Monumental Routes: Movement And The Built Environment At Iron Age Gordion

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Abstract
The archaeological site of Gordion, or Yassıhöyük, located at the confluence of the Sakarya and Porsuk Rivers in central Turkey, is best known as the capital city of the Phrygian King Midas and is essential to understanding the Iron Age on the Anatolian Plateau. One hundred burial mounds (or tumuli) dot the landscape around Gordion's Citadel Mound, of which 43 have been excavated. The vast majority of those date to the Iron Age, between 850 and 530 BCE. Thus far, they have mainly been studied as burial assemblages, and little research has been conducted on the mounds as archaeological features in their own right. There are suggestions that certain tumuli were aligned along ancient routes, or with monumental architecture of the Citadel Mound. The present study embeds the tumuli within their landscape and considers them intentional transformations of the environment. Through a careful reconstruction of ancient routes, using digital methodologies to model their paths and views along them, combined with personal reconnaissance to document the phenomenology of traveling, I will describe the process of monumentalizing this landscape that unfolded over several centuries, its spatial and chronological distribution, and what it implies about the changing sociopolitical situation at Gordion. Several routes will be shown to share characteristics of monumental construction related to movement and visibility that vary according to topography and the sociopolitical relationship between Gordion other settlements, suggesting strong cultural cohesion throughout the landscape that should be connected to a process of regional coalescence centered on Gordion. I will also discuss the role of the tumuli within Phrygian society, moving beyond a simple designation as royal burials, and focusing on the physical properties of the tumuli - their presence in the landscape, the activities and labor required for their construction, and how these aspects changed over the three hundred years during which they were built. The monuments did not disappear after the Iron Age, but outlasted the sociopolitical system that produced them. The dissertation therefore will conclude by examining how the tumuli survived as physical objects in a changing landscape while signifying something about the history of the area.

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MONUMENTAL ROUTES: MOVEMENT AND THE BUILT ENVIRONMENT AT IRON AGE GORDION

Lucas Stephens

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ABSTRACT

MONUMENTAL ROUTES: MOVEMENT AND THE BUILT ENVIRONMENT AT IRON AGE GORDION

Lucas Stephens

C. Brian Rose

The archaeological site of Gordion, or Yassihöyük, located at the confluence of the Sakarya and Porsuk Rivers in central Turkey, is best known as the capital city of the Phrygian King Midas and is essential to understanding the Iron Age on the Anatolian Plateau. One hundred burial mounds (or tumuli) dot the landscape around Gordion’s Citadel Mound, of which 43 have been excavated. The vast majority of those date to the Iron Age, between 850 and 530 BCE. Thus far, they have mainly been studied as burial assemblages, and little research has been conducted on the mounds as archaeological features in their own right. There are suggestions that certain tumuli were aligned along ancient routes, or with monumental architecture of the Citadel Mound. The present study embeds the tumuli within their landscape and considers them intentional transformations of the environment. Through a careful reconstruction of ancient routes, using digital methodologies to model their paths and views along them, combined with personal reconnaissance to document the phenomenology of traveling, I will describe the process of monumentalizing this landscape that unfolded over several centuries, its spatial and chronological distribution, and what it implies about the changing sociopolitical situation at Gordion. Several routes will be shown to share characteristics of monumental construction related to movement and visibility that vary according to topography and the sociopolitical relationship between Gordion other settlements, suggesting strong cultural cohesion throughout the landscape that should be connected to a process of regional coalescence centered on Gordion. I will also discuss the role of the tumuli within Phrygian society, moving beyond a simple designation as royal burials, and focusing on the physical properties of the tumuli - their presence in the landscape, the activities and labor required for their construction, and how these aspects changed over the three hundred years during which they were built. The monuments did not disappear after the Iron Age, but outlasted the sociopolitical system that produced them. The dissertation therefore will conclude by examining how the tumuli survived as physical objects in a changing landscape while signifying something about the history of the area.
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Introduction

During my first season as a member of the Gordion Archaeological Project, I decided to take a hike. G. Kenneth Sams, the site director at the time, and Richard Liebhart, whose project I was assisting, had told me about another large, Phrygian citadel site located only thirteen miles to the northeast of Gordion, called Hacıtuğrul. They had even pointed out the mound to me as we passed it on the highway coming from Ankara. I was intrigued, and having spent my previous summer as a backcountry ranger for the National Park Service, I was eager to get to know the area by going for a long walk. Before setting out, I printed out a rough map I had drawn over a satellite image of the intervening terrain, but I was also given a salient piece of advice by Gareth Darbyshire, the Gordion archivist and an experienced member of the expedition. He told me to head towards a large burial mound (or tumulus) on the ridge between the two sites, and that I would not get lost as long as I kept that mound within sight. This advice proved both accurate and helpful, as I was not always able to reconcile what I was seeing on the ground with what my map was indicating, and for long stretches of my hike it was much easier to navigate by means of that tumulus - effectively using it as a landmark. I learned on my return journey that local shepherds also cross the ridge at that point because there is a spring of fresh water right beside the tumulus. My experience with the large tumulus on the ridge (which I would later come to know as the Beyçeğiz Tumulus) made me wonder whether its function as a landmark had been intended by its builders, and thereby planted the seed for this dissertation project.

One hundred tumuli dot the landscape within twelve kilometers of Gordion’s Citadel Mound, of which 43 have been excavated. The vast majority of those date to the
Iron Age, between 850 and 530 BCE. Thus far, they have mainly been studied as burial assemblages, and little research has been conducted on the mounds as archaeological features in their own right. There are clues, however, that certain tumuli are aligned with each other or with architecture on the Citadel Mound. Scholars have noted linear alignments in the placement of tumuli and hypothesized that they lined ancient routes (Marsh and Kealhofer 2014; Liebhart et al. 2016). Others point out that Tumulus W (the earliest and second largest tumulus) is directly visible through the bastions of the Early Phrygian Gate Building, arguing that this sight line was intentional and the orientation of the gate was changed mid-construction to ensure it (Liebhart et al. 2016, 631). These hypotheses are suggestive, but based on only a few cursory observations. “Such deliberate alignments of tumuli with the city or with other important points in the landscape are certainly possible, and the concept is one that merits further study (Liebhart et al 2016, 631).”

The present study embeds the tumuli within their landscape and considers them intentional transformations of the environment. The dissertation seeks to answer the following research questions: can we discover principles guiding the placement of tumuli within the landscape? Are the tumuli built along routes, and if so, what did these routes connect, and who used them? More generally, how can we characterize the relationship between movement and monument building at Iron Age Gordion?

To investigate these questions, I will apply a cultural landscape perspective - acknowledging that the monuments are the results of decisions that people made while interacting with the accumulated labor of past generations in the form of the built environment. In this way people are constantly reacting to and simultaneously reshaping the world around them while engaging with their own history and
contemporary social context. I will also provide empirical evidence to reconstruct ancient routes, using digital methodologies to model their paths and views along them, combined with personal reconnaissance to document the phenomenology of traveling in the Gordion landscape. Rarely are these perspectives integrated within landscape archaeology. I propose that digital and the experiential techniques both provide fruitful insights on past behavior that can guide analysis in a recursive manner.

Finally I will discuss the role of the tumuli within Phrygian society. There has been little interpretation of the monuments beyond labeling them ‘royal’ burials and reconstructing the funeral ritual from the burial assemblages. I will focus on the physical properties of the tumuli - their presence in the landscape, the activities and amount of labor required for their construction, and how these aspects changed over the c. three hundred years during which they were built throughout the Iron Age. This shift in focus emphasizes how monuments functioned over a longer period of time and in contact with more people than a focus on the funeral ritual allows. The ultimate goal is to describe the process of monumentalizing this landscape that unfolded over several centuries, its spatial and chronological distribution, and what it implies about the changing sociopolitical situation at Gordion.

**Outline of Chapters**

The first chapter reviews various theories of landscape archaeology in order to frame the conceptual background of my methodology and the methodologies that produced the settlement data for the region. Combining legacy data with the type of analysis conducted in this study is not a simple task, and deserves a full theoretical examination. The chapter also provides an overview of current trends in the
interpretation of cultural landscapes, and how I think each is relevant to the case of Gordian.

Chapter Two introduces in full the site and surroundings of Gordian and reviews all previous scholarship on the landscape. I am privileged to have a wealth of research to draw on, including geomorphological studies, two separate settlement surveys, and an abundance of archaeobotanical and faunal data, all of which aid in reconstructing the past landscape in terms of both settlement and land use. The chapter presents the current state of knowledge, how it was produced, and how my project combines all of it into a holistic picture of the past landscape.

Chapter Three discusses movement as a meaningful, culturally specific activity. I survey the field of spatial cognitive science to explain how we as humans come to know a landscape and develop a ‘mental map’ of a familiar place. I examine in particular how humans navigate space and the role of landmarks in this process to explore whether the tumuli of Gordian may have served this purpose. The chapter contains several examples from ethnographic studies of cultural practices that contribute to special spatial knowledge and unique navigational abilities. Ultimately I describe movement as a sequence of meaningful places in which memories are generated.

The second half of Chapter Three reviews relatively new, digital methods that archaeologists are using to reconstruct past movement when ancient roads or other evidence of exact routes are not extant. These methods assess constraints and accessibility over terrain and assign paths that accrue the least cost between two points, based on a number of factors chosen by the researcher. I discuss three different approaches according to their strengths and weaknesses, focusing on their
suitability for various research questions, the type of data they require, and considerations of scale. I also apply each method in turn to the landscape surrounding Gordion and discuss what insights each offers. Ultimately I emphasize the Circuitscape method which returns multiple, weighted paths for point-to-point travel, allowing the researcher to judge between them, rather than a single result determined by the model itself.

Chapter Four applies this favored method of reconstructing past movement to four case studies throughout the Gordion landscape. I examine movement between Gordion and other, contemporary settlements, each with a different pattern of monumentalization along the route. I use viewshed analysis in GIS to illustrate the significance of locations at which tumuli were placed, and finally describe the experience of traveling along the routes, informed by my own personal reconnaissance. I characterize the landscape as a network of sites connected to Gordion with the tumuli signaling different relationships between the urban center and outlying settlements.

Chapter Five explores labor mobilization through the lens of energetics calculations that yield total labor values required to construct monuments. I detail the process of tumulus construction through all of its required tasks and their impact on the landscape. I discuss different types of labor mobilization and how they match or do not match the available evidence at Gordion for social hierarchy, powerful institutions, central authority, and a developed economy.

After Chapter Five, I summarize the various insights derived from the conducted analyses and present my conclusions about the cultural landscape of Iron Age Gordion.
The dissertation actually culminates, though, with an additional chapter about the afterlife of the tumuli. The monuments did not disappear after the Iron Age, but outlasted the sociopolitical system that produced them. Chapter Six discusses how the tumuli survived both as physical objects in a changing landscape and as obviously man-made features signifying something about the history of the area, a meaning that likely changed over time. We have no written records to document this process of reinterpretation, so it must be inferred from the post Iron Age archaeological record. In following the afterlife of the tumuli through the Hellenistic, Roman, and Modern periods, I focus on the practices central to the rest of the dissertation - burial, movement, settlement, and monument construction - always relating the information to the social context of the period in question.
Chapter 1: Theories of Landscape Archaeology

Introduction

This chapter discusses several of the main trends in the theory of landscape archaeology that have influenced previous researchers at Gordion and approaches that form the background of the present study. Much of landscape archaeology has revolved around the search for settlements by means of ceramic survey, but the methodologies of these surveys have not been consistent and depend in large part on the theoretical leanings of their directors. The theoretical underpinnings of the Gordion Regional Survey (GRS) conducted in the mid-1990s, which is responsible for most of our information on settlement in the region, are first reviewed below in order to better understand its published data and conclusions (discussed in detail in Chapter Two). Then, we will consider ideas from spatial theorists and other landscape archaeologists that have informed the methods and interpretative frameworks adopted in this dissertation.

A central issue is the concept of the ‘site’ as a fundamental unit of analysis and its relationship to the archaeological record. The way in which archaeological surveys treat sites determines in large measure what kind of data they produce and therefore what sort of interpretations emerge from them. The chapter therefore begins with an exploration of the concept of the ‘site’ and how it has shaped our knowledge of the Gordion landscape. Next follows a discussion of the interpretive goals of previous research. The GRS explicitly focused on variation in settlement and land-use over the longue durée in relation to prevailing environmental conditions, in order to examine the effects of human activities on the environment. This is a common approach in
landscape archaeology, particularly in the Near East, promoted by Tony Wilkinson among others.

This project departs from earlier outlooks and relies more on theoretical concepts that have highlighted the role of cognitive processes and social practices in attaching meaning to the landscape. Movement through the landscape is often seen as a key activity in meaning-making processes, but opinions among archaeologists have been sharply divided as to how best to study movement and its effects on sensory experience in the past. Both formal analyses employing Geographic Information Systems (GIS), and subjective, phenomenological observations are included in this dissertation, and are therefore discussed below, though they are rarely so combined. Since the Gordian tumuli are regarded as monumental constructions, the chapter ends with a consideration of monumentality as a concept within archaeology and its multiple temporal aspects which require different modes of investigation.

**Sites and Surveys**

Along with the rise of survey and regional archaeology in the 1980’s came the realization that the site as a basic unit of analysis in archaeology is theoretically and methodologically limited (Cherry 1983; Dunnell 1992; Fotiadis 1992). Critics have shown that sites are created by archaeologists through observation in a specific moment, and do not exist independent of that individual context (Dunnell 1992, 26). Any division of the archaeological record into discrete sites is a construction of the field itself and is not necessarily indicative of any past reality. Sites are therefore problematic. They are also difficult to do away with. Finding some other basic unit of analysis, or rigorously defining the notion of site is fraught with epistemological issues. As a solution, scholars have begun to conceptualize the archaeological record simply as the more or less continuous distribution of artifacts on or near the surface.
of the earth. Any spatial area, therefore, is potentially relevant to investigation at a variety of scales. A siteless conception of archaeology imposes upon researchers the task of explaining the character and density of artefact distributions (Dunnell 1992, 34). This realization is the core of a landscape approach to archaeology – one which analyzes the entire remains of human activity in a given location.

There have been two surveys conducted at Gordion, each with a different approach to the concept of site and concomitant differences in methodologies and data classification. Over two seasons in 1988-9 William Sumner personally traversed the region on foot and motorbike identifying mounded settlements (Dickey and Sumner 1993). In an alluvial environment like the Sakarya River Valley, these mounds are visually and physically distinct from the surrounding landscape. Chronological designations were made by the simple presence or absence of collected diagnostic ceramics. The mounds were labeled sites and interpreted as locations of dense settlement. The Gordion Regional Survey, led by Lisa Kealhofer and Peter Grave in the mid-1990s, applied an explicit siteless methodology aimed at statistically sampling hydrological sub-regions (Kealhofer 2005b, 2005a; Grave et al. 2009; Marsh and Kealhofer 2014). And yet, even with intensive surface collection from nine separate transects, they still use the term ‘site’ to define “dense artifact concentrations” or “activity areas,” with very little description of individual sites, and without specifically stating how these designations are made (Marsh and Kealhofer 2014, 692). The resulting data consists of a list of mounded sites and surface sites along with total sherd counts from each period.

This dissertation necessarily relies on the published data from these previous surveys of the Gordion landscape. In the Phrygian period, both mounded and surface sites are common and therefore neither is privileged in my analysis. I treat both as
starting points and destinations of routes through the landscape, consider them likely centers of settlement, and draw distinctions between them based on size and occupational history through on the available survey data. From that perspective my analysis is dependent on the traditional idea of the site. By foregrounding activities and features that occur in between sites, however, I attempt to approach a more holistic understanding of the landscape.

**Environmental Studies**

Most landscape archaeology in Anatolia and the Near East has focused on the productive capabilities of a landscape. Topics such as “resource management; sophisticated strategies of land use, and structured productive activities in the landscape” (Balée and Erickson 2006, 3) have often been studied to understand human intentionality and agency. This outlook is very similar to the stated goal of the Gordion Regional Survey. In many contexts, historical ecology mainly concerns agriculture, pastoralism, and other domestication practices. Tony Wilkinson has centered his research on the archaeological landscapes of the ancient Near East on geomorphological, environmental, and climatic conditions and their effects upon subsistence strategies and settlement patterns (2003). Studies of this kind often present the landscape in terms of systems of human adaptation, referring to concepts such as feedback loops and environmental damage.

Interpretations of the Gordion landscape have to this point concentrated on questions of land-use over the long-term and its effects on the natural environment. Conclusions have tended towards negative judgements concerning the relative impact on soil erosion, ecosystem degradation, and hillslope instability (Marsh and Kealhofer 2014, 689). Human activity is thus couched in terms of unnatural, damaging behavior, changing and upsetting the natural environment.
The leaders of the Gordion Regional Survey, following Wilkinson and other scholars, often describe the landscape as a product of interactions between culture and nature (Anschuetz, Wilshusen, and Scheick 2001; Crumley and Marquardt 1990; Knapp and Ashmore 1999; Wilkinson 2003). The dichotomy between culture and nature, however, is a false one (Balée and Erickson 2006; Denevan 1992). Such a division assumes that some pristine or original, natural landscape exists which is transformed into a cultural landscape through human activity. The inherent problem with this view is that the world contains no pristine wilderness with which comparisons can be made (Erickson 2006, 246). Humans start to transform their landscape in recognizable, patterned ways from the first moment they come to inhabit it. People do not simply adapt to environmental conditions, but rather interact with the accumulated landscape of previous generations to manage and create the contemporary landscape based on a “conscious knowledge system operating in a historical context (Erickson 2006, 245)”. This view does not deny the existence or effects of natural forces (e.g. wind, annual rainfall, draught, currents and tides, and/or natural selection, among others). However powerful, natural forces do not create a “natural” environment as a blank slate divorced from the influence of humans. The culture/nature dichotomy insulates objective space (pristine wilderness or natural law) from the effects of social forces which should be foregrounded in any discussion of the landscape (Smith 2003, 46).

My project builds on the previous, environmental-centered studies of the Gordion landscape, but takes a different approach in which the landscape is seen as a constantly emerging phenomenon, created through social activities that play out in spaces often left over from previous generations. How people understand and create significant spaces is therefore a crucial theoretical topic for my analysis.
**Spatial Archaeology**

Spatial relationships are the sinews of archaeological research (Smith 2003, 77). Physically and temporally (through stratigraphy), relations between objects in space inform our understanding of the archaeological record. We can even go a step further and better refine the archaeologist’s object of interest if we recognize that geometric, Cartesian space – the background against which we might plot the distribution of artefacts and measure their density – is itself a product of a particular time and culture, and not the only way of understanding space.

Following Lefebvre, “(social) space is a (social) product” and every society produces its own space (Lefebvre 1991, 142:31). Keeping this maxim in mind, the focus of archaeological research should shift to the actual production of space and not merely things in space. Such analysis emphasizes the relationships between people and the spatial worlds they inhabit, rather than the essential properties of either (Smith 2003, 69). Within the Gordion landscape we currently have a decent grasp of where things were at different times. We can plot the distribution of settlements and tumuli on maps and through time, but we have little understanding of how and why these features were built where they were. To investigate these questions, the activities through which people interacted with the landscape must form the basis of our analyses and interpretations.

People can produce space in a number of different ways, and every one of them is structured by social practice. Perhaps the most intuitive way is the physical reorganization of material through human labor. Ingold uses the term ‘taskscape’ to describe all of the activities which go into creating and maintaining the built environment (1993). The taskscape is not only important for fully reconstructing the form of the past landscape, but also the link between the landscape and the social
structures which pattern its formation. The taskscape of the Gordion landscape includes activities related to the ancient agro-pastoral economy, as well as rituals of burial and construction of tumuli, all of which involved movement between significant places.

People also produce space through cognitive processes, creating mental spaces where objects and places take on value as we get to know them better (Tuan 1977). Conceptualized landscapes are created and maintained by repeated social processes which give them meaning (Knapp and Ashmore 1999, 11). Meaning can be ascribed to natural or man-made features through religious, artistic, or cultural investment. The first step in this process of attaching meaning to landscape is often simply naming distinctive features, recreating narrative information through mnemonic devices. Names, landmarks, and monuments can be thought of as “symbolizing kernels” – specific places which authorize certain practices (De Certeau 1984, 105). These elements can become imaginative and emotional, providing moral messages, recounting mythic histories, or recording genealogies (Knapp and Ashmore 1999, 12). In this way the landscape comes to be tied to memory, identity, and history. By siting specific events in a physical environment, landscapes fix “social and individual histories in place (Knapp and Ashmore 1999, 13)”.

What can be seen designates what is no longer there. “[Landscapes] recall or suggest phantoms - the dead who are supposed to have disappeared (De Certeau 1984, 105).” In this way, the accumulation of human transformations to a landscape imparts to a society its sense of history by which it defines its identity. The Phrygian tumuli at Gordion are examples of such mnemonic devices within a landscape. They symbolized single individuals, families, and elite groups, but came into contact with a much larger portion of the local population through routine movement. The specific histories
connected to the tumuli can never be recovered, but we can study the mechanisms by which these narratives were recalled.

Movement is a key activity in the process of creating and activating memory and meaning. Reconstructing past movement and its relationship to the tumuli – as monuments of historical significance – is thus an important goal of this study. In order to navigate space, humans learn a succession of movements rather than a spatial configuration or mental map (Tuan 1977, 70–73). This knowledge is fundamentally relational, based on the appropriateness of actions to recognized landmarks. Both physical and perceptual experience combine to familiarize space, impart value onto it, and transform space into place. De Certeau refers to this process as the “enunciative” function of movement – a particular appropriation of a topographical system which spatially acts-out a given place (De Certeau 1984, 97).

Archaeologists, especially those studying prehistorical societies, have rarely investigated the consequences of movement in the landscape without reference to ancient texts, maps, or other representations of space. One solution is to document the formal characteristics of the material remains of past movement: streets, roads, and trails (Snead, Erickson, and Darling 2011). At Gordion remains of a Roman-era road have been excavated and are discussed in Chapter Six, but earlier concrete evidence for movement, and critically for the Phrygian period, is absent. Where these remains are not preserved, archaeologists have turned to Geographic Information Systems (GIS) to analyze the topography of a given region and evaluate different degrees of mobility inherent to the terrain (Llobera, Fábrega-Álvarez, and Parcero-Oubiña 2011). These types of studies generate least cost paths in GIS which can then be tested against the archaeological record to reconstruct past routes. Different
GIS methodologies are considered in detail and applied to the Gordion landscape in Chapter Three.

The meaning ancient people derived from the experience of movement is often even more opaque. Some archaeologists have turned to phenomenology to understand the meaning of physical space from the sensory and bodily experience of an individual within an environment (Tilley 1994; Tilley and Bennett 2008; Johnson 2012). These studies rely on the idea that knowledge of a landscape is gained through the perceptual experience of the subject, and the physical properties of the landscape are the foundation for all thought and social action. Phenomenology’s emphasis on recording sensory experience while being physically in the landscape, centers this approach on the way landscapes structure movement, action, and meaning from the perspective of the human body. Embodiment, the idea of being a part of what one is studying, experiencing a landscape from the “inside” and not through abstract representations, is therefore a central tenet of phenomenology (Tilley and Bennett 2008, 2:271). Phenomenological methodology often consists of walking between ancient features in a landscape and noting visual and other sensorial relationships in sequence. Insights gained from subjective experience are then used to argue about intentionality and meaning in past monuments.

Critics of phenomenology (and there have been several strong negative reactions) have questioned its evidentiary base in replicating past experience (Fleming 2006). The assumption that the visual consequences of the built environment (as experienced in the present) can argue back to the motivations of the builders is unproven (Barrett and Ko 2009). Moreover, bodily experience is likely culturally different, and therefore the perceptions of modern archaeologists may give no insight into meaning construed from the landscape in the past (Johnson 2012).
Phenomenology often produces what seems more like speculation than knowledge of the past, but insights gained through bodily experience of the landscape can still be revealing. Phenomenology has the advantage of a clear, unbroken relationship to its data. We cannot directly observe past social hierarchy, political structures, or economic exchange, but we can test sensory issues like the use of color, constraint on movement, sound, and sight (Johnson 2012, 273).

Visibility is also frequently studied through spatial technological approaches in GIS, particularly with viewshed analysis (Wheatley 1995; Wheatley and Gillings 2000). These formal analyses strive to reveal visual structure and organizational patterns in the landscape through empirical methods. Landscape archaeologists studying visibility have tended to separate themselves into these two methodological frameworks, each critiquing the other. Phenomenological, and more generally post-processual, theorists have argued that panoramic views from above - map-like orthogonal representations of space that erase perspective - would have not been recognizable to past inhabitants of any cultural landscape. The result is that few visibility studies of archaeological landscapes employ both of these perspectives – the subjective, human perspective (phenomenology) and the empirical, technological perspective (GIS). In Chapter Four, I try to show how these methods can be used recursively to enhance analysis and interpretations. Formal viewshed analyses of the tumuli serve as an evidentiary base, but are supplemented by my own subjective observations made while walking reconstructed past routes through the landscape. In this way I combine digital and humanistic perspectives to identify significant places in the Gordion landscape and evaluate the visual structure of the built environment.
Political Factors

The Gordion tumuli represent a specific stratum of the local society with the ability to construct large mortuary monuments. It is important to remember that not all individuals have the same ability to modify the landscape (Smith 2003, 70). There are constraints on both the mobilization of labor and the construction of meanings associated with places. The asymmetric power to produce space is heightened by the recursive ability of the landscape to affect practices, leading to all types of unintended consequences. Tying authority to spatial action is therefore critical to any understanding of political life. Authority is often acted out in the landscape in the form of monuments, whose meaning is constantly renegotiated in changing political and social conditions (Osborne 2014a).

In Chapter Five the tumuli are considered as monuments that create prestige for an elite class and reinforce the legitimacy of the political authority both through the mobilization of labor (presumably drawn from lower strata of the society) and by tying certain groups to the history imbued in the monuments. Little attention has been paid to their active political role. The tumuli have tended to be understood simply as royal burials, adopting a dynastic model inferred from scant literary references to King Midas, rather than reconstructing political activity based on the archaeological evidence (Young 1981). A full study of Phrygian political structures is beyond the scope of this dissertation, and may ultimately be unrecoverable, however, by considering patterns over time in the construction of political monuments such as the tumuli, we can begin to understand the evolution of authority manifested in the landscape.
**Monumentality**

Monumentality can be approached on two different time scales: the initial construction event, and the long-term use and re-use of monuments as part of a dynamic cultural landscape. The immediate effects of monumental building activity result from the activities of construction and the associated social structures which organize and provide meaning to those activities. Construction on a large scale involves the mobilization of labor and surplus resources, which requires extensive planning, engineering skill, and a developed artistic aesthetic (Trigger 1990, 121). The construction activities of the Gordion tumuli and how they relate to the wider landscape are considered in detail in Chapter Five.

In one sense, the highly organized effort funneled into monumental buildings can represent the wealth and political power of rulers and elites through their ability to control surplus food and labor, thus reflecting and reinforcing social hierarchies (Trigger 1990, 125). This is a common interpretation of monumentality and scholars have even measured its scale by calculating energy expenditure on construction (Abrams 1994, 1989). These labor calculations can provide useful relative benchmarks with which to compare the scale of different monuments and ways to measure their impact in human terms. In Chapter Five, labor mobilization and energetics are used as proxies for levels of interaction between groups of different social status at Gordion, rather than a simplistic equation of the size of each monument with the individual buried inside. Monumentality can equally express the “collective potential of communities,” and the mobilization of surplus labor does not necessarily imply a high degree of social stratification (Rosenswig and Burger 2012, 6–7). Political hierarchy is not the only source of authority in the landscape. Events that occur at “subordinate” levels can have important systemic effects, and
organization can be based from different levels and different social groups within societies without necessarily involving centralization (Crumley 1994; Ristvet 2014).

The relative permanent nature of monuments means that they continue to affect people as features of a cultural landscape long after their initial construction. The built environment not only reflects existing social and political relations at the moment of its creation or modification, but also persistently reinforces these structures by physically affecting the movement of people, activities, and goods. In addition to their physical influences on people, monuments also structure the realm of ideas. As modifications to the landscape, monuments help to create mental and physical maps which reflect economic and social relationships (Osborne 2014b, 4; Kolb and Snead 1997, 611). Monuments create a sense of place which is directly linked to community identity and the formation of group history (Lindauer and Blitz 1997, 194). Connection to the past through focal points on the landscape imparts authority and legitimacy, no matter how much practices change over time (Bradley 1993, 115; Rosenswig and Burger 2012, 12). The afterlife and re-use of monuments thus constitutes a creative process by which the significance of the past is constantly reinforced and reinterpreted (Bradley 1993, 93).

The Gordion tumuli are still very visible and stand as clearly man-made features of the landscape, as they would have throughout the centuries in between their construction and today. Cultures very different than the Iron Age Phrygians, who were responsible for their construction, have interacted with and reinterpreted these monuments over time. In order to come to a full understanding of the tumuli, we must attempt to reconstruct these processes within their own cultural frameworks. The afterlife of the Gordion tumuli is considered in Chapter Six throughout the
Hellenistic, Roman, and modern periods, each of which brought cultural changes to the region.

Humans transform the landscape through the production of space, and the landscape in turn modifies human actions in a recursive cycle. The built environment clarifies social roles and relations, the same forces which govern its creation (Tuan 1977, 102). Practices that remain within a given space reproduce not only the spaces themselves but also the social structures and political regimes that these spaces support (Smith 2003, 72). We build our spaces, they build us, then we modify them, and on and on, until at some point there is abandonment, and then even ruins continue to affect practices, and are in turn modified. The process continues ad infinitum and similarly has no real beginning. Stigmergy, a term originally used in entomology formed from the Greek words for sign and action, is a helpful concept for explaining this recursive and instrumental capacity of the landscape. Stigmergy describes the coordination of actors embedded in a shared environment, whose state they both sense (to guide their actions) and modify (as a result of their actions) (Parunak 2005). It captures the notion that an individual’s actions leave signs in the landscape, signs that are sensed by others and that determine their subsequent actions. All landscapes are stigmergic to some extent, but those with large, permanent monuments imbued with political significance are particularly so. The Gordion landscape with its myriad of tumuli is an ideal example to explore this concept.
Chapter 2: Current Evidence for the Ancient Gordion Landscape

Introduction

This Chapter introduces Gordion as an archaeological site and the landscape around it. Both are unique in Anatolia and essential to understanding the history of the region. The chapter begins with a description of the modern topography, climate, and land cover in an effort to familiarize the reader with the Gordion’s physical setting. Next I define the site and its constituent features before providing a brief history of excavations. Finally I review the published material bearing on the past landscape and combine these studies into a holistic picture of the Iron Age environment to form the basis of my study.

Previous work on the Gordion landscape has been a collaborative effort by many scholars from different fields including scientific studies on material indicators of the environment by archaeobotanists Naomi Miller and John Marston (Marston and Miller 2014; Miller and Marston 2012; Miller 2011; Miller, Zeder, and Arter 2009; Marston 2009, 2012, 2010) and archaeozoologists Susan Arter and Melinda Zeder (Zeder and Arter 1994; Miller, Zeder, and Arter 2009); geomorphology by Ben Marsh (Marsh 1999, 2005, 2012; Marsh and Kealhofer 2014), and different types of artifact surveys as part of the Gordion Regional Survey headed by Lisa Kealhofer and Peter Grave (Kealhofer 2005; Kealhofer et al. 2015; Kealhofer and Grave 2011). These diverse lines of evidence have combined to show how human activity has affected the local environment and vice versa over several millennia of occupation. This wave of regional research was undertaken in the mid-1990s in conjunction with the renewed campaigns of excavation headed by Mary Voigt (see below). The studies
were explicitly processual in their outlook and methods, focusing on issues of environmental degradation and evolving economic strategies of land use.

