ENVISIONING LANDSCAPES OF WARFARE:
A MULTI-REGIONAL ANALYSIS OF
EARLY IRON FORTRESS-STATES AND BIAINILI-URARTU

Part I

by
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ABSTRACT

The present dissertation—an interdisciplinary study incorporating archaeological data, textual sources, art-historical evidence, and ethnography—investigates state development in the highland, non-urban empire of Urartu and the Early Iron fortress-states that preceded it during the early first millennium BCE. GIS studies take social agents into account, employing Social Network Analysis and human-scale analysis techniques. Vision acts as an organizing principle for the present study and provides a window into the priorities and decision making of the people who created the ancient states in question.

The investigation of Iron Age fortress states has been hindered by a paucity of systematic, multi-regional studies. In order to understand the spatial development of Urartu, the dissertation employs a large-scale, temporally-sensitive study, utilizing results from archaeological survey performed by German and Italian expeditions to Iranian Azerbaijan and the Lake Sevan region in Armenia. An examination of the data—both historical and archaeological—reveals, contrary to previous scholarship, that the strategies of the Urartian empire varied across space as well as in time. Furthermore, the Urartian occupation in the studied areas did not constitute a dramatic break with previous modes of regional organization, but intensified pre-existing patterns, particularly those of regional defense.

The role of systematic warfare in the large-scale organization of states is examined. The visibility studies reveal that forts, fortresses and settlements were
strategically placed for defensive communication and the systematic surveillance of roads, and that these patterns were already in place by the Early Iron Age. The insecurity created by the threat of warfare is understood as only one of a variety of factors that influenced the organization of the studied Iron Age states along with economic incentives, ritual importance and the ideological impact of socially-constructed space. It is furthermore proposed that fortress-states, dominated by military architecture and frequently accompanied by bellicose philosophies and religious ideas, are a response to crisis and may promote continued cycles of violence.

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For my father, Sam Lamar Earley.
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Though the view from Federal Hill tells us much about the city, it cannot tell us how what we see came into being. How was Baltimore built? Who decided that it should be a tourist mecca rather than an industrial city? Why do the buildings look the way they do, and to what traditions are they monuments? —David Harvey (2001:131)

Chapter 1 Introduction

1.1 Objectives of Study and Definitions

The present dissertation constitutes an examination of visibility in the ancient empire of Biainili-Urartu (Figure 1) and the Early Iron fortress-states that thrived in the Iranian and Caucasian highlands during the early first millennium BCE. I ask the question: to what extent can an investigation of visibility and spatial organization elucidate the social processes that formed these ancient states?

The Early Iron (EI) period (ca. 1200-800 BCE) in Iran and the southern Caucasus is typified by small fortress-states that competed for regional control (Smith 2003; Kroll 2011). Urartu was a highland fortress-empire centered at Lake Van on the Anatolian plain from ninth to seventh centuries BCE (Kroll et al. 2012). Territories previously ruled by a constellation of EI fortress-states were annexed and subsequently consolidated into Urartu beginning in the ninth century in northwest Iran and in the early eighth century in Armenia (Salvini 1984; Salvini 2002).

The study of Iron Age fortress states has been hindered by a paucity of systematic, multi-regional studies. Moreover, the regional archaeological data that exist had not been previously compiled or systematically studied as a whole. In order to understand the spatial development of Urartu, the dissertation employs a
large-scale, temporally-sensitive study, utilizing results from archaeological survey performed by German, Italian and Armenian-Italian expeditions to Iranian Azerbaijan and the Lake Sevan region in Armenia (Kleiss and Kroll 1977; Pecorella and Salvini 1984; Biscione, Hmayakyan, and Parmegiani 2002). The described regions were selected since they represent differing, historically-document ed episodes of Urartian imperial expansion and each selected region constitutes a distinct physiographic zone. Unlike many potential study zones in Anatolia (Biscione and Dan 2014), the traditional Urartian heartland, the selected regions utilized in the dissertation had also been the object of previous, in-depth regional survey projects that employed comparable research methodologies.

One of the underlying assumptions of spatial analysis in archaeology is that the manner in which ancient people arranged their physical surroundings, their built environments, reflects their priorities and decision making (Richards-Rissetto 2010; Knapp and Ashmore 1999; Ashmore 2004; Smith 2003). In particular, recent generations of Urartian scholars have argued that by understanding the empire’s spatial patterning, we can better understand the organizational principles of the state (Smith 2003; Biscione 2012; Zimansky 1985; Kleiss 1972). Moreover, built environments and the regional patterning of states shaped ancient life (Smith 2003).

Visibility studies have become an important methodological tool in archaeology to investigate the sociocultural significance of features in constructed landscapes (e.g. Llobera 2001; Garcia 2013; Supernant 2014; Bongers et al. 2012; Wheatley 1995; Earley-Spadoni 2015; Llobera 1996; Llobera 2007). Though
visibility is not the only important factor in the construction of ancient landscapes, it is a significant one (Bongers et al. 2012; Wheatley and Gillings 2000).

Figure 1: Map of Notable Fortress Sites of the Urartian Empire (Satellite Imagery Digital Globe provided by ESRI)
Intervisibility and viewshed studies are tools frequently utilized to investigate visibility, and Geographical Information Systems (GIS) provide archaeologists with a rigorous quantitative platform for assessing the role of vision in the construction of ancient landscapes (Wheatley and Gillings 2000; Smith and Cochrane 2011; Garcia 2013; Rua et al. 2013). The social context of patterns of visibility is critical to their interpretation (Golden and Davenport 2013). Accordingly, visibility analyses are integrated with the findings of archaeological research, relevant ethnographies, and the historical record of Biainili-Urartu.

1.1.1 Objectives of Study

One goal of the investigations presented in this dissertation is to determine if EI and Urartian installations were located at highly visible or otherwise significant locations by examining the patterns of spatial distribution and visibility among forts, fortresses and settlements. Another objective is to determine whether the fortress-states of the two studied periods incorporated regional systems of visual communication. The results are combined with historical evidence and ethnographies in order to understand the social context of the observed archaeological patterns.

One methodological objective is to develop GIS-driven analytical methods that are both human-scaled and human-agent focused in light of recent critiques that have cautioned against approaches that ignore the agency of social actors and human-appropriate scaling (Llobera 2012; Llobera 1996).
Certain presuppositions have typified studies of the state of Urartu during recent decades. One such assertion is that the spatial organization of Urartian sites represents a fundamental departure from patterns established during the Early Iron Age (EI) (Smith 2003:169–180). This conclusion has not been examined within the framework of a multi-regional, comparative analysis of EI and Urartian settlement. By contrast, this dissertation constitutes a large-scale study of all known Urartian territories in Iranian Azerbaijan as well as the Lake Sevan region of Armenia during both the EI and Urartian periods.

An additional problematic scholarly assertion is that the evidence from large seventh-century sites such as Ayanis, Bastam, Karmir Blur, and Kef Kalesi founded by Rusa son of Argishti are typical and representative of Urartu rather than representing exceptional cases.

A final, related scholarly convention is that the ancient empire of Urartu represents a relatively uniform phenomenon rather than demonstrating marked regional and temporal variation. Accordingly, I perform a rigorous presentation and evaluation of the data from Iran and Armenia in order to test this and the other scholarly conventions described above.

Having summarized the objectives of study, I will now define a number of concepts that are central to the formulation of the dissertation.
1.1.2 Socially-Constructed Space

*(Social) space is a (social) product.*

—Henri Lefebvre (1991:189)

The theoretical emphases of regional landscape studies in Anglo-American archaeology have transformed in recent decades. In particular, the cultural ecological approaches that were common in the mid-twentieth century have been challenged by a variety of post-modern, post-positivist philosophies (Ashmore 2004; Llobera 1996; Knapp and Ashmore 1999). While some archaeologists previously equated the concept of landscape with the physical environment, a growing group of scholars now embraces a radically different perspective (Ashmore 2004:256).

In the late twentieth century, theorists from a variety of disciplines converged upon concepts of socially-produced space (Lefebvre 1991; Bourdieu 1989; Harvey 1989; Harvey 1973; Soja 1989; Hayden 1997; Harvey 2001; Giddens 1979). Subsequently, space as a social construct has become an influential model in landscape archaeology as well as in the social sciences more generally (Smith 2003; Harmanşah 2013; Knapp and Ashmore 1999; Ashmore 2004; Rösler and Wendl 1999; Creekmore and Fisher 2014).

The concept of social space entails a number of implications for spatial analysis in archaeology. In particular, the re-conception of space shifts the center of gravity away from an emphasis on physical environments to, instead, understanding
the social origins of landscape production. Moreover, the concept of socially-constructed space highlights the importance of human agents (Bourdieu 1989; Giddens 1979) rather than framing archaeological interpretation as human adaptation to the physical environment. Accordingly, recent investigations have explored how landscapes, both ancient and modern, reflect the decision making of people as well as their priorities and preoccupations (Knapp and Ashmore 1999; Ashmore 2004; Richards-Rissetto 2010; Moore 2005; Fisher 2009).

