been identified using both Phase I and Phase II archaeological testing of land considered for infrastructural development (DHR 2011).

The archaeological landscape of NWSY consists of approximately 6,000 acres and 246 unique sites distributed along the York River coast, York and James River confluence systems, and the installation’s interior (Underwood et al. 2003). Similar to the Mulberry Island context, many of these sites are deeply stratified and include components
spanning from the Archaic Period until acquisition of the lands by the U.S. government in the early 20th century. In total, 88 sites, or 36 percent, demonstrate identifiable prehistoric remains (Blanton et al. 2005). Of this group, diagnostic ceramic and lithic technologies are indicative of Woodland occupation, including each of its three subdivisions. Survey methods conducted followed DHR standards of Phase I and Phase II investigation; however, unlike the Mulberry Island data set, the William and Mary Center for Archaeological Research (WMCAR) conducted a full coverage, systematic survey of all 6,000 acres within the installation’s borders.

Assumptions

Prior to addressing this project’s methodology, a discussion of its interpretive suppositions is necessary. Currently, three key points require explicit attention: 1) Archaeological sites, following the siteless distribution of place perspective, exist as material residues of movement, the objects of observation for a study of mobility, 2) Woodland-period communal movements (see above) operate with a consideration of the spatiality of place, and 3) Although archaeological survey methods used at Fort Eustis and NWSY varied, the results of both can be combined as a single data set of previously recorded Woodland-period sites for the Virginia Peninsula. Elaborating on the first supposition, the Geographic Information System (GIS)-based methodology within this project presumes that the deposition of artifactual remains represent a proxy of Woodland-period groups arriving, occupying, and traveling between various spaces throughout the Mulberry Island and NWSY landscapes. Archaeological sites, the material remains of places of human significance, emerge through intra- and inter-site bodily
movements, including walking, tool manufacture, resource acquisition, and food preparation. Individuals intentionally and accidentally leave behind utilitarian and symbolic objects throughout the course of their lives, and while post-depositional processes may affect the final positionality of artifacts (Schiffer 1996b), the structural and organizational capacity of archaeological sites (Binford 1964) provides a satisfactory buffer against completely random, non-meaningful artifact distributions.

The second supposition presumes archaeological places represent the scant existing evidence of Woodland movements. In essence, the project presumes that place is the most viable point of departure for identifying the object of observation, movement, within an archaeological context where the representation of Woodland-period dynamism is ephemeral at best. Critical to this view is an explicit acknowledgment of two ideas, first, that the archaeologically imposed boundaries of places must not influence analysis, and, second, that a potential GIS model of movement must account for variability in human occupation. Reasoning for the first point derives from a conscious desire to avoid implementing contemporary notions of fixity and boundedness onto a culturally differentiated past. In the case of the second point, incorporating the archaeologically defined chronological sub-divisions within the study, which presumes discrete differences in cultural practices of the Early, Middle, and Late Woodland periods, GIS can responsibly demonstrate potential of the spatial and temporal qualities of movement.

The final supposition involves the consequences of synthesizing the results of two distinctive survey methodologies. In general, Fort Eustis' archaeologists employed a sampling strategy predicated on "geomorphic and biotic factors", or environmental
parameters with discrete physiographic and hydrographic characteristics (Opperman and Polk II 1989:86). The researchers partitioned the survey universe into seven environmental zones, within which surveyors constructed 500 by 500-ft systematic grids. Within these square partitions, a statistically random sample was calculated in order to designate 1-ft diameter units and three adjacent units for shovel test excavation. NWSY archaeologists, in contrast, incorporated a full, systematic shovel test survey of 6,000 acres of undeveloped property, irrespective of environmental considerations (Underwood et al. 2003:41-42). During the project, archaeologists from WMCAR constructed a series of 15-m transects oriented perpendicularly to two baseline “areas”, defined by previous archaeology (Sheehan et al. 1999); within the transects, technicians excavated 30-cm diameter shovel-tests at 15-m intervals. Although the use of two different approaches may lead to potential research biases, synthesizing the evidence generated from these surveys can still offer fruitful windows into mobility.