**General Description of Site and Landscape**

Gordion lies in central Anatolia at the confluence of the Sakarya and Porsuk Rivers (Figure 1). The region has a semi-arid Mediterranean climate with annual precipitation averaging c. 350 mm/yr with high interannual variability. This level of moisture is on the edge of dry farming capability, and the agro-pastoral economy is constantly vulnerable to drought.

![Figure 1: Map of Iron Age Anatolia with key sites and Gordion highlighted.](image)

The Sakarya River flows from south to north through the valley, creating a floodplain around two kilometers wide. Gordion sits at the western edge of the Sakarya floodplain (Figures 2-3). To the east stretches a valley system, 12 km long, fed by streams interspersed with ridges extending to a mountainous ridge some 600 m
higher than the Sakarya at the summit of Çile Dağı to the northeast of Gordion. To the west of the site lies a broad arid plateau rising 100 m above the level of the plain and extending for c. 14 km west of the Sakarya and south of the Porsuk Rivers.

Figure 2: Topographic map of region surrounding Gordion.
The archaeological site is actually a collection of various ancient features and topographic zones spread over an area roughly 4 x 2.5 km (Figure 5). The Citadel Mound, also called Yassıhöyük, lies in the center of the Sakarya Valley and has been the focus of excavations since the beginning of the 20th century when it was identified as Gordion, the capital city of legendary King Midas by Alfred and Gustav Körte (Körte and Körte 1904). The mound itself is trapezoidal in shape, roughly 310 x 375 m (14 ha) in size, and 14 meters tall, a few meters higher on its western than eastern end (Figure 4). The Citadel Mound is so named because of the monumental architecture of the Iron Age, but in fact it has been inhabited since at least the Early Bronze Age and has been built up from millennia of occupation debris with only the Iron Age showing any signs of fortification.
Surrounding the Citadel Mound and stretching c. 250 m to the south and 450 m to the north is the Lower Town. This was a fortified area of urban occupation in the Middle Phrygian period, but without evidence for settlement in other periods. Beyond the Lower Town to the west lies the Outer Town - another area of Middle Phrygian occupation, c. 45 ha in area, which seems to have been used mostly for burial at other times. Recent geophysical prospection has revealed parts of the urban fabric and defensive system of these areas (C. Brian Rose 2017). Kuştepe and Küçük Höyük are two mounds covering fortresses at the northern and southern extents of the Lower Town fortification wall, and take their shape from siege mounds built up against them, presumably during the Persian Empire’s conquest of Anatolia in the mid-6th century BCE.
Figure 5: Map of the archaeological site of Gordion showing occupation zones and topographic features.

In addition to the occupation zones, archaeological investigation has concentrated on the Northeast and South Ridges where dozens of monumental burial mounds, or tumuli, have been excavated. Trenches on the western end of the Northeast ridge have also revealed burials from almost every period of Gordion’s occupation as well as a Middle Phrygian period settlement (Gunlog E. Anderson 2012).

**Excavation Campaigns**

The Körte brothers, brought to the region by the construction of the Berlin-Baghdad Railroad, spent one season in 1900 excavating two trenches on the western side of the Citadel Mound that reached levels that may date to as early as the 6th century
BCE (Körte and Körte 1904). They also opened five tumuli on the Northeast Ridge (K I-V).

Rodney Young, on behalf of the University of Pennsylvania’s Museum of Archaeology and Anthropology, began excavations at Gordion in 1950. Over 17 seasons lasting until 1973, Young’s team uncovered an area c. 100 x 150 m on the eastern half of the Citadel Mound, revealing much of the Early and Middle Phrygian phases of the site including the Early Phrygian Gate Building, the Terrace Building (destroyed by fire c. 800 BCE with thousands of artifacts found in situ), and many ‘megaron’ buildings (Rodney S. Young 1950, 1950, 1953a, 1953b, 1955, 1956, 1957, 1958, 1960a, 1960b, 1962, 1963, 1964, 1966, 1968a, 1968b). Trenches were also dug into Küçük Höyük, a mudbrick fortress at the south of the Lower Town dated to the late 7th or early 6th century and ascribed to Lydian influence. Young opened 30 tumuli on the Northeast Ridge, South Ridge, and the ridges to the west of Gordion, including Tumulus MM - a massive burial mound that dwarfs those around it, covering a tomb chamber furnished with fantastic grave goods (Young 1981).
Figure 6: Several phases of Early Phrygian architecture on the Citadel Mound uncovered by Rodney Young’s excavations.
Young based his chronology and interpretations of the site on events recounted in Herodotus and other Classical historians. He therefore attributed the Destruction Level, in which the Terrace Building and most of the Early Phrygian Citadel burned down, to an attack by the Cimmerians (also supposedly responsible for Midas’ death by suicide) and dated it to 700 BCE. He therefore believed what we now call the Early Phrygian level to be the city of Midas. He also thought Midas was the occupant of Tumulus MM, hence its name the ‘Midas Mound.’ All the other levels and the tumuli were dated relative to this ‘fixed’ point.

Later excavations, led by Mary Voigt from 1988 to 2006, sought to clarify the stratigraphy of the site through more controlled excavation at different points on the
Citadel Mound, including areas on the western and northern sides of the mound that had received little or no attention (Voigt 1994, 2000, 2011, 2013; Voigt and Henrickson 2000). The result was the Yassihöyük Stratigraphic Sequence (YHSS, Table 1) and ultimately the redating of the Destruction Level to c. 800 BCE (Rose et al. 2011; DeVries et al. 2003). Voigt’s investigations in the Lower and Outer Towns uncovered pieces of the Middle Phrygian urban fabric there, including some monumental buildings bordering a street leading to Küçük Höyük, but these await final publication (see summary, Voigt 2013).

<table>
<thead>
<tr>
<th>YHSS Phase</th>
<th>Period Name</th>
<th>Approximate Dates</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Modern</td>
<td>1920s</td>
</tr>
<tr>
<td>1</td>
<td>Medieval</td>
<td>10-16th century CE?</td>
</tr>
<tr>
<td>2</td>
<td>Roman</td>
<td>1st-4th century CE</td>
</tr>
<tr>
<td>3A</td>
<td>Later Hellenistic</td>
<td>260?-100 BCE</td>
</tr>
<tr>
<td>3B</td>
<td>Early Hellenistic</td>
<td>333-260 BCE</td>
</tr>
<tr>
<td>4</td>
<td>Late Phrygian</td>
<td>540s-333 BCE</td>
</tr>
<tr>
<td>5</td>
<td>Middle Phrygian</td>
<td>800-540s BCE</td>
</tr>
<tr>
<td>6A-B</td>
<td>Early Phrygian</td>
<td>900-800 BCE</td>
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<tr>
<td>7</td>
<td>Early Iron Age</td>
<td>1100-900 BCE</td>
</tr>
<tr>
<td>9-8</td>
<td>Late Bronze Age</td>
<td>1500-1200 BCE</td>
</tr>
</tbody>
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More recently, beginning in 2013, excavations have resumed under the direction of C. Brian Rose. Rose has begun systematic use of geophysical prospection to examine features in the Lower and Outer Towns, and targeted excavations to better understand how the Citadel Mound is connected to the Lower Town (Rose 2017, and forthcoming). A new trench on the southern side of the mound has uncovered a new gate complex leading to the western part of the Citadel Mound.

**Geomorphology**

As part of the Gordion Region Survey, Ben Marsh has collected environmental data from the region beginning in 1996 (Marsh 1999, 2005, 2012; Marsh and Kealhofer 2014). In a series of publications, Marsh has classified the region into a number of landscape ‘types’ based on underlying geology and topography. Each type has its own geomorphic history and soil, and thus agricultural potential and erosional responses to human activity.

Most of the geology near Gordion is made up of marly siltstone with basaltic intrusions forming the mountains and ridges to the east. Neither type of rock is very good for building or used much in this capacity on the Citadel Mound. The soils derived from the marl are typically alkaline and low in nutrients and moisture capacity. They do not support much farming without irrigation (as is the case today on the plateau to the west of Gordion where fields are left fallow in alternate years to allow moisture to build up). These marly soils are by far the most abundant in the

<table>
<thead>
<tr>
<th>10</th>
<th>Middle Bronze Age</th>
<th>1800-1500 BCE</th>
</tr>
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</table>

**Table 1: Yassıhöyük Stratigraphic Sequence.**
landscape around Gordion and would have been even more prominent in antiquity before the erosion of uplands.

The soils on the basaltic ridges to the east are better at holding nutrients and water and are also fed by numerous springs that occur at the junctures between the basalt ridges and marl lowlands. These soils are therefore much more agreeable to various forms of agriculture even without irrigation. Today these fields are productive but discontinuous, remaining green after the wheat harvest. These soils are also prone to erosion and would have been more extensive in the past.

The only other arable soils in the Gordion landscape are alluvial soils located in stream and river floodplains. These are by far the most productive and easily irrigable, but least common areas.

One of the major goals of the GRS was to determine the amount of human ‘impact’ on the local environment. This was mostly measured in erosion caused by vegetation loss in the uplands. Marsh and Kealhofer took 28 small stream alluvium core samples, dated by radiocarbon samples, as a proxy for erosion rates. When compared to settlement intensity from GRS survey data, their results showed that erosion had a nonlinear response to human activity in the landscape (Marsh and Kealhofer 2014). A peak in sediment depositional rates was reached in the Early Bronze Age after rising rapidly from the relatively stable landscape of the Chalcolithic period. In the Middle Bronze Age, when settlement and human activity was increasing, erosional rates decreased sharply and continued to remain low through the end of the sequence, even while human activity continued to increase.

Marsh and Kealhofer have concluded that human activity was not the primary factor in upland erosion and ‘landscape degradation’ at Gordion. Rather, they have
associated decreases in erosion with periods of increased centralized management of agriculture and a shift in the location of farming from erosion-prone soils on steep hillslopes to irrigated river valleys during the Hittite, Phrygian, and Roman periods (although this model does not match the survey data for extensive land use in the Roman period).

Upland erosion is also poorly linked to aggradation of the Sakarya river valley – the other way in which topography has changed drastically since antiquity. Marsh mapped fluvial deposits by examining exposed river banks and drilling over 60 holes to a depth of 4-7 m in the floodplain between 1993-5. He has identified five sequences (Sakarya I-V) of the river - each with its own floodplain level, location in respect to the Citadel Mound, sediment type, and channel form (Marsh 1999).

Sakarya I was the pre-settlement version of the river. Its channel lies 4-8 m below the modern surface. It meandered south to north through the valley and deposited c. 2 m of coarse to fine sand.

The next important phase of the river sequence is a nearly continuous layer of silt (or paleosol) 3.2-5.2 m below the present surface. This silt layer contains a higher degree of organic material than any other in the sequence and is the surface upon which the Iron Age city was built. The Citadel Mound already existed when the paleosol was laid down by the river (at this stage on the eastern side of the Citadel Mound), but structures in the Lower and Outer Towns were built upon it. Its high degree of organic material suggests that this layer was agricultural soil containing silt imported from irrigation water.

Beginning ca. 600 BCE, the river entered its third stage (Sakarya III) and began laying silt loam over the lower parts of the city, a process that continued until the
river was channelized in the 1960’s, depositing as much as 5 m of sediment. At some late point (perhaps in the 19th century CE) the river laid enough material against the outer fortifications of the buried city to obstruct its course along the east side of the Citadel Mound and it switched course to the western side (Sakarya IV). Since its channelization in the 1960’s by the Turkish government (Sakarya V), the river has been widening and deepening its present channel.

This excellent geomorphological study provides a dramatic picture of the site formation processes that have left us with the present archaeological site during different stages of its burial. The city initially expanded onto the paleosol, likely previously used as agricultural land. The onset of aggradation was relatively sudden and must have been an unexpected change in the behavior of the river for the inhabitants of the city. There is evidence for large earth-moving projects inside the walls of the city, perhaps in an effort to counteract the flooding (Marsh 1999, 168). Over 600,000 tons of fill was dug from in or near the river, possibly to manage its channel, deposited within the city, and finally built upon, lifting construction above the level of the flooding. This effort was ultimately in vain. The city was abandoned and gradually buried. Swampy lakes formed between long, high, stone walls which dominated the urban geography of the Outer Town (the existence of which has been confirmed by recent magnetic surveys). Gradually the mudbrick of the outer fortifications southwest of the Lower Town were worn away by the meandering Sakarya.
Gordion Regional Survey (1996-2002)

The Gordion Regional Survey conducted fieldwork over three seasons between 1996 and 2002, collecting cultural material and environmental data from a 20 x 18 km region centered on Gordion. The goal was to use settlement data as a proxy for land use strategies and to compare these with political transformations over the long period of occupation in the landscape (Dickey and Sumner 1993; Kealhofer 2011).

In 1988-89 William Sumner had carried out an extensive mound survey over a larger region covering 40 x 40 km (Figure 8). Sumner was confident that he had identified most of the mounded sites in his study area, but estimated his discovery rate of unmounded sites at only 20%. In total, he surveyed 22 mounds: 11 of which contained evidence for Early Bronze Age occupation, 15 for the Middle/Late Bronze Age (the ceramic evidence could not distinguish between the periods), 8 for the Iron Age, 7 for what Sumner termed Late Antiquity, and 3 for the modern period. Of his 17 identified surface/ridge sites, none showed signs of Early Bronze Age habitation, 2 were occupied by the Middle/Late Bronze Age, 6 dated to both the Phrygian and Late Antique periods, and 4 were recent sites. These numbers were revised when Sumner’s evidence was subsumed into the later Gordion Regional Survey (Kealhofer 2011).
Conscious of site formation processes that affect visibility in the landscape (earlier surface sites being likely buried or eroded and later sites having had less time to form large mounds by accumulating phases of debris), Kealhofer and Grave applied a systematic, intensive, pedestrian survey methodology. The study area was divided into five geographical subregions based on hydrology: 1) the Porsuk Valley, 2) the Southwestern Uplands, 3) the Gordion Catchment, 4) the Ezineli Valley, and 5) the Şabanözü Valley. Each subregion was sampled with at least one transect – a continuous strip of survey units that varied in size from 0.5 – 1 km². In total they surveyed c. 1-2% of the entire 360 km² region, with an extra focus on the Gordion catchment (Figure 9).
Cultural material mostly consisted of ceramics which were analyzed by style, fabric, and geochemical composition and then matched to stratigraphically excavated samples from the Citadel Mound. In total, the survey collected 29,951 total sherds and analyzed 9,588 sherds, 2,247 of which could be assigned to a chronological period (Marsh and Kealhofer 2014, 692). From this evidence they were able to reconstruct an alternating pattern of expansion and contraction of settlement intensity beginning in the Chalcolithic period (Figure 10, Table 2).
<table>
<thead>
<tr>
<th>YHSS phase</th>
<th>Period name</th>
<th>Citadel mound dating</th>
<th>GRS dates</th>
<th>GRS sherd count</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Modern</td>
<td>1920s</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>1</td>
<td>Medieval</td>
<td>10th–15th centuries CE</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>2</td>
<td>Roman</td>
<td>1st century BCE – 4th century CE</td>
<td>50 BCE–450 CE</td>
<td>419</td>
</tr>
<tr>
<td>3A</td>
<td>Late Hellenistic</td>
<td>260(?)–50 BCE</td>
<td>330–50 BCE</td>
<td>205</td>
</tr>
<tr>
<td>3B</td>
<td>Early Hellenistic</td>
<td>330–260(?) BCE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Late Phrygian</td>
<td>540–330 BCE</td>
<td>540–330 BCE</td>
<td>294</td>
</tr>
<tr>
<td>5</td>
<td>Middle Phrygian</td>
<td>800–540 BCE</td>
<td>800–540 BCE</td>
<td>273</td>
</tr>
<tr>
<td>6A–B</td>
<td>Early Phrygian</td>
<td>900–800 BCE</td>
<td>1100–800 BCE</td>
<td>261</td>
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<tr>
<td>7</td>
<td>Early Iron Age</td>
<td>1100–900 BCE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9–8</td>
<td>Late Bronze Age</td>
<td>1400–1200 BCE</td>
<td>1400–1100 BCE</td>
<td>146</td>
</tr>
<tr>
<td>10</td>
<td>Middle Bronze Age</td>
<td>1600–1400 BCE</td>
<td>2000–1400 BCE</td>
<td>365</td>
</tr>
<tr>
<td></td>
<td>Early Bronze Age</td>
<td>–</td>
<td>3000–2000 BCE</td>
<td>251</td>
</tr>
<tr>
<td></td>
<td>Chalcolithic</td>
<td>–</td>
<td>4000–3000 BCE</td>
<td>33</td>
</tr>
</tbody>
</table>

Table 2: YHSS chronology with GRS sherd count per period (adapted from Marsh and Kealhofer 2014 Table 1).
Figure 10: Sherd concentrations per transect in different periods (Kealhofer 2005 Figure 11-4).
The earliest traces of human occupation in the region date to the Chalcolithic period (there is some evidence for Paleolithic resource extraction, but no settlement) and are relatively rare. Only two locations provided evidence for Chalcolithic habitation, and only one of them was substantial enough to be considered a 'site' by the surveyors (2014, table 3). The count of 33 Chalcolithic sherds makes up only 1.5 % of the total diagnostic sample.

By the Early Bronze Age the landscape was fully colonized with habitation in nearly every catchment of the survey area. The GRS identified 3 Early Bronze Age sites and 13 components with 251 total sherds - or a little over 10 % of the total sample.¹ Expansion of settlement continued into the Middle Bronze Age reaching a brief peak during this period with 3 sites, 19 components, and 365 total sherds. The Late Bronze Age is less visible in the survey evidence. Wares on the Citadel Mound from the Late Bronze Age are dominated by standardized Hittite pottery, but these characteristic ceramics are rare in the landscape. It is possible that population was nucleated at Gordion in the Late Bronze Age, or that rural wares are indistinguishable from earlier Middle Bronze Age ceramics, but only two locations in the landscape, other than the Citadel Mound, showed clear Late Bronze Age occupation.

The Early Iron Age is similarly difficult to trace through survey. Handmade pottery with stylistic affinities reaching as far west as Troy and the Balkans characterizes the assemblage on the Citadel Mound from this period (Sams 1994; Voigt and Henrickson 2000b), but these wares were only found at three sites throughout the region. Similar issues of interpretation apply to the Early Iron Age as to the Late

¹ Sites are defined as “dense artifact concentrations... or activity areas,” but the distinction between site and component is unclear (Marsh and Kealhofer 2014, 692).
Bronze Age – there is either an absence of rural settlement or we are unable to recognize it.

All other periods of the Iron Age (split into Early, Middle, and Late Phrygian) show rapid expansion of settlement intensity, reaching a maximum in the Middle Phrygian period. The GRS identified 5 Phrygian period sites, 23 components, and 828 total sherds, making up 37 % of the total sample. Many Bronze Age sites were reoccupied in the Iron Age, particularly those closest to the floodplain, but new settlements were also established – nearly 70 % of Phrygian sites were new foundations with no evidence for previous occupation. The majority of Phrygian ceramics (74 %) were found on a relatively small number of large sites, mostly located in the lowlands and floodplain. More dispersed settlement clustered around springs to the east of Gordion – a pattern which was constant throughout the occupation sequence. There was some decline in the number of settlements during the Hellenistic period with only 3 sites and 15 components, but most of the settlements were reoccupied from the Phrygian period.

Roman period occupation established a new pattern of many small sites, interpreted as homesteads or small farms, scattered throughout the entire landscape. The majority of Roman period ceramics (60 %) were found on this type of dispersed settlement and are linked to a new, larger extent of land use. Roman period sherds amounted to 419, or 19 % of the total sample. Byzantine and Ottoman settlement is less abundant, but similarly dispersed, although not reviewed in any detail in GRS publications.
Figure 11: Gordion Regional Survey sites and features (Marsh and Kealhofer 2014 Figure 2).

The only mounded site from Sumner’s earlier survey that has received any further publication by Kealhofer and Grave’s Gordion Regional Survey is the sanctuary site of Dümrek (Grave, Kealhofer, and Marsh 2005). Dümrek is located on the edge of a cliff overlooking the Sakarya as it winds through a gorge ca. 80 m below the site, and is identified as a Phrygian sanctuary by the numerous rock-cut ‘altars’ and other stepped shrines that have been found there which have parallels at sites in the Phrygian Highlands including Midas City (Berndt-Ersöz 2006). Its cliff-top views, lack of architecture, and position where the landscape changes from river valleys and
plateaus to more mountainous terrain all suggest that the cult was in some way tied to nature.

There was never evidence for occupation at the site, only sporadic, ritual use beginning in the Early Phrygian period and continuing into the Middle Phrygian period, with a sharp decline in the Late Phrygian period and little activity at any other time. Interestingly, brown-on-buff Middle Phrygian fine wares are unattested. The assemblage is instead dominated by large, coarse, jar sherds most likely used for storage.

Using compositional analysis by means of Proton-Induced X-ray and Gamma Ray Emission spectrometry (PIXE-PIGE), Grave et al. compared the ceramics from Dümrek with other central Anatolian Iron Age centers in order to gauge its importance in long-distance integration (Grave, Kealhofer, and Marsh 2005). The results of the study were mixed. The majority of samples (85%) matched the elemental signature from wares found at other GRS sites near Gordion. There were, however, some matches with farther flung sites, specifically Boğazköy to the east and Uludere to the west.

The Gordion Regional Survey provides good coverage of the landscape around Gordion and a strong foundation for discussing diachronic settlement patterns and land use. We can be confident that most of the important population centers have been discovered and dated. The geomorphological component of the survey is particularly excellent. Marsh delivers a comprehensive picture of how the physical topography and hydrology of the region has changed over time.

The weaknesses of the survey primarily stem from the fact that it is not fully published, and it is based on a sequence - the YHSS - which is also not fully
published. No detailed information on any site besides Gordion and Dümrék has ever been released, which makes it difficult to consider the development of individual sites. The mounded sites identified by Sumner were not resurveyed intensively because of the theoretical outlook of the survey, a neglected opportunity to find out more about the size and function of these settlements in different periods. The focus has remained on long-term environmental degradation and land use, instead of changing patterns cultural behavior in the landscape, or an in-depth look at any particular period.

**Archaeobotany and Zoology**

Information on the ancient environment and agro-pastoral economy comes from archaeobotanical and archaeozoological studies on material from Voigt’s series of excavations. Naomi Miller and John Marston have examined macrobotanical samples to reconstruct changing patterns in plant use as a part of agriculture and construction (Marston 2009, 2010; Miller 2011; Naomi F. Miller and Marston 2012; Marston 2012). Zeder and Arter contributed the only faunal analysis from Gordion in over 65 years of continuous archaeological work at the site, providing useful insights into the animal economy (Zeder and Arter 1994).

Analysis of charcoal from occupation areas allows Miller to reconstruct the ancient vegetation cover in the landscape to a certain degree (Miller 2011). Oak and conifer (pine and juniper) dominate the charcoal assemblage from all periods, however there are some fluctuations in the proportions between these which suggest changes in the environment. Juniper likely grew closest to the site in antiquity (on ridges at the edge of the river valley) and was subjected to the greatest pressure from fuel-cutting. Juniper also shows up in the chamber of Tumulus MM. Gradually over the Phrygian period juniper was replaced by Oak as the primary source of fuel and by
the Hellenistic period juniper is completely absent from the assemblage. Variety in the types of trees also increased from the Late Phrygian period onwards, a pattern which likely stems from a degraded woodland that remained after the steppe-forest was removed.

The vegetation of the landscape likely radiated in bands upward from the valley – from treeless steppe and riverine vegetation (trees of willow, poplar, wild pear and apple, and elm in dense thickets) closest to the Citadel Mound and urban center, to scrub juniper and oak in the eastern uplands where a majority of the Iron Age settlements were located, integrating with pine and oak forest at elevations above 1000 m. Because of their locations, many of the smaller sites surrounding Gordion would have had better access to timber and fuel resources than the Citadel Mound. Today the ground cover is very similar, although oak and pine trees would have been more prominent in antiquity (Figure 12).

Figure 12: Aerial photo of the Şabanözü Valley, showing modern agricultural fields and vegetation. View towards northeast.
From the beginning of settlement on the Citadel Mound, plant and animal husbandry depended on wheat, barley, sheep, goat, cattle, and pig. The main crops were always wheat, barley, lentils, and bitter vetch. Caprids dominated the faunal assemblage, always with more sheep than goat – sometimes at a ratio of 3-to-1. Other plants (besides wood for fuel and construction) and animals were relatively rare although einkorn, emmer, rice, millet, chickpea, flax, grape, and almond, and equid, deer, canid, hare, rodent, bird, reptile, and fish bones are all attested. Taken together, the evidence reveals an economy which incorporated dry farming of cereals, small-scale garden irrigation, and a strong pastoral component. Flexibility was built into the system in terms of the amount of irrigation, the types of animals that were raised, and differing levels of sedentism or mobility, all dependent on prevailing natural and political conditions (Miller 2011; Marston 2017).

When compared to the overriding trends of the entire sequence, the Middle Phrygian period stands out for indications of irrigation. Miller and Marston point to ratios of barley to wheat, bitter vetch to lentil, and wild to cereal seeds which are all at their lowest during the Middle Phrygian period as evidence for increased reliance on irrigated agriculture. A concurrent uptick in the number of plants which prefer wet areas like the edges of irrigated fields (sedges) adds further weight this idea. The ratio of cattle and pig (animals that need wetter contexts) to caprids also reaches a max in the Middle Phrygian period, suggesting a shift in the entire agro-pastoral economy. Miller relates these changes to a possible moist phase across Eurasia during the 9th century BCE which “may have set the stage for a period of prosperity that culminated in the territorial state associated with King Midas” (Miller 2011, 320). This kind of agriculture demanded significant increases in the input of labor, but would also have yielded more predictable surpluses. The switch to more irrigation did
not last long however. By the Late Phrygian period the archaeobotanical and archaeozoological indicators mentioned above were on the decline and would never again reach the levels of the MP period.

**Iron Age Landscape**

When all of this data is combined, a coherent picture of the landscape in the Iron Age can emerge (Figure 13). Most dramatically, the Sakarya was on the eastern side of the Citadel Mound (not the western as it is today) and its floodplain was up to five meters lower. The geomorphological and archaeobotanical evidence suggests that the river was managed in some way (channelized or dredged) in the Middle Phrygian period and its water was used to irrigate fields of wheat on either side of it for several kilometers to the north and south of Gordion. Vegetation along the river consisted of wild fruit trees and sedges near field boundaries.
Figure 13: Map showing reconstructed Iron Age vegetation and archaeological features.

Intensive, irrigated agriculture supported large, dense settlements in the lowlands – especially Gordion itself, which reached its largest extent in the Middle Phrygian period (over 108 ha). The city was composed of a raised citadel with public architecture and surrounding urban occupation stretching up to 800 m away from the central mound. Different areas within the city were walled off and defended to different degrees with stone walls, mudbrick fortifications, ditches, and towers. The urban fabric of the city and organization of domestic space is still relatively unknown or unpublished. There were likely gardens which produced lentils, chickpeas, and other crops on a small scale.

2 See Anderson 1981 and 2012 for Middle Phrygian houses on the western edge of the Northeast Ridge.
Radiating outwards from the city and upwards from the floodplain, smaller settlements coalesced around perennial springs, especially to the east where basaltic soils made agriculture more productive. The lower ridges had once held scrubby juniper trees, but by the MP period these were already beginning to thin out. Herds of sheep and goat, exploited for their meat, milk, and wool, but also cows and pig would have grazed in this intermediate zone. The outlying settlements likely relied more heavily on pastoralism than agriculture and were likely involved in a complicated trading network with each other and Gordion. Marsh has hypothesized Iron Age roads connecting settlements (likely based on the alignments of tumuli, although this is nowhere explicit; see Chapter Four). In addition to agricultural and pastoral activity in the landscape, there were massive earth-moving projects to construct c. 100 tumuli, most built during the Middle Phrygian period (see Chapter Five). At higher elevations forests of mixed pine and oak, harvested for fuel, covered the high ridges which ringed the valley.

Interestingly, we do not have evidence for any quarries or mines. We know that large quantities of hard stone of different colors were used in building the massive fortifications of the Middle Phrygian Citadel Mound, but no ancient quarries have been identified in the landscape. We also have not found mines, metal sources, or workshops, even though bronze and iron objects are very common in the assemblages from the tumuli and the destruction level of the Citadel Mound. We also do not see smaller settlements like farmsteads or villas, rather the population was nucleated in a few large sites.

My research on the Gordion landscape focuses on the connections between settlements - patterns of local movement within the sphere of the city’s influence. By identifying and describing a number of ancient routes I will attempt to reconstruct
movement and its relationship to tumuli and other features in the landscape. Monumental burial and routine travel are two very different forms of social behavior which are inextricably linked at Gordion. Tumuli symbolize an elite group, a family unit, or even a single individual, while mundane routes were used by a much larger portion of the population. An examination of the relationship between tumuli and routes is therefore a window into the interaction between the elite and the non-elite at Gordion. The ability to affect change in the landscape was never equal, but was divided asymmetrically along the lines of social hierarchy. My project will clarify the extent and intensity of communication between nucleated settlements within Gordion’s local region. It will also help us to understand the degree of political control exercised by the rulers and elite of Gordion over the landscape and nearby settlements around them.
Chapter 3: Archaeological Approaches to Past Movement

Introduction

This chapter is about the movement of people through cultural landscapes and the digital methods that archaeologists have used to reconstruct movement in the past. Movement has long been recognized by landscape archaeologists as the primary means by which people interact with places. Whether routine or ritual in nature, movement is the activity that connects narratives to monuments, unlocking meaning attached to the physical features of a landscape. If we are interested in how these meanings shaped the lived experience of past people, we must first understand the possibilities of their movement and the various consequences of different route choices. Reconstructing paths, conceived of as sequences of encounters with successive places, is the first step in discovering the relational importance of places, routes, and monuments to each other. In the case of Gordion, the relationship among settlements - where people lived, tumuli - where people buried, and routes - where people traveled, are the landscape features at the center of the questions about movement.

Spatial Cognition

The idea that people recall memories through movement, which underlies this line of investigation, is a central tenant of the field of spatial cognitive science, much of which has focused on navigation. Experiments have shown that humans do not learn to navigate their environment by memorizing a Cartesian-style, top-down map. Rather, people learn a series of appropriate actions based on the recognition of specific places. Perceptual experience, particularly visual experience, encodes a set of behaviors that is easily recalled in the service of a goal. Overtime, humans build in
their minds a set of spatial relations between certain places, sometimes referred to as a ‘mental’ or ‘cognitive map.’ The title is a misnomer, however, in the sense that these memorized spatial relations are not map-like in terms of coverage, accuracy, or perspective.

For example, humans tend to learn mazes the same way that mice do, remembering courses based on the spatial layout of visual scenes where decision points are reached, often at junctions and turnings (Epstein 2005; Kahana et al. 1999). This process is intuitive when one thinks about day-to-day travel or the practice of giving directions. Junctions and turnings along a well-traveled path are more vivid in our minds and are places sure to be mentioned when asked the way. Spatial knowledge does not always even require conscious recall. The phenomenon of 'highway hypnosis,' when a driver traveling a frequent route 'blanks out' and does not remember actively navigating, but nevertheless makes the correct turns to direct the car to the destination, is evidence of its subconscious nature (Tuan 1977). Nor are the encoded behaviors limited to navigation. Relational stimuli can evoke social activity once a place is made familiar enough through repeated experience, as episodes of group sleepwalking attest - wherein seemingly coordinated and purposeful action occurs (Tuan 1977).