1.1.3 Landscapes and Social Practice

David Harvey, geographer and anthropologist, contends that space can only be understood in relation to social actions, and cannot be defined otherwise lest it become, “a thing itself with an existence independent of matter” (1973:13). A.T. Smith, influenced by Harvey, offered a theory of space in which practices assemble space into landscapes (1996:45), and in turn, landscapes reflexively regulate practice. Thus, landscapes are socially-constructed theaters, and individuals and societies create and re-create landscapes through acts, known alternately in the literature as praxis, practice or social acts (Smith 1996; Giddens 1979; Harvey 1973; Bourdieu 1977).

Space and place are frequently differentiated in the scholarly literature (Coleman & Collins, 2006; Creekmore & Fisher, 2014; Tuan, 1979). Places are herein defined as specific loci, nodes where social actions converge, whereas spaces are defined as the interstices of place. Both are socially produced. Spaces and places are assembled within a four-dimensional social matrix into landscapes. The
fourth dimension is time, since landscapes are dynamic constructs. The object of the GIS analyses in this dissertation is the spatio-temporal dimension of social actions. Moreover, spatial analysis, such as the studies employed in the present dissertation, may be understood as a way to evaluate the agency of ancient people as well as investigate the ancient construction of space.

1.1.4 States: Definitions and Polemics

The present study investigates visibility and spatial organization in order to elucidate the social processes that formed the ancient states under investigation. I utilize the terms state and fortress-state with the recognition that the terminology is complicated and controversial to some. Recent critiques have argued that studies of the state are plagued by problematic neo-evolutionary perspectives (Yoffee 1993; Yoffee 2005; Smith 2003; Trigger 2003). In a number of mid-twentieth century approaches, the state was conceived as the climactic rung on a complexity ladder consisting of bands, tribes, chiefdoms, states (Service 1962).

The critiques of neo-evolutionary terminology and categories are varied. For example, neo-evolutionary typologies have been critiqued for promoting racism or Orientalism, particularly in social-evolutionary formulations (Yoffee 2005:4). Another difficulty with such categories is that there are myriad ways in which societies organize themselves, which defy tidy systems of classification (Yoffee 2005:41). Moreover, the state was considered a superior system to its more “primitive” counterparts, implying a value judgment inherent in complexity (Trigger
Yoffee prefers to discuss “city-states” since, he reasons, most early states are relatively small and centered at a particular urban center (2004).

Bruce Trigger divides early states or “early civilizations” into city-states and territorial states (2003). City-states are defined as small states that have an urban capital with surrounding hinterlands, and they tend to occur in groups that share a common language and culture. Ancient Greek and Mesopotamian cities are cited as examples of city-states (2003:32). Territorial states are, instead, composed of larger territories and a larger number of urban centers. These larger territories, due to the increased administrative burdens placed upon them, necessitate a much more elaborate bureaucracy. Old and Middle Kingdom Egypt and Late Shang China are provided as two examples of territorial states (2003:32).

Trigger perceives fundamental differences between the earliest states, and a category of “later preindustrial” civilizations that arose during the first millennium BCE (2003:48-51). As examples, he cites the Assyrian and Persian empires and the “feudal”\(^1\) and mercantile states found in Europe and Japan in medieval and early modern times. His arguments for creating a separate class of later preindustrial states include the ideas that notional currency\(^2\) revolutionized economies, and military forces were more specialized and separate from the state. Above all, later states arose within an environment that already possessed notions of statecraft,

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\(^1\) Feudalism is an analytical category that, much like the state, has been critiqued by particularists (e.g. Brown 1974).

\(^2\) Trigger’s inclusion of the Neo-Assyrian Empire is anachronistic since coins or notional currency were apparently an innovation of the Persian period and inspired by a Lydian model (Briant 2002:408–410).
suggesting that there may be a good argument for considering these later states separately in comparative analyses.

A.T. Smith argues that the concept of the state is one that is nebulous and lacks a clear referent (2003:95), but the term he offers in replacement is, arguably, less precise. Smith prefers the use of the term “polity” or “early complex polity,” noting that there is little likelihood that much debate will be created over whether or not particular political formations properly fit within the category (103). The early complex polity is a study in contradiction being simultaneously “clear in its terms yet flexible in its connotation” (103). The term has its uses, but it is too vague to describe particular kinds of socio-political development meaningfully and therefore does not facilitate comparative studies. For example, “early complex polity” implies some level of complexity but lacks any further resolution, meaning the term applies to many kinds of societies. The use of “early complex polity” is, at times, an alternately non-committal or non-critical way to describe widely varying levels of political, social and cultural organization and transformation.

Although aware of its polemics and limitations, I have elected to use the term “state” or more specifically “fortress-state” to describe the socio-political entities that existed prior to and during the Urartian era. The state is defined as a process of socio-political formation characterized by centralized government in which the operation of political power is sanctioned by a legitimated figure or a ruling body (Renfrew and Bahn 2004:586). States employ elaborate ideologies that normalize the right to rule as well as justify, at times, grossly asymmetrical power
relationships (Flannery and Marcus 2012). A hierarchical bureaucracy is often created and imposed, and it is typically facilitated by administrative technologies such as writing. Economic redistribution, trade and craft specialization, standing armies and organized religion also typify the state but may also exist in some non-state societies (Trigger 2003:103, 244, 442–443, 670).

1.1.5 Fortress-States

To accurately define a particular kind of socio-political organization, I propose the analytical grouping “fortress-state.” While the term fortress-state has appeared in the scholarly literature (Pollak 2010; Smith 1996; Ettel 2014), I am unaware of any treatment that has defined what one is. The Iron Age states of Iran and the southern Caucasus are examples of the proposed grouping of fortress-state. Urartu is, furthermore, a rare though not unique instance of a fortress-empire. Urartu as an empire is discussed in detail below.

The terms city-state and territorial-state are inadequate to describe EI fortress-states and Urartu. The small states or kingdoms that preceded the rise of Urartu cannot be properly called city-states in the Greek or Mesopotamian sense due to their decidedly non-urban character.\(^3\) For that matter, Biainili-Urartu is

\(^3\) This determination hinges upon the definition of “city.” The study of ancient urbanism in western Asia has been a focus of research since the earliest investigations of Mesopotamia. Recent approaches favor non-restrictive definitions that encompass a variety of kinds of urban expression cities (Smith 2013; Creekmore and Fisher 2014). However, even the least restrictive definitions of urbanism do not properly encompass the Urartian settlement pattern. The minimal amount of pottery and associated cultural remains in Urartian fortresses argue against interpreting them as habitations (Kroll 1976:12–13).
anomalously non-urban among empires. Even though the elaborate fortresses of Biainili-Urartu house a variety of administrative, governmental and religious structures, they were not significant habitations for people beyond the modest “lower towns” attested at seventh-century sites (Zimansky 1995a:175).

Unlike a city-state whose socio-political heart is “the city,” a fortress-state is centered upon a castle or fortress. Accordingly, a predominance of highly-fortified architecture is the defining characteristic of the proposed analytical grouping. Fortress-states may or may not have cities, although urbanism is not a necessary condition for complexity or statehood (Honeychurch 2014). Certain fortress-states, such as Urartu, are characterized by a primarily rural and dispersed population.

City-states and fortress-states are conceived as fluid, non-exclusive classifications, and some states may demonstrate features of both. Moreover, the proposed nomenclature is not conceived as a stage in an evolutionary trajectory (Flannery and Marcus 2012).

It is furthermore proposed that fortress-states, dominated by military architecture and frequently accompanied by bellicose philosophies and religious ideas, are a response to crisis and promote continued cycles of violence (Rowe 2007; Arkush 2011). Certain conditions present in fortress-states, therefore, may have pushed ancient state builders towards certain kinds of possible futures and away from others.

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4 Certain nomadic and medieval empires are other examples of non-urban empires (Barfield 2001).
5 According to my formulation, a territorial fortress-state may be composed of multiple fortresses.
Numerous examples of fortress-states can be cited, although early medieval Europe (500-1000 CE) is particularly notable for the rise of fortress-states and the emergence of a fortress-empire, the Frankish Empire (Nelson 1996). Castles and fortress complexes became loci of regional power during the period of insecurity that succeeded the collapse of Rome (Creighton 2002; Edwards 1996). Fortress-states persisted during late medieval Europe throughout the mountainous portions of central Europe, from castle-states in Val D'Aosta in Italy, to the Swiss riverine valleys, and along the Rhine valley in Germany (Kaufmann and Kaufmann 2004; Ettel 2014). These states existed alongside the well-known city-states of Europe, e.g. Florence or Pisa, but followed their own unique cultural trajectories.

Iron Age fortress-states from Iran and the Caucasus bear certain similarities to early medieval fortress-states in Europe. Wolfram Kleiss, a scholar who discovered hundreds of fortified sites in Iran, occasionally uses German castle architecture or distribution as an analogy for explaining site function or the spatial organization of Urartu (e.g. Kleiss 1971:58). Such a comparison may, at first glance, appear wildly anachronistic but instead provides useful parallels. For example, medieval European fortress-states such as Gruyères and Fribourg in Switzerland or Rothenburg ober der Tauber in Germany, were situated along river valleys or routes of travel that could be simultaneously surveilled for defensive purposes as well as taxed for income (Creighton 2002; Schofield and Vince 2003; Ettel 2014). These fortress-states had rural, dispersed populations that sometimes aggregated into small villages in the valleys or modest settlements surrounding the castle.
Fortress or castle complexes sometimes form the core of nascent urbanism (Keeley and Wilkinson 2015). For example, many modern European cities, e.g. Nürnberg, Milano, Genève, were fortress-states during the medieval period. These places transformed into the urban centers that they are today for a variety of historically-contingent reasons though they were originally centered upon a medieval burg, citadella or cité, a highly-fortified walled administrative complex that formed the core of the medieval European socio-political unit and presided over a mostly rural and dispersed population. While a fortress-state may transform into a city-state in certain circumstances, it is not a historically-inevitable outcome.