Methodology

In order to extrapolate evidence of Woodland-period mobility from Fort Eustis and NWSY, this project examines the relationships between archaeological site densities, local geography, and time within a GIS-based methodology. Motivation for this approach is twofold. Firstly, GIS provides an adequate mechanism for synthesizing diverse data sets for analysis within a single, analytical medium (Jones et al. 2012; Kvamme 1995; Witcher 1999). Considering the siteless distribution of place perspective of this project, this factor is crucial because it bridges the archaeologically constructed information gaps that manifest from the multiple, unique styles of survey and excavation techniques that
pervade Virginia’s historical and contemporary resource management programs by providing a streamlined, analytically capable repository for geographic and archaeological data. Secondly, GIS can account for variations in spatial and temporal scales and the terrains they encompass (Daly and Evans 2006; Frachetti 2006; Jones 2014; Nash 2009:13). Never existing as a uniform phenomenon, mobility requires analysis to adapt such a consideration in order to highlight the dynamic nature of human movement and its contextual manifestations at any given time or space (Marcus 1998).

In order to analyze movement through archaeological sites, local geography, and time through a *site distribution of place*, this project required a specific series of archaeological data representative of each factor and easily incorporable into ArcGIS 10.0. Ultimately, the data selected included the following: digital elevation maps (DEM; see Figures 1 and 2), soil survey materials of Mulberry Island and NSWY, shapefiles consisting of polygons reflecting all sites surveyed and excavated on both military installations, and Phase I and Phase II survey reports for all Woodland-period sites. DEM was chosen to serve as the staging medium into which all other GIS data were embedded due to its unique ability to provide simultaneously a clear regional image layer (at 100-m resolution for the NWSY and 1-m resolution for Fort Eustis), boundaries of hydrographic features, and topographical data. Complimenting these attributes, the soil survey materials (which included a shapefile for Fort Eustis/Mulberry Island and a field report for NWSY) provided additional information that further elaborated the terrains in which Woodland-period communities constructed their places. The archaeological site shapefiles provided the archaeological proxy of “places” by which GIS analysis of
movement could initiate. Finally, survey reports served as references to each individual site and the material culture associated with their temporal identification as Early, Middle, or Late. Once the data were acquired from its three sources, the United States Geological Survey (USGS) archives and the cultural resources managers of Fort Eustis and NWSY, an ArcGIS geodatabase was created in order to synthesize each discrete data set into a single, analytically capable source.

Following the creation of the geodatabase, a series of query searches was developed for the archaeological site shapefiles in order to distinguish Woodland-period occupation, and its subsequent sub-divisions of Early, Middle, and Late, from other prehistoric and historic contexts. Next, the sites that emerged under each query were correlated to each installation’s soil survey data. In the specific case of Fort Eustis, the soil and archaeological site shapefiles were combined utilizing the Union analysis tool and the results were recorded in a separate inventory for later reference. Following this procedure, the center point of each site at Fort Eustis and NWSY was calculated using Boolean statistics with the centroid (representative center of polygon) and inside (output contained within input) conditions. Lastly, ArcGIS spatial analysis of Kernel site densities for each Woodland subdivision was conducted utilizing the site center points. Kernel density analysis was chosen for this project because of its explicit consideration of the “neighborhood” factor of data points and its production of raster surface, which accounts for that archaeological sites and interstitial space. In order to account for possible variation in spatial and temporal scale, Kernel densities were conducted of the following contexts: Early, Middle, and Late Woodland of Fort Eustis only; Early, Middle,
and Late Woodland of NWSY only; and Early, Middle, and Late Woodland of both installations combined.