Navigation is a continuous process of integrated perception and action that makes reference to this ‘mental map’ and its associated set of appropriate behaviors. Relevant wayfinding information is detected through interaction with the environment and used to identify significant objects or features. Information about decision making can be kept to a minimum as long as the next relevant feature is visible and an intersecting path is clear. In this way landmarks can be used as
beacons, or goals of navigation, and knowledge of other objects therefore becomes less important and detailed (McNamara 2013; Heft 2013).

The information that we rely upon for navigation constantly changes as we move and consists of a succession of vistas connected by transitions. A vista is simply what can be seen from any moving point, often depicted by a panoramic photograph or, in GIS, as a viewshed. Patterns of visual information change within a vista as movement occurs. Gradually different things come into and go out of view. Eventually, when these changes are substantial enough, a new vista is generated at a place of transition. Put another way, one’s view along a route remains pretty much the same and changes only gradually - except at certain locations where it changes much more quickly and more dramatically. These places where one’s view changes are called transitions. Wayfinding experiments (Heft 1979, 1983, 1996) have shown that people are sensitive to the sequence of transitions along a route and identify them as meaningful places. Landmarks are often located and more likely to be recognized at such transitions. Over time, with repeated experience of a route, people perceive more and more navigational value in these places. The analysis of movement through a landscape, therefore, should rest on identifying and reconstructing sequences of transitions - the most significant places when moving.

Indeed, even more generally, our ‘cognitive maps’ - the spatial knowledge we build through familiarity with the environment - are formed around large, stable features in significant places that anchor spatial knowledge (Nadel 2013). Further details are then added to these fixed landmarks. Size and permanence are therefore particularly important properties in determining whether a feature will be used as a landmark (Auger, Mullally, and Maguire 2012). Spatial knowledge is systematically, often predictably fragmented and distorted because of this attachment to salient objects.
Certain areas are known in much higher detail than others, usually those surrounding landmarks. Even neighboring areas can be almost ignored, leading to an understanding of an environment that more resembles a patchwork than a map. In experiments, distances from less to more significant places are underestimated relative to the reverse. Boundaries and borders add to estimates of distance, as do the number of turns or intersections along a route. Our ‘cognitive maps’ bend like malleable surfaces depending on the information we have learned through movement. Especially important locations and features - landmarks, monuments - have a sort of gravity in our spatial understanding of the environment.

In order to understand any past concept of the landscape we should focus on how landmarks, monuments, and significant places are related to each other, since these are the most likely to have been the anchors of spatial knowledge in the past.

Scientists have pinpointed the areas of the brain where this navigational knowledge is stored and used (Auger, Mullally, and Maguire 2012). The hippocampus is responsible for navigation, an area of the brain that is also important for remembering the past and imagining the future. A specific part of the hippocampus - the retrosplenial cortex, known to be involved in autobiographical memory - responds directly and proportionately to the size and permanence of landmarks. The close connection between memory and navigation is likely related to the ability to project what might happen if certain decisions are made while traveling a route. Scientists have even proposed that the neuronal networks involved in memory and planning evolved from those used in navigation. “Our central claim is that the neuronal mechanisms that evolved to define the spatial relationship among landmarks can also serve to embody associations among objects, events and other types of factual information (Buzsáki and Moser 2013, 138).” Our ability to tell a
story, follow a narrative, and construct history is therefore directly (and neurochemically) related to our ability to follow landmarks in the environment. Even if we can never recover these histories from civilizations that left no written records (as is the case at Gordion), still we can identify and study the mechanisms by which they were incorporated into the landscape and spatial experience of past inhabitants.

**Navigation as a Cultural Practice**

Several examples from ethnographic studies of ‘traditional’ societies in which travel plays a vital role, help to illustrate how navigation is closely tied to cultural narratives. In each case wayfaring skills are embedded in familiar environments and social systems, and often supported by material artifacts including tools (Heft 2013, 279–83). All of the following examples, drawn from Namibia, the Canadian Arctic, and Australia emphasize the importance of oral communication describing significant places.

The Hai || om Bushmen of Namibia, who are renowned for their tracking skills, display numerous navigational abilities including locating places they have never visited (Widlok 1997). These abilities have been attributed to a practice of topological discourse - the frequent naming of and pointing to places during conversation. Topological discourse among the Hai || om imparts expert knowledge of the layout and names of places in the immediate area and some places even more distant. The abilities are actually stronger among women than among men who do the tracking (Widlok 1997, 319). The practice makes use of a variety of flexible landscape terms relating to topography, resources, groups of people, exchange relations, and how all of these aspects relate to one’s own life history. For example *Gogarab* = ‘stony ground’; *Gogara-khoe* = ‘People of the stony country’ (Widlok 1997, 321).’ The landscape is socially and ritually constituted through activities that
create and reinforce social bonds both between and within groups. Boundaries between territories are consecrated with rituals of tasting taboo first fruits from a neighboring region, which can only be performed by a local elder. These land-and-people groupings remain largely unchanged for long periods of time, attesting to their generational importance. The objective of topographical gossip is not necessarily about getting somewhere geographically, but more about getting somewhere socially (Widlok 1997, 324). The focus is on interacting with people, collecting resources, or accomplishing goals - all of which are potentially implied in the landscape terms tied to a series of meaningful dimensions such as soil, fruit, or work.

For the Inuit of the Canadian Arctic, travel is a way of being (Aporta 2004, 2009). Frequently birth and other major life events happen along the way. Rituals are performed before a child’s first journey, helping to define the identity of each individual. And yet, the physical trails along which they travel disappear each year with the melting of the ice and must then be remade when the ground is once again frozen beneath snow. Although these sled-tracks are by their very nature ephemeral, they show remarkable continuity along the same routes from year to year. The Inuit have different terms for the physical trails that vanish annually (igliniit), and the knowledge of the routes that remains and evolves among the community (aqqutiiit), enabling their recreation (Aporta 2004, 19). The persistence of the routes is owed to the way the course of travel is woven into narratives that are shared across generations.

The Inuit describe journeys in great detail, placing as much importance on the story of the trip as on the trip itself. The route itself is not the main feature of the story, but rather the cultural history and identity of narrator. The narratives contain
information about what is encountered along a route in a particular sequence. They are often segmented by named places that frequently occur at turning-points. Typically these named places are landmarks or villages visited along the way, and are always recounted chronologically, measured in periods of time, not distance, along the route. The names of the landmarks often refer to their visual appearance, for example: *Iglunnguaraaluuk* meaning ‘two hills resembling iglus that you can see from the mainland,’ and *Pusinngajuujaq* meaning ‘a hill that from a distance resembles a bowl upside-down (Aporta 2009, 137).’ Recreating the routes each year depends upon the visual recognition of the landmarks combined with the narrative information contained in the descriptions of journeys.

Travel can also be a deeply religious experience. A well-known example comes from Australian Aboriginals for whom navigational knowledge is closely intertwined with an all-encompassing belief system (Lewis 1976). In this cultural context, songs about an elaborate mythology spanning the history of the earth also contain paths of travel across the physical world. The aboriginals regard each song as belonging to the place it describes and associate it with the remembered, original inhabitants of that place, thus providing a historical dimension to travel. Similar to the discursive practices of the previous examples, the songs depict significant features encountered along specific paths in sequence. The features are sacred places, spiritually invested through ritual ceremonies that tie them to small local groups, although the wayfinding information is shared much more widely through travel and mythological narration (Lewis 1976, 253). Unsurprisingly, in orientation experiments carried out by Lewis, the locations of sacred sites featured in songs and used for navigation were identified with a higher degree of accuracy than other places. This way of conceptualizing the landscape pervades other aboriginal, artistic practices including
abstract designs which symbolize stops along a journey. Artifacts (Toas) are sometimes left behind at campsites which identify a group’s destination through culturally specific morphology, materials, and designs related to the destination’s topography or mythology.

In none of these ethnographic examples does navigation rely on maps or Cartesian representations to communicate spatial knowledge. Rather, social communication drawing on cultural tradition confers a sequence of significant features and places, each tied to knowledge about resources, history, or mythology and woven together in a narrative about the landscape and the past. Non-verbal cues along routes and the visual experience of traveling combines fluidly with oral practices to form ‘cognitive maps’ specific to an individual’s culture and personal life history.

In each of these cases and more generally, movement and wayfinding is part of the socialization process that imparts a sense of cultural identity and a set of culturally appropriate behaviors to an individual (Llobera 2000). Cultural and social institutions are reproduced and perpetuated through these activities. Navigational skills and knowledge are passed down through generations and help to structure relationships through ritualized actions. These institutional behaviors are often remarkably stable, reproduced and subtly transformed over time as part of the same socialization process.

The basic observation that the tumuli at Gordion are often arranged linearly as if lining ancient routes becomes more significant in light of the links between movement, navigation, landmarks, and memory (Marsh and Kealhofer 2014, 693). It begs the questions: which routes did the tumuli line? What exactly did these routes connect? Who traveled along them and for what reasons? What was the visual
experience of this movement? Were the tumuli used as landmarks and can we then ascribe additional significance to them within the landscape? And perhaps most importantly of all, how do we investigate these questions? How might we tap into some of the meaningful, culturally-specific experiences that emerged from movement in the ancient Gordion landscape without recourse to rich ethnographic testimony, textual sources, or extant roads? The remainder of this chapter tackles this last question and reviews some of the formal and at times informal methodologies that archaeologists have used to study movement in the past.

**Phenomenology**

Investigating past movement has proven difficult for archaeologists, especially in cultural landscapes lacking relevant documentary evidence or extant traces of paths. Phenomenology is one theoretical approach that has become popular especially among those studying Neolithic monuments in the United Kingdom. Phenomenology is essentially the study of the structures of human experience and consciousness, and takes as a central principle the idea that there is no objective approach to space, time, or movement (Johnson 2012, Barret and Ko 2009). Phenomenologists therefore recognize the subjective constitution of landscape knowledge and seek to develop narratives based on the concept of embodiment - being a part of what one is studying and gaining knowledge through subjective, bodily experience. The goal is to develop a textured understanding of the landscape similar to those available through ethnography, but based on features built by cultures that are inaccessible through oral or written traditions.

Phenomenological methodology often consists of walking through a landscape, to and from monuments under investigation, noting sensory experiences in the moment. Most frequently conclusions are based on visual alignments, but sounds,
smells, colors, and their combinations are all valued as relevant information. Typically arguments attempt to trace the consequences of the built environment in these dimensions back to the motivations of the builders. Phenomenologists have eschewed maps and other representations as unnecessary and even obstructive intermediaries between direct bodily experience of the landscape and knowledge of it. Rather ‘true’ spatial knowledge is seen to emerge from the act of moving itself which can be erased by a line on a map. Considered in relation to ethnographic examples, the physical act of moving and perceiving features along a route is surely essential to understanding any meaning invested in a cultural landscape.

Phenomenology has its critics though. The theory has been criticized for lacking a strong evidentiary base and rigorous methodology (Fleming 2006). Phenomenologists also too often privilege ritual or special contexts and do not focus enough on ordinary day to day experience (Johnson 2012). Critics have rightly questioned whether the methodology is sophisticated enough to replicate any past reality. The landscape features modern researchers note as significant as they walk are highly dependent on direction of travel and the specific chosen sequences of movement which are often arbitrary or supported by weak arguments. In order to be on firmer footing when it comes to phenomenological observations of cultural landscapes, we need ways to reinsert sequences of movement that we can be confident were used in the past (Llobera 2012, 500). As archaeologists we must have sound arguments to compare different paths and investigate the consequences of route choices.

**Digital Methods**

With the inclusion of GIS in archaeology, digital methods to analyze topography have become more and more popular, especially as digital elevation models (DEMs)
continue to be made available at ever better resolutions. Least cost path (LCP) analysis is now a nearly ubiquitous and increasingly standard part of archaeological practice (White and Surface-Evans 2012). LCP analysis stems from a tool within many GIS platforms which computes and generates a path between two points based on friction values for various dimensions of the intervening terrain, such as slope or vegetation. The path it generates minimizes the cost of moving - defined in various ways, commonly in terms of time or effort expended - and is often considered to be the most likely path to have been used in the past. LCP analysis is most effective in landscapes with constraining topography, where a straight line is often not the easiest way of getting somewhere else.

Critics of LCP analysis have pointed out that its main flaw lies in the generation of a single, optimized path - just one result. The sole, ‘least cost’ route represents only an idealized pattern and may have no relationship to any past reality (Herzog 2013; Branting 2012). It assumes that people will make this optimal choice based on perfect knowledge but ignores a host of other factors that often affect people’s travel decisions including visibility, weather, means of transport, proximity to resources, and many others (Branting 2012, 214; J. Verhagen 2013, 387). Many of these factors are difficult to weigh against the costs from topography, a necessary step in order to provide them with numerical expression and incorporate them in models. Instead, most researchers choose friction values applied to land-cover data based on expert judgement (Howey 2007). In the end, the researcher is left making many choices about what to model and how to weight costs, resulting in a subjective output.

Another important consideration when interpreting LCP studies is that different GIS platforms often use slightly different algorithms and can return different results. The
source of the DEM is also a crucial choice. DEM resolution must match the scale of the research question and the distances under study, but memory requirements make processing some high resolution DEMs impractical. As software and data continue to improve, LCP analyses should be repeated and reinterpreted.

LCP analysis is now seen more as a first, basic step or a building-block in some more complicated, more nuanced analysis of a landscape. Several scholars are developing more sophisticated techniques in an attempt to answer these criticisms - Llobera with the Focal Mobility Network method, Verhagen (and Llobera) with the Cumulative Cost Path method, and Howey with the Circuitscape method. The remainder of this chapter discusses these recent innovations, the strengths and weaknesses of the various approaches, and their relevance to my specific research questions, before finally applying each method to the Gordion landscape and commenting on possible insights.

**Focal Mobility Network**

Marcos Llobera has been experimenting with digital methods in GIS to quantify and graph aspects of movement for over two decades (Llobera 1996, 2000, 2001, 2003; Llobera and Sluckin 2007; Llobera 2012, 2015). His research focuses on how landscapes are structured by human movement. In a recent article (Llobera, Fábrega-Álvarez, and Parcero-Oubiña 2011), Llobera seeks to show how the decision to move *towards* one central location can impose order in a landscape, producing what he calls a focal mobility network. His technique provides accessibility measures for sites that are valuable for comparing how settlements and other features are situated within their surrounding landscapes.
The first step in constructing a focal mobility network is to create an accumulated cost surface that converges on a central location - a surface in which every pixel’s value corresponds to how much cost is accrued when crossing it while traveling towards the center. There are several different options for applying these costs. A popular method is to convert topographic slope into walking times based on Tobler’s Hiking Function (Tobler 1993; Herzog 2010). Llobera chooses a similar, but slightly altered hiking algorithm to build his accumulated cost surface (Llobera and Sluckin 2007). The result resembles a drainage network with the destination at the lowest point and human travelers in place of flowing water (Figure 14). Llobera uses a lot of hydrological terminology - basins, catchments, etc. - to describe different observable features of the accumulated cost surface.

Figure 14: Llobera’s accumulated cost surface with grey dot as destination (2011 Figure 1).
The next step is to develop a network of most likely paths towards the destination point by assigning a threshold value for each path according to the size of the area it ‘drains.’ The threshold value corresponds to the total number of pixels that are connected to the central location through each section of path (Figure 15). To better understand these values, it will help to revert to the hydrological metaphor. Imagine a single drop of water emanating from every pixel on the grid and flowing ‘downhill’ towards the center point. Inevitably, these drops will converge along paths of least resistance, turning into streams, and then streams into rivers. These streams and rivers all carry a certain volume of water to the center - an accumulated flow dependent upon the total number of raindrops that started their journey ‘uphill’ from each stream or river. In the Focal Mobility Network, the streams and rivers are replaced by least cost paths, which are categorized based on the volume of ‘water’ they deliver to the central point. Paths with lower ‘volumes’ connect the center to harder to reach areas, while those with higher values are more central to the network and connect larger areas.
This methodology has several strengths. First of all, it is relatively easy to implement in any GIS platform, requiring only three to four separate tools applied in succession to any digital elevation model. The results are relatively easy to interpret and allow for formal comparisons of accessibility between different locations. The structure of the network - how many paths flow into the center, how concentrated the flow is along certain paths, etc. - provides a reasonable description of mobility in the landscape around a site. A researcher could quickly compare the structure of such a network surrounding a large city versus that of a hillfort, or some other category of
site, to elucidate how various settlement-types are distinctly positioned within their landscapes.

A Focal Mobility Network also identifies potentially important places in a landscape, given a dominant center. The junctions where different paths converge, especially larger, more central paths, are immediately recognizable nodes in a possible transportation network.

A major weakness of this method is its dependence on the size and shape of the digital elevation model chosen by the researcher. Llobera provides no details on how to choose the correct scale for the study area, but always uses square blocks of topography with the site under analysis at the geometric center. The scale and shape of the study area should not be arbitrary, but rather determined through analytical considerations, and these might change for different types of sites or research goals.

A Focal Mobility Network also requires a central location, which necessarily limits the potential for visualizing movement through any landscape. Accordingly, the method should only be used to answer very specific research questions about sites that are known to be important central places.

The method also only reveals least-cost paths and so falls victim to the criticisms of LCP analysis listed above. There is a lot of variability in movement that a Focal Mobility Network will ignore. Additionally, there is no guarantee that any of the starting points for the main paths are relevant for a past landscape. The Focal Mobility Network may be an unrealistic version of movement that relates only partially with historical human movement which is primarily based on settlement.
Gordion’s Focal Mobility Network

Figure 1 shows the results of applying Llobera’s Focal Mobility Network method to the landscape around Gordion. Though not the only Iron Age mound in the area, Gordion can be assumed to be a central location during this period because of its size and the presence of so many tumuli in its immediate vicinity. Indeed, it has long been assumed to be a political capital of a larger Phrygian state (Grave et al. 2009; Voigt 2000, 2007, 2011; Voigt and Henrickson 2000). With the Focal Mobility method, I seek to address not if Gordion was a regional center, but rather how that reality was expressed in the landscape. The Focal Mobility Network reveals the quickest ways to approach Gordion, or put another way, the city’s attractive potential and how that divides the landscape along discrete lines of movement.
Figure 16: A cumulative focal mobility network centered on Gordion overlaid on walking time to Gordion. The weight of each path relates to the amount of area it connects to Gordion and therefore how central it is to the network.

The Focal Mobility Network I have constructed for Gordion is based on walking times derived from Tobler’s Hiking Function, a commonly used algorithm for landscape archaeology which converts topographic slope into units that are directly related to human movement and can be easily understood (Tobler 1993). The data used for all the following geoprocessing methods is SRTM 1 arc second (NASA JPL 2013). The paths were created using ArcGIS’s Flow Accumulation tool, using the anisotropic hiking function conversion table to create the friction grid with the Cost Distance tool. I experimented somewhat with different scales to determine whether variation in scale would significantly alter the path networks for this landscape. There was very little change in the location and importance of paths when the scale was limited.
to two hours, four hours, or six hours (Figure 16) of walking time. These times were chosen to reflect different activities throughout the landscape: a time of two hours relates to regular, day-to-day movement such as walking to and from fields; four hours encompasses movement from sites identified by the Gordion Regional Survey, and six hours is near the maximum travel time that is accessible within a single day. Stability in the shape of the network over different scales implies that the routes to Gordion are fairly distinct and that the same routes that are important for local movement are also important for medium-distance movement.

Figure 17: Gordion's Focal Mobility Network in relation to topographic and archaeological features, showing six primary access routes to the city.

Gordion's Focal Mobility Network consists of six main routes into the city, each leading from different areas of the landscape (Figure 17). Starting clockwise from the
northwest, a major route leads along the Porsuk River valley from the west, cutting across the lower outskirts of the high western plateau where a large, unexcavated tumulus sits, to approach Gordion from the north. The next path heads directly south towards Gordion along the Sakarya River, with a large branch from the Şabanözü valley to the east connecting to the route 4.5 km north of Gordion. These northwestern and northern routes lead into the city on either side of Kuştepe, at the furthest northern extent of the city. Another route approaches Gordion from the northeast, just north of the Northeast Ridge, connecting Gordion to an upland area to the east. A southeastern route follows the valley of a stream - the Sülüklü Çay - that drains into the Sakarya from the area around the modern town of Çekirdeksiz. This route connects Gordion to several Iron Age sites in the uplands to the southeast identified in the Gordion Regional Survey. There is also a route that heads north down the Sakarya River valley, and the last leads into Gordion from the west over the arid Plateau in an area that contains several tumuli of Hellenistic date.

The thickness of the paths relates to how much total area each connects to Gordion, and therefore how central or important each is to the network. This model clearly weights the routes along the river valleys more than all others, suggesting they would be the preferred routes if traveling more than a short distance. The other paths, to the northeast, southeast, and west over the high plateau are more likely local routes, usually superseded by those along the river valleys if the journey is longer than 3-4 hours.

This method of analysis only describes the topographic potential for movement towards Gordion, and as a proxy for past traffic assumes an equal distribution of people across the area (which is definitely false). To provide some context for these results, we should consider the routes in relation to the archaeological record and
single out those routes which lead from areas known to be inhabited in the Iron Age (Figure 18). The Gordion Regional Survey indicated the highest density of Iron Age sites to the east and northeast, suggesting the most trafficked routes in the Iron Age may actually be the routes that the Focal Mobility Network identified as less central. This incongruence highlights the importance of considering scale when constructing and interpreting this type of analysis.

Figure 18: Gordion’s Focal Mobility Network in relation to Iron Age archaeological features, with locations of tumuli at junctions of paths highlighted in red circles.

When we include the tumuli into our consideration of the results, some interesting correspondences between the Focal Mobility Network and the archaeological record begin to appear (Figure 18). While Iron Age sites typically lie along routes, the tumuli are positioned near junctions of routes. In fact, most of the clusters of tumuli outside
of the Northeast and South Ridges are located at significant junctions along routes leading from Iron Age sites to Gordion. Even the tumuli along the Northeast Ridge are situated between two routes. The only exceptions seem to be the tumuli on the South Ridge, which are not obviously related to any routes identified by the Focal Mobility Network.

The Focal Mobility method was employed in this case to answer the research question: “How does the attractive power of Gordion as a central location affect movement, settlement, and monument building in the local landscape?” The results suggest that long-distance movement (more than 4 hours) relies on the river valleys, which should be no surprise given that this method is based on hydrological principles. It also appears that settlement is not correlated well with these longer-distance routes. Rather, smaller sites are positioned to lie along local routes that lead quickly to Gordion. Many of the tumuli are also located at junctions - often where more local routes break off from longer-distance routes, frequently those leading from other Iron Age sites.

Overlaying visibility from the Citadel Mound on the walking times to Gordion perhaps reveals why this incongruence between longer-distance movement and settlement exists (Figure 19). One can see much further along unbroken lines of sight (especially in terms of travel time) to the east, southeast, and northeast than directly to the south or west. To the south of Gordion, visibility extends 7.25 km, but only just over an hour of walking time. Compare that to the Beyçeğiz tumulus at 11.5 km distant to the east in a straight line, but over 6.5 hours of walking time away from Gordion. The increased visibility of movement time in these directions could help to explain why the landscape is settled and monumentalized to a much greater degree in these directions as well. Probably not coincidentally, the tumuli are often located along
unbroken lines of sight from the Citadel Mound. Another explanation could be that the Sakarya River valley was primarily used for agriculture, not settlement, during the Iron Age.

Figure 19: Visibility (in dark pink) from the Citadel Mound overlaid on walking times to Gordion.

**Cumulative Cost Path Method**

Philip Verhagen is another scholar who has long used topographic modeling to conduct archaeological research. The majority of his scholarship has focused on the relative benefits of different types of predictive modeling (Verhagen 2007; 2013; Verhagen and Drăguţ 2012; Verhagen and Whitley 2012; Verhagen et al. 2013). Since Verhagen often analyzes landscapes before they have been surveyed, his
techniques necessarily incorporate less information from the archaeological record and derive primarily from the topography itself. Such is the case with the methodology we will next explore: the Cumulative Cost Path, also known as the ‘from everywhere to everywhere,’ method (Verhagen et al. 2013; Verhagen 2013).³

The Cumulative Cost Path method assumes no central location, but takes a digital elevation model (DEM) of the study area as its only input. A random series (or grid) of points is laid across the study area to serve as destinations or starting points for least cost paths, which crisscross the landscape, hopefully providing full coverage, and measuring the potential for movement across the entire study area. The size and shape of the study area are again critical choices in applying this method, and they should be linked to the research questions under investigation. Verhagen recognizes the importance of scale in analyzing movement, commenting that hillforts are often difficult to reach from a short distance, but usually located in areas that are attractive to movement on large scales (2013, 384), but does not list his criteria for choosing his study area.

In applying the Cumulative Cost Path method, Verhagen selected an area in the Rijssen-Wierden region, measuring 10 x 12 km and used a grid of points spaced 250 m apart. He notes that adding or removing points, and using evenly spaced or randomly distributed points did not seem to change the structure of the results (2013, 285). For each point in the grid, he created an anisotropic cost surface using Tobler’s hiking function and friction costs based on past hydrology, and then produced least cost paths from 72 radially distributed points at a distance of 5 km.

³ Llobera has also employed a very similar method in his study of a group of Galician barrows on the Barbanza peninsula (2015).
He combined all of these least cost paths, and then created a density grid of the results.

Verhagen uses this method to think about corridors of movement - areas where the local density of paths is high relative to their surroundings. Typically these are located in places where travel is forced through passable areas that are surrounded by more difficult terrain. Verhagen, however, resists detailed interpretation of the landscape based on these corridors. He comments that (pre)historic paths usually do not leave traces, and therefore the results of his study are difficult to prove or disprove. Instead, he notes the potential value of such a study to survey archaeologists in locating attractive areas for settlement or other activities (2013, 387), but he refrains from further comparisons with the archaeological record.

The Cumulative Cost Path method is certainly more robust in terms of its design, application, and necessary computing power than the Focal Mobility Network. It does not preference a given set of destinations or starting points, rather it provides a general description of the potential for movement throughout the landscape, giving the researcher a result to test against the known archaeological record. In comparison to the Focal Mobility Network, the Cumulative Cost Path method relies less on a sole least cost path in a given area because it examines the density of all such paths. However, it is still likely missing alternative routes by favoring only the easiest paths.

One weakness of the methodology is that it only describes the topography itself. It reveals only the potential for movement over terrain, which may or may not be related to past movement. Like the Focal Mobility Network, the Cumulative Cost Path also suffers from all of the theoretical problems with least cost path analysis, in that
the researcher is often left making arbitrary decisions to create friction grids. Verhagen himself also mentions the problem of lacking a theory of past movement - how people in the past made decisions about which routes to follow.

**Cumulative Cost Path Applied to Gordion**

To create a Cumulative Cost Path density grid for the landscape around Gordion, I first defined two study areas - both with Gordion at the center. One study area was a simple circle with a radius of 25 km (Figure 20). The other study area was an irregular shape corresponding to six hours walking time away from the Citadel Mound. The results produced by these two study areas were virtually identical.

![Figure 20: Circular study area centered on Gordion with radius of 25 km (in pink) and 300 randomly generated points serving as destinations of least cost paths.](image)
The next step was to populate the study area with 300 randomly generated points to serve as destinations of least cost paths, and create isotropic cost distance grids based on Tobler’s hiking function (which converts slope from the digital elevation model into walking time) for each point. Then, I generated 50 randomly distributed points within 10 km of each destination and produced least cost paths, using ArcGIS’s Cost Path tool, from each of these 50 points to their destination, yielding a total of 15,000 individual paths across the study area (Figure 21), all at most 10 km long. The 10 km maximum distance for the paths enforces a focus on local movement, each journey easily within a day’s walk.

![Figure 21: Cumulative Cost Path results for the landscape surrounding Goridon. All paths and their background density are shown. Paths are weighted and colored to reflect their frequency of use.](image)
The first and most obvious observation - that the potential for movement is greatest along the Sakarya and Porsuk River valleys - confirms the results of the Focal Mobility Network analysis. These are both long, connected corridors of high path density (Figure 22). These results should be tempered by our knowledge of past alluvial conditions, recognizing that frequent flooding of these rivers likely made these routes more difficult in the wetter months. Gordion’s location, however, only three km south of where these two corridors meet is probably not a coincidence. This is likely what the majority of scholars are referring to when they claim that Gordion is positioned at the intersection of trade routes.

Figure 22: The density of the Cumulative Cost Path results, showing long, connected corridors of high path density along the Sakarya and Porsuk River valleys.

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4 See Howey 2007 for an attempt to model such hydrological effects on travel.
While the two methodologies so far discussed reveal the same primary routes, the variability among secondary routes within the region is more apparent with the Cumulative Cost Path results than it was with the Focal Mobility Network analysis. Some other pockets of high path density can be seen at the junctions of other corridors (Figure 23). These are places where people are likely to pass through using multiple different routes, and which are well connected to the rest of the landscape. In the uplands 7.5 km to the east of Gordion is a large area of high path density that connects six corridors of medium density. A penumbra of Iron Age sites surrounds this area, and one Early Bronze Age mound lies at its center, potentially making it an important place throughout multiple periods of history. Clusters of tumuli also lie along both medium-density corridors that connect Gordion to this area.
Figure 23: Gordion’s Cumulative Cost Path results, highlighting a pocket of high path density to the east of Gordion, with surrounding archaeological features and connected corridors of medium path density.

The largest Iron Age mound in the landscape, aside from Gordion, sits in the center of another pocket of high path density connected to several medium-density corridors (Figure 24). Şabanözü/Büyük Hüyük (GRS Site #5) is a large mounded site (5.75 ha at its base, 10 m tall) identified in the 1988 extensive survey by William Sumner as a multi-component site. Collected sherds provide evidence for occupation in the EBA, MBA, LBA, Phrygian, Hellenistic, Roman, Byzantine, and Ottoman periods – a settlement history that matches Gordion’s closely. Sumner reports that there is also evidence for occupation on the low ridges and flat area around the mound. This was also an area surveyed by Kealhofer and Grave’s team as part of the Gordion Regional Survey transect 9 (GRS Site #52). The survey confirmed occupation in an
area greater than 200 x 1000 m to the west of the mound with pottery on the surface dating only to the Phrygian period. There is also a large tumulus around 500 m to the southwest of the mound.

Figure 24: Gordion’s Cumulative Cost Path results, highlighting a pocket of high path density to the northeast of Gordion, which is also the location of a large Iron Age mounded site, Şabanözü/Büyük Hüyük.

The movement corridor that connects these two noted areas of high density can be seen as another major north-south route, in addition to the Sakarya River valley (Figure 25). At several points, this route is connected to the Sakarya valley by medium-density corridors, which are often bookended by clusters of tumuli, almost as if they were gates.
Figure 25: The other major north-south route through the landscape revealed by the Cumulative Cost Path analysis.

When the Cumulative Cost Path results are compared to Gordion’s Focal Mobility Network, we see very similar routes appearing (Figure 26). The junctions between routes are also very similar, and are often locations where clusters of Iron Age tumuli were built. The Cumulative Cost Path analysis, however, reveals more variation in movement and helps to show how other important areas (besides Gordion) are connected to one another in interesting ways. Both analyses suggest that the area around Şabanözü/Büyük Hüyük and the upland area surrounded by Iron Age sites to the east of Gordion are important in part because of their relation to movement through the landscape. The Cumulative Cost Path results also help to highlight movement patterns that are separate from Gordion, and therefore the easiest ways to travel through the region while bypassing the Citadel Mound. The
most important of these is the corridor which passes through the area around Şabanözü/Büyük Hüyük, indicating its potential strategic value to political control of the region.