Alternatively, some city-states or territorial states might reinvent themselves as fortress-states in response to external threat. For example, the conversion of cities and towns into massive fortified complexes was a widespread phenomenon in Europe and the Americas during the seventeenth and eighteenth centuries when places such as Sienna in Italy and Amsterdam and Deventer (Figure 2) in the Netherlands invested in a type of massive fortification called the Trace Italienne, effectively transforming hundreds of cities into massive star forts (Kingra 1993; Lynn 1991). The period was sufficiently fraught with interregional conflicts such as the Thirty Years’ War that some historians have called the epoch the “General Crisis” (Parker and Smith 1997).

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6 Lawrence and Wilkinson have observed that citadels sometimes form the core of incipient Late Chalcolithic or Early Bronze urbanism in northern Mesopotamia.
During the General Crisis, the star-shaped bastions of the *Trace Italienne* were widely adopted across Europe since they repelled powerful early-modern siege guns more effectively (Pollak 2010:9). The conversion of the Italian town of Siena in the seventeenth century by King Philip of Spain into a fortress-state was so offensive to the citizens’ concepts of urbanism that the Sienese revolted against their Spanish overlords (Pepper and Adams 1986). A similar pattern of investment in fortification was initiated by Thomas Jefferson at coastal ports in the United States in the years preceding the War of 1812, and Fort McHenry in Baltimore is a

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7 Many Dutch towns and cities were enclosed within bastioned walls to defend themselves against the Spanish during the seventeenth century.
specific example of the proliferation of the star fort or *Trace Italienne* in the Americas (Chartrand 2012).

The described example of the widespread implementation of the *Trace Italienne* during the General Crisis is, furthermore, an example of the link between regional insecurity and the adoption of fortress architecture (Arkush 2011), a theme developed in this dissertation. The traces of pervasive insecurity were present on both a local and regional scale (Kingra 1993; Lynn 1991).

1.1.6 Urartu as Fortress Empire in Time and Space

In recent decades, scholars have shown interest in the study of empire as a distinct form of complex society, and many researchers have contributed to the definition of empire as an analytical category (Barfield 2001; Sinopoli 2001a; Smith and Montiel 2001; Alcock et al. 2001; Smith 2005; Matthews 2003). In this section, I also offer a definition of empire and discuss how a phenomenon like Urartu can be better understood within the theoretical framework of the archaeology of empires.

One challenge in providing a definition of empire is distinguishing it from the state. Certainly, scale is important since empires are large states. In addition to the issue of size, empires possess heterogeneous ethnic and cultural compositions (Sinopoli 2001a:444). A multi-ethnic or supra-national character is widely considered to be an important part of the definition of empire (Zimansky 2012; Sinopoli 2001a; Matthews 2003; Sinopoli 2001b).
A number of recent archaeological treatments define empires as static socio-political units and not as processes. Preferring a definition of empire that understands empire as a dynamic construct (e.g., M. E. Smith & Montiel 2001:246), political scientist Michael Doyle endorses a “behavioral definition of empire as effective control, whether formal or informal, of a subordinated society by an imperial society” (1986:30). Doyle’s proposed model constitutes a better representation of the variable nature of empires, and in particular, their temporally-variant qualities.

Empires are formed through conquest and coercion (Sinopoli 2001a:444; Smith and Montiel 2001). They are expansionistic and militaristic (Arkush 2011:215). An important implication of the expansionary nature of empires is that conflict, or at times the credible threat of violence, is a constituent component of the formation these states. Therefore, militarism should be understood as an important part of empire dynamics.

While violence may provide an effective beginning to the process of imperial subjugation, conquest and repression must give way to organizational structures of administration and ideologies of incorporation in order for these states to endure over time (Sinopoli 2001b:196). However, empires differ from smaller states in both scale and in their heterogeneity and, consequently, in the cost of and ability to exercise authority over the territories they administer. Therefore, imperial administration and integration may prove more difficult to achieve than conquest, and may require varying degrees of coercion, reward, structural transformation,
and accommodation (Sinopoli 2001b:195). The forms that these mechanisms of administration take must be responsive to the social, environmental and historical context of the regions that were incorporated.

Some theorists argue that states, particularly empires, are fragile (Yoffee 2005; Sinopoli 2001b; McAnany and Yoffee 2009). The observed fragility must derive, in part, from the nationalistic problems posed by an ethnically diverse population. Accordingly, Barfield observes that successful empires are organized to both administer and exploit diversity (2001:29).

Empires have also been implicated in replicating inequality, echoing the views of scholars who have shown concern with the proclivity of modern empires to perpetuate asymmetrical and exploitative power dynamics (Flannery and Marcus 2012). In particular, the classic formulation of Wallerstein’s world-system model (2011) relies upon three main assumptions: core dominance, core control over an asymmetric trade system, and the causal primacy of long-distance trade interaction in structuring the empire’s periphery (Stein 2002:904). For Wallerstein adherents, a primary goal and consequence of imperial takeover is the extraction of material goods and resources, including human labor, from integrated territories (Stein 2002).

Equally, the role of domination and resistance have been better theorized within the social sciences in recent decades (Topper 2001; Miller et al. 1989), though these observations seldom appear in archaeological literature about empires. Yet, resistance to overly-dominant regimes is a social process that can
result in the precipitous toppling of modern nation-states and ancient empires alike, as evidenced by the events of the Arab Spring in 2010.

The Babylonian revolts at the end of the Neo-Assyrian period provide an ancient example of the importance of resistance in empire dynamics. The Assyrians crushed a series of Babylonian insurrections during the reign of Sennacherib early in the seventh century (Van de Mieroop 2007:252–255). In a marked shift in previous policy towards Babylonia, the Assyrians razed sacred temples, looted treasuries and deported a large number of Babylonians to other provinces. Indeed, these humiliations and depredations were not forgotten. In 612, the Babylonians, along with Elamites, Medes, and Scythians, toppled the Neo-Assyrian empire forever. The ruin was so definitive that when the Greek mercenary Xenophon travelled by the destroyed tell of Nineveh a few centuries later, the name of the once-great empire had been utterly forgotten (Haupt 1907).

In the archaeology of empire, Urartu is both a usual and an unusual case. Empires are characterized by a rapid appearance, a middle period of consolidation, and a final period of decline that finishes in a precipitous collapse (Matthews 2003; Sinopoli 2001a). Certainly, the historical and archaeological evidence from Urartu (described in Chapter 2) follow the described pattern. Moreover, there is ample evidence, mostly historical but also archaeological, for a multi-ethnic component to the empire of Urartu (Zimansky 2012).

A number of scholars have explicitly associated empires with urbanism (Smith and Montiel 2001; Matthews 2003), understanding them to possess a large
urban center as a capital (Matthews 2003:129). Yet, Urartu demonstrates a decidedly non-urban character. In fact, its capital fortress Tushpa measures four hectares, making the Urartian capital an impressive structure but equivocal as a city. By contrast, Sargon II’s *ex novo* Neo-Assyrian capital of Dūr-Šarru-kēn was approximately 290 hectares (Otto 2015:479), while the Neo-Assyrian city of Nineveh was 750 hectares, roughly half the size of ancient Rome (Otto 2015:482).

Urartu, with its dispersed population and non-urban character, can be compared to other atypical cases of empire such as nomadic empires (Barfield 2001; Kradin 2003), but especially to the early medieval Frankish empire, a non-urban fortress-empire that arose in the wake of the fall of the Western Roman empire in the fourth century CE (Nelson 1996). The necessary association of empires and urbanism is problematic because urbanism is not a necessary condition for complexity (Silverman 1988; Honeychurch 2014; Honeychurch 2015).

Moreover, the previous scholarly construction of a monolithic “Urartu” flattens the diversity that exists within empires. One feature of empires that has been underemphasized in recent scholarly treatments is their temporally-variant quality. Moreover, empire is a social process, and it is one that varied over time as well as in space.

Thus, it is reasonable to propose, particularly in the earliest days of an empire, that strategies of administration may have been largely improvised, pragmatic and specific to the particular conditions in the new territory (Sinopoli 2001b:96). Writing of the early days of the Carolingian Empire, Nelson argued that
“each royal regime lurched from one challenge to another, improvising responses to a series of challenges” (1996:xvii). Nascent empires are militaristic states that are new to the business of geographically-dispersed and supra-national administration. The forms that these mechanisms of administration take must be responsive to the social, environmental and historical context of the regions that were incorporated. Thus, imperial practice may be highly variable and socially, environmentally or historically contingent, especially in an empire's earliest stages. These initial phases may be characterized by variability, hybridity and innovation in practices.