Results

The results of the above procedure highlighted four noteworthy relationships between the Fort Eustis Woodland-period sites and their local geography: 1) a shift in site densities from the southernmost portion of Mulberry Island to the north through time, 2) a general avoidance of Mulberry Island's center over time, 3) a constant density of settlement on the west coast (nearby site 44NN0105), and 4) a tendency for Woodland communities to occupy certain soil types. Beginning in the Early Woodland period, human occupation and activities focused on the southern portion of the island and on the west coast, notably near site 44NN0105, a potential quarry site (Figure 3). Several areas to the north, specifically upriver along the Warwick, contained smaller concentrations of material remains, but not comparable in density compared to the southern groupings. During the Middle Woodland, the strongest density of sites shifted roughly 2-km north along the Warwick-James river confluence and westward toward site 44NN0105; although, several concentrations emerged in the northern portion of the island persisted (Figure 4). By the Late Woodland period, site densities transferred once again to the southern-most tip of the Island, at the connection between the Warwick and James Rivers, while the Island's center became generally abandoned. In addition, unprecedented site densities arose north of Mulberry Island, particularly along the center of the Warwick River and along the entire James River coastal boundary (Figure 5). Throughout this spatial-temporal redistribution process, many of the Woodland communities occupied
soils with either very poor water drainage (Bohicket Mucky Silty Clay) or moderate
drainage (Typic Hapludult and Tetotum Silt Loam). These soil occupations remained
consistent throughout the Early, Middle, and Late Woodland chronological periods.

In the case of the NWSY Woodland-period site distributions, three distinct
patterns emerged: 1) a consistent development, through time, of concentrations in close
proximity to York river confluences, 2) a general avoidance of NWSY interior,
specifically lands lacking a nearby river or stream, and 3) a tendency for Woodland
communities to locate sites on similar soils throughout the entire Woodland period. With
the exception of sites 44YO804 and 44YO857, Early Woodland indigenous occupation
coalesced almost exclusively along the center of the Felgates Creek, York River
confluence (Figure 6). Although the two aberrant cases do not follow the general location
trend, each appears to share topographic and aquatic considerations with the major site
concentration of the period. Following the transition to the Middle Woodland period, the
number of sites and significant concentrations significantly expanded at NWSY (Figure
7). Although an emphasis on the center of Felgates Creek remained, major site
concentrations shifted north and south of the Early Woodland period’s primary
occupation zone. In addition, new aggregations developed at the initial outlier case of
sites 44YO804 and 44YO857, south towards the extreme reaches of Felgates Creek, east
along Indian Field Creek, west at King Creek, and along the coastal border of the York.
During the Late Woodland period, accumulations remained relatively consistent with its
temporal predecessor, with the exceptions of a decrease in focus at the western extreme
of Felgates Creek and a general decline in inland occupation (Figure 8). Constantly
throughout the Early, Middle, and Late Woodland the majority of indigenous communities occupied soils on Coastal Plain uplands (Emporia, Kempsville, and Craven-Uchee Complex) or river terraces (Dogue, Pamunkey, and Uchee) (Virginia Polytechnic Institute and State University 1982). Both of these groups encompass moderate to well drained traits.

After compiling a series of merged distributions consisting of Fort Eustis/Mulberry Island and NWSY archaeological sites, several spatial-temporal trends emerged. Initially, Mulberry Island, and by association the James River, appears to monopolize the most significant Kernel distributions during the Early Woodland (Figure 9). In addition, these concentrations exhibit broad stretches of potentially utilized lands, likely a result of the large spatial distances between clusters of sites. Interestingly, during the Middle Woodland the focus of site concentrations abruptly changes, shifting to the NWSY, and by association York River, portion of the Virginia Peninsula (Figure 10). During this period at Mulberry Island, concentrations shift slightly north along the east coast and occupied land boundaries shrink; in contrast, the NWSY experiences a sharp expansion of its Early Woodland density, which covers the entirety of the Indian Field Creek area and its proximal York River coastline by the time of the Middle Woodland. By the Late Woodland period, both Fort Eustis/Mulberry Island and NWSY encounter a contraction in significant site concentrations. In the former case, two closely constricted cases appear at the southern portion of the island and along the Skiffes Creek-James River confluence; in regards to the latter, the most noteworthy frequency occurs east of Indian Field Creek along the York River coast (Figure 11).
In order to best contextualize the results of the preceding model, the following section revisits themes from the preceding theoretical and organizational discussion. By relating the study's findings back to these themes, specifically the Gell's navigation theory and Kaufmann et al.'s motility, this paper attempts to discern potential evidence of movement and implications for Early, Middle, and Late Woodland mobility.