Figure 26: Gordion’s Cumulative Cost Path density and Focal Mobility Network compared.

Circuitscape Method

Meghan Howey is an anthropologist who has implemented a new methodology from the field of biology to study movement patterns in Michigan during the Late Prehistoric period (Howey 2007, 2011). Drawing on network and circuit theories, Circuitscape is a program for modeling movement that has been effectively employed in testing habitat connectivity for wild animal populations and the effects
of human intervention on their movement (Shah and McRae 2008; PEARLSTINE 2010; Koen et al. 2010). The method conceptualizes the landscape as an array of circuits for moving, with impediments causing resistance. It can be used in a number of different ways, but generally takes resistance grids (slope, land cover, hydrology, etc.) and nodes (destinations and starting points) as its inputs, and returns varying probabilities of permeability along different routes. Biologists use the program to show how roads and other human impediments negatively impact animal habitats and where access corridors should best be placed.

Howey uses the opensource program, Circuitscape, which interfaces with ArcGIS, with contemporary archaeological sites throughout Michigan during the Late Prehistoric period as her nodes (2011). To create resistance grids, she applies values to multiple variables including land cover (based on historical descriptions), topographic slope, and hydrology (2007).

Howey’s results are interesting in a number of respects (Figure 27). She compares resistance scores from a central, ceremonial site at Missaukee Earthworks to a number of settlements throughout the region and contrasts these with distances derived from a previous least cost path analysis. Howey finds that significant differences occur when certain sites have lower resistance based on the Circuitscape analysis due to several, different, redundant paths - affording more flexible choices for the traveler than sites that are only joined by a single least cost path. She notes that this higher level of connectivity revealed trough Circuitscape is reflected in the archaeological record in higher levels of ceramics and other material culture from better connected sites (2011, 2530). Ultimately, Howey argues that LCP and Circuitscape analysis are compatible methods to investigate past movement and should be used in conjunction with one another.
Figure 27: Maps showing Circuitscape results for movement between Skegemog Point site and Missaukee Earthworks (left) with least cost path analysis (right) (Howey 2011 Figures 4-5).

Circuitscape analysis has several advantages over the other methodologies for describing connectivity. Its main benefit is revealing multiple, different pathways and providing relative measures that enable the researcher to quantitatively compare routes. The results also better reflect human movement through a landscape. The methodology does not assume that travelers have complete knowledge of the terrain or that they are always willing or able to select the easiest path. Many circumstances that are unrecoverable to archaeologists can cause paths to close, become more dangerous, or be considered suboptimal in other ways (Howey 2011, 2525). Least cost path analysis, and even the more advanced techniques discussed above, fail to consider this kind of variation in the landscape, nor do they account for individual, behavioral variability on the part of travelers. Circuitscape, by including non-optimal
paths and revealing the full range of choices available to a traveler, allows a researcher to make qualitative interpretations of movement patterns and route decisions based on theories of past movement derived from ethnographic studies and spatial cognition research discussed above. Circuitscape can be used productively to study connective patterns throughout a region as Howey does, or to test specific research questions about routes between settlements (as I do in Chapter Four).

Circuitscape shares similar weaknesses to the other methodologies. The scale of the study area and the data are important considerations and should be compatible with the research question being investigated. Howey uses a digital elevation model with rather large 270 m grid cells. It is unclear whether such low resolution captures the relevant landscape dynamics that affect movement over the entire state of Michigan. Howey also builds cost surfaces by incorporating friction values associated with historic land cover and hydrology, but these are more or less arbitrary decisions by the researcher.\(^5\) Howey encourages more robust approaches to calibrating parameters for cost surfaces, but fails to make her assumptions clear.

I prefer a simpler approach that refrains from modeling criteria such as land cover and hydrology, and relies solely on topographic slope converted to walking speed through Tobler’s hiking function for a number of reasons. Incorporating criteria such as land cover and hydrology that change over time, often dramatically so, lessens the claim of the results to model past reality. Moreover, human intervention - through road-building or drainage of wet areas - can usually nullify these factors. At the scale of the Gordion landscape, one would need very precise data on ancient land

\(^5\) Howey, noting that her initial results did not seem 'realistic,' recalibrated the relative resistance values of movement through waterways.
cover (and its effects on ease of travel) to be confident in its inclusion in any analysis. I believe it is better to consider these factors qualitatively when interpreting results rather than include them as deterministic assumptions in the models themselves. Circuitscape in particular is powerful because it affords the researcher the ability to interpret and weigh different routes based on one's knowledge of past circumstances.

**Circuitscape and the Gordion Landscape**

Chapter Four presents a full analysis of the routes between Gordion and other, important, contemporary sites in the region, incorporating both digital and experiential perspectives on movement through the landscape. Here I describe the methodology I have employed, which differs somewhat from Howey’s, to produce results similar to the Circuitscape program. Two examples from the Gordion landscape, which are not included in the following chapter, will also serve to show how this method compares with those already discussed and why I prefer it for describing movement between locations.

The concept underlying Circuitscape - to think of the landscape as a field of ‘resistance’ with ‘currents’ of higher or lower resistance - is very similar to least cost path analysis derived from cost surfaces. The method’s real value is in revealing not just the easiest path, but a full spectrum of routes, each with different relative resistance scores. The same effect can be achieved in ArcGIS by adding together anisotropic cost surfaces from the locations under consideration and symbolizing the results to reveal separate paths (Figure 28). As before, the cost surfaces are based on topographic slope converted into walking times with Tobler’s hiking function - putting the relative ‘resistance’ values into meaningful, human terms.
Figure 28: Circuit between Gordion and Kara Pinar, showing two main routes with similar travel times.

The circuits between Gordion and two sites, Kara Pinar and Hasansih Pinar, identified in the intensive Gordion Regional Survey as surface ceramic scatters, will highlight the variety of route-options that this methodology allows a researcher to compare. Both examples include a number of routes with different walking times, land cover and hydrology considerations, and divergence/convergence points between them. The results are related to the built environment in an attempt to identify significant locations in the landscape.
Kara Pinar (GRS Site #48) is a circular surface scatter roughly 500 m in diameter, making it one of the largest surface sites identified by the Gordion Regional Survey. Ceramic evidence dates the site to the Early Bronze Age, Middle/Late Bronze Age, Phrygian, Hellenistic, Roman, Byzantine, and Ottoman periods. Circuitscape analysis reveals two main routes between Gordion and Kara Pinar (Figure 28). One route, the faster one by about four minutes, follows the course of the Sülüüklü Çay to the south of the Northeast Ridge, then bends northeast after passing another Iron Age site - Çekerdeksiz B (GRS Site #28) to approach Kara Pinar downhill from the south. The other route skirts the Northeast Ridge on its western side and heads more or less directly east before turning northeast to join with the first route. Both routes are flanked by large clusters of numerous tumuli, especially for the portion of the journey closer to Gordion. The northern route is shorter in Euclidean distance - 10.5 to 11.5 km - and is also more direct, requiring less turns of a traveler. Heavy rains draining off of Duatepe to the southeast often caused flooding of the Sülüüklü Çay before its channelization in the 20th century, which would have made the southern route periodically impassable. Another important consideration is the other site that lies along the southern route. Travelers would have passed by another settlement, perhaps stopping for social interaction along their journey, meaning that relationships between communities would have been affected by route choices. Both routes were likely used during the Iron Age, but least cost path analysis would have only shown the southern route, missing the more nuanced picture of movement that Circuitscape affords us.

6 The published data from the Gordion Regional survey on site size is not specific to chronological period, so it is unclear how large the site was during the Iron Age.
The second example (Figure 29) reveals similar dynamics related to movement in this part of the landscape. Hasansih Pinar is another surface scatter (GRS Site #42) located in the uplands to the east of Gordion and roughly 150 x 500 m in size. It seems to only have been a new occupation in the Phrygian period, and then continued in use through the Hellenistic and Roman periods. Circuitscape again suggests two major paths between Gordion and the smaller, contemporary site - routes very similar to those that connected the city to Kara Pinar. The northern route for this site involves some interesting choices for the traveler. In the same amount of time, one can either skirt the western edge of the Northeast Ridge, or cross it on either side of Tumulus MM (the largest tumulus at Gordion). The northern route then heads east until veering south to rejoin the southern route, and at this turning the path is flanked by two clusters of tumuli. The placement of monuments at turning points, or where decisions must be made, is a pattern that will recur several times in the next chapter and indicates that these monuments likely functioned as landmarks.

Just as in the previous example, the two routes bear an interesting relationship to another Iron Age site - Çekerdeksiz B - with one route passing right by the site, and the other bypassing it. This is another example of the possible social implications of route choices, made all the more interesting by the fact that both routes were monumentalized.
Figure 29: Circuit between Gordion and Hasansih Pinar, showing two main routes with similar travel times.

When compared to the other methodologies discussed in this chapter, Circuitscape offers clear benefits to archaeologists studying movement between contemporary sites. The methods all return similar paths, but Circuitscape is better linked to past movement because of its focus on centers of settlement where people would have been traveling most often. Certain routes take on added significance, especially in relation to the built environment and other considerations about the past landscape, when using a method that reveals suboptimal paths. Spatial cognition and ethnography tell us that choice in movement is a complicated process tied to knowledge of a landscape gained through experience and social interaction. Circuitscape allows a researcher to better explore the options available to travelers and reveals very different junctions between routes than the other methods.
Conclusions

Movement through a cultural landscape is a meaningful activity, related to many different aspects of ancient life, but is often difficult to study without extant traces of routes. There are signs that travel through the local landscape was culturally significant at Gordion, where in the Iron Age we find a constellation of nucleated settlements spread around a dense urban site, with mortuary monuments interspersed between them in linear arrangements. The relationship between the tumuli and movement has even been suggested by earlier scholars, but has never been formally investigated. In this chapter, I have reviewed the current digital methodologies archaeologists are using to explore past movement and I have applied them to the landscape around Gordion to compare their results.

The different methods each complement each other. The Cumulative Cost Path method describes the potential for movement throughout the entire region, privileging no single site, and revealing the broad corridors through which many people are likely to have moved. The Focal Mobility Network shows how Gordion, as a central place, could have structured the landscape by attracting movement towards the city, and its correspondences with the survey evidence indicate that settlement was likely more closely related to local than to long-distance movement. Circuitscape enables the examination of route choices available to people traveling between contemporary sites. In each case the scale of the study area and the resolution of the data were important considerations; both should be related to the type of human movement under study. Other factors, such as land cover, hydrology, and the built environment, also have mitigating effects on movement over different scales and conditions, which need to be kept in mind when formulating research questions and interpreting results.
Returning to our research questions at Gordion: how did people move through the landscape? What were the routes people traveled and what were the visual consequences of those decisions? Spatial cognitive science and ethnographic examples of cultural navigation (discussed above) teach us to think of meaningful movement along routes as a sequence of socially significant places anchored by visually salient landmarks. My analysis, therefore, combines Circuitscape - to identify possible routes between contemporary sites, visibility analysis in GIS, and personal reconnaissance while walking the routes, thus integrating digital and experiential perspectives on movement through the landscape.
Chapter 4: Movement through the Gordion Landscape

Introduction

Gordion became a large city in the Middle Phrygian period, but little has been written about its connections to its hinterland and how it supported the urban center. Historical claims about King Midas and Gordion have the city as the capital of a Phrygian kingdom. Such a powerful center, with interregional influence, must surely have dominated its local landscape in some manner. What should we expect a ‘capital landscape’ to look like? How did the process of sociopolitical integration unfold over time and space throughout the Gordion landscape?

This chapter explores the physical connections through the landscape between Gordion and several contemporary sites. Based on my review of GIS methodologies in Chapter Three, I identified potential routes by means of Circuitscape analysis, and then I personally walked, rode a bike, drove a car, and sometimes flew a drone along these routes to note the visual experience of traveling along them. In this way digital and phenomenological perspectives informed each other over multiple iterations in a recursive manner throughout my research.

The sites were chosen from the Gordion Regional Survey (GRS) and in one case the closest contemporary citadel, to provide a variety of site size and distance for my study. Two are relatively small, surface sites within one hour’s walk from Gordion: Kollar Tepe (GRS Site 3) and Çekirdeksiz B (GRS Site 28). One, Şabanözü/Büyük Hüyük (GRS Site 5) is a mounded site, roughly half the size of Gordion, but like Gordion likely had an attached lower town during the Iron Age, and is a little over two hours on foot from Gordion. Hacıtuğrul Höyük, actually larger than Gordion’s Citadel Mound, was not surveyed by the GRS and is 9.75 hours from Gordion. Each
site has a different configuration of monumentalization along the route between it and Gordion, but my study will show that there are several common elements that all share. The rest of the chapter contains descriptions of each individual site, the route connecting each to Gordion, and the patterns in tumulus construction and visual structure based on movement which I have observed throughout the landscape.

**Descriptions of Routes**

**Şabanözü/Büyük Hüyük (GRS Site 5)**

Şabanözü/Büyük Hüyük is a large mounded site (5.75 ha at its base, 10 m tall) identified in the 1988 extensive survey by William Sumner as a multi-component site (Figure 30). Collected sherds provide evidence for occupation in the Early Bronze Age, Middle Bronze Age, Late Bronze Age, Phrygian, Hellenistic, Roman, Byzantine, and Ottoman periods; a settlement history that matches Gordion’s. Sumner reports evidence for occupation on the low ridges and flat area around the mound. This was also an area surveyed by Kealhofer and Grave’s team as part of the Gordion Regional Survey transect 9. The survey confirmed occupation in an area greater than 200 x 1000 m to the west of the mound with pottery on the surface dating only to the Phrygian period (GRS Site 52). The site is just over two hours walking time from Gordion. The combination of large mound and what can be called a lower town makes Şabanözü/Büyük Hüyük the largest settlement aside from Gordion in the local region. Like Gordion, the site has a long occupational history, but seems to have reached a maximum extent in the Phrygian period.
Circuitscape analysis reveals two main routes connecting Gordion and Şabanözu/Büyük Hüyük (Figure 31). Route B (the fastest – represented in dark green) follows the course of the Sakarya River valley north for around 4.7 km, then turns east after passing Kızlar Kayası (a cliff at the western edge of a long ridge between the two sites), and then north again avoiding ridges and hills to reach Şabanözu/Büyük Hüyük.

The other major route (A) splits off from the river valley to traverse a ridge along a more or less direct line northeast towards Şabanözu/Büyük Hüyük. This route is considerably shorter in length than route B (8.4 km to 10.2 km), but in travel time the two are relatively equal – a difference of less than 6 minutes over a journey of 4
hours on foot. This incongruity can be explained by the increased elevation gain experienced as one crosses the ridge lying between the two sites.

Both routes converge to the north of Gordion, reaching the Citadel Mound via a road leading through the north Lower Town – protected by the fortified bastion of Kuştepe at the northernmost extent of the city’s outer fortifications. These features of the urban center have been identified through geophysical prospection carried out by GGH under the direction of Brian Rose since 2011 (Rose 2017).

Figure 31: Map showing two routes between Gordion and Şabanözü/Büyük Hüyük.

The quicker route along the river valley (B) was likely used only seasonally due to frequent flooding of the Sakarya River before its channelization in the 1960’s. Even if not underwater due to the rising river levels, the road would have been muddy and
difficult to travel during the winter months, and would have required much more maintenance due to rising ground levels caused by alluviation. The land along the river was also prime agricultural land and was likely irrigated, creating wetter conditions for a majority of the year and impeding travel. Therefore I consider the route which traverses the ridge to be the primary one.

At each juncture and at significant topographical points along both routes tumuli were constructed (Figure 31):

1. Where the route over the ridge (A) diverges from the route along the river (B) and begins to climb the ridge to the NE, there are two, now rather plowed over tumuli (Figure 32).

Figure 32: Digital elevation model of two tumuli at point where route A leaves the Sakarya River Valley and heads up a ridge to the northeast.
2. As one walks route A, visibility of the road in front is limited by the slope of the ridge in the direction of Şabanözü/Büyük Hüyük, so that one cannot see farther along the path past where two more large tumuli sit to either side of the route (Figures 34-35). The elevation profile shows nicely how there are a number of abrupt changes in elevation along route A, which are all marked by monuments (Figure 33). Visibility along the route changes significantly at these points.

![Elevation profiles of routes A and B](image)

**Figure 33:** Elevation profiles of routes A and B, showing location of tumuli at places where slope changes dramatically.
Figure 34: Viewshed, in red, from the first two tumuli along route A (star shows location of viewpoint).

Figure 35: Photo of the view northeast along route A between two pairs of tumuli while traversing ridge.
Figure 36: Digital elevation model of tumulus to the north of route A.

Figure 37: Digital elevation model of tumulus to the south of route A.
Figure 38: Viewshed, in red, at point where pair of tumuli (Figures 35-37) line route A (star shows location of viewpoint).

3. At the crest of the ridge before descending towards the valley in which Şabanözü/Büyük Hüyük sits, there is another mound placed just to the south of the route (Figure 39). This mound is flat on top and irregular in its dimensions. Surveys have found no evidence of occupation, but its prominent location along this route and its unusual shape argue for it being manmade. It is placed at the highest point along the route and the last point visible from Gordion’s Citadel Mound (Figure 40). It controls the view along the entire rest of the route towards Şabanözü/Büyük Hüyük (Figure 42, Figure 43) and is one of only two features along the route which is visible from both Gordion and Büyük Hüyük (Figure 44). The other is the large
northern tumulus (Figure 36), the largest of all the tumuli along the route. Perhaps this flat mound was a tumulus that was aborted during construction (similar to Tumulus KY). If so it would originally have been an exceptionally large tumulus with a maximum diameter of over 140 m. Another possibility is that this was a place of refuge or defense that was only used in times of emergency and therefore did not accumulate much pottery to be discovered during survey. Further investigation is needed to assess the nature of this feature.

Figure 39: Digital elevation model of large mound on crest of ridge at midpoint along route A.
Figure 40: Viewshed, in red, from the Citadel Mound (star shows location of viewpoint).

Figure 41: Photo showing view to the northeast from Kuştepe.
Figure 42: Viewshed, in red, from large mound on ridge along route A (star shows location of viewpoint).

Figure 43: Photo of view towards Şabanözü/Büyük Hüyük after just cresting the ridge along route A.
Figure 44: Combined viewshed from Gordion and Şabanözü/Büyük Hüyük, showing only locations visible from both sites.

Figure 45: Photo showing view towards the southwest from Şabanözü/Büyük Hüyük.
4. After descending the ridge and reaching the valley floor, where routes A and B converge once again, there are two smaller tumuli placed at this juncture (Figure 46, Figure 47).

**Figure 46:** Photo of view along route A and two tumuli on eastern side of ridge where routes A and B join.

**Figure 47:** Digital elevation model of two tumuli placed where routes A and B join on eastern side of ridge between Gordion and Şabanözü/Büyük Hüyük.
5. There is also a group of four low mounds at the point where route B leaves the river valley to make a 90 degree turn to the east to head up a slope towards Şabanözü/Büyük Hüyük (Figure 48). At this point one’s view along the route opens up to the east towards the two smaller tumuli where the two routes join, or if traveling towards Gordion, this is where the Sakarya Valley and the Citadel Mound come into view (Figure 49). These mounds were originally identified by William Sumner as settlements based on ceramic and artifactual evidence, although in shape and size they are very similar to tumuli, and they were identified as tumuli in the latest publication from the Gordion Regional Survey (Marsh and Kealhofer 2014). So opinions on these mounds are varied and they deserve a closer look to determine whether there is a settlement or elite burial or both here. In any case they are positioned at the last place visible along route B from the Citadel Mound.

Figure 48: Digital elevation model of four low mounds, likely tumuli, placed where route B turns east and leaves the Sakarya River Valley.

7 Although in Kealhofer 2005 this group of mounds is listed as a settlement.
Figure 49: Viewshed, in red, from four low mounds along route B (Figure 48). Star indicates viewpoint.

6. Finally, near the end of the route there is a large tumulus placed along the route to the southwest of Şabanözü/Büyük Hüyük (Figure 50). This is the only tumulus within two kilometers of the site. For comparison’s sake, there are over 40 tumuli within a two kilometer radius of Gordion’s Citadel Mound.
Figure 50: Digital elevation model of large tumulus two kilometers to the southwest of Şabanözü/Büyük Hüyük.

In 1988 rescue excavations were undertaken by the Museum of Anatolian Civilizations in Ankara on a partially looted tumulus near Kızlar Kayası (Saatçi and Kopar 1991). The material yielded a date in the mid 8th century BC, giving the only chronological point for any of these landscape features along these routes. Unfortunately no map was included in the publication and the exact location of this tumulus is currently unknown.

Hacıtuğrul Höyük

Hacıtuğrul Höyük is a very large (over 500m in diameter, 21.3 ha, 15-20m tall) circular mounded site (Figure 52, Figure 53). On foot, it is 9.75 hours from Gordion or 21.5 km as the crow flies (Figure 51). Hacıtuğrul sits in a valley almost 200m higher (850m) than the
Sakarya River valley (670m). The two are separated by a spur of the Çile Dağı reaching a height of 1065m.

**Figure 51: Route between Gordion and Hacituğrul Höyük reconstructed by Circuitscape analysis.**

Hacituğrul Höyük was excavated by Burhan Tezcan over four seasons from 1972 to 1975, then again for a season in 1979. Excavations revealed Iron Age fortifications, terraces, and evidence of Early Bronze Age and Late Bronze Age habitation (Tezcan 1980; Mellink 1972, 1974, 1975). No Hellenistic or Roman levels were found. Extensive terracing was used to enlarge and raise the citadel forming its present shape. The interior of the citadel was subdivided into different enclosures by crosswalls. The excavations were never fully published. Even from the brief reports, however, one can glean that Hacituğrul Höyük was a massive fortified citadel much
like Gordion with a similar layout of space and similar occupation history. The ceramics recovered ranged from the Early Iron Age to the 6th century and there were several building phases during the Iron Age. Such a large and important fortress and so close to Gordion surely must have been in contact with the Phrygian capital.

A new research campaign under the auspices of the Japanese Institute of Anatolian Archaeology was begun at Hacituğrul Höyük in 2007, including topographical survey, documentation of surface architecture, geophysical prospection, and surface collection of artifacts (Yamashita et al. 2013). This survey confirmed the presence of large, likely public, architectural complexes dating to the Iron Age. The majority of ceramics collected dated to the Late Phrygian period, with many also from the Middle Phrygian, and a small number from the Early Phrygian periods. The survey also seemed to confirm that the citadel had been abandoned by the Hellenistic period.

Figure 52: Orthorectified photo of Hacituğrul Höyük.
Figure 53: Digital elevation model of Hacıtuğrul Höyük.

Circuitscape analysis combined with observations made while traveling between the two sites has revealed the course of the Iron Age route which connected them (Figure 51). The route exits Gordion from the east – likely from a gate complex on the eastern edge of the Lower Town, then heads up the Northeast Ridge through a dense group of tumuli and past Tumulus MM to traverse the plateau to the east. The reconstruction of the exact path of this route is aided by the discovery of a Roman period road unearthed by Rodney Young in 1955 and thought by him to be part of the Persian Royal Road mentioned in Herodotus (Figure 54). This road was paved with cobbles and lined with larger boulders. It ran up the ridge between tumuli N and KY, and a section was also found to the east of MM. From here the line of the road can be followed by analysis of digital elevation models of the landscape produced through aerial photogrammetry. It passes through a group of 12 smaller tumuli (30-
60m in diameter) which stretch out 1.5 km to the northeast of tumulus MM. The route then passes two farther tumuli before leaving the plateau and gaining steeply in elevation to cross the high ridge to the south of Çile Dağı.

Figure 54: Map of Young’s excavation trenches on the Northeast Ridge that uncovered pieces of a Roman period paved road.

As was observed with other routes, the tumuli are positioned at a key points along the route in terms of visual experience while traveling. When passing Tumulus MM, one’s view along the route is obscured by the low ridge upon which a further cluster of tumuli sits (Figure 56), but the tumuli are still visible (Figure 55).
Upon reaching the cluster, the view of the route opens into the distance, continuing all the way to the high ridge where the Beyçeğiz Tumulus is located (Figure 59). When traveling in the opposite direction (towards Gordion) the trend of visibility along the route changing considerably at each tumulus cluster holds. Generally, one’s view along the route is limited to the point where the next tumuli are, although Tumulus MM and the Beyçeğiz Tumulus are always visible (Figure 60, Figure 62). In effect, the clusters of tumuli create a series of waypoints along this route where visual experience changes.

Figure 55: Viewshed, in red, from just past Tumulus MM along the route between Gordion and Hacituğrul Höyük. Star indicates viewpoint.
Figure 56: Digital elevation model of western cluster of tumuli along route between Gordion and Hacıtuğrul Höyük.

Figure 57: Digital elevation model of second cluster of tumuli along route between Gordion and Hacıtuğrul Höyük.
Figure 58: Photo of view from first cluster of tumuli along route between Gordion and Hacituğrul Höyük.

Figure 59: Viewshed, in red, from just past first cluster of tumuli along route between Gordion and Hacituğrul Höyük. Star indicates viewpoint.
Figure 60: Viewshed, in red, from second cluster of tumuli along route between Gordian and Hacituğrul Höyük. Star indicates viewpoint.

Figure 61: Digital elevation model of pair of tumuli along route between Gordian and Hacituğrul Höyük.
Figure 62: Viewshed, in red, from pair of tumuli along route between Gordion and Hacıtuğrul Höyük. Star indicates viewpoint.

The Circuitscape analysis suggests two ways of crossing the high ridge between the sites: one, slightly slower track (in yellow), and a faster one about 750 m to the south of the first. The difference between these two options in walking time is only about 6 minutes, an insignificant amount of time over a journey of over 9 hours.

More telling is the location of a large tumulus at the top of the ridge, near the modern town of Beyceğiz (Figure 63, Figure 64). This Beyceğiz Tumulus underwent a series of rescue excavations from 2015-2017, but ultimately was found not to contain a tomb chamber or a burial of any kind, a unique occurrence at Gordion (see Chapter 5). It is the farthest tumulus from Gordion which is still within view of the Citadel Mound and it lies at the farthest point along the route to Hacıtuğrul that is still within view of Gordion. This was likely the point at which the Phrygian elite
expected many travelers to enter the Sakarya Valley and catch their first glimpse of
the landscape filled with burial monuments and the Citadel in the distance (Figure
65, Figure 66). The location is also a decision point in that the route can either head
northwest or southeast after passing the monument. Interestingly, the Beyçeğiz
tumulus is not visible from Hacıtuğrul, but the topography is such that there is no
point along the route between the two sites which is visible from both of them.

Figure 63: Digital elevation model of the Beyçeğiz Tumulus.

Figure 64: Photo of the Beyçeğiz Tumulus viewed from the west.
Figure 65: Viewshed, in red, from the Beyçeğiz Tumulus. Star indicates viewpoint.

Figure 66: Photo of view from the Beyçeğiz Tumulus towards Gordion. Tumulus MM and several tumuli along the Northeast Ridge are clearly visible in front of the Citadel Mound.
After crossing the ridge, the route descends towards Hacituğrul Höyük where it passes a very large tumulus (160m in diameter, one of 5 in the area around the site) about 700m to the southwest of the mound. The Circuitscape results show multiple options for the route after passing the Beyceğiz Tumulus. Without further survey of the terrain between these sites (outside of the zone covered in the Gordion Regional Survey) it is not possible to know which option was used in the Iron Age (perhaps they were all used to a certain degree). However, it is interesting that they all converge at the point where the last, large tumulus is located.

The monumentalization of this route through tumulus construction at multiple points along it (the high density of tumuli along it closer to Gordion, the size, distance, and prominence of the Beyceğiz Tumulus, and indeed Tumulus MM) argues for a high volume of traffic along the route in the Iron Age. The further investment in the infrastructure of the route during the Roman period, by formalizing it into a built road, suggests that this route remained important and was likely part of longer distance links. The connection between the sites was likely a strong one, with people frequently traveling back and forth between the two citadels.

The size of Hacituğrul Höyük (at 500m in diameter, the mound is actually slightly larger than the Gordion Citadel Mound), its distance from Gordion (9.75 hours on foot is probably a two-day journey, unless traveling on horseback), and the presence of at least 5 tumuli in the landscape around the mound argue for a degree of political autonomy, perhaps with its own community of elites (with their own tradition of monumental burial) and territory of control. The lack of a series of tumuli past the Beyceğiz Tumulus – on the Hacituğrul side of the ridge so to speak – suggests a slightly different type of connection than that between Gordion and Şabanözü/Büyük
Hüyük or other sites nearer to the Citadel Mound. Likely the increased travel time was a factor in the political relationship between them.

The topography of the area between the two sites and its limitations on travel are very important to their relationship. There is no other citadel or settlement of a comparable size within one day’s journey from Gordion. Hacıtuğrul is in a separate valley with a different hydrological system, so the agricultural territories would have been separate, although the two sites likely shared pastoral zones and other resources such as clay beds and mineral sources.

Only further excavation can clarify to what degree and at what time Hacıtuğrul was politically and socially connected to Gordion, but it is a crucial question in terms of understanding the development of Phrygian political structures. The construction of the Beyceğiz Tumulus, as yet datable only to the Middle Phrygian period, was probably an important moment in the relationship between the two sites, as perhaps was the construction of Tumulus MM in 740 BCE. Further survey around the mound could potentially tell us if Hacıtuğrul was an urban center with a lower town and distributed settlement hierarchy throughout its nearby landscape like Gordion was during the Iron Age, or if it was only a fortress.

**Kollar Tepe (GRS Site 3)**

Sumner describes Kollar Tepe as a natural hill with conglomerate rock outcrops and cultural deposits on the southern, western, and eastern slopes (Figure 67, Figure 68). He found sherds in the banks of the road that cuts the hill on its south flank, but not many in the saddle between the hill and the ridge to the north. At its base the hill is ca. 100 x 120 m, and ca. 40 x 55 m at the top, with a total area of 1.26 ha. It rises c. 4 m above the surrounding ground level near the river, but is lower than the
ridge to the north. Squared building stones are visible at the southern foot of the hill where the road has cut it. The pottery Sumner collected consists of grey and tan wares dating to the Phrygian period and Middle Bronze Age respectively. The site is dotted with circular pits cut into the conglomerate especially on the southern and western slopes of the hill, which are the areas where Sumner reported finding pottery. These are likely the results of quarrying activity similar to what has been observed in the conglomerate rock outcrop west of the Outer Town.

Figure 67: Orthorectified photo of Kollar Tepe.
Figure 68: Digital elevation model of Kollar Tepe.

Today the site sits at a natural crossroads, lying at the intersection of a road running the length of the Porsuk valley to the west, a north-south road heading over the ridge to the north and south towards Gordion, and an unpaved track heading around the ridge to the northeast and following the Sakarya north. The position is also strategic in terms of viewsheds, especially when compared to sightlines from the Gordion Citadel Mound (Figure 69). Kollar Tepe is ideally situated to extend views west up the Porsuk Valley and northeast up the Şabanözü Valley, both areas that are hidden from Gordion. Kollar Tepe itself is also not visible from the Citadel Mound.
Figure 69: Viewshed, in red, from Kollar Tepe.