However, as empires grow, standardization can become a natural part of the process of consolidation since the challenges of administering a large, heterogeneous empire are ameliorated by uniformity in practices. At times, standardization may have been superficial, as has been observed by Zimansky in the adoption of a uniform “state assemblage” during the reign of Rusa the Great (Zimansky 1995b; Zimansky 1995a; Zimansky 2012). The implication of superficial standardization is that hybridity and regional variation co-existed with the official material repertoire of the state.

Some empires may develop a more or less established “path to province” in which buffer states become vassals and subsequently vassals become provinces, as has been observed in the Neo-Assyrian and Roman empires (Parpola 2004; Postgate 1992). In the particular case of Assyria, at least four distinct phases of imperialization have been identified (Postgate 1992; Van de Mieroop 2007). Local
administration varied over time and depended on a particular territory’s status within the regime.

Urartu is no exception to the principle that imperial organization varies over time. However, Urartu’s history of scholarship has led to the impression that certain aspects of administration or material culture were permanent and invariable (Smith 2012:40; Zimansky 2012:102, 109). Namely, the majority of what is known about Urartu from stratigraphic excavation comes from the peculiar contexts of Rusa the Great’s large and spectacular imperial foundations, while prominent sites from the ninth and eighth centuries such as Qalatgah in Iran and Tsovinar in Armenia remain unexcavated and unexplored.\(^8\) Future investigation of these sites should shed light on both temporal and regional variation that existed within the empire. Variation in style over time is, in fact, one of the underlying assumptions of archaeology, and one might suppose that variation was the case in Urartu.

The results from decades of archaeological research in regional survey have the potential to shed light on temporal variation in Urartu. One perennial limitation of the method of regional archaeological survey is its chronological grossness since the surface collection of pottery dictates the resolution of the temporal scale. Ceramic styles vary over a time scale that is, in most cases, not small enough to answer most historical questions. In the context of Urartian fortresses and forts, historical-scale chronological markers are provided by two important sources:

\(^8\)Preliminary investigations have begun at Tsovinar on the southern shore of Lake Sevan under the auspices of the Tsovinar Excavation Project, co-directed by Miqayel Badalyan and Roberto Dan in the summer of 2015.
inscriptional evidence and stylistic change in architecture (Salvini 2008; Kleiss 1976a). One important objective of this study is to highlight the detrimental effects of temporal compression in the scholarship and to also provide chronological relief to the analyses presented.

Along with misunderstanding the differences apparent over time, some previous analyses of Urartu did not emphasize the variation that is apparent over space. On occasion, archeologists conducting research in Anatolia, northwest Iran or the Caucasus generalize site-level or regional results to the entire empire or conversely they may extrapolate results from another part of the empire. However, such conclusions are not based upon a rigorous comparative analysis.

A growing scholarly cadre acknowledges that strong regional variation characterized the Urartian Empire, and therefore, caution must be applied in archaeological generalization (Smith 2012; Biscione 2012; Avestisyan and Bobokhyan 2012). For example, recent studies of the regional organization of the fortified installations of Iran, Armenia and Turkey, led to the conclusion that regional organization among these three zones is hardly uniform. Instead, each region demonstrates a distinct form of spatial organization (Biscione and Dan 2011; Biscione 2003; Biscione 2012; Biscione and Dan 2014). Therefore, I will attempt to identify the various forms of regional organization and take them into account. Accordingly, I have selected geographically disparate regions, Iranian Azerbaijan and the Lake Sevan plain, each incorporated into the empire during different episodes of conquest.
1.1.7 Visibility as an Indicator of Priorities

As is the case with many terms in routine archaeological usage, visibility has a variety of meanings and uses in the archaeological literature. For the purposes of the present study, vision refers to past cognitive acts that structure, inform and organize the construction of social landscapes (Wheatley and Gillings 2000:3); vision is an embodied act of ocular perception that interprets and choreographs practice within landscapes (Llobera 2001).

The visual appearance of a place or a landscape is arguably its most culturally-significant and memorable feature: “A place may feel cold or hot, may smell or have a particular sound quality, but it is the visual characteristics that are most frequently remembered and referred to, and often form the basis upon which a description of a place is instinctively based” (Wheatley and Gillings 2000). It is, in fact, difficult to imagine a representational art depiction of a landscape that excludes visual prompts, thought it would most certainly be at home in an avant-garde art collection. When ancient (or modern) writers or artists wish to convey the character of a place or landscape, they focus on its visual characteristics.

Seeing is often interchangeable with knowing, and to see is to believe. The Standard Babylonian incipit of the The Epic of Gilgamesh, “Ša naqba īmuru...”9 or “He who saw the deep...” illuminates the importance of seeing in the Neo-Babylonian

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9 The Akkadian verb amāru means, literally, to see or behold but also has the secondary meanings of to find, observe or experience (CAD: A).
world view (George 2003:538). Gilgamesh had a brief experience with the god Ea’s domain, the Apsû, while retrieving a magical plant of rejuvenation. The protagonist failed in his search for immortality but obtained wisdom in the process. In the incipit, the visual act is conflated with direct experience of the divine and with knowing the limitations of mortality (George 2003:444).

The visual aspects of constructed landscapes are important and, at times, highly choreographed by the state. A few lines later in Tablet One of The Epic of Gilgamesh, the narrator invites his audience to embrace the virtues of Uruk the city and Gilgamesh its king: “See its wall...view its parapet, which is like no other!” The context of the preceding passage is that the audience is asked to visually survey the defensive walls of the city so that they may be convinced of Uruk’s undeniable greatness.

1.2 Summary of Dissertation

The present study constitutes an examination of the spatial patterning of El fortress-states and Biainili-Urartu in the Iranian and Caucasian highlands during the early first millennium BCE. The role of visibility in socially-produced landscapes is investigated utilizing GIS-driven modeling.

Chapter Two, “Historical Sources and Previous Study of El Fortress-States and Biainili-Urartu,” reviews prior scholarship, and presents the textual and art-historical sources available for the study of the ancient states in question. I appraise relevant archaeological work performed in Armenia and Iran, and detail previous scholarly interpretations of the spatial organization of the states in question. I argue
that chronological and spatial compression have led, in particular, to the portrayal of a monolithic Urartian empire. Thus, a multi-regional, large-scale examination of the available evidence is warranted.

The importance of the role of conflict in the development of regional patterns is explored in Chapter Three, “Ancient Warfare and Landscape Formation.” I evaluate Keeley’s influential thesis from *War Before Civilization* in which he argues that the past has been artificially pacified by archaeologists, detailing a number of reasons why this has been the case among scholars of the ancient Near East. Since organized violent conflict is a universal human experience that has social implications and archaeological repercussions, warfare should be incorporated into archaeological explanations of past social change along with other socially-transformative institutions. A comprehensive study of patterns of conflict requires a large-scale, regional perspective, in addition to site-level and off-site studies.

The fourth chapter, “Survey Data and Methodology,” examines the site data utilized for the studies and evaluates the research design and methodology of each expedition. In this area, survey techniques were optimized for grand-scale research agendas as opposed to the more intensive approaches employed in other parts of the world. I also characterize the aggregated data from Iranian Azerbaijan by site type and size.

The fifth chapter, “Visibility Analysis and Archaeology,” describes the vital role that visibility studies play within GIS-implemented archaeological approaches. In particular, GIS methodologies have been critiqued on the basis of environmental
determinism and for a failure to integrate human-scale criteria within analytical frameworks. I describe how visibility studies are, instead, well-suited to agent-based simulation and human-scale modeling. In particular, recent scholarly contributions have demonstrated particular success with the integration of social theory and empirical approaches.

Chapter Six, “Visual Communication Networks,” evaluates the archaeological evidence for Iron Age visual communication networks in Iranian Azerbaijan and Armenia. The GIS-implemented approach consists of a point-to-point analysis to evaluate possible intervisibility among sites. Random-point simulation, statistical validation, and social network analysis are employed to rigorously evaluate the characteristics of observed networks. Based upon these achieved results, I infer the presence of fire beacon networks. Moreover, I argue that the spatial organization of the fortress-states in question was the result of regional coordination.

The broad visual catchment from each site as well as the spatial distribution of landscape features more generally is the focus of Chapter Seven, “The Role of Vision in the Construction of Iron Age Landscapes.” Patterns of visibility from individual sites are examined on a region-by-region basis. I ask the question: do sites have sweeping panoramic views or is vision focused upon particular features in the landscape? The observation that Urartian forts and fortresses are elevated above the plain and located near primary routes of transport is the focus of systematic investigation. I also evaluate the proposition that the Urartian period constitutes a major re-organization from the EI. I conclude Chapter Seven by
reviewing the historical evidence for first millennium networks of espionage and surveillance, primarily derived from the Neo-Assyrian Sargonid epistolary corpus.