**Movement – The Object of Observation**

Prior to identifying potential Woodland communal movement through the categorical requirements of Gell's model of navigation, several key points regarding *siteless distribution of place* require attention in regards to its role within the case study. While the "places" under investigation contain boundaries, these archaeologically constructed features do not represent impenetrable obstacles. Likely, Woodland-period communities, for a variety of motivations including subsistence, economic exchange, and migration, traversed within and beyond these areas at any given point in time. Because of this scenario, the Kernel density analyses explicitly account for distributional patterns of sites within the Fort Eustis and NWSY landscapes.

The second major introductory point that requires consideration is that the Early, Middle, and Late Woodland-period GIS models do not reflect alternatives to established cultural ecological settlement pattern systems. Rather, because movement and mobility are the object of observation and object of study, respectively, of this investigation, the analyses of archaeological site distributions and their geographical correlates reflect a
more nuanced view of a single set of practices within the larger scale Woodland settlement system.

Considering Gell’s “navigational theory”, the geospatial and survey data provide information on the three critical factors that comprise the practice: a “real world”, a set of fixed spatial constructs, and a contextual interaction with both of these phenomena. The DEM images and soil surveys of Fort Eustis and NWSY generate a representation of the local Woodland-period topographic and geological territory, a section of the larger “real world” setting in which natural and anthropogenic constructs can emerge (Gell 1985:280). In addition, the DEM images and trends in soil occupation work in conjunction with the archaeological shapefiles to populate the “world” with the physical residues of various Woodland community spatial constructs, or non-token-indexical spatial beliefs (Gell 1985:279). Collectively, these ideas comprise the “mental maps” of Early, Middle, and Late Woodland societies, or the sets of fixed spatial circumstances (e.g. site 44YO804 is west of site 44YO857, and south of the York River) by which movement relationally operates. The final criterion, token-indexical knowledge, is apparent in the density raster images, which emerge from a historically influenced relationship with the geography of the Virginia Peninsula (“real world”) and the constructed places within the territory.

In addition to meeting the third criterion of Gell’s navigation categories, the Kernel site densities of the Fort Eustis and NWSY archaeological sites provide the synthetic bridge that connects the “real world”, “mental map”, and contextual interactions
to its product, past anthropogenic movements. The temporally and spatially specific results that emerge within the GIS analysis suggest that Early, Middle, and Late Woodland-period communities traversed the Virginia Peninsula, which can be construed as territory, in unique structured patterns. As communities occupied the land over time, represented through the DEM images and soil survey data, they began to populate their world with a series of socially and environmentally contingent “mental maps” that were materially evident through the creation of repeatedly occupied places, referenced by the archaeological shapefiles. Expanding on this point, these repeated occupations share similar qualities with Thomspon’s (2012) notion of “persistent places”, or locations created by structured human practices that offered constant concentrations of culturally relevant resources (in this circumstance historically informed geographical locations and soil types). Concurrently with the establishment of the “maps”, Woodland communities constructed a series of dynamic, historically influenced interactions with their spatial constructs and the “real world”, suggested by the Kernel density images. In particular, Kernel density raster images indicated that Early, Middle, and Late Woodland communities of Fort Eustis and NWSY traversed their land with temporally contingent considerations predicated on contemporaneously occupied places, the James and York River coasts, river confluences, and poorly/moderately drained soils.