The route to Kollar Tepe traverses the Sakarya floodplain north (Figure 70). This is the area of the Gordion landscape which has undergone the most dramatic and continuous change since the Iron Age. Kollar Tepe is also only four kilometers distant from the Citadel Mound, which is near the lower limit in terms of the scale at which GIS analysis is useful with the currently available data. The interpretations of this route based on topography are therefore more speculative than others, but the general patterns seen elsewhere in the landscape hold for this route as well. Key points along the route, according to the visual experience of travelers, were marked by monumental burial.
Kollar Tepe lies at a distance of 3.9 km in a straight line almost due north from the Citadel Mound and the walk between them takes a little under one hour. The reconstructed Iron Age route starts from Kuştepe, the bastion at the north end of the Lower Town where geomagnetic prospection has recently revealed the existence of a large fortress and gate structure. The route then heads northwest up a slight ridge and onto a low plateau to the west of the river over land that was most likely used for irrigated agriculture.

At the start of the route, one’s view along it is blocked by this first ridge (Figure 71). To the east of the route is a tumulus, placed right at the point where the route crests the ridge and the slope begins to even out (Figure 72). When one reaches this first tumulus, the view along the route (Figure 73) opens up and extends to the north ca.
1500 m near where two farther tumuli line the route. These two tumuli (Figure 74), placed on the eastern edge of the low plateau, are almost exactly halfway between the two sites. They have been severely damaged by modern plowing and are now barely visible (Figure 75).

Figure 71: Viewshed, in red, from Kuştepe. Star indicates viewpoint.
Figure 72: Digital elevation model of southernmost tumulus along route between Gordion and Kollar Tepe.

Figure 73: Viewshed, in red, from southernmost tumulus along route between Gordion and Kollar Tepe. Star indicates viewpoint.
Figure 74: Digital elevation model of pair of tumuli at halfway point along route between Gordion and Kollar Tepe.

Figure 75: Photo showing view to the south towards Gordion from pair of tumuli at halfway point along route between Godion and Kollar Tepe. Red arrows point to the pair of tumuli, which are difficult to see due to plowing.
The route then heads up a final slight ridge before plunging down the northern slope of the low plateau to meet the Porsuk River. The ancient crossing of the river is unknown, but there was likely a bridge here that could be controlled from Kollar Tepe. The last and largest tumulus along the route is located to the west of the route where it would have crossed the river (Figure 76). This seems the most likely spot for an Iron Age bridge across the Porsuk. Indeed today there is a crossing just 75 m to the southeast of the tumulus. The route then ascends a short distance up the ridge to Kollar Tepe.

Figure 76: Digital elevation model of tumulus near modern crossing of the Porsuk River along route from Gordion to Kollar Tepe.
The Northeast Ridge

The majority of the tumuli in the Gordion landscape lie along the Northeast Ridge: a ridge that runs northwest-southeast beginning about one kilometer northeast of the Citadel Mound between it and the modern town of Yassihöyük and stretching four kilometers to the southeast. The modern road to Polatlı, the largest town in the region, lies on top of this ridge. Forty-seven tumuli were built along the Northeast Ridge, 28 of which have been excavated, affording us the opportunity to examine the chronological development of monumental burial at Gordion.

As we have seen with the other tumuli, these lie along a route between contemporary Iron Age settlements (Figure 78). In this instance there is not an obvious mounded site at the end of the route, but the Gordion Regional Survey found evidence for occupation in the form of a large (300 x 450 m) surface sherd scatter: GRS Site 28, named Çekirdeksiz B, dating to the Phrygian, Hellenistic, and...
Roman periods. Çekirdeksiz B is one hour walking time from Gordion along the Sülüklü Çay streambed.

Figure 78: Map showing route between Gordion and Çekirdeksiz B.

As with other sites connected to Gordion by tumuli, Çekirdeksiz B is not visible from the Citadel Mound (Figure 79). The route also eventually disappears from view of the Citadel Mound, but the Northeast Ridge and the tumuli along it are all in view. Indeed the tumuli extend along the ridge to almost the same point where the view from the Citadel ends. The density of tumuli in this area obscures some of the patterns that have been traced elsewhere in the landscape, but the trend of placing tumuli at key points related to visual experience while moving can still be detected in certain cases.
Figure 79: Viewshed, in red, from the Citadel Mound. Star indicates viewpoint.

Chronological Development

The earliest tumulus that has been excavated at Gordion is also one of the largest and farthest along the Northeast Ridge: Tumulus W, dated to 850 BCE. Even at the beginning of this burial practice, there are convincing reasons to associate tumulus construction with movement. It has long been noticed that Tumulus W aligns with the axis of the Early Phrygian Gate Building (Liebhart et al. 2016), creating a direct visual connection between the Citadel and the tumulus for those exiting the monumental gates (Figure 80).
James Osborne describes the close relationship between kings and gates in Iron Age Syro-Anatolian cities (2014). The practice of burying royal statuary, perhaps embodying the king himself, at the gates of Kunulua attests to a strong symbolic and spatial correspondence between kingship and movement into and out of the city. A similar spatial link between the citadel gates and elite burial is present at Gordion although we lack the textual sources to explicate the meanings associated with either or to confirm the exact political position of the deceased interred underneath Tumulus W.

Tumulus W is placed significantly vis-à-vis the relationship between Gordion and Çekirdeksiz B as well. It is located almost exactly halfway along the route between the two sites, at the last point along the Northeast Ridge visible from Çekirdeksiz B (Figure 81), and is one of only two tumuli on the ridge that is visible from both sites (Figure 82), the other being Tumulus MM. As one passes Tumulus W while traveling
in the direction of Gordion, the route turns and the northern edge of the Citadel Mound comes into view from behind the South Ridge. All of these factors put Tumulus W in line with the patterns we have seen in the placement of tumuli along other routes throughout the landscape. As far back as we can trace tumulus construction, therefore, it is directly related to movement and visual experience along routes connecting Gordion to other settlements.

Figure 81: Viewshed, in red from Çekirdeksız B.
Figure 82: Combined viewshed, in red, from Gordion and Çekirdeksiz B, showing only locations visible to both sites.

Figure 83: Photo of view towards the southeast along route heading from Gordion to Çekirdeksiz B.
Figure 84: Photo of view towards northwest along route heading from Çekirdeksiz B to Gordion.

From 850 BCE on, we can trace the accumulation of tumuli along the Northeast Ridge over several generations until it became a dense field of monuments (Figure 85).

Figure 85: Northeast Ridge with excavated tumuli labeled with dates BCE.

Tumulus G, a much smaller mound, was built at almost the same time as W, but at the western end of the Northeast Ridge, the end closest to the Citadel Mound. This
area had been a popular place for burial since the Early Bronze Age for both elite and less elaborate graves.

Then around 20 years later, a pair of tumuli (X and Y) of similar size were built right next to each other, in a location almost equally spaced between W and G – near where the route connecting Gordion and Hacituğrul crosses the Northeast Ridge. As noted elsewhere in the landscape, the intersections of routes are often marked by tumuli, and this place on the Northeast Ridge which is connected to both routes (the longer one to Hacituğrul and the route to Çekirdeksiz B) is where a cluster of some of the largest monuments at Gordion were built (culminating in Tumulus MM which dramatically outstrips all others in size). From here on out, all of the excavated, dated tumuli lie to the west of X and Y, or on the South Ridge, although 17 unexcavated tumuli were built at some time along the eastern stretch of the Northeast Ridge, most in more or less a line between Y and W.

Right around the turn of the 8th century Tumuli Q and S were built 400 meters to the southwest of X and Y. Although these are relatively small tumuli, they begin a cluster of larger mounds which were built between 800 and 730 BCE in this location. This was a time when large-scale changes were occurring on the Citadel Mound which can be related to increasing social hierarchy and possibly state formation at Gordion. The construction of tumuli, and specifically this cluster which includes Tumulus MM, is surely a part of this process.

Shortly after Q and S were built, KY and K-III appear – another pair of similar-sized tumuli built at roughly the same time (775 BCE).

Tumulus KY (which stands for Küçük Yassihöyük, small flat mound) was likely never finished. It thus provides good evidence for different stages of construction
consisting of an initial raised surface with a pit, chamber, and ritual internment (likely occurring shortly after the death of the individual), then a subsequent earth-covering operation (probably during the summer when there would have been a surplus of labor after the harvest and the ground was not frozen, as it is for several months in winter). Tumulus KY is also interesting for the presence of sacrificed horse burials placed just outside of its burial chamber. This is further reinforcement of the idea that movement and perhaps ritual procession is strongly associated with elite burial at Gordion.

Then, within 50 years after the construction of KY and K-III, Tumuli P, K-IV, MM, and N are all built in quick succession around the already existing tumuli at this intersection. If we include Q and S in this group, the tumuli form a cluster of 9 monuments of varying sizes (but including some of the largest in the entire landscape) all built within two generations. The scale and speed of this construction argues for an ability to mobilize labor by the elites (likely the rulers) of Gordion during the middle decades of the 8th century that is unmatched throughout any other period of the site’s history (see Chapter Five). Tumulus MM, built in 740 BCE, is the pinnacle of this trend.

Tumulus MM (named the Midas Mound by Rodney Young) is an outlier due to its size (see Chapter Five). It seems to change the pattern in terms of location as well. Tumulus MM itself is in a very traditional spot, but after MM was constructed, only one other tumulus (N) was placed on the Northeast Ridge for a little over 100 years (until F at the western end of the ridge – and the late 7th/6th century tumuli near F seem to be part of a different pattern). Instead, for the next century or so, tumulus burial seems to transfer to the South Ridge, and it is likely in this period, the late-8th to mid-7th centuries, when most of the tumuli along the other routes were built.
The tumuli along the South Ridge (along with W and those to its east) are some of the only tumuli that are visible from both Gordion and Çekirdeksiz B. They may line a route leading to the south, though no Iron Age settlements have been discovered in the near vicinity that are a likely destination. It is more likely that they were built to further visually link Gordion and Çekirdeksiz B, though future research could clarify this issue. The Middle Phrygian Gate has a similar relationship with the largest and northernmost tumulus on the South Ridge as the Early Phrygian Gate Building does with Tumulus W: the two are positioned so that the view out of the gate aligns directly with the tumulus (Rose 2017). This switch in visual focus of the monumental architecture of the Citadel Mound suggests some sort of rupture with the traditions and memories embodied in Tumulus W at the time of the rebuilding of the Citadel following the destruction in 800 BCE.\(^8\) The large tumulus on the South Ridge remains unexcavated, so we do not know when the visual link was established.

The South Ridge may have become a popular place for burial because the Northeast Ridge was increasingly being used for other purposes. An area of habitation and a ‘common’ cemetery occupied the western edge of the Northeast Ridge from roughly tumulus A to tumulus M (Anderson 2012). This extra-urban settlement consisted of at least 11 distinct houses and 250-300 burials spread over an area of roughly 300 x 400 m. The houses date to the 8th and early 7th centuries, while the burials have a much longer history, stretching back to the Early Bronze Age. The cemetery and settlement were contemporary.

Tumulus G was initially surrounded by Early Phrygian non-tumulus burials that clustered around it. During the 8th century the area was built up into an extra-urban

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\(^8\) Indeed the Early Phrygian Gate Building seems to have gone out of use even before the destruction, perhaps in preparation for a reorganization of the Citadel (Voigt 2012).
settlement, but burial continued. The houses had no fixed pattern of layout or plan aside from including living spaces placed around open courtyards. They have been interpreted as houses for a community of laborers involved in tumulus construction, though I find this unlikely (Anderson 2012). It is more reasonable to see this settlement as part of the expansion of Gordion’s population which occurred in the Middle Phrygian period, simply lying outside of the urban fortifications. The location is a natural one – it is above the floodplain, but very near the Lower Town’s eastern gate, just west and north of the road running through the 8th century tumuli discussed above. Some of the people who lived here were likely involved in tumulus construction, but the area was unlikely to have been specifically devoted to those laborers.

In any case, the settlement did not last for much more than a century. The houses show evidence for quick abandonment and destruction by fire sometime in the early 7th century. Soon thereafter, tumulus construction returned to this area, occasionally cutting through house destruction levels to dig pits for burial chambers (even reusing the basement walls of a destroyed house as part of the burial chamber of Tumulus B). The fill of all of these tumuli contained destruction debris and domestic material culture from the abandoned settlement. These late 7th and 6th century tumuli appear in tight chronological and size pairings (H & I, K & J, C & D, and K-V & U), continuing the earlier pattern observed farther to the east along the Northeast Ridge. The “common cemetery” also continues in use until the later 6th century, ending around the same time as the latest tumulus in this area: Tumulus A dated to 530 BCE.

The later tumuli, built on top of and out of the destruction of the extra-mural settlement on the Northeast Ridge, seem to be part of a different phenomenon than the earlier tumuli spaced along routes. They are generally smaller than the earlier
tumuli, they are closer to the Citadel Mound, they are more tightly clustered together, and they are the only tumuli built directly on top of previous habitation. The evidence points to a traumatic event which reduced the extent of settlement in the landscape, perhaps violently (associated with raiding Kimmerians by Liebhart et al 2016). The tumuli were likely an attempt to commemorate this event, creating a permanent visual reminder of the destruction of a ‘common’ area, while participating in the traditional forms of elite commemoration.

**Porsuk Tumulus**

Another large tumulus, which has not factored into the discussion of any routes thus far, sits at the southern edge of the Porsuk Valley just under three kilometers northwest of the Citadel Mound (Figure 86). Similar to the Beyceğiz Tumulus, this Porsuk Tumulus is very large and prominent in the landscape (Figure 87). It is also likely positioned in relation to longer-distance movement, in this case to the west up the Porsuk valley in the direction of Dorylaion/Şar Höyük and Midaion, other large, Iron Age sites near the modern city of Eskişehir. The tumulus is placed at the very western edge of visibility up the valley from the Citadel Mound, another similarity with the Beyceğiz Tumulus. The Porsuk Valley is a wide transportation corridor as analysis in Chapter Three has shown. Surveys in the Eskişehir region have identified 13 sites between Dorylaion/Şar Höyük and Gordion, with interesting patterns of interaction among them and with Gordion (Figure 88).

*Based on the typological data, the ubiquity of Middle and Late Phrygian Grey Ware across the province and the apparent similarity in forms from cooking pots to table wares and storage vessels (where identifiable) suggests that there is a community that encompasses both Gordion and this region. These shared daily practices include

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9 This mound is unlikely to be excavated any time soon, but it would be interesting to know whether or not it contains a burial. It is possible that these two large, outlying tumuli were built specifically as landmarks without a mortuary function.
foodways, ceramic production, management of goods (storage and transport), and perhaps the social contexts in which consumption occurred. These Grey Wares, however, unlike the LBA Hittite Drab Wares, were not standardized, uniform, or limited to a handful of forms. The Eskişehir province assemblages show a highly localized and yet fluid pattern of interaction within communities. This combination of locally produced yet shared identity suggests a strongly coherent larger regional community, yet one which was not strictly hierarchical (Grave et al. 2012, 403).”

It is probable that the Porsuk Tumulus is part of this interregional interaction among Phrygian communities to the east and was constructed with the frequent movement of people along the Porsuk Valley in mind.

Figure 86: Map showing location of the large tumulus at the edge of the Porsuk River Valley.
Figure 87: Digital elevation model of large tumulus at edge of Porsuk River Valley.

Figure 88: Iron Age sites to the east of Gordion identified by the Eskişehir regional survey grouped into communities of interaction by ceramic compositional affinities (Grave et al. 2012, Figure 5).
Conclusions

The strategic placement of burial monuments at key points along the routes between Gordion and other contemporary settlements, both in its local region and at farther distances, argues for a number of conclusions about the social connections between them. These routes were likely used frequently in the Iron Age and tied Gordion into a local communication/transportation network that included smaller communities that probably identified as Phrygian. The relationship between the urban center and the landscape was a close one and depended on constant movement of people and goods along established routes.

The consistency with which we find tumuli built at points of decision or at locations where one’s view changes dramatically, i.e. places of transition, fits the properties of landmarks outlined in Chapter Three. The intentions of the builders, whether or not the tumuli were meant to be used as landmarks, are less clear, but it is likely that visibility and movement played a role in their decisions. In either case, over time, as people continued to move through the landscape these monuments would have stood out in their memory, attached to the activities of burial, construction, routine movement, and perhaps ritualized movement and procession.

The elite of Gordion had a large role in marking and maintaining connections between settlements. The amount of labor that went into building tumuli was likely restricted to a select, but not too small, group of elites who may have derived some of their power from control of travel and communication throughout the landscape.

The relationship between Gordion and the sites within its hinterland was likely very close. Even though the sites are not intervisible, the monuments built along routes phenomenologically connect the settlements to Gordion. The communities which
lived at these sites were likely linked socially, especially among the elite, links that were probably established at Gordion. We should think of Gordion as a central place in terms of creating bonds (economic, social, and political) between groups living within a wide territory that expanded throughout the Iron Age. The hints that we have in terms of chronology suggest that this expansion likely occurred sometime in the early 8th century – as the tumuli along the routes were built – this date is in line with other dynamic changes occurring on the Citadel Mound and throughout the landscape which suggest rapid growth and state formation during this time.

The tumuli played a critical role in creating and cementing this local network. They populated significant places in the landscape with which people interacted on a regular basis. The monuments, as landmarks, aided and encouraged traffic, and as burials involved ritual movement that helped increase the prestige of the elite while binding communities together through a set of shared practices.
Chapter 5: Labor Mobilization for Monumental Construction

Introduction

Aside from being a helpful landmark on my first long hiking trip at Gordion, and thus planting the seed of this dissertation project, the Beyçeğiz Tumulus remained a significant part of my summers at Gordion throughout my research. Numerous attempts at looting the tumulus have taken place over the years, several since I started working at Gordion, which drove me to consider the complicated, modern, economic, and political dynamics of the region and how they impact heritage preservation (see Chapter Six). After the first of these illicit excavations, reconnaissance of the tunnel dug into the side of the mound and subsequent geophysical prospection seemed to indicate the presence, and even the location, of a tomb chamber encased in squared limestone blocks, much like some of the larger, excavated tumuli, including Tumulus MM. The dimensions of the Beyçeğiz Tumulus, 110 m in diameter and 20 m tall, and pottery found in the looters’ backfill dating to the Middle Phrygian Period, all suggested that the tumulus would contain an intact burial with an exciting assemblage of grave goods from the most prosperous period of Gordion’s history.

The Museum of Anatolian Civilizations in Ankara began rescue excavations which the Gordion Project joined in 2017 (under the direction of Richard Liebhart, assisted by Braden Cordivari). The excavations failed to uncover a tomb chamber or indeed any material indicative of any kind of mortuary deposition, even with the aid of earth-moving equipment and a mining machine used to punch through the bedrock underneath the massive mound. Instead the tumulus was found to have a complicated internal structure with a large, cubic, stone platform and radial walls of
loose masonry topped by alternating layers of differently colored fill. The lack of a chamber is extraordinary given the size, prominence, and distance of the monument from Gordion’s Citadel Mound, and therefore its presumed importance. No other excavated tumulus at Gordion has failed to reveal a burial of some kind.

The Beyçeğiz Tumulus, more than any other at Gordion, emphasizes the idea that the existence of a tumulus and its presence in the landscape were important elements in and of themselves, perhaps more important than its mortuary function. The route and visibility analysis of the previous chapter is an attempt to explain how this concept may have worked in practice.

The complicated internal structure of the Beyçeğiz Tumulus also hints at the importance of and research questions about the construction process (the subject of this chapter): how much labor does a tumulus represent? If we grant that elites were buried inside the tumuli, who built them and why? How much planning and organization were involved? How was the workforce mobilized? Very little has been written about the relationship between the elites and the rest of the population at Gordion (DeVries 1980; Anderson 2012). Some indicators of social hierarchy are evident at Iron Age Gordion: monumental burial with prestige items, monumental public and defensive architecture, intensive agriculture, and long-distance trade. The nature of the hierarchy defies simple explanation, however, when one looks more closely at certain details: the architectural plan of the Citadel Mound is composed of equal-sized ‘megaron’ units arranged around courtyards, and other large buildings populate the Lower Town (Voigt 2007, 2011). Gordion lacks architecture that is identifiably representative of powerful institutions, such as a palace or a temple. Material culture associated with a complex administrative apparatus, which we would expect from a developed, hierarchical state, is also missing.
How all of these factors combined into a cohesive social structure throughout the course of the Iron Age is beyond the scope of this project. The current chapter, rather, is an examination of how the tumuli, and specifically their construction process, may have structured relationships between the elite and the rest of the population at Gordion. I interpret the monuments as representative of practices that helped create social hierarchy, not merely reflect it.

To accomplish these goals, I begin by reviewing different types of labor mobilization found in ancient societies, with a focus on how scholars have treated the available evidence in various contexts and argued towards holistic views of ancient economies. In each case, I will consider whether the type of labor mobilization fits with the evidence from Gordion.

Most studies of ancient economic organization rely on textual sources to reconstruct specific practices. Scholars without recourse to such data have occasionally turned to the field of energetics to investigate issues of sociopolitical complexity through the lens of monument building and the scale of labor involved in large construction projects. Energetic calculations attempt to measure the total labor invested in a monument, usually represented in person-days. I will evaluate the comparative value of this methodology and comment on its limitations before engaging in my own calculations of the construction process of a typical tumulus at Gordion. This section will include an in-depth look at all of the evidence for the various activities, materials, construction episodes, and changes throughout the Iron Age in the creation of tumuli. Next I will generalize these energetic calculations to the landscape as a whole, including all of the excavated and unexcavated tumuli. Spatial and chronological breakdowns will help to illustrate the distribution of labor over space and time in the landscape. I will also discuss two outliers - Tumulus MM and Tumulus
W - the largest and earliest tumuli, respectively, and the implications of their labor values for the development of social hierarchy in Phrygian society.

**Labor Mobilization in Ancient Societies**

Four categories of labor mobilization beyond the household level have been documented in ancient societies: 1) Dependent labor from individuals attached to a social or political institution; 2) Corvée labor derived from taxes or levies; 3) Communal labor resulting from ceremonial work feasts; and 4) free, paid labor.

While certain divisions can be drawn between them (see below), these types actually lie on a spectrum with varying levels of remuneration and obligation. It is important to consider which form of labor mobilization most likely functioned at Gordion because each creates a different relationship between the workers and the monuments. Compulsory labor can easily be interpreted as burdensome and oppressive, instilling negative associations vis-à-vis the final product in the laborers. On the other end of the spectrum, voluntary forms of labor can create opportunities for workers to form their own meanings of monuments while participating in communal, group-affirming rituals of construction.

Evidence for past labor regimes derives mostly from texts documenting payouts to workers (Powell 1987; Steinkeller and Hudson 2016). Mark Lehner provides an interesting example of using architecture and material culture from a settlement near the pyramids in Giza to estimate the social status of workers living there (2015). He matches long galleries and modular housing units to graffiti mentioning gangs or crews of workers, but cites archaeological finds that indicate a diet rich in meat and access to goods imported from the Levant, implying a higher status than ‘ordinary’ laborers. Combining these data, Lehner argues that the traditional reconstruction of an obligatory corvée labor system, drawing on all parts of the
kingdom, is insufficient to explain the construction of the massive pyramids which likely depended on a more ad-hoc workforce perhaps partly composed of settled military captives. Lehner’s discussion of labor mobilization for the pyramids is mostly speculative and reflects the difficulty of interpreting archaeological evidence bearing on this topic without texts that specifically outline the relationships between laborers and elites. Splitting the divisions on the spectrum of labor outlined above is delicate and complicated, especially when dealing with truly massive projects which probably involved a mixture of the different types. The example of the pyramids also emphasizes why scale is an important consideration when examining the labor organization of a monument.

**Labor Categories**

Powerful political and religious institutions, particularly during the Bronze Age of the Near East, commanded large forces of dependent laborers whose status fell somewhere between fully enslaved and free. Typically these workers were tied to agricultural lands in a form of serfdom and were forced into poverty or debt through taxation and the acquisition of land by palaces and temples (Warburton 2005; Powell 1987). Dependents were granted rations in exchange for year-round, obligatory labor as part of a redistributive system. A complex system of obligations was linked to land ownership, residence, and group affiliations (e.g. kinship, ethnicity, religion, profession) that were components of individual identity. As a whole, the regime is referred to as the Bronze Age ‘palace-economy’ system (Smith 2004, 79; Warburton 2005, 171).

Institutional, dependent labor was capable of mobilization on a truly massive scale. For example, During the Third Dynasty of Ur (2114–2004 BCE), the state was recorded to have paid out some 30 million liters of grain to around 40,000 state
dependents each year (Warburton 2005, 171). Labor was concentrated in industrial enterprises - frequently the production of textiles which required constant labor. The most menial to the most specialized of tasks were dominated by institutions, managed by a complex bureaucracy, and recorded in administrative documents. Labor organization could also be seasonal under this system - for agricultural work (often the construction or maintenance of irrigation infrastructure) or for the collection of other resources - e.g. wood gathering in the forests of the Levant (Warburton 2005, 179).

As has already been mentioned, there is minimal evidence from Gordion for large institutions such as the temples or palaces of the Bronze Age. The architecture of the Citadel Mound does not include obviously recognizable palaces or temples. There is little differentiation in the size of the megarons to imply the dominance of a single political or religious institution. The hallmarks of an administrative bureaucracy - detailed records, archives, dedicated storage structures - are also absent. We do have evidence of intensive agriculture, including investment in irrigation infrastructure, and a certain degree of central planning - in the coordinated rebuilding of the Citadel Mound c. 800 BCE. The earlier Terrace Building (9th c. BCE) has been interpreted as a series of attached workshops under the control of the state, similar to labor organization schemes in Bronze Age societies (Burke 2005, 2010) - but it remains incompletely published, and this interpretation relies on only one type of material: textile production tools. The weight of the evidence does not reveal a complex state apparatus that we would expect from a powerful institution with thousands of dependents under its command.

Labor hired from free individuals in exchange for contractual payment is found in complex market economies that are usually at least partially monetized. Money does
not imply coinage, but often consists of pieces of silver, copper, or tin (Warbuton 2005, 177). Hired labor is typically employed on a temporary basis, often as a supplement to another form of labor, and can be applied to a wide range of tasks, frequently in agriculture, especially for collection of harvest, and in the transport of goods (Radner 2015). This form of labor normally exists just outside the control of powerful institutions and states, although these often made use of labor markets as well - as has been analyzed by Michael Jursa in the context of Babylonian administration of the 6th century BCE (2015).

For an example of how hired labor functions within an ancient economy, Jursa found that even in large, institutional construction projects, hired laborers always outnumbered the dependents of the temple or a similar compulsory workforce. Economic evidence from 6th century BCE Babylonia, in the form of administrative documents and financial records, is very extensive (Jursa 2015, 347). Lists regularly mention workforces of 200-600 men, paid in silver through contract-based relationships, and there were even private contractors who had long-term business relationships with different temples (Jursa 2015, 351; 353). Jursa estimates from a quick calculation that several thousand people must have been employed at any given time on public construction projects, and uses these data to reconstruct an urban working class who could count on varied, yet regular employment (Jursa 2015, 362-3). He suggests that this economic situation was only a temporary phenomenon, mostly due to an influx of metals from the campaigns of Babylonian Kings, and during the Achaemenid period a return to a higher degree of compulsory labor ensued because of changes in landholding patterns among the elite and less royal investment in the construction of public buildings.
Did hired labor play a role in the construction of tumuli at Gordion? It is unlikely that the economy was sufficiently monetized. In fact, we have very little evidence for the use of money at Gordion at all. There are no records of contracts or transactions, even though writing was in use by at least the mid-8th century (Liebhart and Brixhe 2010; Roller 1989). Metals are found in the form of fibulae and vessels, but only in contexts that suggest they were prestige items that did not circulate widely (Rodney Stuart Young 1981; Vassileva 2007, 2012; Oscar White Muscarella 1967; Rademakers, Rehren, and Voigt 2017). Payment in kind, in the form of grain allotments, or perhaps in finished products, such as textiles, is a possibility, but remains hypothetical. Production of textiles certainly occurred on a large scale in the Terrace Building on the Citadel Mound, but they could have been put to many different uses, and we have no evidence they were disbursed as payment (Burke 2005, 2010). As in the example of Babylonia, the situation may have changed with the growing power of Gordion towards the end of the 8th century BCE around the time of Midas. An influx of metals from the campaigns of a powerful king could have led to growth and increasing complexity in the economy, but again there is little direct evidence that this was the case. The archaeological record thus far recovered simply does not support the reconstruction of a sophisticated labor market and an associated urban working class at Gordion. At the very least we can be confident that hired labor was not the dominant form of labor mobilization at the site.

Corvée labor, also referred to as conscription, consists of obligations for the delivery of quotas of products or days of labor to some authority, sometimes in lieu of taxes owed (Powell 1987). This type of labor is levied on free, taxable households and other property-owning groups such as villages or cities. Ad hoc construction projects, maintenance of buildings, and seasonal agricultural labor are all often applications of
corvée labor. The quotas are frequently organized on the household level, and are usually only a small fraction of a family’s total annual labor. Erasmus gives an average of 40-45 days per year based on a survey of ethnographic studies from multiple societies (1965, 280).

Before interrogating whether or not a corvée system is relevant for Gordion, it will be compared to a very similar means of mobilization - the work feast. Typically associated with ceremonial or ritual activity, the work feast has been given more prominence in New World archaeology, particularly in cases of mound building (Ortmann and Kidder 2013; Kassabaum et al. 2014). Michael Dietler and Ingrid Herbich emphasize the ubiquity of the practice among agrarian societies and see it as “the nearly exclusive means of mobilizing large voluntary work projects before the spread of the monetary economy and the capitalist commoditization of labor and creation of a wage labor market (Dietler and Herbich 2001, 240).” A work feast converts commensal hospitality into collective labor. In its most simple form, people gather to work on a particular project, which the host afterwards owns, and in return for their labor, are treated to food and/or drink (Dietler and Herbich 2001, 241).

Rather than forming a permanent, recurring part of a system of labor relations, the work feast is used on an ad hoc basis to complete specific projects. It mobilizes groups of workers performing identical, relatively unskilled tasks in which more people will directly lower the time of completion. The size of the workforce is directly related to the scale of hospitality, and groups as large as several hundred people have been documented (Dietler and Herbich 2001, 243).

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10 See Weilhartner (2017) for an attempt to apply the work feast concept interpreting a group of texts from Bronze Age Pylos.
Significantly, Dietler and Herbich call attention to the similarities between the work feast and corvée labor - the only difference being the voluntary vs obligatory nature of the two types of mobilization. They describe corvée labor simply as the compulsory form of the work feast in which labor, in the form of tribute, is given to some central authority and the workforce is predetermined by an ideology of obligation. “Rulers cannot rely on coercive force to motivate participation: any stable long-term system of labor tribute must rely on the continual production of consent - which means operating through and playing upon the same practices that have symbolic resonance within the population as a whole (Dietler and Herbich 2001, 244).”

Another important feature of the work feast (and by extension corvée labor) that should be kept in mind is that the practice is critical in political economies that are in flux because it enables the acquisition and conversion of symbolic and economic capital. As a public statement, the event increases the prestige of the host, or the mobilizer of the labor, creating additional symbolic capital and thus converting between spheres of exchange. In this way, construction episodes can be catalysts for increasing inequality, rather than just exploiting it (Dietler and Herbich 2001, 246).

Feltus, a Coles Creek period (700-1200 AD) mound-and-plaza-group site in southwestern Mississippi, helps to show how the work feast can mobilize labor to produce monumental constructions (Kassabaum et al. 2014). Feltus’ large platform mounds were built before the rise of clearly hierarchical Mississippian cultures, and the site lacks traits commonly associated with central authority - e.g. intensive agriculture, differentiation in burial, long distance trade, and accumulation of status items. Rather, the excavators have discovered that feasting and mound-building were linked as parts of a ritual cycle. Feasting deposits were discovered beneath
Mound A and throughout multiple phases of its fill, attesting to a recurring practice that rapidly built the mound in relatively few, large episodes of construction. The summits of the mounds show no evidence of regular use, suggesting that the feasting and construction were significant acts in and of themselves (Kassabaum et al. 2014, 8). Kassabaum et al argue that differential power relationships are not evident, and emphasize the potential for group identity formation during communal construction events (2014, 9).