In Chapter Eight, “The Unbearable Lightness of Seeing,” I develop three topics, united by a theme of ancient-modern dialectic, that are relevant to the study of visibility in the ancient empire of Urartu. The detrimental and dehumanizing implications of surveillance in Urartu are discussed, and I elaborate the ethical implications of the modern archaeological use of remote-sensing data that have been collected in the context of espionage. Next, I discuss the future of subjective, non-empirical approaches to the experience of ancient landscapes epitomized by phenomenological research. Factors such as culturally-specific world views and changes in local ecology may alter these experiences, limiting but not eliminating the possibility for ancient-modern analogy. Last, I argue that visibility studies are poised to make important contributions within the domain of Cognitive Archaeology since vision plays an important role in how both ancient and modern people perceive the world.

Chapter Nine, the conclusion, summarizes the objectives, methods and data utilized. I recapitulate and expand upon major conclusions and explain the unique contributions of the dissertation. In particular, I describe two ways in which the effects of the historically-documented, systematic warfare of the early first millennium are apparent in indelible traces upon the regional organization of the states in question, and I elaborate upon the importance of vision in the construction of Iron Age fortress-states. I also explain how spatial analyses performed for the
dissertation helpfully intervene in a number of scholarly debates about Urartu by both confirming and refuting a number of previous assertions. Last, I discuss potential avenues of future research.
Chapter 2 Historical Sources and Previous Study of Iron Age Fortress-States

The majority of the examples of Urartian art which are known today can be classified as palace-art, and their purpose was to convey a strong impression of wealth, magnificence and power. This is clearly seen, for example, in the state throne... The gold and the many-coloured stones which decorated it gave an impression of barbaric splendour and luxury, and the expressive figures of terrifying mythical creatures served both to strike superstitious fear into those standing in front of the throne and to shield the king, when he sat on it, from evil powers. —Piotrovsky, 1967

The purpose of this chapter is to provide a synopsis of the evidence—historical and archaeological—available to study EI fortress-states and Urartu in Iran and Armenia, emphasizing both the possibilities and limitations of the available sources to elucidate the history and development of the states in question. Since this dissertation makes a number of historical arguments, particularly relating to the Urartian empire, the overview presented below provides the necessary context for understanding the variation in material culture and administration strategies that I argue occurred over time and space. Furthermore, another objective of the chapter is to provide the historical context in which the GIS analyses presented in subsequent chapters may be contextualized. I recapitulate the history of scholarship of Iron Age fortress states in Iran and Armenia, arguing that certain scholarly assertions have led to critical misunderstandings of the ancient states in question.
2.1 Early Iron Fortress-States

Historical sources that elucidate EI phases of state development in Armenia and Iran are not available, apart from a few fleeting references to distant enemies in the Neo-Assyrian sources (Kroll et al. 2012). Nonetheless, archaeological research provides valuable information about EI fortress-states.

The EI period in the southern Caucasus is characterized by increasing complexity and an array of local kingdoms that competed for regional supremacy (Badalyan et al. 2003). These kingdoms are a continuation of local trends that began by the Late Bronze Age (LBA), as is particularly evident in the data from the ArAGATS project in the Tsaghkahovit plain of Armenia (Smith et al. 2009; Lindsay et al. 2010). Fortified architecture made of stone is a prominent feature of EI landscapes in the Southern Caucasus (Biscione and Dan 2011). The described cyclopean structures vary in size from modest forts measuring forty meters on each side to massive fortresses measuring hundreds of meters across (Biscione 2012).

Certainly, residential settlements played an important role in the development of EI kingdoms though a paucity of data relating to them renders it difficult to characterize the nature of settlement in this period (Lindsay et al. 2010; Smith 2012; Hammer 2014).

The pre-historic EI period in northwestern Iran is, compared to Armenia, less understood. Nonetheless, archaeological excavation and survey are still informative. During the LBA, there is more evidence in northwest Iran from cemeteries than from settled occupation (Kroll 2011). By contrast, the EI is
characterized by an abundance of evidence for settled life. More than 120 sites pertain to the EI in Iranian Azerbaijan (Appendix 1) and undoubtedly more remain to be discovered.

It is not yet possible to provide a comprehensive list of sites that might have been the centers of small states during the Iranian EI. Nonetheless, Hasanlu, located southwest of Lake Urmia, was certainly important, as was Aslan Qaleh, located south of Lake Urmia (Kroll 2011:152; Dyson 1968). Boyuk Qaleh on the northwestern slopes of Mount Sahand and Libliuni in the Ahar region are other likely loci of administrative centers from the northwest Iranian EI (Kroll 2011). The finds from Hasanlu, the only site among those listed above to have been the focus of excavation, are suggestive of a powerful, centralized kingdom with craft specialization and a wealth of resources at its disposal (Dyson et al. 1969). Archaeological evidence indicates that kingdoms in the environs of Lake Urmia implemented regional systems of defense consisting of forts along roads (Chapter 7). While settlements have not been the focus of archaeological excavation in northwest Iran, more than eighty have been documented in regional survey (Chapter 4).

2.2 Historical Sources for the Study of Urartu
The fortress-empire of Biainili, known by the Neo-Assyrians as Urartu, was a state centered at Lake Van in Anatolia from the ninth to seventh centuries BCE. The conquest of territories in northwest Iran began during the empire’s earliest expansion in the ninth century. Meanwhile the armies of Biainili arrived in the Southern Caucasus during the first half of the eighth century BCE, eventually
annexing the territories of numerous EI kingdoms (Smith 1996; Salvini 2002:45). A final period of renaissance was experienced late in the empire during the reign of Rusa son of Argishti when a number of forts and fortresses were constructed throughout the empire.

Apart from a few cryptic references in the Hebrew Bible, Urartu was lost to the ages until its rediscovery in the early nineteenth century (Kroll et al. 2012; Barnett 1982). The empire’s dramatic story of rediscovery began with a young German scholar, Friedrich Eduard Schulz, who, *en route* to an epigraphic mission in Persia, stopped to copy the Urartian inscriptions at Lake Van and also found the bilingual Assyrian-Urartian *Kelashin* stele in 1827 (Barnett 1982). Schulz was subsequently murdered by Kurdish brigands, but fortunately his notes and drawings were forwarded back home. Schulz’s preliminary work provided the basis for the subsequent discovery of many more Urartian texts carved into stone niches throughout the empire (Barnett 1982).

### 2.2.1 Urartian Historical Sources

Urartian texts provide important chronological information for the study of Urartu since they are typically attributed to a particular Urartian king, which is useful since there are no known Urartian kings’ lists.

The majority of known examples of writing from Biainili-Urartu were created for the purpose of royal display (Zimansky 2006:257).\(^{10}\) In addition to the

\(^{10}\) Evidence for writing for administration, for example, does not occur until the latest phase of Urartu’s history during the reign of Rusa son of Argishti (alt. Rusa II).
historiographic problems presented by the genre of royal propaganda (Liverani 2010), the Urartian repertoire is highly formulaic and frequently laconic (Salvini 2008). Nonetheless, there are hundreds\(^{11}\) of known Urartian rock-cut inscriptions located in 137 locations (Figure 3), and the majority of these dedicate the foundation of structures—e.g. fortresses, canals, vineyards—or commemorate military victories. More than half of the known inscriptions were carved in stone, particularly on exposed rock faces.

The earliest stone-cut inscriptions appeared in Biainili-Urartu around 830 BCE (Zimansky 2006:257), and were written in Akkadian. Soon afterwards, literacy came to Urartu when its own language\(^ {12}\) was rendered in cuneiform. At a time when cumbersome cuneiform writing systems were widely being replaced by alphabetic scripts such as Aramaic (H. Parker, 2013), the adoption of cuneiform in Urartu is anomalous. In fact, Urartu’s use of cuneiform constitutes one of the last great expansions of an in-decline *Keilschrift* writing culture (Wilhelm 1986:96–97; Zimansky 2006:257).\(^ {13}\) It can be argued that adoption of cuneiform writing culture was, in fact, a deliberate act of appropriating symbols of ancient traditions of statecraft rather than a response to the more practical needs of bureaucracy.

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\(^{11}\) Many of these are duplicates or fragmentary.

\(^{12}\) Urartian is a non-Semitic, non-Indo European language with an affiliation to Hurrian. It is unclear how widely spoken the Urartian language might have been or even who might have spoken it (Zimansky 2006).

\(^{13}\) Old Persian, used by the Achaemenid Empire, is another example of the relatively late employment of cuneiform for monumental display (Briant 2002:889).
Figure 3: Geographical Distribution of Urartian Inscriptions
Data courtesy of: (Dan 2012; Salvini 2008)
Besides monumental display inscriptions, a second category of texts is comprised of short dedicatory inscriptions on objects such as shields, helmets, weapons, metal bowls and other objects (Kroll, Gruber, et al. 2012:8)

Initially, Urartian writing appears to have been an adoption of the aesthetics and gravitas of monumental writing rather than having been employed as an administrative technology. The earliest stone-cut inscriptions in Urartu, written in Akkadian, (e.g. CTU A 1) begin with the Sumerogram “IM” and read, “The (clay) tablet of Sarduri...” (Zimansky 2006:258; Salvini 2008:99). The idiosyncratic appropriation of a sign usually reserved for clay objects is an indication that the literal meaning of the text may not have been important, suggesting that writing was meant to be experienced more than read. The overall effect can be compared to the way modern visitors to the ancient Near Eastern collection at the Louvre are impressed by Neo-Assyrian monumental stone inscriptions even if they cannot read what is written.