Although my results provide insight into broad patterns of Woodland movement through time, especially through the organizational lens of Gell’s “navigation” theory, these results do not identify discrete travel routes. While the amorphous shapes of Kernel

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4 By spatially specific I refer to the Kernel densities that consider Fort Eustis and NWSY independently, and the model that incorporates the archaeology of both installations.
densities highlight the totality of potential past human movements, they do not provide apparent indications of explicit, actualized journeys. This situation is expected; Kernel density analysis is a non-parametric estimation of a random variable’s probability density function (Parzen 1962; Silverman 1986). The products of the ArcGIS spatial analyst tool are a series of statistically derived “magnitude” distributions that alter in value depending upon the input parameter’s spatial characteristics and the user-defined search radius, which in this case follows Silverman’s Rule of Thumb (Esri). Moreover, the resultant concentrations account for outliers and potentially absent data by assuming the known data set represents a sample of a larger population. Essentially, the Kernel densities of this study represent a collection and projection of variably shaped movement possibilities, or internally fluctuating catchments of non-discrete human mobile practices.

From the qualitative mobility perspective, the notion of movement possibilities appears at first glance to encompass several problematic conditions. Because this finding emerges from a GIS-based methodology that utilizes a collection of places instead of recorded movements, it runs the risk of identifying human mobile practices solely as by-products of archaeological site positioning. Massumi best highlights the potential dilemma of this situation, stating, “When positioning of any kind comes a determining first, movement comes a problematic second. After all is signified and sited, there is the nagging problem of how to add movement back into the picture” (Massumi 2002:3, emphasis added). Secondly, the static, photographic nature of ArcGIS inherently obscures the possible fluctuations that may occur among the identified movement possibilities. Specifically, the current raster images may oversimplify the dynamic extent
of Woodland communal “territories”, “mental maps”, and contextual interactions toward long-term trends instead of short-term or episodic shifts. Thirdly, because Kernel densities reflect a distribution of probabilities instead of discrete movements, they may not offer the critical link to a discussion of the object of study, mobility.

Although the first possible critique of movement possibilities strikes at a key assumption of this study’s theoretical framework, it fails to recognize the interpretive condition of archaeological research. Embedded within the core of the discipline is a fundamental, unavoidable reality, material remains exist within a frozen space at locations often void of its original inhabitants (Beaudry and Parno 2013). Discerning human practices and cultural processes from objects and features, especially in prehistoric contexts, requires constant epistemological reflection on the part of the researcher as she/he constructs the inferential links that connect static data to dynamic human agents (Binford 1967, 1981; Raab and Goodyear 1984; Wylie 2002). Ignoring this circumstance creates a presentist bias, which Cresswell defines as a hyper-fixation on contemporary societies, technology innovation, and the “new” (Cresswell 2010). The extreme consequence, which this project rejects, would be a complete disavowal of past movement as an observable practice and of past mobility as a significant social process.

The second critique highlights a critical issue that still exists within GIS technology. By its very nature, computer systems can only provide a series of spatial-temporal snapshots that do not immediately demonstrate potential fluctuation of incorporated geospatial data. However, this limitation is not problematic. Depending on
the user and the research question, GIS can exist not only as a technology, but also as a “science”. Wright et al. discuss the implications of this notion:

The ‘science of GIS’ position insists on a more intimate and reciprocal connection between tool and science – one that involves research on a set of basic problems...[it] is concerned with the analysis of the fundamental issues raised by the use of GIS in geography or other disciplines (1997:355).

What this broad definition implies is a view of GIS as process, a totality of education, application, analysis, and critical reflection that produces a set of socio-historic contextual results. Although a complete system can never truly exist (because technological improvements and new data constantly emerge) this does not preclude the necessity for GIS practitioners to engage with contemporary circumstances and to create knowledge baselines by which improvements and refinements can emerge.

An adequate solution to the third critique is to elaborate further upon the potential social implications of movement possibilities. In addition to delineating internally fluctuating catchments of non-discrete human mobile practices, these objects of observation serve as progressive, constantly developing models of movement’s potential. Moreover, by discerning the statistical distribution patterns of places, which represent the material proxies of past human movements, and identifying possible correlations with local landscape features, the GIS-generated results of this study appear to exhibit a portion of the prospective structuring characteristics of Early, Middle, and Late
Woodland-period communal movement. In this view, *movement possibilities* appear to reflect certain temporally contingent “capacities”, or motilities.