A system of labor mobilization centered on work feasts or corvée obligations best fits the circumstances we can currently reconstruct at Gordion. I treat these types of labor together because they are so similar, and in the context of Gordion it is hardly possible to separate them. Their common application to unskilled tasks that are easily sped up by the addition of laborers matches the sort of labor necessary for tumulus construction. Most of the organized labor at Gordion also falls into the category of ad hoc projects (or in the case of the tumuli, presumably ad mortem). While we do not find deposits of feasts in the fills of the tumuli at Gordion, as at Feltus, feasting was certainly part of the funeral ritual - as attested by numerous assemblages of grave goods (Rodney Stuart Young 1981; McGovern et al. 1999; McGovern 2000; Kohler 1980, 1995). The sharing of agricultural produce likely extended to the laborers as well as the burying group. Part of the function of the Terrace Building on Gordion’s Citadel Mound was certainly the preparation of large scale feasts - possibly to mobilize labor for tumulus construction or other similar tasks. The hallmarks of corvée or work feast organization are certainly present at Gordion. Distinguishing between the two depends on the presence of a central authority, and this is where scale becomes essential to the assessment. When do we first see construction projects that required a workforce in excess of several hundred
people? To examine questions related to the scale of labor represented in the tumuli, we turn to the lens of energetic calculations (see below).

In some sense, the answer to questions about labor organization in monumental building projects requires a better understanding of economic conditions at Gordion. No general characterization of the economy of Gordion has ever been attempted, probably due to the lack of documentary evidence. We know very little about levels of commercialization, finance, property ownership, or central control of the economy, and even less about how these changed as Gordion transitioned from a small settlement into the capital of a regional state over the course of the Iron Age. Moreover there are serious methodological issues in moving from archaeological evidence alone to these types of broad economic conclusions. For example, often we cannot distinguish objects related to tribute vs those related to trade once they have entered the archaeological record. I do not aspire to solve these issues or to describe the nature of the Phrygian economy, but only to highlight the role that tumulus construction played within it.

**Quantifying Monumental Labor Expenditure**

Following Elliot Abrams’ definition, "Energetics, most succinctly, is the study of the transformation, conversion, and movement of physical energy (however analytically measured) through a system (Abrams 1989, 52)." This method of analysis assigns a quantified cost to a building or monument expressed in person-days (p-d) of labor (Abrams and Bolland 1999, 264). All such calculations are based on two independent data sets: 1) architectural data on the volume of materials; 2) energy costs per task. The latter are derived either from observations of tasks in an ethnographic setting, or from timed work in a prepared setting - “controlled” experiments. Both sources depend on similar assumptions between comparable past and present behaviors.
The total calculated cost is based on inferred behaviors drawn from the final extant version of the building, and is thus only an indirect attribute – an estimate subjectively based on the decisions of the researcher (Abrams and Bolland 1999, 265). Modern calculations can never take into account all of the tasks involved in any past construction - e.g. crop cultivation, distribution of food and water to laborers, the building of temporary structures, manufacture and repair of tools, etc. - and therefore arbitrary decisions must be drawn at some point in the construction process (Abrams 1989, 54; Kolb 1997, 269).

The value of these calculations is therefore not in absolute numbers representing empirical evidence, but rather in their comparative ability and the transformation of data into human terms. Evaluations with other estimates of population size and temporal duration of construction are usually crucial to deriving inferences based on this kind of data (Abrams and Bolland 1999, 267). For example, one thousand cubic meters of earth moved each year over the course of 300 years is a very different operation than moving 300,000 m$^3$ of earth over the course of a decade (Rosenswig and Burger 2012, 11). Each has significantly different implications for mobilization, organization, political control, etc. Careful excavation or geophysical prospection of the stratigraphy of fill layers is often the only way to reconstruct the duration of construction episodes.

Scholars have traditionally used energetics data to argue for varying levels of social complexity and political control based on a social evolutionary framework (Erasmus 1965). Fitzsimons compares the labor values of Mycenaean tholoi (c. 2800-14500 p-d) to ethnographic data from chiefdom-level societies to describe changing levels of elite competition and political development at Late Bronze Age Mycenae, even while recognizing that a social evolutionary perspective has little explanatory power (2014,
 Abrams reconstructs a three-tiered social hierarchy at Copan during the Late Classic period based on labor values in residential architecture (1989, 72).

These reconstructions of social structure stem from the ideas of Bruce Trigger who wrote that the labor invested in a monument can be considered a reflection of the power of the elite and therefore political relationships can be measured through labor expenditure (1990). Trigger saw a direct link between social hierarchy, despotic authority, and the control of labor, with monumental construction as a kind of feedback loop, simultaneously glorifying the elite and subordinating social inferiors. Tombs in particular were symbols of oppressive control because of their non-utilitarian nature and their association with a single individual (Trigger 1990, 122).

Trigger’s distinction between utilitarian and non-utilitarian is problematical, however, in that it implies that “utility” was thought of in the same way across different societies or across different time periods within a single society (Rosenwig and Burger 2012, 6). Constructions which provide economic benefits should not be discounted as monumental, nor should the significance of massive tombs such as the tumuli of Gordion be classified as “non-utilitarian.” We should not define the function of a monument based only on its final form. The process of construction carries significance worthy of analysis.

A social evolutionary framework is also limited because it discounts the particular political behaviors that play a role in the creation of legitimate authority in each specific cultural context. Indeed, monumental architecture is frequently built at times of stress - in an attempt to promote social cohesion and group solidarity because they are needed at times of increasing heterogeneity along linguistic, ethnic, social, and economic lines (Abrams 1989, 62). So we should not think of the labor invested
in a tomb as a measurement of a deceased individual’s power, but rather a behavior that actively creates social status for the burying group within a specific set of circumstances.

Anthony Ortmann and Tristram Kidder provide an example of using labor values to argue past Trigger’s simplistic equations of power (2013). Ortmann and Kidder carefully excavated a monumental mound built at the site of Poverty Point - a Late Archaic (1400-1200 BCE) complex of earthworks and mounds in northeast Louisiana. Mound A, containing c. 238,550 m$^3$ of earth, revealed a deliberate process of sediment selection, with different types of soil brought from different locations. Microstratigraphic analysis showed no erosion of the superimposed layers of fill, and carbon dating of those layers suggested a quick construction process. Energetics calculations were used to estimate that Mound A required at least 91,700 p-d of labor to construct. Construction periods of 30, 60, and 90 days equated to workforces of c. 1000-3000 individuals (Ortmann and Kidder 2013, 76). Little evidence of use on the surface of the mound has ever been discovered, suggesting that the construction of the mound was the meaningful behavior. Weighing all of the evidence together, Ortmann and Kidder conclude that Mound A represents considerable planning and organization in an effort to transform the landscape into a preconceived, desired form. The society that built at Poverty Point, however, did not practice agriculture, and showed no other signs of central authority, leading the excavators to emphasize the ephemeral and situational nature of leadership at the site (Ortmann and Kidder 2013, 80).

At Gordion, the tumuli have generally been considered the burials of a royal family according to an unsophisticated political reconstruction based on scant historical references to King Midas (Rodney Stuart Young 1981; R. Liebhart et al. 2009;
Simpson 1990; O. White Muscarella 1989; R. Liebhart and Stephens 2016). Most directly, the mounds represent energy expended in monumental construction. Tracking changes in the scale of energy expenditure over time will help us clarify the type of labor mobilization involved, and provide some insight into the nature of political authority at the site.

**Energy Invested in the Gordion Tumuli**

Energetics calculations can be very complicated, with multiple formulas, and different sources for constants to match to the historical context under study. Since part of the value of these data lies in their comparative ability, however, I have chosen values for tasks that have been used by the majority of other scholars, as much as makes sense for the case of Gordion. The constants for each task and material (Table 3) have been adapted from Abrams (1989, 70, Table 2.1) and Erasmus (1965, 285-6) - for values with metal tools. The numbers for transportation deserve a bit more explanation. The constants come from the equation:

$$m^3/p \cdot d = \frac{1}{D/(C \times H) \times (1/V + 1/V')}$$

Where $D =$ Distance to materials (km), $C =$ Capacity of each load ($m^3$), $H =$ Hours worked per day (a constant of 5), $V =$ Velocity unloaded (constant of 5 km/h), and $V'$ = Velocity loaded (constant of 3 km/h). The sources in the landscape of the earthen fill of the tumuli, the stones that make up the cap over the chamber, and the wood used in the chamber itself, are all still unknown, but they are likely to have been as close as possible to the final construction site. A reasonable average distance of one kilometer has been assumed for all of the materials. In reality, the earth may have come from a closer site, while the stones and timber were likely farther away. The

11 See Picket et al. (2016) for an example of a highly particular energetics methodology.
capacity used in the formula assumes wheeled cart transport powered by draft animals. Even a single horse is easily capable of drafting the maximum one meter cubed of each of the materials; the limit would have been the size of the cart (Picket et al 2016, 109-110). The methodology involves considerable assumptions, but the results still likely underestimate the amount of labor represented by the tumuli, based as they are on the extant, weathered dimensions of the mounds.

<table>
<thead>
<tr>
<th>Procurement</th>
<th>Transport</th>
<th>Preparation</th>
<th>Construction</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Earth</strong></td>
<td>7.2 m³/p-d</td>
<td>9.4 m³/p-d</td>
<td></td>
</tr>
<tr>
<td><strong>Cobbles</strong></td>
<td>3.9 m³/p-d</td>
<td>9.4 m³/p-d</td>
<td></td>
</tr>
<tr>
<td><strong>Stone</strong></td>
<td>3.3 m³/p-d</td>
<td>9.4 m³/p-d</td>
<td>0.8 m³/p-d</td>
</tr>
<tr>
<td><strong>Timber</strong></td>
<td>27.4 m³/p-d or 5.7 trees/p-d</td>
<td>9.4 m³/p-d</td>
<td>0.6 m²/p-d</td>
</tr>
</tbody>
</table>

**Table 3: Labor constants for tasks and materials involved in tumulus construction.**

An examination of the construction process of a single tumulus will help to clarify the types of labor involved. Tumulus Z is one of four large tumuli on the South Ridge (Figures 89-91). It was excavated in 1969 and intended to be the final tumulus excavation during the Young campaigns (Kohler 1995, 152). Objects found in its disturbed burial chamber date the tumulus to the first or second decade before 700 BCE, making Tumulus Z the earliest tumulus yet excavated on the South Ridge.
Figure 89: Map showing location of Tumulus Z on the South Ridge.

Figure 90: Photo from above Gordion’s Citadel Mound, showing view of Tumulus Z and the South Ridge past Küçük Hüyük and the Lower Town fortifications.
Tumulus Z is slightly larger than the average tumulus, with a diameter of 60 m and a height of 9.3 m. It also has a number of internal features, some of which are seen in other tumuli, which make it an interesting example, but the basic stages of its construction and composition are similar to most other tumuli at Gordion. The first step in construction was digging a pit roughly nine meters square and 3.5 m deep into the ancient ground surface to serve as a container for the tomb chamber. Then a thin layer of gravel was laid in the bottom of the pit as a bedding for the wooden tomb chamber - essentially a wooden box made out of around 50 squared pine beams with internal dimensions of 4.55 x 3.75 x c. 1.5 m (Figure 92). A thick reed mat was then laid over the roof beams (traces of another such mat were also found in the rubble above the tomb chamber).

Figure 91: Orthorectified photo of Tumulus Z.
After the tomb chamber was complete, the body was deposited with its associated grave goods in a ritual that involved a funeral feast. Once the chamber was sealed, in a typical tumulus, a stone cap, made of large pieces of white limestone mixed with harder dark blue/black stones was placed around and on top of the chamber and then topped with thick clay, presumably in an effort to keep out moisture (Kohler 1995, 154). In Tumulus Z in place of the normal stone cap, a roughly square (5 x 5 m), vertical pile of stones with roughly built walls filled with cobbles - dubbed ‘the tower’, rose directly on top of the chamber in step with the mound around it (Figure 93). Ellen Kohler interpreted this ‘tower’ as a means to mark the tomb chamber, and the center of the tumulus, as both were covered with earth while the mound rose. She relates it to ‘masts’ - upright wooden posts - which were found in the fill of other, larger, earlier tumuli and supposedly served this purpose. The explanation makes little sense in the case of Tumulus Z’s stone tower though. Based on energetics calculations (Table 4), the tower would have taken almost 200 p-d to build.
That amount is slightly more than the tomb chamber, and suggests the tower was a significant feature whose construction was meaningful in some way to the builders. The tower was thought to be unique to Tumulus Z until the 2017 excavation of the Beyçeğiz Tumulus uncovered a similar feature.

Figure 93: Section drawing of Tumulus Z with reconstructed tomb chamber and other internal features (Kohler 1995, Figure 64).

Tumulus Z has several other internal features in addition to its tower. A line of stones was found emanating out from the bottom of the tower, and others were projected by the excavators but not uncovered. These internal, roughly built walls have been found in other large tumuli and are interpreted by Kohler as retaining walls to help organize labor, with different teams of workers assigned to dump soil in separate quadrants marked out by lines of stones (1995, 181). A series of conical dumps of gravelly soil were also found placed directly on the ancient ground surface at the outer edge of the mound, presumably to mark its circumference, indicating
that the tumulus had a conceived, planned final form from the start of the
construction process.

Finally, the mound itself was built up of successive dumps of different types of soils
(Figure 93). The excavators documented “brown clay, gray clay, brown gravelly clay,
white clay, white gravelly clay, gray gravelly clay (Kohler 1995, 155).” All of which
was laid down from the outside in toward the tower in the center of the mound. The
layers of different soils likely originated from different places in the landscape and
indicate meaningful selection by organized workers. The same phenomenon has been
documented in other tumuli, including Tumulus MM and the Beyçeğiz Tumulus
(Figures 94-95).

Figure 94: View during excavation of the Beyçeğiz Tumulus showing layers of
differently colored soil in the fill of the mound. Photo by Braden Cordivari.

Figure 95: View during excavation of the Beyçeğiz Tumulus showing layers of
differently colored soil in the fill of the mound. Photo by Braden Cordivari.

Based on these construction stages a sense of the various activities required by the
building process can be reconstructed. The acquisition of the necessary materials
would have involved quarrying and shaping limestone, cutting down trees, shaping beams for their use in the chamber, and gathering vast amounts of rubble and earthen fill. Acquisition of limestone implies the presence of local quarries in the landscape. The timber would also have been available locally at higher elevations, but the specific sources for these two materials are unknown (Liebhart 2012; R. Liebhart and Stephens 2016; Miller 2011). Both the limestone blocks and the pine beams were worked by a similar adze-like iron cutting tool (Liebhart 2012). These tools would have required manufacturing installations and mining activity at ore sources. They also would have required frequent sharpening to remain effective, all activities and landscape features that can be associated with the building of a tumulus.

For the transportation of all these materials we can imagine a procession of laborers and pack animals back and forth to the site of the tumulus from the locations of acquisition. The constant movement over the landscape would have created well-worn paths which perhaps continued to structure the movement of people through the landscape long after their initial use. The ratio of human to animal labor used in the construction of the tumulus will forever remain unknown, but draft and pack animals were definitely available to the Phrygians. The larger limestone blocks were likely transported in horse or oxen drawn carts or wagons, which would have required fairly wide, level, cleared paths built throughout the landscape.

<table>
<thead>
<tr>
<th></th>
<th>Volume m³</th>
<th>Procurement p-d</th>
<th>Transport p-d</th>
<th>Preparation p-d</th>
<th>Construction p-d</th>
<th>Total p-d</th>
</tr>
</thead>
<tbody>
<tr>
<td>Earth</td>
<td>13,569</td>
<td>1884.6</td>
<td>1443.5</td>
<td></td>
<td></td>
<td>3,328</td>
</tr>
</tbody>
</table>
The energetics calculations for Tumulus Z (Table 4, Figure 96) clearly show that piling earth on the completed tomb chamber was by far the most labor-intensive activity, representing c. 90% of the total labor involved in construction. The labor invested in the tomb chamber itself mostly resulted from cutting and squaring wooden beams. The sheer volume of earth overwhelms the other activities. In many tumuli, this last, greatest effort occurred after everything else had been finished. It certainly took place after the chamber had been built and sealed, which was the task that likely required the most skilled labor and perhaps a specialized workforce. In Tumulus Z
though, the fill was deposited concurrently with the construction of the central stone tower. There is no evidence for any weathering or use surfaces on the superimposed layers of soil. We can, therefore, reconstruct a relatively quick construction episode. Following Ortmann and Kidder, durations of 90, 60, and 30 days equate to workforces of 42, 62, and 124 people, respectively. Labor on this scale could easily have been fit into the agricultural schedule, especially because the majority of the work came after the body had been deposited and the chamber sealed - meaning the raising of the mound could be put off until sufficient labor was available. Building the chamber and covering it (200 p-d) would have only taken a few days with a similarly sized workforce.

In addition to Tumulus Z’s tower, there are other extra features found in other tumuli that reveal details about the construction process. As mentioned above, several tumuli (MM, P, W, S-1, S-2, and the Beyçeğiz Tumulus) also contained retaining walls, structuring the filling process. Tumulus KY, rather wide at 80 m in diameter, was nevertheless only four meters in height and flat on top, and therefore likely unfinished. Its width and circular shape, though, are further proof that the outer limit of each tumulus was planned at an early stage of its construction. This initial form could have been finished at any later time, but for some reason in the case of Tumulus KY the mound was never completed.

Later tumuli (after c. 600 BCE) on the western end of the Northeast Ridge seem to have had a very different construction process with less of an emphasis on a single, wooden tomb chamber. Changes in the funeral ritual seem to have begun around this time as well. Tumulus F, dating to c. 630 BCE, contained the first cremation of any tumulus, which afterwards was practiced contemporaneously with inhumation. This group of tumuli (including F, H, I, J, K, K-II, A, B, C, D, and E) often covered
multiple burials in built mudbrick cists and cremation urns - so many sometimes that it was difficult for the excavators to identify the ‘main’ chamber (Kohler 1980). Tumulus D, for example, contained no fewer than 19 burials. A similar practice was documented in the earlier Tumulus S-1 (Figure 97), which contained five burials - one cist with the inhumation of a small child, one cremation, and three urns with the remains of cremated bones - all intentionally deposited at different levels within its fill during construction (Kohler 1995, 120-121). Some of these burials included grave goods in the form of bronze fibulae. A pit in the fill above the burned chamber held 51 bronze fibulae. Other interesting depositional behaviors are seen in Tumuli D and E, which both covered skeletons of horses (Young 1951, 12). Tumulus E also contained skeletons of cows and camels arranged in a circle. These depositional events in the fills of some tumuli likely attest to rituals practiced during construction. They may be a trend of the later tumuli, but may also be related to the excavation procedure - smaller tumuli were frequently more fully excavated than larger ones, which often had just a single trench carved into their mounds.
Figure 97: Section drawing of tumulus S-1, showing the location of five additional burials in the fill of its mound (Kohler 1995, Figure 49).

We can also see changes over time in labor expenditure. Table 5 summarizes labor data on 28 excavated and dated Iron Age tumuli. The dimensions of the tumuli were either drawn from excavation records or from photogrammetric measurements.

Dates are based on the sequence from the New Chronology (Rose and Darbyshire 2012). The record begins with Tumulus W in 850 and continues through to Tumuli E and A in 530. The rate of tumulus construction remained relatively stable over the c. 300 years, but the amount of labor invested in the monuments changed dramatically over time (Figures 98-99).
<table>
<thead>
<tr>
<th>Tumulus</th>
<th>Date BCE</th>
<th>Volume of Earth m³</th>
<th>Total Labor p-d</th>
</tr>
</thead>
<tbody>
<tr>
<td>W</td>
<td>850</td>
<td>129,590.7</td>
<td>34963</td>
</tr>
<tr>
<td>G</td>
<td>840</td>
<td>891.3</td>
<td>240</td>
</tr>
<tr>
<td>X</td>
<td>820</td>
<td>2220.4</td>
<td>599</td>
</tr>
<tr>
<td>Y</td>
<td>820</td>
<td>7580.2</td>
<td>2045</td>
</tr>
<tr>
<td>Q</td>
<td>810</td>
<td>710.7</td>
<td>192</td>
</tr>
<tr>
<td>S</td>
<td>800</td>
<td>142.7</td>
<td>39</td>
</tr>
<tr>
<td>K-III</td>
<td>780</td>
<td>52174.8</td>
<td>14077</td>
</tr>
<tr>
<td>KY</td>
<td>780</td>
<td>11351.7</td>
<td>3063</td>
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<tr>
<td>P</td>
<td>760</td>
<td>38015.3</td>
<td>10257</td>
</tr>
<tr>
<td>K-IV</td>
<td>750</td>
<td>5542.2</td>
<td>1495</td>
</tr>
<tr>
<td>MM</td>
<td>740</td>
<td>1,180,640</td>
<td>293266</td>
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<td>N</td>
<td>730</td>
<td>374.7</td>
<td>101</td>
</tr>
<tr>
<td>Z</td>
<td>710</td>
<td>13561.8</td>
<td>3700</td>
</tr>
<tr>
<td>S-1</td>
<td>700</td>
<td>2538.7</td>
<td>685</td>
</tr>
<tr>
<td>Mamaderesi</td>
<td>700</td>
<td>4467.4</td>
<td>1205</td>
</tr>
<tr>
<td>S-2</td>
<td>640</td>
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<tr>
<td>F</td>
<td>630</td>
<td>619.6</td>
<td>167</td>
</tr>
<tr>
<td>H</td>
<td>620</td>
<td>381.3</td>
<td>103</td>
</tr>
<tr>
<td>J</td>
<td>600</td>
<td>286.7</td>
<td>77</td>
</tr>
<tr>
<td>K-1</td>
<td>600</td>
<td>32345.4</td>
<td>8727</td>
</tr>
<tr>
<td>M</td>
<td>580</td>
<td>1258.8</td>
<td>340</td>
</tr>
<tr>
<td>B</td>
<td>575</td>
<td>6219.8</td>
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<tr>
<td>K-V</td>
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<td>1856.3</td>
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</tr>
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<td>U</td>
<td>560</td>
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<tr>
<td>K-II</td>
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<td>A</td>
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</tr>
<tr>
<td>E</td>
<td>530</td>
<td>7048.3</td>
<td>1902</td>
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**Table 5: Volume and labor data for excavated Iron Age tumuli.**

The following observations about trends in the scale of labor mobilization exclude Tumulus MM, which is an outlier on a completely different scale than the other tumuli (see discussion below, Figures 100-101). Energy expenditure begins very high with Tumulus W, which other than MM is the largest tumulus in the landscape and represents more than twice the amount of labor as any other excavated tumulus.\(^\text{12}\)

Otherwise the ninth century witnessed the construction of relatively small tumuli

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\(^{12}\) The Beyçeğiz Tumulus is now the one exception to this statement at 26,750 p-d of labor, but since it can be dated no more precisely than to the Middle Phrygian period at present, it is not included in this part of the analysis.
until a large surge in the eighth century, and especially the first half of the eighth century when several large tumuli including P and K-III were built. After c. 700 BCE energy expenditure in tumulus construction drops off considerably, with only a single tumulus, K-1, built on a similar scale as those of the eighth century.

Figure 98: Scatter plot of labor values for excavated tumuli over time with trend line (Tumulus MM excluded).
Figure 99: Chart showing cumulative labor invested in excavated tumuli over time (Tumulus MM excluded). Notice steep rise during first half of the eighth century BCE.

Adding Tumulus MM overwhelms the labor data, but adds to the story of the importance of the eighth century.
Figure 100: Scatter plot of labor values for excavated tumuli over time with trend line.
Figure 101: Chart showing cumulative labor invested in excavated tumuli over time. Notice how including Tumulus MM erases the patterns seen without it (Figure 99).

Tumulus MM is simply more massive and monumental in every way than every other tumulus at Gordion. It had a larger, more elaborate tomb chamber filled with more grave goods than all the other burials. The tomb chamber itself required a similar labor expenditure as the entirety of Tumulus Z (Table 6). The wooden chamber was built of pine, but with a gable roof and a floor of cedar planks. Surrounding it was a shell of juniper logs held in place by a layer of cobbles and a casing of squared limestone blocks. Some of our best evidence for construction techniques comes from Tumulus MM and the research of Richard Liebhart (2012). The juniper logs were likely moved to the construction site by means of wheels and draft animals. All of the logs have notches cut in their widest ends for the placement of wheeled axels which would have made their transport much easier. This method of transporting the
juniper logs would have required wide, level roads from the source of the trees leading to the construction site. Several of the pine beams have cuttings on their ends completely unconnected to their function in the tomb chamber, suggesting that they had been salvaged from earlier use in other buildings.

<table>
<thead>
<tr>
<th></th>
<th>Extraction p-d</th>
<th>Transport p-d</th>
<th>Preparation p-d</th>
<th>Construction p-d</th>
<th>Total</th>
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<tr>
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<tr>
<td><em>Stone</em></td>
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<td>74.9</td>
<td>469</td>
<td>880</td>
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<td><em>Wood</em></td>
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<td>21.4</td>
<td>461</td>
<td>251.3</td>
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<td><em>Cobbles</em></td>
<td>882.1</td>
<td>366</td>
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<td>1248.1</td>
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<tr>
<td><em>Total</em></td>
<td>1164.9</td>
<td>462.3</td>
<td>930</td>
<td>1131.3</td>
<td>3688.5</td>
</tr>
</tbody>
</table>

Table 6: Energetics data for Tumulus MM’s tomb chamber.

The earth fill of Tumulus MM’s mound - always the most labor-intensive part of a tumulus - dwarfs everything else in the landscape (Figure 102). Photogrammetric measurements of the mound’s topography return a volume of 1,180,640 m³. This fill likely originated from a farther distance than was usual for the other tumuli, but even keeping the transportation constant, it represents almost 290,000 p-d of labor. A construction time of 30 days would have required a workforce of 9,667 people; 60 days, 4,834 people; and 90 days, 3,223 people.
Figure 102: Photo looking towards Northeast Ridge from the northern Lower Town. Tumulus MM is in silhouette at left.

By projecting the energetics analysis to the entire landscape we can see how labor was distributed spatially in different clusters along the routes discussed in Chapter Four (Figures 103-104). In total, 92 tumuli over 300 years equates to roughly one every three and a quarter years.\(^\text{13}\) The geographic breakdown (Figure 103) shows the importance of the Northeast Ridge (even excluding Tumulus MM) - the greatest concentration of tumuli with several of the largest monuments among them. The East Route, leading towards Hacıtuğrul, also stands out in comparison to the other regions. The labor required to build Tumulus MM, however, surpasses all of the other tumuli in the landscape combined. The sum of the labor values of all the other tumuli equals 253,165 p-d, while Tumulus MM’s reaches 293,266. This is a difference of roughly 40,000 p-d, which is greater than the labor invested in the second largest monument, Tumulus W, at just under 35,000 p-d. In other words, the average tumulus (excluding MM) at 2,875 p-d represents less than one percent of the energy expenditure in Tumulus MM.

\(^{13}\) This count assumes the unexcavated tumuli throughout the landscape date to the Iron Age - except the cluster to the west of the Citadel Mound, which are likely Hellenistic in date (see Chapter Six).
Figure 103: Chart showing labor values summed by regions defined in Figure 104.

Figure 104: Map outlining separate geographic regions for energetics analysis, based on routes discussed in Chapter Four.
Such a massive amount of labor mobilized over a short period, completely out of scale with local custom, suggests a wholly different form of social messaging. During the Middle Phrygian period, in which Tumulus MM was built, the Lower and Outer Towns reached their greatest extent, as did the regional population, according to settlement survey (Kealhofer 2005, 148; Voigt 2002, 194). The combined area of the Citadel Mound plus the Lower and Outer Towns is roughly 105 ha. Estimating population density in the ancient world is an exercise fraught with numerous epistemological difficulties. Ideally one would have access to counts of hearths from a decent sample of residential areas (Bairoch 1991). With limited exposure and publication of the urban zones at Gordion, determining how many people actually lived in the city is really a guessing game. A rough approximation based on the figure of 100 people per hectare - which is a common result of scholarly attempts to reconstruct population density in ancient cities (Hassan 1981; Chandler 1987; Bairoch 1991) - returns a population in the neighborhood of 10,500 during the Middle Phrygian period. When this number is compared to the estimated workforce for Tumulus MM, c. 3,000 - 10,000 people, it becomes clear that the monument would have had to draw on labor from outside Gordion, incorporating people from the surrounding region, or even farther afield. The project likely demanded new, different types of labor mobilization to be employed, reflecting the power and aspirations of an expansive, territorial state.

Tumulus W, while not nearly on the same scale as MM, still outstrips any other tumulus in terms of labor expenditure by almost 10,000 p-days. It is also the earliest tumulus we yet have evidence for, built in the period before the growth of the Lower and Outer Towns. Construction periods of 30, 60, and 90 days equate to workforces of 1,165, 585, and 390 people. The builders of Tumulus W established a precedent.
for elite commemorative practice that would persist for three centuries, but nothing would be built on the same scale for roughly a hundred years. Perhaps in Tumulus W we can see the creation of a new elite group at Gordion - an event that required and arose from an effort to mobilize hundreds of people in a communal construction project. The endurance of mound building at the site is a testament to the practice’s effectiveness in creating prestige out of agricultural surplus.

Conclusions

Energetics provides a useful glimpse into the scale of labor mobilization and the development of the elite at Gordion. It is a complicated picture. Small tumuli, requiring only a few hundred p-d of labor, were built throughout every period at the site. These monuments could have been built relatively easily by a single family or a small group of 10-20 individuals. These smaller tumuli are also the most numerous, indicating a relatively large elite class that was competing for prestige. In addition, and immediately at the beginning of the sequence, we also find monuments that required a considerable level of organization. Tumulus W, the earliest tumulus, demonstrates the ability to mobilize several hundred people. No slow development or gradual increase in monumental building can be observed in the tumuli of Gordion, as at Mycenae with the construction of the Shaft Graves, then the smaller tholoi, and finally the Treasury of Atreus and Tomb of Klytemnestra (Fitzsimons 2014). The trend of contemporary large and small tumuli continued at least through the 8th century, when the monuments were distributed further throughout the landscape. In the middle of the 8th century, Tumulus MM likely represents some change in the sociopolitical system, and it is probably not a coincidence that we have textual evidence for a powerful king of Phrygia with expansive territorial ambitions from this period.
The labor values allow us to compare the tumuli to other monuments that have been studied through energetics. Fitzsimons finds labor values of c. 32,000 p-d and 25,000 p-d for the two largest tholoi at Mycenae, the Treasury of Atreus and Tomb of Klytemnestra, which he assigns to the fully developed palatial administration of the 13th century BCE (2014, 95). These totals are comparable to what I have found for Tumulus W at almost 35,000 p-d. The labor values for the other tholoi at Mycenae fall in the range between 2800 and 14,500 p-d. Fitzsimons also estimates the size of the workforces at between c. 90 and 375 people, and construction times with most between 30 and 55 days, based on the size of their lintel blocks (2014, 97). These figures are very similar to the rest of Gordion’s tumuli.