Urartian texts are best understood within their broader traditions in the ancient Near East since Urartian inscriptions are largely dependent on Neo-Assyrian models (Zimansky 2006). At least initially, many texts from the Urartian corpus, give the impression of having been copied from Assyrian tablets with little investment in innovation. Therefore, it may be argued that Urartian foundation

14 Variations of the same inscription beginning with “IM” appear in five different locations at “Sardursburg” and the “IM” is also repeated at a rock niche at Tushpa. “IM” introduces a later inscription by Argishti (CTU A 8-13 r. 8).
15 PSD: “IM” [CLAY] [ED IIb, Old Akkadian, Lagash II, Ur III, Early Old Babylonian, Old Babylonian] wr. IM “clay, mud; tablet” Akk. 𒄧; 𒉺𒈹
texts must be properly contextualized within the broader traditions from which they derive in order to fully appreciate their historical significance (Kroll, Gruber, et al. 2012:7).

The reign of Rusa son of Argishti may mark a period of striking innovation in the development of writing in Urartu. Some of the longest texts in the Urartian corpus date to Rusa’s reign and constitute elaborate performed rituals (Salvini, 2008: CTU 12-1, CTU 12-2, CTU 12-3, CTU 12-4). The first datable clay tablets

Figure 4: Urartian Rock-Cut Inscription at Tsovinar, Armenia
(Photo: Author)
derive from the Rusite era, though there are relatively few of these.16 Four or five tablets were discovered at Toprakkale (Diakonoff, 1963: no.s 12-16) and eleven at Karmir Blur (Ibid: no.s 1-11). Only five tablets were discovered at Bastam and two at Ayanis during a decade of research at each site (Zimansky 2006:266). Some of these documents are administrative while others are royal letters or decrees. One of the tablets is a lexical list, and it constitutes the first evidence in Urartu for scribal training (Salvini 2001:312–314). In contrast to Urartian lapidary inscriptions, Urartian clay tablets employ a specialized type of cuneiform cursive, as seen elsewhere in Mesopotamia (Diakonoff 1963).

2.2.2 Assyrian Annals and Letters

The annalistic traditions of the Neo-Assyrian empire syncretize with the reigns of certain Urartian kings, providing important historical anchors for Urartian chronology. Nonetheless, the utility of these texts in historiographic reconstruction is somewhat limited by their genre (Liverani 2010). Most attestations of Urartu in official state inscriptions are as enemies in an important conflict. There is reason to question the reliability of propagandistic state texts and there is also evidence that ancient Near Eastern people themselves questioned the veracity of royal propaganda, especially as pertained to reports of foreign lands (Liverani 2010:242). Nonetheless, these sources are still a valuable reference for Urartian history.

16 As is noted throughout the dissertation, relatively little work has been performed on eighth or seventh century sites. However, no tablets were found in the excavation of the eighth century site of Erebuni.
Neo-Assyrian archival materials, which were not composed in the context of royal propaganda, are far more reliable as historiographic references (Radner 2000: 737). Letters from the state archives at Kalhu (Nimrud) and Nineveh dating to the reigns of the kings Tiglathpileser III (r. 745-727 BCE) and Sargon II (r. 721-705 BCE) are particularly important Neo-Assyrian sources for Urartian historiography (Parpola 1987; Lafranchi and Parpola 1990; Fuchs and Parpola 2001; Dietrich 2003). Additional documentation is provided by oracular queries (Starr 1990) and eponym chronicles (Millard 1994).

2.2.3 The Eighth Campaign of Sargon

One particular Neo-Assyrian source merits special attention, since the text has inspired a great deal of scholarly debate and is an integral component of most reconstructions of Urartian history. The Neo-Assyrian text known alternately as “The Eighth Campaign of Sargon II” or the “Letter to Aššur” (Foster 2005; Luckenbill 1927; Thureau-Dangin 1912) is a detailed account describing an extensive military campaign by Sargon II to Iranian Azerbaijan in 714 BCE. The “Letter” is addressed to the chief god of Assur, the other gods of his temple, the people of the city, and the text styles Sargon as the writer. The conflict described in this Assyrian text is widely interpreted as a watershed event in Urartian history (Smith 1996:274).

The text was written in a high literary style rather than following a more conventional epistolary format (Foster 2005:790) and pertains to a genre of texts,
Gottesbriefe or Letters to the God, of which there are only a few exemplars in the Assyrian corpus (Oppenheim 1960; Na’aman 1974).

A number of literary elements are present in the text. The narrative focuses upon Sargon and his actions as the righteous and heroic king (Fales 1991). Sargon’s physical and moral strength are of particular importance, and the first part of the narrative culminates with the gods granting him victory. Sargon’s foil in the narrative is the weak and immoral Rusa, although the text also acknowledges his considerable achievements as king.17 The second part of the narrative culminates with the grieving Rusa tearing his clothing and throwing himself on the ground, a scene that some have interpreted as his suicide while others suggest it is significant that the text only suggests Rusa’s death (Kravitz 2003:94).18

Besides the actions of Sargon II, and his nemesis, Rusa, the Assyrian text provides rich detail of the world of the Urartian enemy. In particular, a number of specific toponyms are mentioned as Sargon’s army makes its journey. The narrative is interrupted with a glowing description of the skill of the Urartians as horse breeders and trainers. Sargon visits Rusa’s pleasure garden, marvels at its splendors and destroys it. There are portrayals of vineyards, vast wine stores and water channels. When the army arrives at a place called Sangibute, the Urartians

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17 Conventionally, he was understood to be Rusa I or Rusa son of Sarduri, but the recent revelation that the chronology of Rusa son of Erímena is poorly understood sheds some doubt on the previous scholarly understanding. Van De Mieroop objects to Fales’ depiction of Sargon and Rusa as opposites, arguing that the contraposition is more nuanced (Van De Mieroop 2010).

18 “Rusa heard and threw himself to the ground. He tore his garments and his arms hung slack. He tore off his (royal) headband. He pulled out his hair and... [pounded] his chest with both his (hands). He lay flat on his face. His heart stood still and his liver burned. He continually cried out in pain” (Foster, lines 411–13). In fact, Rusa is mentioned as a potential co-conspirator in an Anti-Assyrian plot the following year (Lie 1929:32 ln. 199–200).
light their elaborate fire beacon system. Sargon also sacks the independent state of Mušašir.

The sacking of the cult center at Mušašir is a peculiar episode since the place had cultural significance not only to the Urartians but also to the Assyrians as a destination of religious pilgrimage (Radner 2012). However, the Sargon of the text is morally justified because Mušašir’s ruler, Urzana, is a traitor. The Mušašir passage may be an attempt to provide an *apologia* for a controversial act of cultic desecration.

The “Letter to Aššur” has been investigated by two groups of scholars. The first of these are archaeologists and historians who endeavor to reconstruct the historical itinerary and geography of Urartu from the numerous toponyms in “Sargon's Eighth Campaign” (Zimansky 1990; Salvini 1984; Muscarella 1973; Kroll, Muscarella, et al. 2012; Maniori 2010). The second group of scholars are primarily Assyriologists who seek to understand the literary construction and socio-political reception of the “Letter to Aššur” (Kravitz 2003; Fales 1991; Oppenheim 1960; Van De Mieroop 2010).

Regarding the first group of scholars who focus on historical geography, a number of attempts have been made to re-trace the historical itinerary of Sargon's campaign. Most recent treatments have converged on the conclusion that the campaign took place near Lake Urmia in Iran (Kroll et al. 2012). Some scholars propose an itinerary that passes west of Lake Urmia (Salvini 1984; Muscarella 1986) while others propose an eastern itinerary (Maniori 2010:198–199).
Among the more literary approaches, Oppenheim's classic treatment of the text proposed that it was composed by an artist “sure of himself” in a high literary style (1960:144). Fales argued that the Letter has a complex compositional history, and contended convincingly that certain portions were added after the original composition of the text (1991). Kravitz maintained, more specifically, that Rusa's humiliation and defeat were historically-contingent addenda, and that there was no evidence that the king had actually committed suicide (2003). Van De Mieroop observed that the figure of Sargon II in the text resembles a literary epic hero, and that the dichotomous oppositions created by scholars following a Rome-school structuralist paradigm were outdated and not supported by the text (2010; 1999).

The textual analysis findings of the second group of scholars have implications for the historical interpretation of the text. In particular, genre should be considered when weighing the appropriateness of a document’s use in historiographic reconstructions. However, defining the genre of the text in question is complicated. Certainly, the distinction between historiographic texts and literature is not well-defined in the Akkadian corpus in general (Van de Mieroop 2005:27). Moreover, the genre of Gottesbrief, to which the text pertains, defies modern systems of genre classification (Na’aman 1974; Oppenheim 1960), although a scholarly consensus is emerging that the document is a work of art and an artifact of statecraft.