**Mobility – The Object of Study**

Although the preceding case study appears to support the validity of the *siteless distribution of place* framework and Gell’s navigation theory in the identification of past Woodland motilities, it requires additional historic contextualization in order to demonstrate its potential anthropological significance in terms of communal mobility, this paper’s *object of study*. What follows are a brief overview of major episodes of mobility within the modern borders of Virginia, as well as from the Early, Middle, and Late Woodland periods a discussion of how these factors possibly relate to the examples of motility identified at Fort Eustis and NWSY.

Virginia’s Early Woodland-period archaeological record demonstrates two noteworthy trends in regards to communal mobility. Firstly, indigenous peoples throughout the state began to focus upon the use of a single residential base-small foray camp settlement strategy, which generally privileged a reliance on increased sedentism in comparison to similar practices from the Archaic (Gardner 1982; Hodges 1991:223). Coinciding with a stabilization of the local climate (Gardner 1984:32), this approach spurred an unparalleled period of expansion and intensification of subsistence procurement and non-food resource exploitation among Early Woodland communities (Klein and Klatka 1991:166). Riverine and estuarine locales became the major geographical foci of these developments, in opposition to more interior and upland
contexts, spurring increased reliance on aquatic-based materials (Catlin et al. 1982) and likely river-based transportation.

Secondly, Early Woodland community-based mobile practices tended to create expansive material exchange networks. Concentrating predominantly on goods of functional or symbolic importance (Hodges 1991:224), such as exotic lithic tools of foreign origins, these webs of socio-economic relationships both maintained and expanded social interactions between inhabitants of Virginia’s physiographic regions as well as with communities beyond their borders, notably those located in the Onondaga, Canadian, Indiana, and Tennessee territories (Stewart 1989:56). Such connections undoubtedly required large-scale movements (within and beyond state regional borders) and ensured that the transition toward more sedentary settlement practices involved significant flexibility in terms of mobile capabilities, or the ability to relocate at any moment.

During the Middle Woodland period, a vast array of cultural practices emerged that affected the diverse iterations of communal mobility. In terms of general settlement patterns, two discreet systems dominated the archaeological period--simple logistical and fusion-fission. The former scheme (Binford 1980) encompassed complete site relocations predicated primarily on hunting/fishing-gathering based seasonality while the latter (Blanton 1992:71) concentrated on the erection of singular, central base camps in which smaller foray sites served as temporary resource conduits. Beyond the configuration of sites, archaeological evidence indicates a severely reduced exchange network, in comparison to the Early Woodland (Hantman and Gold 2002:276-277). While broad-
based exchange of foreign (e.g. copper and rhyolite) and domestic (e.g. quartz) goods continued throughout the Middle Woodland, severe declines occurred in the spatial extent of temporally antecedent and contemporaneously developed networks (Little 1995:157-158). At the center of all these major changes was an unprecedented reconfiguration of the social landscape.

Centered on the Piedmont and Coastal Plain regions, the Middle Woodland social landscape experienced an unprecedented division around 200 A.D. During this time, a distinct “fall-line” of ceramic distributions emerged that predominately focused on tempering agents (Gallivan 2003:34). Within the Piedmont, sand and lithic temper dominated the region, represented by such types as Varina, Prince George, and Stony Creek (Egloff and Potter 1982); in the Coastal Plains, the shell-tempered Mockley tradition reigned supreme (Gallivan 2003:34; Gleach 1988; Stewart 1992:9-10). Archaeological consensus suggests the emergence of this material distribution represented an unprecedented territorial designation process between local Siouan communities and recently migrated Algonquian groups from the Great Lakes region (Potter 1993:3). Over time, both ceramic traditions developed in increasingly divergent forms and tended to become associated with discrete economic exchange networks (Stewart 1989).