Abrams estimated that the royal palace at Late Classic Copan required around 30,000 p-d to build, again very similar to Tumulus W. Sixth century Babylonian texts studied by Jursa attest to workforces 200-600 strong employed by temple and palace institutions (2015, 353). This size is in the middle of the range I have estimated for Tumulus W. This is not to suggest that Tumulus W was necessarily a royal monument. The lack of a tumulus on a similar scale to W until the mid-8th century rather implies an ephemeral form of leadership. The work feast is capable of mobilizing several hundred workers, which would have been sufficient for all of the tumuli at Gordion except for Tumulus MM, and would not require any permanent central authority.

Tumulus MM is not quite comparable to the scale of the Late Bronze Age palace-economy institutional labor. Lehner estimates a workforce of 10,000 - 36,000 for the large pyramids at Giza (2015, 471). Nor can we reconstruct anything approaching the 40,000 state dependents of the Third Dynasty of Ur (Warburton 2005, 471). MM is closer in scale to Mound A from Poverty Point at 91,700 p-d, which Ortmann and
Kidder estimate required a workforce of between 1,000 and 3,000 individuals (2013, 76).

It is important to remember that the construction of these monuments is not just reflective of political authority, but a significant behavior in and of itself that helps to cement social relationships and enact legitimate leadership. The building of a mound was potentially the first act of an inheriting individual. The presence of graves and prestige items deposited in the fill of some tumuli suggests that construction was a meaningful act with corresponding rituals. Depositional practices may have become more elaborate and important over time as the tumuli decreased in size.

Applying a social evolutionary framework to this analysis is not appropriate. We cannot pinpoint a time when Phrygian society became a chiefdom, or a state, based on these data; and these labels would not help to explain the particular circumstances of Phrygian politics in any event. Rather the labor values help us to understand these monuments as a set of practices that determine the appropriate symbols of power and authority for the population as a whole.
Conclusions

By combining the survey data with reconstructed routes and considering the location of the tumuli, we can begin to understand a settlement hierarchy as it existed at its maximum extent in the Iron Age (particularly the Middle Phrygian period 800-550 BCE). Gordion was a large urban center located in the floodplain of the Sakarya River, built originally atop an earlier Bronze Age mound and positioned in the landscape to maximize exploitation of fertile agricultural land fed by irrigation from the Sakarya. Gordion was also the center for a wider network of settlements of varying sizes, located mostly in the uplands to the east of the Citadel Mound and west of the mountainous ridge which stretches south from Çile Daği. This network was maintained by the frequent movement of people and goods along established routes between Gordion and the other settlements, routes that were marked by burial monuments at key points along them. Significantly, none of the smaller settlements in the region are visible from the Citadel Mound. Instead, they are visually connected to Gordion by the tumuli.

Ayse Gursan-Salzmann, in an ethnography of the local Turkish villagers of the region, has shown how the pre-1950 regional economy (before the introduction of mechanized agriculture and irrigation on a large scale) was a careful balance between agriculture and pastoralism differentially distributed among lowland and highland villages (2005). Lowland villages were more reliant on farming, while upland villages focused more on pastoralism (comprising up to 40% of the economy) and dry farming, being required to leave up to 50% of the arable land fallow in odd years. Balance in each village was accomplished through a complicated interregional
trade in crops (primarily from lowland villages) and animal products (primarily from upland villages).

It is very likely that a similar economic situation existed in the Iron Age. The inhabitants of Gordion, practicing irrigated agriculture, would have had a much greater surplus of crops – primarily wheat and barley – than other settlements in the region which would have supplied Gordion with animal products and other resources. If we consider the spatial relationship of the zones of vegetation (as reconstructed by Miller’s archaeobotanical data) to the Iron Age upland settlements, it is clear that they were better positioned to pasture large populations of animals (especially sheep and goat - exploited both for their meat and wool) and to manage timber resources.

Each of these resources is represented in the tumuli assemblages at Gordion. Consider the artifacts found in Tumulus MM: vessels used in the consumption of a large funeral feast consisting of barley beer and goat stew, textiles, other bronze objects (fibulae and belts) associated with dress, and intricate wooden furniture which was also used in the feast in the form of serving stands and tables (Young 1981; Simpson 2011). Similar objects have been found on the Citadel Mound in the destruction of the Terrace Building, the site for the production of textiles and preparation of feasts.

The symbolically powerful rituals of burial relied on an integrated regional economy concentrated at Gordion. The same rituals can also be seen to create and sustain this exchange – associated as they are with monuments that physically link Gordion to other settlements and critical resources.
**Tumuli, Movement, and a Regional Network**

All four routes between Gordion and the surrounding settlements (Şabanözü/Büyük Hüyük, Kollar Tepe, Hacituğrul Höyük, and Çekirdeksiz B) share similar characteristics of monumental construction related to movement and visibility:

1) The tumuli are more or less evenly spaced along routes at transition points where visibility changes dramatically both in relation to movement along the routes, and in relation to the viewsheds of the sites that the routes connect.

2) The halfway point between Gordion and each site (based on travel time) is an important location marked along every route, often with a very large tumulus. Tumulus W (also the earliest tumulus yet known), the Beyçeğiz tumulus, the mound on the ridge between Gordion and Şabanözü/Büyük Hüyük (which may be an unfinished tumulus, or some other type of construction) are all examples.

3) Tumuli are built in clusters, often pairs, of similarly sized mounds. This trend is most clear along the route between Gordion and Şabanözü/Büyük Hüyük, but can be seen in varying degrees along all of the routes and even in the dense field of tumuli along the Northeast Ridge once chronology is considered. Indeed when we do have dates for the tumuli, the clusters are not just of similar size, but are close in date as well.

These consistent patterns suggest strong cultural cohesion throughout the entire landscape and should be connected to a process of regional, sociopolitical coalescence centered on Gordion. Different elements of that process can perhaps be read in the variations between the routes, for while they share common characteristics, each route ultimately took on a distinct form of tumulus distribution.
related to the topographical and the political relationship between Gordion and each site.

The settlement of Çekirdeksiz B is similar in total area to the Citadel Mound (300 x 450 m) and, at roughly one hour away, is the closest of the settlements linked to Gordion by tumuli. The route between Gordion and the site is lined by more and larger tumuli than any other route through the landscape. Tumulus W, with its strong associations to the Early Phrygian Gate Building (and therefore likely to some sort of political authority), is situated at the midway point between the sites and is also the earliest tumulus we can date. This evidence suggests that Çekirdeksiz B was integrated into the sociopolitical sphere of Gordion at a very early date (perhaps right around the construction of Tumulus W in 850 BCE) and the relationship between the two sites lasted the entire Phrygian period. The fact that it shows no evidence of occupation before the Phrygian period could mean that it was settled directly from Gordion. Regardless, the dense, monumental connections between the sites suggest that the people living at Çekirdeksiz B likely identified with the social community at the urban center.

Şabanözü/Büyük Hüyük, consisting of a large mound (roughly half the size of Gordion’s Citadel Mound) and lower town, is both larger and over twice as far from Gordion (a little over two hours on foot) than Çekirdeksiz B. Şabanözü/Büyük Hüyük also has a much longer occupational history reaching back to the Early Bronze Age and continuing through the Phrygian period and later. Topographic analysis shows built features similar to Gordion’s Citadel Mound, including possibly fortifications and built terraces. The political relationship between Gordion and Şabanözü/Büyük Hüyük would therefore have been significantly different than that between Gordion and Çekirdeksiz B.
Şabanözü/Büyük Hüyük seems to have undergone a similar development as Gordion itself, though on a smaller scale. It would have likely required more effort to integrate into the regional network. This is perhaps why two different routes between Şabanözü/Büyük Hüyük and Gordion were monumentalized and could explain part of the function of both Kollar Tepe and the unidentified mound on the ridge between the two sites – both of which have excellent views of the territory between Gordion and Şabanözü/Büyük Hüyük (not itself visible from the Citadel Mound). These smaller mounds might have been used for communication between the two largest settlements in the local region. Only future excavation could clarify how this integration actually developed and what consequences it had for the population of Şabanözü/Büyük Hüyük.

Hacıtuğrul Höyük is the largest and farthest away of all the sites connected to Gordion by tumuli. Its mound is even larger than Gordion’s (21.3 ha, 15-20 m tall) and is over four times as far from Gordion as Şabanözü/Büyük Hüyük (over 9.75 hours on foot). The community at the site seems to have had its own tradition of tumulus construction. Most of the tumuli along the route between the two sites are within two hours from Gordion (the exception being the Beyceğiz tumulus which is near the halfway point). The evidence suggests a more equitable relationship between Gordion and Hacıtuğrul than any other site in Gordion’s immediate region. Only further research at the site could determine if Hacıtuğrul was the center of an integrated local network the way Gordion was, but it seems to have had a degree of political autonomy with connections between the sites mainly prompted from Gordion.

The settlement hierarchy centered on Gordion is best understood as a regional network of settlements connected to the urban center of Gordion by established
routes lined with monumental burials. The density and location of tumuli along the routes varies according to the topography and the sociopolitical relationship between Gordion and each settlement – a relationship that depends on site size, occupational history, and distance from Gordion.

Sarıoba, another Iron Age mounded settlement identified in the Sumner survey roughly 24 km to the northeast of Gordion, is an interesting point of comparison. At 7.4 hours, Sarıoba is farther away than any site connected to Gordion by tumuli except for Hacıtuğrul, but it is nowhere near as large as Hacıtuğrul (only just under 4 ha). The route to Sarıoba was not monumentalized with tumuli. The settlement, therefore, was likely not part of the local network centered on Gordion. This does not mean there was no interaction between the sites, but only that Sarıoba was not integrated economically, politically, and socially with Gordion in the same way that closer or larger settlements were.

The tumuli were not merely a response to the growing importance of these routes and the interregional network they connected, but they actively facilitated movement by functioning as landmarks, and at the same time structured meanings inherent in the landscape by which this culture defined its identity and history.

**Tumuli as Landmarks**

In order to navigate space, humans learn a succession of movements rather than a spatial configuration or Cartesian map (Tuan 1977, 70-73). This knowledge is fundamentally relational, based on the appropriateness of actions to recognized landmarks. Knowing ‘where you are’ is a subjective and physical process that requires interacting with the environment, often the built environment. For humans
this interaction with the environment by which one gains locational and navigational information is mostly dependent on sight.

Not all landmarks are created equally. Several properties have been suggested as important to navigation, including permanence, position in comparison to a decision point, size, and visibility (the last two are often directly related to each other). Due to the fundamentally subjective aspect of landmark identification, though, it has proven difficult to develop a consensus about the relative importance of any of these properties.

The role of monuments as landmarks and the value of their study within the field of landscape archaeology has been recognized for decades, but has lately gained steam with the widespread use of GIS, satellite photography, and other technologies which have made the analysis of past landscapes on a wide scale more manageable than ever before. Recent studies have proposed methods for formally analyzing visibility (Llobera 2001, 2003; Wheatley and Gillings 2000), movement (Llobera 2010), and the effects these aspects of the landscape have on communities (Bernardini and Peeples 2015; Ristvet 2014).

The close connections between landmarks, navigation, and memory (discussed in detail in Chapter Three) have important implications for the role of tumuli in the Gordion landscape. Tumuli, acting as landmarks, encouraged movement along specific routes – since not in every case were the monumentalized routes the easiest (and therefore most likely to be used) ways to move through the landscape. In addition, and perhaps more importantly, the visual connection that the tumuli provided (and continue to provide) enabled the creation of meaningful places in the landscape – always in relation to Gordion, other settlements, and the routes between
them. The viewsheds along the routes are just a sample of this place-making process. These significant places were the repositories of cultural memories which could be recalled through formal activities (such as burial rituals) in the same way that the landscape could be navigated by use of landmarks. The tumuli were thus how people understood where they were in the physical world and also in time, in relation to their history (now mostly lost to us), imparting a sense of cultural identity.

**Stigmergy: Landscape as Process**

The previous discussion of how the tumuli acted as landmarks and the implications of this realization for the role of tumuli within Phrygian culture has mainly described the Gordion landscape as a finished product. We should, rather, think of landscape as a constantly emerging phenomenon developing over multiple generations. The distribution of tumuli throughout the landscape was not conceived and implemented all at once, but gradually accumulated through a stigmergic process based on prevailing cultural traditions.

Stigmergy was coined in 1959 by the French zoologist Pierre-Paul Grassé to describe the emergence and coordination of collective action observed in ants and other social insects (Theraulaz and Bonabeau 1999). The term, formed from the Greek words for sign and action, is a helpful concept for explaining how a complex, intelligent, built environment can develop over a long time frame without the need for any organized plan. Stigmergy describes the coordination of actors embedded in a shared environment, whose state they both sense (to guide their actions) and modify (as a result of their actions) (Parunak 2005). It captures the notion that an individual’s actions leave signs in the landscape, signs that are sensed by others and that determine their subsequent actions.
One of the original studies and still a fascinating example of stigmergy is the building behavior of termites. In building nests, termites sense a particular configuration of the structure that triggers a specific building action. The action of each individual termite changes the structure of the nest, producing a new configuration that in turn triggers (possibly different) building actions by the same termite or others in the same colony. Ant trails, wasp nests, and dirt tracks made by humans have all been productively explained through interactions of this kind. “Stigmergy offers an elegant and stimulating framework to understand the coordination and regulation of collective activities. The main problem is then to determine how stimuli are organized (in space and time) to generate robust and coherent patterns (Theraulaz and Bonabeau 1999, 102).”

Stigmergy has influenced the fields of computing and robotics, particularly in the research of exploiting multi-agent systems to build reliable coordinated behavior in unpredictable settings (Ricci et al. 2006). In most of these examples, however, the actors can be described as non-rational automata - simple and uniform. Humans, of course, possess cognitive abilities that insects do not and use them in the operation of coordinated behavior. Human stigmergy, therefore, necessitates the consideration of additional dynamics related to cognition and agency. In the context of a cognitive stigmergy:

- Modifications to the environment are subject to intelligent interpretation based on shared conventions;

- The environment is fluid, and the features which compose it are active;

- Active features are the foci of cognition, enable stigmergic interaction between agents, and provide rules for such interaction (Ricci et al. 2006).
An often cited example of human stigmergy is that of paths on college campuses. Students do not always walk along already paved paths, sometimes producing dirt tracks through grassy lawns, these are often paved over, turning emergent paths into permanent ones. Maps and signs identifying buildings are scattered around campuses, leading people along desired routes, but trees and bushes are also planted to discourage unwanted traffic. Some of these modifications are seasonal, some more permanent. All are means of indirect communication which require intelligence and shared cultural norms to understand, and are tied to complicated social and economic relationships between students, faculty, administrators, and grounds and maintenance crews.

At Gordion, the tumuli can be seen as the loci of stigmergic processes in the landscape producing different kinds of coordinated activity. Mound building itself was one of these coordinated activities, as was the movement of people and resources along established routes, and the formalized rituals of elite burial, including feasting and procession. All of these activities were self-reinforcing: burial rituals relied on resources brought to Gordion from outlying settlements, the rituals provided an incentive for people to travel to and from Gordion, the tumuli facilitated this movement, movement activated cultural memories associated with the tumuli and the individuals buried inside them. The recursive practices thus reinforced the prestige and ideology of the contemporary elite who eventually died, ensuring the continuation of the cycle. The monuments provided an indirect means of communication between generations separated in time, but connected by a shared cultural identity – the conventions that provided the basis for intelligent interpretation of the landscape.
Sociopolitical Reconstruction

We cannot recover the specific meanings and stories that people connected with the tumuli – not without texts, oral histories, or narrative art – but we can try to identify some of the social groups that were directly involved in the activities related to them.

The excavated tumuli along the Northeast and South Ridges provide a sample of 34 tumuli built over the years between 850-530, fairly evenly distributed over time. If we extend this sample to the rest of the landscape (excluding later tumuli to the west of Gordion dating to the Hellenistic period), it works out to less than three and a half years on average between tumulus burials. This estimate only includes the 95 tumuli that I have been able to document through aerial photogrammetry, more tumuli (especially smaller ones in the middle of modern fields) have likely disappeared due to repeated over-plowing. These numbers suggest that tumulus burial was not limited to a single ‘royal family’, but rather a larger group of elites who had the ability to mobilize labor on a recurring basis.

The power of these elites was surely based in the agro-pastoral economy which required interaction between Gordion and the network of smaller settlements around it, and was reflected in the artifact assemblages buried in the tomb chambers. The grave gifts testify to funeral rituals that involve feasting, but also include skilled craft products – textiles, bronzes, wooden furniture, and ceramics. Together, these aspects of the burial assemblages suggest that the power of elites at Gordion came both from a formal, communal distribution of economic surplus, and the ability to control the production of specialized crafts. Absent from this equation (aside from the lone exception of Tumulus J) is any form of martial equipment or iconography. This is not to suggest that violence played no role in the power of the Phrygian elite,
but rather that it was probably not the driving force, and certainly was not a popular theme for commemoration. Tumuli contained burials of adults of both sexes as well as at least one child, suggesting that the status these elites held was ascribed to the groups to which they belonged rather than earned through personal achievements.

In Chapter Five, I found that the labor values for the tumuli are comparable to calculated figures for the Late Bronze Age tholos tombs at Mycenae. In order to elucidate the political implications of the Gordion tumuli, I return now to the comparison with Mycenaean elite burial practices for which there is a longer scholarly tradition of interpretation along these lines (Wright 1987; Voutsaki 1995, 2001; Fitzsimons 2006, 2011, 2014; Boyd 2014, 2015). By tracing the elaboration and distribution of tholoi through time and space, scholars have described a model of state formation wherein elite competition between different corporate groups eventually gave way to a fully developed state centered on Mycenae.

Scholars stress the competitive political situation between the upper stratum of horizontal social groupings such as moieties or clans at Mycenae which gave rise to monumental burial forms. Deposition of wealthy grave goods and the mobilization of labor have been interpreted processes which actively created prestige and instigated networks of gift exchange among the elite, rather than simply as proclamations of power (Voutsaki 1995). Shifts in construction and abandonment of tholoi denote an unstable political system in which the elite power structure was important but still being formed and therefore fragile.

Many of the characteristics of monumental burial already noted for Gordion hold true for the tholoi of Mycenae. Similar to the relationship between the gate buildings and tumuli at Gordion, there are numerous connections between the Lion Gate at
Mycenae and the largest tholos tombs: they shared a similar architectural style; they were constructed at roughly the same time; they were built of the same material. According to Wright, the tholoi formed part of a “conscious monumental symbolism” also found in a bridge, terrace walls, and the mortuary complex of Grave Circle A, all of which were along the road leading to the citadel. Together these features created an “extended visual complex promoting a link between the monuments of the living and those of the dead (Wright 1987, 182).”

The relationship between tholoi and movement extends into the landscape as well. Boyd describes how Mycenaeans embellished the experience of routine movement with funerary monuments, advertising the lives and histories of those interred (2015). Based on groupings of 27 cemeteries located along routes to and from the palace, he postulates processional routes through the landscape.

I propose that a similar political reconstruction of monumental burial practice is possible at Gordion as at Mycenae, though with a different trajectory of development. The clusters of tumuli throughout the Gordion landscape suggest competitive factions among the elite. The pattern is somewhat obscured by the density of tumuli along the Northeast Ridge, but when these burials are broken down chronologically, clear clusters appear. These clusters often do not last much longer than a few generations, implying a dynamic, unstable political situation.

One specific faction seems to have come to power early in the eighth century BCE, represented by a cluster of tumuli on the Northeast Ridge near Tumulus MM. Several tumuli were built within a short time frame, beginning with Q and S, and including KY, K-III, K-IV, P, N, and MM. These tumuli are larger than average, and all tumuli dating between 800-730 BCE belonged to this cluster (as far as we know). This was
also a period of increased building activity on the Citadel Mound, the time when the highest indicators of irrigation are found, and the highest population levels throughout the region based on survey evidence. The mobilization of labor was at an all-time high.

These trends find their most ostentatious expression in the construction of Tumulus MM, truly an outlier in terms of size. It was a different kind of monument than what had come before. Tumulus MM was a powerful visual symbol, meant to be immediately recognizable to anyone who visited the landscape and to be seen from a great distance. The grave gifts found in its chamber similarly emphasize longer-distance connections. The bronze vessels, (including bowls, situlae, and cauldrons) have parallels as far east as Urartu and Assyria, and as far west as Etruria. The floor of the chamber was made from cedar likely from the Levant or southeastern Anatolia. These artifacts show that the elites in power at Gordion at this time were participating in an international elite culture that spanned the eastern Mediterranean. We should therefore connect the construction of Tumulus MM with expanding political and territorial aspirations.

It is probably not a coincidence that the date of 740 BCE for the construction of Tumulus MM matches closely to the historical references to King Midas in Greek and Assyrian sources. Suzanne Berndt-Ersöz, through a close reading of Eusebius and Herodotus, dates the reign of Midas to c. 723-677 BCE (Berndt-Ersöz 2008). Mita of the Mushki appears in Assyrian sources between 718 and 709 BCE (Sams 1995). In this historical context, it would seem that the occupant of Tumulus MM had amassed wealth and power enough to set the stage for Phrygian political expansion during the last quarter of the 8th century, leading to confrontations to the west and east that were deemed worthy of recording. These sources reveal little about the internal
dynamics of Phrygian politics though. The great emphasis on monumental, single inhumation suggests some sort of dynastic lineage may have been important, but we can only guess at the nature of Phrygian kingship.

Whatever form Phrygian political dominance assumed in the late 8th century, it seems to have been short-lived. After Tumulus MM the location for tumulus burial shifted to the South Ridge, and the size of the monuments decreased to earlier norms. By the late 7th century BCE, tumuli were limited to the western edge of the Northeast Ridge (as far as we know), were smaller compared to earlier examples, again separated into distinct clusters/pairs, and built on top of previous settlement – all indications that the local population and power of the elites had retracted somewhat. Overall, it seems that elite competition was the prevailing trend except for a brief period during the 8th century when circumstances permitted the coalescence of power in a single group or family, territorial expansion, the construction of a single massive monument, and infrastructural changes to the urban layout. This situation lasted only a few generations before reverting back to previous patterns of elite competition.

The other major social group that took part in tumulus construction was ‘everyone else,’ the non-elite, or commoners. In order for the elite to mobilize labor on a habitual basis over several centuries, they must have produced consent. Laborers were likely incorporated into the political system through recurring ritual behaviors associated with the tumuli: feasting, procession, and craft production. All of these activities involved some sort of reciprocal remuneration and must have held symbolic resonance with the wider population. This system enabled the elite to exploit regular labor obligations, likely as part of a corvée system, while creating group cohesion. Collective building activity itself is a process for negotiating identity, wherein
opportunities arise for multiple meanings to be attached to monuments. The ‘common’ burials around the tumuli on the Northeast Ridge, and the burials found within the fill of several tumuli, are all signs of a wider, communal connection to the monuments.
Chapter 6: The Afterlife of Tumuli

Introduction

An intrinsic property of most monuments is their permanence. Long after their initial period of construction and use, monuments remain active forces in the landscape, continuing to affect the actions and memories of people. To quote Michel de Certau on this durable power of monuments, "People are put in motion by the remaining relics of meaning, and sometimes by their waste products, the inverted remainders of great ambitions... they recall or suggest phantoms – the dead who are supposed to have disappeared (1984, 105).” The built environment not only reflects existing social and political relations at the moment of its creation, but also persistently reinforces these structures by physically affecting the movement of people, activities, and goods.

Monuments also structure the realm of ideas. Humans have great difficulty perpetuating the meaning tied to specific spaces beyond the cultural context of their creation and use, especially without the aid of texts. Much of the original meaning of the Gordion tumuli will forever be unknown to us. It is difficult enough for archaeologists to determine the intent behind their construction. With the rise and fall of different societies in a given location, the physical remnants of lost civilizations often ‘outlive’ the social memories attached them (Osborne 2014, 10). Noticeably man-made features of the landscape stand out and invite reinterpretation, their connection to the past authorizes appropriations and imparts legitimacy no matter how much culture has changed (Bradley 1993, 115; Rosenwig and Burger 2012, 12). Each successive generation establishes its own place-history through focal points in the landscape, tying the present to the past.
The challenge to researchers is to explain how and why the meanings associated with monuments changed over time through breaks in social memory (Osborne 2014, 11; Alcock 2016, 2–3). This is what Richard Bradley calls the afterlife of monuments – a creative process by which the significance of the past is constantly reinforced and reinterpreted (1993, 93). Landscape archaeology itself, particularly when concerned with the perceptual experience of monuments, is just the modern iteration of this long-standing revisionist practice.

Tracing the post-Iron Age history of the Gordian tumuli is a difficult task due to the scarcity of evidence surrounding them in later periods. Archaeology has mainly concentrated on the Iron Age, and more specifically the Early Phrygian period. In the Hellenistic and Roman periods, we do start to get written accounts mentioning Gordion, but these are few, and seem to be based on only indirect knowledge of the region with no reference to the tumuli. In order to understand the long afterlife of these monuments, therefore, we must rely on the methods and themes already employed, focusing on the location of the tumuli in the landscape and their relation to newer features, looking at how movement and land-use changes over time, and trying to situate the monuments within an evolving social and political setting. Throughout all periods an emphasis will remain on how the tumuli affected activities and ideas, and how they were themselves altered by prevailing conditions.

**Gordion after the Iron Age**

The Yassihöyük Stratigraphic Sequence (YHSS, Table 7) demarcates five phases of occupation on the Citadel Mound following the end of the Late Phrygian period (associated with the period of Achaemenid rule in Anatolia). Each phase is listed with corresponding cultural labels that are linked to changes in material culture, though not necessarily representative of political or ethnic affiliation at the site.
<table>
<thead>
<tr>
<th>YHSS Phase</th>
<th>Period Name</th>
<th>Approximate Dates</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Modern</td>
<td>1920s</td>
</tr>
<tr>
<td>1</td>
<td>Medieval</td>
<td>10-16th century CE?</td>
</tr>
<tr>
<td>2</td>
<td>Roman</td>
<td>1st-4th century CE</td>
</tr>
<tr>
<td>3A</td>
<td>Later Hellenistic</td>
<td>260?-100 BCE</td>
</tr>
<tr>
<td>3B</td>
<td>Early Hellenistic</td>
<td>333-260 BCE</td>
</tr>
<tr>
<td>4</td>
<td>Late Phrygian</td>
<td>540s-333 BCE</td>
</tr>
<tr>
<td>5</td>
<td>Middle Phrygian</td>
<td>800-540s BCE</td>
</tr>
<tr>
<td>6A-B</td>
<td>Early Phrygian</td>
<td>900-800 BCE</td>
</tr>
<tr>
<td>7</td>
<td>Early Iron Age</td>
<td>1100-900 BCE</td>
</tr>
<tr>
<td>9-8</td>
<td>Late Bronze Age</td>
<td>1500-1200 BCE</td>
</tr>
<tr>
<td>10</td>
<td>Middle Bronze Age</td>
<td>1800-1500 BCE</td>
</tr>
</tbody>
</table>

Table 7: Yassihöyük Stratigraphic Sequence (Voigt 1994).

The following chapter considers the evidence for developments at Gordion throughout these post-Iron Age phases (excepting phase 1 – the Medieval period, because of a dearth of excavation and publication). The first section deals with a group of tumuli built to the west of the Citadel Mound during the Hellenistic period – YHSS phase 3A-B, separated from previous monuments in both time and space, which have been associated with Galatian immigrants to Anatolia. The next section
analyzes several cemeteries and roads in use during the Roman period – YHSS phase 2, in relation to the Phrygian tumuli. Lastly, the modern landscape (since roughly 1920) is treated in a similar manner, bringing the narrative of human interaction with the tumuli to the present day.

**Introduction to Hellenistic Gordion**

After Tumulus A (530 BCE), tumulus construction seems to have ended as a popular form of elite burial at Gordion (Figure 105). Settlement continued on the Citadel Mound, but the extent of occupation in the Lower and Outer Towns declined (although to what extent and how quickly are still open questions). It was also at this time (later 6th-early 4th centuries BCE) that large scale flooding and alluvial buildup from the Sakarya River began to affect the urban landscape (Marsh 1999). The Persian conquests and establishment of the Achaemenid Empire in Anatolia created a political change that altered power structures for local elites. Meanwhile in western Anatolia, tumulus burial proliferated during Achaemenid rule, as surveys in the Granicus River Valley and Lydia have shown (B. C. Rose, Tekkök, and Körpe 2007; Roosevelt 2006). Tumulus construction resumed at Gordion, but only after another political change - the fall of the Achaemenid Empire and immigration of the Galatians into Anatolia. The excavated sample of tumuli at Gordion (44 of c. 100) allows us to say with a degree of certainty that the c. 200 year hiatus in monumental burial is real and not merely a product of incomplete investigation.
Figure 105: Sequence of excavated tumuli based on the New Chronology (Rose and Darbyshire 2012, 166).
The tumuli built at Gordion during the Hellenistic period employ a different tomb chamber architecture than the earlier tumuli, but their final form and visual presence in the landscape are very similar to their Iron Age predecessors. The local elite chose a form of monumental burial that was already so visible all around them, physically linking themselves with the past rulers of Gordion. And yet the placement of these tumuli – to the west of the Citadel Mound, over three kilometers distant from the dense field of Phrygian tumuli on the Northeast Ridge – emphasizes a distinction between the elite of the Hellenistic period and those of the Iron Age. This section explores the details of the Hellenistic tumuli at Gordion and what they can tell us about how the elite of that era understood the monumental landscape they inhabited and reshaped.

Figure 106: Map showing area of Hellenistic period tumuli in relation to other archaeological features.
Descriptions of Tumuli

Three tumuli dating to the Hellenistic period have been excavated in an area to the west of the Citadel Mound both within and just outside of the Phrygian-era Outer Town (Figure 106, Figure 107). All three were looted before archaeologists were able to excavate them.

Figure 107: Map showing topography around Hellenistic period tumuli.

Tumulus O is the largest (46 m in diameter and 7.5 m tall) and at over 1.5 km to the west of the Citadel Mound it is farthest west of the three (Figure 108). Indeed, Tumulus O is the farthest west of any tumulus at Gordion except for one large tumulus to the north along the Porsuk River. Excavated by Rodney Young in 1955, the tomb chamber consisted of two rooms – one large inner room and a smaller antechamber – built of poros stone blocks carefully cut and shaped on the interior.
(R. S. Young 1956). The roofs of the both rooms were domed with a distinctive type of corbelling (Figure 109). The chamber was found empty aside from some iron nails and fragments of a terracotta sarcophagus. One vessel fragment in the fill of the earth mound provides a date of 275-189 BCE. The tumulus is still visible, little affected by modern agriculture since it lies on the edge of cultivated land, but the chamber was moved and reconstructed outside the Gordion Museum.

**Figure 108: Digital elevation model of Tumulus O.**
Tumulus JL, located between the Sakarya River and a modern road just to the south of the Phrygian-era Outer Town, was excavated in 1962 (Edwards 1963). The construction of its chamber was very similar to Tumulus O, but only the lowest
course of stones was preserved at the time of excavation (Figure 111). Pottery in the fill of the tumulus dates it to the same general time period as Tumulus O. Unfortunately, the tumulus has been completely erased by agricultural activity in the intervening years and is now no longer visible.

Figure 111: Plan and elevation of Tumulus JL (Edwards 1963, Figure 34).
A third tumulus dating to the Hellenistic period was looted and subsequently investigated in 1953 (R. S. Young 1955). Unfortunately, no map showing the location of this grave was ever drawn, however from Rodney Young’s description a guess can be made:

“The small tumulus is one of a group of three or four which lie three miles to the west of the site of the city, on the far side of the Sangarios River. Since this tumulus and others near it are visible from the excavation house against the skyline on the summit of the ridge to the west, we were aware of their existence... On arrival we were surprised to find that on the far side the ridge falls away steeply into a deep gully, and that the tumulus in question lies right at the lip of the precipitous descent (1955, 192).”