Besides the considerations of genre, it is not possible to know the identity of the author of the text or his familiarity with the precise historical events. Moreover,
it is important to recognize that a number of the aspects of the narrative, such as the
death of Rusa or the widespread destruction of many Urartian “cities,”\footnote{Hasanlu is the only archaeological site where there may be evidence for a destruction level at the end of the seventh century (Magee 2008), but, a previous interpretation proposes that the destruction is associated with the arrival of the Urartians in the late ninth or early eighth century (Muscarella 2012).} show evidence of having been altered for propagandistic or literary motives (Kravitz 2003). Regarding the implications for historical geography, it may be unwise to conclude that all of the places listed in the Letter's narrative were visited by the Assyrians or especially that the places visited were presented in their correct geographical order. In particular, literary concerns such as climax or pacing of narrative could have necessitated a re-ordering of events and therefore places.

However, none of the preceding should be interpreted to mean that “Sargon's Eighth Campaign” is a purely literary exercise devoid of historical content. Certainly, the text reflects certain historical realities. In particular, the Letter mirrors Assyrian stereotypes of Urartu that have a basis in fact. For example, the descriptions of horse breeding and viticulture are examples of details that reflect a historical kernel and are moreover widely and independently documented. The text also offers a lengthy account of fire beacon networks, a descriptive element for which there is there is archaeological corroboration presented in Chapter Six.

2.2.4 Art-Historical Sources

Urartians appear occasionally in palace reliefs in various Neo-Assyrian contexts, although invariably in distorted and disparaging ways. However, these works of art contain valuable information on Assyrian-Urartian relations.
Certainly, official depictions of the defeat or humiliation of enemies pose certain difficulties for historians (Bahrani 2008). It is useful to speculate upon the purpose of such representations. Do Neo-Assyrian palace reliefs, for example, accurately reflect historical events? Did the Assyrians actually do the terrible things depicted on their walls? How close or how far are depictions of the defeat or humiliation of an enemy to historical realities? It is sometimes said that such depictions were meant to “impress” guests of the king (e.g. Gunter, 1982), although terrify might be a more accurate description.

Shalmaneser III is shown defeating his Urartian enemy Arame in scenes on the Balawat Gates (BM 124652, Band I, Band II, and Band VII) at ancient Imgur-Enlil. One particular scene (Figure 5, A) shows an Urartian fortress, with a double line of walls, in the process of being burned by the Assyrians. The austere Assyrian depiction of an Urartian fortress, with plain walls and disordered towers, is unlike the highly-ornamented fortresses with regular towers portrayed in Urartu’s own artistic conventions on metal objects such as belts and shields (Figure 5, B: Smith 1996:356). Urartian fortresses, in their own idiom, are typically depicted in frontal elevation with stepped crenulation on both tower and curtain battlements, zigzag friezes on the cornice below the battlements, and high, narrow towers projecting from recessed walls (Smith, 1996:355). The described representations are works of art, and one should not understand them, first and foremost, as historical documents (Bahrani 2008). Instead, the subject matter may be understood as communicating an ideology. In this particular case, the ideology might be
summarized as the moral and military superiority of Assyria to its Urartian rivals. Nonetheless, it is likely the case that Neo-Assyrian palace reliefs reflect historical realities (Bahrani 2008), namely that Urartu was an important rival whose interests often conflicted with the aims of the Neo-Assyrian empire.

An epigraph on a relief in Aššurbanipal’s palace at Nineveh illustrates an Urartian diplomatic delegation that is forced to witness the humiliation of an Elamite delegation (Kaelin 1999:26, 28, 30–31: scenes 52, 55, 58, 60, 73–74), an episode that is understood by historians to mean that the relationship between Urartu and Assyria had worsened (Radner 2011). Another scene (Room XXXIII, slab 6) at the Nineveh South-West palace shows diminutive, supplicating Urartians wearing peculiar headdresses at the court of the king (Figure 5, C: Kroll et al. 2012). The Urartian headdresses in this scene are puzzling since this form of dress is unknown from depictions of nobles in the Urartian repertoire (Kroll et al. 2012:19). The distortion of Urartu apparent in the Neo-Assyrian artistic traditions should provoke cautious use of these sources in historical reconstruction.
Figure 5: Art Historical Representations of Urartu
As indicated by Piotrovsky in the preface to the chapter, Urartian art is distinctive and evocative. Urartian objects or their imitations are found in a wide geographical arc, sometimes as far away as Greek tombs (Muscarella 1977). The so-called “minor arts” are well-represented in the Urartian corpus (Kroll et al. 2012:34). Ornamental objects made of metal such as shields, helmets, quivers, belts, horse trappings, bowls etc. are frequently decorated with martial scenes, otherworldly beasts or a combination of the two. Certain pieces, such as a shield found at Anzaf (Figure 4) depicting the gods of the Urartian pantheon holding various weapons and riding anthropomorphic creatures into battle, provide a valuable supplement to the otherwise paltry information known about Urartian religious practice.

Until recently, Urartian art was rarely utilized to answer chronological questions. The reason for the observed reticence is that most Urartian art is unprovenienced. However, Seidl’s (2004) analysis of bronze objects demonstrates the potential of art history to shed light on the temporal questions of Urartu. In particular, inscribed objects form the basis of Seidl’s chronological anchors, a promising approach that may provide additional temporal finesse to the study of Urartu.
2.3 Brief History of Urartu

The ancient empire of Biainili-Urartu is more richly documented by historical sources from the outside than from within, although its own primary sources are informative. The Assyrian sources, however, are more numerous and varied than the Urartian repertoire, which consists mostly of dedicatory and militaristic inscriptions.

Urartian history can be divided into four major phases: political coalescence (late tenth and early ninth centuries), imperial expansion (late ninth and eighth...
centuries), a period of crisis (late eighth century) and a final chapter of renaissance\textsuperscript{20} and demise (seventh century). \textsuperscript{21} The final end of Urartu is poorly understood and poorly documented.

**Political Coalescence: Mysterious Beginnings**

Urartu’s coalescence as a state occurs, historically speaking, offstage. Before the arrival of Urartu, El states existed in both Iran and Armenia where it may be argued that the dominant pattern is that of small states that subsequently coalesced into larger political units. The pattern of indigenous complexity dates at least to the LBA in the Southern Caucasus (Badalyan et al. 2003), and small states arose in Iranian Azerbaijan by the El (Kroll 2011:151–152). It may be hypothesized that Urartu (or a Proto-Urartu) emerged in Anatolia as the result of a similar process of political consolidation in that region (Burney 2002), a view that is corroborated in the Assyrian annals where campaigns are recorded against increasingly united opponents (Zimansky 2006:258).

The first mention of an “Urartu” as an Anatolian geographical place, rather than as a specific state, was a thirteenth century Assyrian reference in the context of a military victory by Shalmaneser (Grayson 1972:81; Salvini 1995:19). The distinction between Biainili (political) and Urartu (geographical) should not be ignored. The first direct historical evidence of Biainili appears in the late 9\textsuperscript{th} century.

\textsuperscript{20} Zimansky has argued that the age of Rusa A is not a period of Reconstruction (Zimansky 2006:266) as others have called the era. I have elected, accordingly, to use the term renaissance.

\textsuperscript{21} Most historians divide Urartu’s history into two phases with the divide occurring at 714 BCE, the year of Assyrian incursion into Urartu known from the literary letter alternatively called “Sargon’s Eighth Campaign” or “Letter to Ashur” (Smith 1996:28).
century. The connection between Biainili and the other states that the Assyrians called Urartu is not necessarily direct.

Instead, the political entity known as Urartu was attested for the first time during the reign of Neo-Assyrian king Shalmaneser III (r. 858-824 BCE) and referred to an early Urartian king named Arame (alt. Arrāmu) (Kroll et al. 2012:10; Barnett 1982; Salvini 1995). Arame was powerful enough to be a perennial nuisance to the Assyrians, and Shalmaneser III campaigned against him three times in fewer than twenty years. One particular campaign was memorialized on the Balawat gates (Kroll et al. 2012). Arame’s capital city, Arzashkun, has not been located.

Sarduri, son of Lutipri (alt. Lutibri), was the first Urartian king known to have left his own inscriptions, which are carved in stone blocks at Sardursburg, an architectural feature carved into the foot of the Van citadel (Salvini 2008:95–104). He also constructed at Tushpa (Van Qalesi) and probably designated the city his capital (Kroll et al., 2012:10).

**Expansion**

Historically speaking, the expansionary period is the era for which there is most documentation, both in the Assyrian as well as the Urartian sources. On the other hand, almost all stratigraphic excavation has occurred at the spectacular seventh century sites founded by Rusa son of Argishti, which date to the later Rusite *renaissance*. Much remains to be discovered at unexcavated and purportedly ninth-century fortress sites such as Evoglu Qiz Qala and Qalatgah in Iran, as well as eighth-
century sites such as Tsovinar in Armenia. Nonetheless, a number of dedicatory inscriptions from the ninth and eighth centuries inform scholarly understanding of the construction activities of Urartian kings and ameliorate the paucity of stratigraphic archaeological research pertaining to the expansionary period.