By the arrival of the Late Woodland, the potential social and environmental forces affecting communal mobility within Virginia increase. Following along the foundations established during the Middle Woodland, material culture, notably ceramics and lithics, continued to diversify along increasingly ethnically oriented trajectories and within
circumscribed spheres of exchange (Bushnell Jr. 1940; Gardner 1986:77-92; Hantman and Klein 1992). Sedentary, agricultural-based lifestyles flourished as domesticated crops, such as maize, beans, squash, and chenopodium, supplanted the predominantly hunting and gathering strategies that dominated the Early and Middle periods (Barfield and Barber 1992; Custer 1986:160-165; Turner III 1976, 1992). In conjunction, seasonal camps transformed into large villages, replete with ceremonial centers, complex burials, defensive palisades, house clusters, and other markers of increased occupational permanency (Custer 1986; Walker and Miller 1992). Perhaps most important, however, was the development of complex chiefdoms.

Although regional differences existed in terms of social organization, alliance networks, and ecological exploitation strategies (Rice 2009; Stewart 199), Virginia's Late Woodland-period chiefdoms tended to follow a pyramidal political structure whereby authority centralized within the hands of a single individual (Gallivan 2011:295; Rountree and Turner III 2002). Maintenance of the complex social relationships tended to involve the development of explicit prescriptions on the mobile practices of tribal subjects, including the establishment of tribute and wealth distribution networks, occupational responsibilities (e.g. specific ways of farming or conducting religious acts), and ethnic boundaries (Dent 1995; Rountree 1993). However, non-elite individuals throughout this time engaged in a variety of strategies related to personal welfare, such as small-scale (i.e. individual, family, or lineage) relocations that were aimed at either establishing new settlements or finding more hospitable communities (Gallivan

Considering the diverse array of conditions affecting communal mobility throughout the Woodland period in Virginia, discerning the role of the identified motilities of Fort Eustis and NWSY’s prehistoric inhabitants is complex. Because of the momentous shifts in settlement pattern organization, exchange networks, ethnic social boundaries, and political organization, a high probability exists that above findings may represent a convergence of various movements consisting of assorted combinations of social, environmental, spatial, and temporal conditions. Nonetheless, bearing in mind this project’s scale of interest (meso-scale), the perpetual occupation of the Fort Eustis and NWSY landscapes, and the consistent correlations between the investigated places and their local geography through time, several potential conclusions arise regarding the motilities’ cultural significance.

Because of the scale of inquiry is relatively small, the communal motilities likely reflect the product of routine, localized social expectations. This idea suggests that the identified movement capacities predominantly represent immediate concerns of Early, Middle, and Late Woodland communal daily life, specifically how the individual or group should move in terms of carrying out residential tasks (e.g. food acquisition and preparation, tool manufacture, social engagements, religious practices, site maintenance, and leisure). The shifting of motility concentration possibly indicates the spatial-temporal distributions of socially defined everyday (high/very high Kernel density), common (medium Kernel density), and uncommon (very low/low Kernel density) movements.
Secondly, while the motilities possibly privilege local concerns, they also doubtlessly embody reactionary responses to the aforementioned Early, Middle, and Late Woodland historical developments. Evidence supporting this notion, the location of the archaeological sites near riverine eco-systems on the Coastal Plain region and the prevalence of Mockley ceramics, sand-tempered ceramics, and foreign lithics at both Fort Eustis and NWSY (Opperman and Polk II 1989; Underwood et al. 2003), indicate that the diverse inhabitants of the Virginia Peninsula engaged with the major events throughout the Woodland period; specifically, the Early Woodland relations to aquatic resources and creation of broad exchange networks, the Middle Woodland Algonquian migrations, and the Late Woodland complex chiefdoms (in this circumstance the Powhatan). Ultimately, all of these conditions, in conjunction with local histories and environments, likely served as orientating factors by which communities negotiated their self-defined motilities and their distributional extents in relation to neighboring groups and larger-scale historical events.