Young must have been overestimating the distance of these tumuli from the site of Gordion. Three miles would place them well beyond any other tumulus yet found to
the west of Gordion and in an area not visible from the excavation house as he describes. There is, however, a group of three small tumuli on the edge of a steep ridge c. 1.25 km to the southwest of Gordion (Figure 107). This group includes the Iron Age Mamaderesi Tumulus. The farthest north of the three is likely the one discovered in 1953. It has a small depression in its southern end that corresponds to Young’s description of the grave in the southwest corner of the tumulus. The tomb itself was a simple cist built and roofed with fitted blocks of limestone with a topping of wooden beams and clay covering (Figure 112). Inside was found a wooden coffin, gold jewelry, and stone and glass alabastra dating to the 4th–3rd centuries BCE (Young 1955).

Figure 112: Cist Grave under tumulus excavated 1953 (Young 1955, Figure 37).

Galatian Question

The question of whether these burials should be attributed to a Galatian ruling class newly arrived in Anatolia is difficult to answer. The historical reconstruction of Celtic migrations in the Hellenistic period is almost entirely based on literary sources and
modern hypotheses that reject assumptions contained therein (Darbyshire, Mitchell, and Vardar 2000; Mitchell 1995). Scholars posit migrations emanating from somewhere in central Germany, both east to Anatolia and southwest to southern France. Galatian social and political structures are not well understood since only the aristocracy appear in texts and distinctive Galatian material culture has proven elusive.

It has generally been assumed that the occupants of Hellenistic tumuli like the ones from Gordion were members of the Galatian elite, although their tombs’ distinctive architecture (remarkably different from the earlier wooden chambers at Gordion) finds no parallels in European La Tène period burials. Rather, the chambers are nearly identical to generally contemporary tombs in Bithynia and Pontus and closely related to slightly earlier examples from Thrace and the Bosporus region (Darbyshire, Mitchell, and Vardar 2000, 86).

The group of tombs from this period so far discovered in Galatia includes the three from Gordion, three at Karalar (including one with an inscription identifying the occupant as Deiotarus the Younger, a tetrarch of the Tolistobogii), two from Taşoluk-Hidırşehir, and two near Eskişehir - at Iğdır and Yalnız (Darbyshire, Mitchell, and Vardar 2000, 86). Most were looted before excavation and the majority of extant grave goods are Anatolian in style (except for a La Tene style gold buckle and torque from the western tumulus at Taşoluk-Hidırşehir). The architecture and masonry of the tombs has clear antecedents in Achaemenid Anatolia (Winter 1988). The little that has been written about these tumuli has emphasized their roles in legitimizing the control of the ruling elite over natural resources and in reflecting extra-regional contacts.
Strategic Placement in Landscape

More about the motivations of the Hellenistic-era tumulus builders can be understood by considering the location of the tumuli within the existing monumental landscape at Gordion. The tumuli were built to 1-1.5 km to the west of the Citadel Mound bordering a high plateau above the Sakarya River valley. Even today with mechanized agriculture and extensive irrigation, this area is on the edge of cultivated land and due to the topography has irregular field patterns. The tumuli therefore do not seem to be placed strategically to legitimize claims to prime agricultural land or natural resources. Furthermore, they are clustered within one particular area, not spread throughout the landscape defining a controlled space as one might expect of territorial markers.

The roughly linear arrangement of the tumuli along ridges bordering a lower, more easily passable area suggests that they may line a route to the west – continuing a trend of the Iron Age tumuli. Nevertheless, without survey data to the west of Gordion it is difficult to speculate on where exactly this route led and what contemporary settlements it may have connected. It is also worth noting that this seems not to have been a very important route in the Iron Age, perhaps testifying to changes in long-distance travel over the centuries in between.

The architecture and grave goods of the tumuli do suggest an emphasis on extra-regional contacts with elites elsewhere in Galatia and in Bithynia and Pontus. The practice of tumulus burial itself, though, suggests some sort of dialogue with the monumental landscape of Gordion and, by extension, the political history of the immediate area. The local Anatolian population who had lived for generations with the backdrop of tumuli in the landscape would have been attuned to political
messages imparted through monumental burial and were thus the likely intended audience.

The location of the tumuli on the western side of the Citadel Mound creates a powerful disjunction with the groups of earlier tumuli on the Northeast and South Ridges (Figure 106). Indeed, to view this new Hellenistic tumulus cemetery from the Citadel Mound, one literally has to turn ones back on the monuments of the Iron Age. This spatial and visual distinction would be a strange choice if the goal of the builders had been to legitimize their rule by claiming descent from previous dynasties. Rather they seem to have purposefully distanced themselves from any associations with the past that close proximity of burial would have implied.¹⁴

It is possible that such claims of descent would not have rung true to the local Anatolian population if there were an ethnic difference between them and the ruling group – presumably Celtic immigrants. Due to the lack of any recognizably Galatian material culture at Gordion and scarce documentary sources on the subject, we can only speculate as to how ethnicity operated during times of migration and population changes at the site and throughout Anatolia. Livy, writing in the first century BCE, describes the Galatians of 189 BCE as “Gallogrecians” and “Phrygians burdened with the weapons of Gauls,” using a biological metaphor to describe how a transplanted people takes on the character of its new land (38.17). It is very likely that ethnic categories were always somewhat fluid and changed over time. This issue is not made clearer by the imprecise dating of the tumuli. Any memories of a Phrygian political authority to contrast Celtic rule would have been manifested in the tumuli

¹⁴ The practice of reusing Bronze Age tumuli for burial in Classical Thrace, which has been interpreted as a claim to continuity between generations, provides a stark contrast to the pattern at Gordion (Agre 2016).
along the Northeast and South Ridges and maintained by the pre-existing population. Perhaps a strategy of marking distinction rather than inclusion better suited the social conditions of the time, at least when the new cemetery was founded.

The Iron Age tumuli are also in general much larger and farther from the Citadel Mound, suggesting a wider area under political control and a larger workforce which could be mobilized than in the Hellenistic period. Any statements of power through monumentality would not have been as effective in the context of a more glorious past represented by the earlier tombs. A new location, visually detached from the earlier, more massive monuments, was therefore strategic in several ways.

**Conclusions**

The tradition of tumulus burial began in Anatolia at Gordion and then was widely adopted in Lydia and northeast Anatolia over the subsequent several centuries. Its abandonment at Gordion during the Late Phrygian period is difficult to explain. Ceramic evidence indicates the landscape was still widely populated, and there must have been at least local elites present at Gordion, even if it had declined as an interregional center of power within Anatolia. When the practice returned to Gordion in the Hellenistic period after a hiatus of c. 200 years, the builders looked west and north for architectural inspiration, emphasizing links to their neighbors. In the local landscape, they purposefully separated their own tombs spatially and visually from the Phrygian monuments (and by extension the people buried inside them) that originated the tradition. By doing so, the Hellenistic-era elites made a strategic statement about their own political history, marking themselves as members of a new, distinct lineage of rulers. That choice sheds light on the relationship between the elites of the Hellenistic period and the local population at Gordion, perhaps
forming part of a complicated negotiation of ethnic difference between these two groups.

**Introduction to Roman Gordion**

The Roman period at Gordion (YHSS 2) consists of four main sub-phases beginning in the late Augustan period and lasting through the late 3rd to mid-4th centuries CE (A. L. Goldman 2002; Andrew L. Goldman 2005). The site seems to have been largely abandoned for at least a century before the Roman annexation of Galatia in 25 BCE. Throughout the Roman period the province of Galatia had few large urban centers. Gordion, while not among them, was positioned along a major highway between two important cities – Ancyra and Pessinus (Figure 116). The rural nature of the settlement is hinted at by Strabo (12.5.3), who describes Gordion as a mere village, but slightly larger than others in the surrounding region. Surveys of the Outer Town (conducted in 1992 and 1995, but never published) and excavations there in 1993 by Mary Voigt have confirmed that the former extensive urban district was indeed abandoned by the Roman period.

Scholars have associated Gordion with the name of Vindia or Vinda, a polis of the Galatian Tolistobogii mentioned by Ptolemy and a *statio* (military way-station) in the Antonine Itinerary (Bennett and Goldman 2009, 1607). The issues with identifying a Galatian presence at Gordion were discussed in the previous section, but the military connection – specifically related to campaigns eastward by Trajan and Caracalla – is borne out by various archaeological discoveries. A distinct type of locally-made red ceramic from the earliest Roman phase is comparable to the “Legionary Wares” found in Julio-Claudian and Flavian military contexts in European provinces (Bennett and Goldman 2009, 1608). More broadly, vessel types throughout the period at Gordion are similar to those found at other Roman military sites.
Excavations on the Citadel Mound in the Northwest Zone (ops 54 and 55) revealed a sophisticated town plan dating to c. 70-150 CE consisting of peristyle houses, water-management systems, and paved, colonnaded courts (Bennett and Goldman 2009). The main structure has been identified as *contubernia* (military barracks) and contained at least one set of armor (likely belonging to a mounted soldier). A soldier’s tombstone dating to the same period, found by chance in a field north of the Citadel Mound, and two inscribed altars dedicated to Caracalla’s victory by the Cohors I Augusta Cyrenaica dating to the 3rd century CE, further support the military link (Darbyshire, Harl, and Goldman 2009).

This military occupation was at least partially abandoned sometime in the 3rd century CE. Reoccupation at the end of the 3rd century showed less complexity in architecture, town plan, and building techniques. Finds of imports and coins also decreased. By the mid-4th century CE this last Roman occupation phase was being cut into for the purposes of burial which continued until the early 5th century.

**Burial**

The Roman period marks a rupture with past practices at Gordion in that monumental burial ceases. The latest tumuli so far excavated date no later than the 2nd century BCE. Several burial trends, especially in regard to the location and visibility of cemeteries, did continue into the Roman period. The occupants of Roman Gordion chose areas on the Northeast Ridge and Küçük Hüyük near earlier mounds and along roads leading into the site for their cemeteries (Figure 113).
Excavations on the Northeast Ridge in 1952-3 and in 1962, in preparation for a prospective site of the Gordion Museum, uncovered a cemetery running up the slope of the ridge roughly between tumuli I and H at the southern end and tumuli F and E at the northern extent – an area around 150 x 250 m (Goldman 2001, 2007). Limited test trenches and one larger exposure revealed 51 inhumations securely dating to the Roman period scattered among and cut into earlier graves, dating back as far as the Early Bronze Age. Based on the known extent and density of the burials, Goldman has estimated a total number of 130-150 burials in the cemetery (2001, 16). There were also a number of burials in the area without grave goods which could not be assigned to a specific period. The cemetery dates from the mid-
1st century CE to the late 4th century, but the majority of activity dated between the 2nd and 3rd centuries CE.

The graves themselves were relatively simple pits, sometimes lined with stone or mudbrick, sometimes containing a wooden coffin or cover over the body. In general, graves with more elaborate structures also contained better quality and more grave goods. Some finds (boots, distinctive jewelry) support the military character of the settlement seen in the architecture of the Citadel Mound. All of the bodies were oriented on a north-south axis with the head to the north and feet to the south, a treatment not seen in earlier periods, but consistently applied in the Roman era.

Another, separate cemetery of the Roman period, discovered by Mary Voigt in the Lower Town, likely connects to a series of burials dug by Machteld Mellink in the late 1950’s along the slopes of Küçük Hüyük and extending into the Lower Town (Goldman 2007, 304). Voigt excavated 26 burials in pits or coffins of reused mud-brick dating between the 1st and 3rd centuries CE. Mellink’s excavations were not recorded in enough detail to precisely place or date them, but they seem to have been on either side of the Phrygian-era fortifications and inside the Lower Town.

The placement of these burials on the Northeast Ridge and Küçük Hüyük suggests that the highly visible monuments of the past helped to mark appropriate places for burial in the Roman Period. Indeed, in commenting on the proximity of the largest cemetery to the tumuli, Goldman notes, “it would be surprising if the Roman Period residents were not cognizant of the analogous tradition embodied by these prominent monuments (2001, 15).” The fact that some of the Roman-era graves cut into earlier burials indicates that they surely were aware of the previous use of the area and that they were continuing a tradition that preceded their occupation of the
area. Visibility was clearly an important factor in the location of the cemeteries—they were placed on elevated slopes less than one kilometer from the Citadel Mound. The graves themselves were, however, not as monumental nor as extensive in the landscape as in previous periods.

**Movement**

The other major factor in the setting of burial in the Roman period was the existence of a paved road leading to the Citadel Mound from the east. The main cemetery was placed just north of the road as it crossed the Northeast Ridge. Burial along major roadways was a common practice in many Roman cities, not just in Anatolia, and has frequently been related to the display of status to passersby (Pearce, Millett, and Struck 2000). To be effective, the custom relies on regular movement of non-local travelers along predictable routes. In the Roman period, this sort of long-distance travel was more predictable than ever before because of infrastructural investments in road-building throughout the provinces.

Fragments of such a paved road have been discovered at several points along the Northeast Ridge and throughout the surrounding region (Figure 114). In 1955 Rodney Young oversaw excavations to the north of Tumulus KY that uncovered a road of graveled stones 6.25 m in width (Young 1956). Two years later a longer stretch was found and cleared just to the north of Tumulus K-II (Young et al. 1958). On this occasion, cuts through the surface of the road showed three superimposed layers of construction, the earliest of which had a *terminus post quem* of the 6th century BCE.
Figure 114: Map showing locations where traces of the Roman period road have been noted superimposed on the route between Gordion and Hacıtuğrul discussed in Chapter Four.

Other traces of the road have been recorded 11.5 km east of Gordion just west of the Beyçeğiz Tumulus (Figure 115) and on the south side of Hacıtuğrul by Frederick Starr (1963). The road varied in width at different points - from 2.9 to 6.5 m, and the stones used to build it were taken from the immediate surroundings (dark, volcanic rock was used at Beyçeğiz, white limestone at Gordion), but the construction technique remained fairly consistent. The road surface itself was composed of a thin layer (10-20 cm) of loose gravel of fist-sized stones set atop a layer of larger, flatter stones. The outside edges of the road were curbed with stones up to half a meter in length, often stood up on their long edge. A center ridge of larger stones, similar in size to the curbstones, was built into the surface gravel. Shallow gutters, about one
meter in width, were cut bordering the curbs. The only subsurface preparation noted was a layer of dirt fill over an earlier road surface.

Figure 115: Orthorectified photo of remains of Roman period road near the Beyçeğiz Tumulus.

The construction technique matches closely other Roman roads documented by David French throughout Anatolia (1988). These highways, and the specific stretch that went through Gordion, were likely initially paved in the reign of Domitian in 81 or 82 CE based on Flavian milestones found throughout Galatia. In the accompanying inscriptions, the emperors claim to have paved a road (viae stravit/straverunt). Later milestones lack this claim, but frequently mention repairs in the 2nd and 3rd centuries CE. One milestone found at the modern village of Mülk (CIL III.1.318) – likely near the ancient town of Colonia Germa (Macpherson 1954) – suggests that the road running through Gordion and Hacituğrul was part of a longer-distance thoroughfare connecting the urban centers of Ancyra and Pessinus (Figure 116).
Figure 116: Map of the Roman road connecting Ancyra and Pessinus.

Young, noticing that the road carefully bypassed several large tumuli on the Northeast Ridge, concluded that it must post-date the tumuli and placed its initial construction in the Achaemenid period. He even went as far as to identify it as the Persian Royal Road mentioned by Herodotus (Young 1963). French has convincingly argued that the specific route described by Herodotus passed through the center of Phrygia and Cappadocia rather than northward through Ancyra and Gordion, but also maintains that Roman roads were the descendants of earlier unpaved roads (French 1998). The association with the tumuli and the older route from Gordion to Hacituğrul (see discussion in chapter Four) provides good evidence for this Roman-era development and expansion of already existing roads. Certainly in the Phrygian and Roman periods the road was in use. The evidence is less clear for the intervening
Achaemenid and Hellenistic periods, but some sort of track must have remained to be paved over in the Roman period.

**Conclusions**

While it is clear that the link between movement and burial continued into the Roman period at Gordion, the character of this relationship had changed considerably since the Phrygian period. In the Iron Age, routes and tumuli worked in concert as part of a local network connecting Gordion to smaller settlements, uniting a region through mundane and ritual movement, and drawing people towards the urban center. The routes were physically and conceptually associated with a regionally dominant elite, lined as they were with the mortuary monuments of single individuals. In the Roman period, long-distance travel increased in importance, and the regional settlement patterns were tied to an imperial economy that eclipsed local political power.

The Roman-era settlement pattern around Gordion differs from all other periods of the region’s history. The general trend of nucleation in a few, large settlements (which reached its maximum extent in the Middle Phrygian period) was replaced by a dispersed, extensive distribution of smaller sites throughout the landscape (Kealhofer 2005; Marsh and Kealhofer 2014), many of which have been interpreted as homesteads or small farms. Many of the settlements that were inhabited in the Phrygian period were also occupied in the Roman era (including the sites connected to Gordion by tumuli discussed in chapter Four: Kollar Tepe, Şabanözü/Büyük Hüyük, and Çekirdeksiz B), but had decreased notably in size. Gordion itself lacked settlement in the Lower and Outer Towns, while Hacituğrul seems to have little Roman-era architecture, and the surface site immediately to the northwest of Şabanözü/Büyük Hüyük was abandoned after the Phrygian period. There is no
evidence that any of the routes, except for the one connecting Gordion to Hacıtuğrul, were paved or similarly expanded in the Roman period. Nor is there evidence for continued burial along these other, local routes.

This change in settlement patterns is linked to contemporary changes in land use revealed by archaeobotanical and archaeozoological evidence (Marston and Miller 2014). The Roman period saw extensive irrigated agriculture in areas not previously used for cultivation. More so than in any other period, farmers focused on crops that required more water and had a higher chance of failure in dry years, but that produced a higher yield. This activity pushed grazing herds to more marginal land, leading to higher rates of erosion than ever before. The result was a larger, more dispersed rural population maximizing the production of bread wheat beyond local demand.

The surplus wheat was likely used to pay taxes owed as part of a system of large imperial and private estates sketched out in historical sources (Mitchell 1995). The scale of production and taxation required the long distance transport of bulk goods along roads built for wheeled traffic. The roads were often built by local villagers, likely through corvée labor, or by military units. The archaeology at Gordion matches the historical reconstructions well.

Changes in movement throughout the landscape (and its relationship to monumental burial) were tied to shifts in land-use and power structures. In the Roman period these forces were imperial in their scope and produced local patterns that contrast with earlier trends. Some tumuli likely still acted as landmarks along the paved Roman road, but now, for the first time, the mounds were also in conflict with agriculture – as hindrances to plowing and clearing fields. It is perhaps not a
coincidence that we can begin to document looting of tumuli in the Roman period -
by lamps left in tunnels. The monuments of the Phrygian past had begun to be seen
as sources of material wealth.

**Introduction to Modern Gordion**

There is very little evidence or scholarship bearing on the periods following the
abandonment of Gordion in the mid-4th century CE. Early excavators were not
interested in these later levels, and while occupation during the Medieval period
(YHSS Phase 1) spanning the 13th and 14th centuries CE has often been documented
at the site, including in recent excavations at the center of the Citadel Mound, full
publication and analysis of this material has yet to be completed (Sams and Voigt
1999, 565, 2004, 198; Sams and Goldman 2006, 44–45; Sams, Goldman, and Burke
2007, 374, 376; Rose 2017, 171). The Gordion Regional Survey detected very little
post-Roman activity in the landscape, suggesting a dramatic decline in the density of
settlement and a likely shift to pastoral economic strategies (Kealhofer 2005, 141–
144). This trend seems to have held throughout the Ottoman period, in which we
have indirect economic evidence in the form of tax records documenting large
amounts of Angora wool collected at Ankara and shipped to Europe during the 16th-
18th centuries (Ayse Gürsan-Salzmann 2005, 173). Our next glimpse comes just
before the turn of the 20th century, when the Körte brothers reported several small
villages with only a few families each in the region (Körte, Körte, and Kobert 1904).

The modern period, which is the subject of this section, can really be said to begin
following the end of the Turkish War of Independence in 1923 and the subsequent
population movements within Turkey and the Balkans more widely. It was at this
time that the village of Yassihöyük was founded at its present location. The modern
period, with its rapid technological advances, has witnessed dramatic changes in land
use in a relatively short period of time. Evidence for these changes comes from historical sources and ethnographic surveys carried out and compiled by Ayse Gürsan-Salzmann from 1995-2000 (Gürsan-Salzmann 1997; 2001; 2005). She documented a transformation in the Sakarya region from a primarily pastoral economy to a mixed agro-pastoral economy incorporating intensive cash-crop cultivation over little more than half a century, with concurrent changes to the settlement system and the social lives of local villagers.

The remnants of the ancient landscape, and particularly the tumuli, have continued to play an important role in this landscape, affecting people’s actions within the context of local, national, and global forces. This section will trace the impact of the tumuli throughout the modern period by engaging with the same themes that have been discussed in previous sections – movement, settlement, land use, and related sociopolitical forces. The section begins with a narrative of the development of the landscape and local economic strategies over the last century, then moves on to a description of the current state of affairs in the Sakarya valley, and finally considers how the ancient features have fit into this picture and how they might continue to do so in the future.

**Modern Settlement and Land Use**

Yassihöyük village was founded shortly after the Turkish War of Independence, during which the decisive Battle of the Sakarya River forced many people to flee their homes in the Sakarya valley and temporarily relocate to the surrounding mountains (Gürsan-Salzmann 1997; 2005). When the fighting ended, several families of Turkoman ancestry who were landholders in the region settled at the present site of the village. Beginning in the late 1930’s, this small community was augmented seasonally by transhumant shepherds from Bolu, who traveled over 100
km south to rent pasture around Yassihöyük in the winter months. At this time the local economy was primarily pastoral. Shepherds traded labor and animal products for grazing rights and agricultural produce with landowners in markets that maintained economic and social connections between upland and lowland villages. Seasonal long-distance travel for trade or pasture was common.

![Map showing modern and ancient features in the landscape around Gordion.](image)

The greatest changes to this pastoral economic system occurred over the course of the 1950’s and 1960’s as a result of national and global political forces and the introduction of new technologies. Many nomadic practices were abandoned soon after the land distribution program carried out by the Turkish government in 1952.
that allocated agricultural plots to many previously transhumant pastoralists in the region, especially in lowland villages such as Yassihöyük. At the same time an increase in the mechanization of agricultural production, made possible by the availability of American-made tractors as part of the Marshall Aid Plan, decreased the amount of labor needed per hectare of land and therefore allowed an expansion of cultivation. In 1967 a multi-year dredging and channeling of the Sakarya River was completed, eliminating frequent flooding of fields and areas near lowland villages, as well as previous problems with malaria, while increasing irrigation. All of these factors allowed lowland villages to grow in area and population. For example, Yassihöyük experienced a doubling in population from around 200 to 400 people between 1950 and 1963 and expanded northwards into lower areas after the channelization of the Sakarya (Gürsan-Salzmann 2005). Finally a concentrated, intensive irrigation project was finished in 1997 by the Turkish government, further escalating these trends.

These changes have not only increased the scale at which agriculture is practiced, but they have also affected crop choices and the relationship between agriculture and pastoralism, leading to a new economic system in lowland villages. The impact of the recent infrastructural projects is best illustrated by the contrast between lowland and upland villages. Upland villages, with less access to water for irrigation, maintain more ‘traditional’ economic strategies focused on pastoralism of sheep, goat, and cattle supplemented by dry-farming predominantly of cereals and garden crops such as sesame, cumin, and legumes. This agricultural regime relies on two-year fallowing of fields, multi-cropping, and the use of animal fertilizer. Cereals compose up to 90% of the cultivated land. The proportion of land used for grazing to that used for agriculture is roughly 3:1 (Gürsan-Salzmann 2005, 178). The situation
in lowland villages is reversed, with up to four times as much agricultural land than pasture. Agriculture in lowland villages is dominated by intensive irrigation and the production of cash crops such as sugar beet and onion which occupy up to 50% of the arable land.

Figure 118: Map of region northwest of Polatlı.
Most agricultural activity in the landscape occurs during the summer and relies on an infusion of migrant laborers from southeastern Turkey to work in the fields during harvest. The surplus cereals and the cash crops are sold in markets in Polatlı, a city of nearly 100,000 that is located 15 km to the southeast of Yassihöyük (Figure 118). Many who live in the region spend the majority of the year in Polatlı, returning to their villages during the summer to work the fields and collect the harvest. Since the early 2000s there has been an explosion in the amount of construction and
development around the city. Many suburban housing towers have been built, as well as new roads and a high-speed railway connecting Istanbul to Ankara. These three socioeconomic groups – landowning villagers, migrant laborers, and developers – are responsible for the vast majority of activity throughout the landscape shared by the tumuli of Gordion (Figure 120).

Figure 119: Letters gouged in uncultivated land near Tumulus O spelling “URFALI.” Many of the migrant laborers come from southeastern Turkey.

Figure 120: Aerial photo showing a migrant workers’ camp (left), an unfinished hotel (center), and the village of Yassıhöyük (right).
**Tumuli**

The ancient monuments intersect with the modern agro-pastoral landscape in a variety of interesting ways. First of all, simply due to the large size and steeply sloped sides of the burial mounds, the tumuli are a severe impediment to one of the most pervasive activities in the landscape: plowing. Farmers are often (but not always) unable to plow directly over the mounds and are therefore forced to abandon their efficient straight lines back-and-forth across a field containing a tumulus and instead plow in a circular direction around it. This avoidance strategy wastes the time of the plowman and can subtract from the productive ability of a given field. Over time a pattern of land-tenure has developed in which field boundaries are very often placed right next to or even straddling tumuli (Figure 123). Additionally, in numerous cases farmers begin to plow over the edge of a tumulus, diminishing its size and impact on their fields often to the point of plowing over them completely, slowly erasing the monument (Figure 121). This is just one way that the tumuli have continued to affect the spatial structures and activities in the landscape.
Figure 121: Orthorectified photos of various tumuli throughout the Gordion landscape that have suffered from plowing damage.

Figure 122: Orthorectified photos of modern roads and paths that border tumuli.
Figure 123: Map showing field boundaries placed next to tumuli.

The close relationship between tumuli and movement is a theme that runs throughout this study and has been discussed in relation to the period of their construction and then the development of later routes in previous sections. The relationship persists into the modern period, although of course the character of movement through the landscape has changed dramatically. Cars, tractors, and trains are now the primary means of transportation. Tumuli are still often adjacent to modern routes, indeed many of the Iron Age routes described in Chapter Four continue in use today, but rarely do people walk along them. There exists a complex constellation of paved and unpaved roads and paths that crisscross the landscape, connecting villages to fields and other villages, but above all to Polatlı. The identification of Gordion by Gustav Körte and the first archaeological work at the site
in 1900 was spurred by the construction of the Berlin-Baghdad Railway, which stops at Polatlı and was a major factor in its growth into an urban center. In the modern period, more infrastructure and investment is concentrated towards movement through the region rather than within it.

Transportation by car along paved roads has had a dramatic effect on navigation. The system limits the number of available routes and therefore reduces people’s experience of the landscape to very specific paths. The major road junctures are no long where the tumuli are located, so their role as landmarks for a majority of the local population has diminished. Instead, the monuments now primarily lie along tractor paths (Figure 122). The continuity of these routes is so strong because they are topographically easier ways to move through the landscape; field boundaries have developed along them over time, and the tumuli - as landmarks and hindrances to agriculture – have contributed to their stability. All of these factors are intertwined and difficult to separate. They all increase the influence of each other, resulting in strong continuity in paths even over the 2700 years that separate the Iron Age from today.

Archaeology

Archaeology is the other large force on this landscape and it affects it in two ways: through the physical presence of the excavation and Gordion Museum, and through archaeological ideas about the value of the past. The excavation dig house, built during the Young campaigns begun in 1950 and slowly augmented over the years since, is positioned on the western tip of the Northeast Ridge at edge of Yassihöyük village (Figure 124).
Archaeology has brought foreigners to Yassihöyük each year since 1950, mainly Americans. In many ways these scholars are themselves migrants, visiting the village from their homes in European and American universities for several months each summer. Archaeological activity has changed the shape of the Citadel Mound, over time revealing layers that extend down to the monumental architecture of the Early Phrygian Period while producing large spoil heaps around the edges of the mound. The excavation of many tumuli, especially along the Northeast Ridge, has either completely decimated the burial mounds, or delved deep gouges through them, forever changing their shape and appearance.
The Gordion Museum was built in 1963 across the street from Tumulus MM on the eastern edge of the village. The museum and the dig house thus form rough book-ends on the main road leading into and out of Yassihöyük.

Tumulus MM serves as the nucleus of the settlement of Yassihöyük, flanked by the site museum, the Jandarma station, and the village’s only grocery store. The Citadel Mound per se has received little attention, except by grazing animals and archaeologists. The Polatlı Belediye has tried to change that with the construction of a new hotel, but that has (thus far) been a failure with construction delayed, leaving a concrete skeleton of a building (Figure 120).

In the modern period, knowledge about the past, ultimately created by universities and museums, exerts a force on the landscape through the policies of local and national authorities, but also through a less direct influence on the value of artifacts within a global economic system. A swath of land surrounding the Citadel Mound, roughly half of Yassihöyük village, and many of the tumuli on the Northeast and South Ridges has been designated as a first degree protected zone by the Ministry of Culture and Tourism. This official protection occasionally makes it difficult for locals to build new storage facilities or to dig new irrigation channels through their fields or gardens, but it has also served to preserve many tumuli from the dangers of agricultural activity (Liebhart et al. 2016, 634). The majority of the outlying tumuli have yet to receive the same designation, and have suffered significantly from plowing damage.
A different threat to these outlying tumuli comes in the form of entangled national-political and global-economic forces resulting in illicit excavations with the goal of selling artifacts. Many tumuli have been looted throughout the years since antiquity, but prior to the modern period, it was accomplished by means of tunnels dug into their sides – marginally changing the appearance of the monuments while still erasing archaeological data from their burial assemblages. Recently, however, there has been a rise in the availability of earth-moving machinery in the region due to the rapid development and construction around Polatlı, leading to more frequent looting that is also much more destructive to the physical mounds (Rose 2017, 172).
To counteract the complicated pressures placed on the modern landscape and the survival of its ancient features, members of the Gordion Project have recently put forward a Conservation Management Plan for Gordion and its Environs (CMPGE) in conjunction with local and national authorities (Ayşe Gürsan-Salzmann and Erder 2010; Erder, Gürsan-Salzmann, and Miller 2013; Naycı and Demirdelen 2018). The goal of the plan is to preserve as much as possible the historic villages, settlement mounds, and tumuli in an area of 600 km$^2$ around Gordion by working in concert with the Ministry of Culture and Tourism (Ankara), the Municipality of Polatlı, the Office of the Mayor of the local district (Yassıhöyük), the Gordion Archaeological Project, the Museum of Anatolian Civilizations (Ankara), and the General Directorate of Cultural Properties. The focus of the plan is on the appearance of the landscape, and how viewsheds surrounding the site of Gordion will be affected by new construction. The plan aims to preserve the rural character of the region through reasonable economic and social development including an educational program targeted primary and secondary school students and teachers, hoping to instill a cultural appreciation for the tumuli.

There exists in the modern landscape a tension between the monetary value of the agricultural land and artifacts within the tumuli (heavily influenced by national-political and global-economic forces) on the one hand, and the preservation efforts pursued by archaeologists and regional authorities on the other. This tension plays out in maps and fences - the tools used to negotiate and enforce spatial boundaries - and in the relationships between people and institutions.
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Chapter 6


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Conclusions