Conclusion

Movement and mobility are pivotal in the formation of human experience. Movement represents an ever-present, observable human practice that generates variable social behaviors and human-environmental relationships. Over time, groups of people adopt certain configurations of these components and construct a set of communal expectations that guide their contemporaneous and future manifestation—in essence a type of mobility. These notions regarding movement and mobility represent a synthetic product of recent anthropological theorization and past archaeological investigations,
which have important ramifications for current research of past peoples and their mobile practices. Specifically in the case of prehistoric communities, this discourse spurs researchers to problematize the functionally based assumptions that permeate current understandings of past indigenous movements and to re-imagine their variable mobilities as a series of complex phenomena that both liberate and constrain certain engagements between societies and local environments.

In the case of the Virginia Peninsula’s Woodland-period indigenous populations, archaeological evidence suggests movement and mobility exist in discreet forms. Through a GIS-based methodology, archaeological site distributions, the material residues of actualized past movements, indicated that Early, Middle, and Late communities traversed their local landscapes through a series of movement possibilities, or internally fluctuating catchments of non-discrete human mobile capacities. The development of this specific character of movement over time and space demonstrated clear patterns, in terms of relatively consistent correlations with temporal predecessors and local geographic features, within this project’s constructed models, suggesting that the Woodland communities adopted a form of mobility predicated on landscape learning and historical engagement.

Considering the potential issues of the project, specifically its assumptions regarding archaeological sites, Woodland-period communal movements, and data limitations, the results and the interpretations provided in this paper represent the initial steps of a potentially larger research agenda that requires additional attention and refinement. Of particular note, studies of potential ethnic groups occupying the Peninsula
during the Woodland period offer a lucrative avenue by which the observable movement possibilities could be further elaborated. Although a non-discriminatory perspective of archaeological sites, in regards to communal and individual identity, enables a broad outlook on the factors affecting movement and its material products, historical ecology's core tenants, especially human agency, require additional research to consider the role of ethnic groups within the broader patterns of mobile practices and its environmental correlates. In order to address this issue, future studies must begin to incorporate conventional artifact classes, such as ceramics, lithics, fauna, and ethnobotanicals, in order to distinguish culturally divergent communities that may be occupying a single territory.

The GIS model of Fort Eustis and NWSY Woodland inhabitants' movement/mobility offers an insightful overview of an often-overlooked social process. With the potential of future technological and data improvements, prehistoric archaeology similar to this project's framework can continue to engage the broad anthropological discourse on both topics and develop improved understandings of the diverse ways humans traverse their landscapes.
Figure 1: Digital Elevation Map (DEM) of Fort Eustis Military Installation.
Figure 2: Digital Elevation Map (DEM) of Naval Weapons Station Yorktown.
Figure 3: Kernel Densities of Early Woodland archaeological sites of Fort Eustis. Site 44NN0105 is highlighted in blue.
Figure 4: Kernel Densities of Middle Woodland archaeological sites of Fort Eustis. Site 44NN0105 is highlighted in blue.
Figure 5: Kernel Densities of Late Woodland archaeological sites of Fort Eustis. Site 44NN0105 is highlighted in blue.
Figure 6: Kernel Densities of Early Woodland archaeological sites of Naval Weapons Station Yorktown. Sites 44YO804 (left) and 44YO857 (right) are highlighted in blue.
Figure 7: Kernel Densities of Middle Woodland archaeological sites of Naval Weapons Station Yorktown. Sites 44YO804 (green dot) and 44YO857 (right) are highlighted.
Figure 8: Kernel Densities of Late Woodland archaeological sites of Naval Weapons Station Yorktown.
Figure 9: Digital Elevation Map (DEM) depicting both Fort Eustis and Naval Weapons Station Yorktown. Kernel Densities of Early Woodland archaeological sites from both military installations.
Figure 10: Digital Elevation Map (DEM) depicting both Fort Eustis and Naval Weapons Station Yorktown. Kernel Densities of Middle Woodland archaeological sites from both military installations.
Figure 11: Digital Elevation Map (DEM) depicting both Fort Eustis and Naval Weapons Station Yorktown. Kernel Densities of Late Woodland archaeological sites from both military installations.
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