The period of joint campaigning of the kings Ishpuini and his son Menua in the second half of the ninth century marks the beginnings of imperial expansion outside of the immediate environs of Lake Van, an assertion that is supported by an analysis of geographical occurrence of dedicatory inscriptions (Salvini 2008; Kroll et al. 2012). Of particular interest is an inscription located at the site of Qalatgah, a sizeable fortress positioned southwest of Lake Urmia in Iran. Qalatgah may date to the late ninth or early eighth century. The bi-lingual Kelashin stele was erected along the eponymous pass (2981 MASL) between Iraqi Kurdistan and the southern shores of Lake Urmia commemorating a political and religious pilgrimage made by the king and his son to Ardini (alt. Muṣaṣir) (Salvini 1984:63; Benedict 1961; Galter 1995). Ishpuini and Menua also recorded a military campaign northeast of the Araxes in Naxçivan at Ilandagh (Salvini 2008:137–139). The Assyrian king Shamshi Adad V (r. 823-811 BCE) recorded an attack upon Urartu (Luckenbill 1927; Grayson 1972).

Menua further expanded the kingdom during his reign with an impressive number of building projects, more than 100 in total, dedicating the foundation of fortresses, temples, granaries and canals (Salvini 2008:181–271). In particular,
Menua constructed the 50 km Semiramis canal (alt. Menua canal) in Anatolia (Kroll et al. 2012:15).

Argishti built upon the territorial gains of his father, campaigning extensively in what is now Armenia (Smith 1996:209; Salvini 2002:323–368), and founded Argishtihinili (alt. Armavir) and the fortress of Erebuni. These sites were part of a program to expand the empire north of the Araxes (Zimansky 1998:250). Both the Assyrian and Urartian sources record a battle around the year 774 during the reign of Argishti, son of Menua (Fuchs 2012:136), and both the Urartians and the Assyrians portray the battle as a victory (Kroll et al. 2012:15).

The reign of Sarduri son of Argishti (alt. Sarduri II) was equally a period of important military gains and imperial expansion. The annals of Sarduri were inscribed upon stelae erected in rupestrian niches on north face of the Van citadel (Marr and Orbelli 1922). Moreover, three rock-face inscriptions along the southern shore of Lake Sevan, the first of these from the reign of Sarduri II, fix the date of Urartian incursion in the Lake Sevan territory to the first half of the eighth century (Salvini 2002:45). Sarduri’s numerous inscriptions also include one in eastern Iranian Azerbaijan near the EI fortress of Libliuni, 200 km northwest of Lake Urmia. Tiglathpileser III (r. 744-727) campaigned against Sarduri and recorded a victory in 743 (Tadmor 1994:50–53; 232–233). The Urartian fortress of Tsovinar was

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22 Erebuni is a rare example of an eighth century foundation that has been excavated.
constructed during the reign of Rusa son of Sarduri during the last years of the eighth century (Salvini 2002:48–49; Smith 1996).

**Crisis**

A number of important events pertaining to expansionary-period Urartu appear in the Assyrian sources dating from the reign of Sargon II, coeval with the reigns of Urartian kings Rusa son of Sarduri and his son, Argishti. First and foremost, the Assyrian military campaign known from the “Letter to Ashur” (Foster 2005) in the year 714 constitutes a watershed event in most historical reconstructions of Urartu. The war recorded in the letter culminates with the possible suicide of the Urartian king Rusa (son of Sarduri), and a decisive Assyrian victory at Mount Waush. According to the document, the Assyrians sacked Muṣaṣir in Iraqi Kurdistan during their return home. The veracity of the account is rarely questioned in historical reconstructions, although the literary and propagandistic nature of the source should engender caution in accepting the Assyrian account at face value (Radner 2012). To date, no archaeologically-detected destructions have been coordinated with the Assyrian depredations of 714 BCE (Zimansky 2006:265), although few Urartian sites of the ninth or eighth century have yet been excavated in Iran.23

During the reign of Argishti son of Rusa, multiple letters from the archives of Sargon II recount the defeats of the Urartians by Cimmerians as well as deadly

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23 Contra Muscarella (2012), Magee argues that there is convincing evidence that Hasanlu was destroyed in 714 (2008).
intrigue at the Urartian court (e.g. SAA 1 30, SAA 1 31, SAA 5 90, SAA 5 91, SAA 5 92, SAA 5 93). These accounts can be considered a more reliable witness of an Urartian crisis since they are espionage letters and pertain to a different genre than the “Letter to Ashur.” In particular, the purpose for which various Assyrian functionaries wrote the letters was to provide administrators in Assyria with reliable intelligence on activities in Urartu.

**Renaissance (or La Belle Époque of Rusa the Great) and Demise**

The period of the French Third Republic (1871-1914) or *La Belle Époque* is considered a golden age (Hall 2014). It was a time of unusual peace, prosperity and cultural achievement in early modern France bookended by the horrors of the Franco-Prussian war and the even more incomprehensible horrors of World War I. The Eiffel tower was one particular *avant garde* architectural feature of the era as was the completion of architect Haussmann’s radical new vision for the city.

By way of metaphor, the reign of Rusa the Great, son of Argishti\(^\text{24}\) constitutes a *Belle Époque* in Urartian history. In the wake of military upheaval and internal

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\(^{24}\) There are (at least) three Urartian kings named Rusa, and there is a chronological dispute involving Rusa son of Erimena (Kroll, Gruber, et al. 2012:12). Rather problematically, Erimena is not a known Urartian king so placing his son in the chronological sequence is not straightforward. Accordingly, a reticence exists among Biainilists to use the misleading, albeit previously conventional, Rusa I, Rusa II, and Rusa III designations, because these may not represent the correct ordering of the kings in question. At the 2007 Biainil-Urartu symposium, a number of the participants decided that the king who was conventionally known as Rusa I should now be called Rusa son of Sarduri, Rusa II is Rusa son of Argishti, and Rusa III is Rusa son of Erimena (the new proposed abbreviation conventions are Rusa S, Rusa A, and Rusa E, respectively). The recent discovery that Rusa E participated in the founding of Topprakale has led to four diverging opinions of the correct chronological order of the Urartian kings. By designating Rusa A as “Rusa the Great,” the problem of relative order can be avoided, at least for this particular Rusa. Moreover, it highlights the historical reality that he was an anomalous and revolutionary figure.
strife that characterized portions of the reign of Rusa son of Sarduri and his son Argishti, the fortunes of Urartu improved dramatically during Rusa the Great’s reign during the first half of the seventh century, and Rusa embarked upon a bold, new program of architectural re-definition of the empire.

The era of Rusa was a period of *renaissance* characterized by an unprecedented imperial building program. Yet, it should be noted that Rusa’s efforts focused upon the traditional Urartian homeland—Lake Van and northwest Iran—rather than the pursuit of expansionist policies. Most excavated Urartian sites pertain to the Rusite period. In comparison to the fortresses of previous Urartian eras, the fortresses of the Rusite period are exceptionally large centers that employed a highly-standardized architectural style, which included features such as ashlar masonry and highly-regularized niching and buttressing (Kleiss 1976a). In contrast to constructions of the ninth and eighth centuries, the spectacular fortresses of Rusa were either new foundations or single-period sites. These fortresses, namely Ayanis, Bastam, Karmir Blur and Kef Kalesi are the largest and most elaborate examples of Urartian architecture. Moreover, the period was also a time of innovation in art and literary culture (Seidl 2004; Zimansky 2006).

It is difficult to overstate the influence of the life and times of Rusa the Great on the scholarly perception of Biainili-Urartu. In fact, nearly everything that is known about the empire from stratigraphic excavation derives from late eighth or
seventh-century contexts (Zimansky 2006:265). Therefore, excavation of ninth and eighth century contexts would contribute substantially to understanding what Urartu was before the prodigious contributions of Rusa.

During the seventh century, Assyrian sources are silent on the subject of Urartu compared to the extensive documentation during the reign of Sargon II. Certainly, one explanation could be serendipitous vagaries of preservation and archaeological discovery. An alternate explanation is that the Assyrian campaign into Urartu in 714, instead of being a decisive victory, was instead a draw or defeat, much like Ramses II’s depiction of the epic battle of Qadesh between the Egyptians and Hittites in the thirteenth century (Van Dijk 2000:297). Fuchs interprets the period from 708 BCE until the collapse of Urartu as a mostly peaceful co-existence by these two powers (2012:141–144). It is also true that the Rusite period of Urartian florescence was coeval with internal conflict in the Neo-Assyrian Empire. In particular, the events that accompanied the accession of Sennacherib in 704 BCE, namely the rebellion of a coalition of Levantine cities led by Hezekiah (Luckenbill 1924) and a long-endured series of revolts in Babylon (Van de Mieroop 2007:252–255), could have meant that Urartu was suddenly the least of the Neo-Assyrians’ concerns.

Though the total number of inscriptions during the Rusite era is fewer, the observed phenomenon is likely the result of a change in inscriptive practices.

25 Cavustepe, Anzaf and Toprakkale are sites founded in the 8th century that have been the focus of excavation, but they are also sites where Rusa the Great was active. At these sites, the small finds tend to date to Rusa the Great’s reign.
(Zimansky 2006:266). Instead of dedicating hundreds of smaller constructions, Rusa commissioned a smaller number of elaborate texts for his unprecedented, large-scale constructions. The long and perfectly-preserved Urartian dedicatory inscription on the susi-temple walls at Ayanis (CTU A 12-1)\textsuperscript{26} records Rusa the Great’s victories over Assur, Etiuni, Tablani, Hate, Phrygia and other territories. The inscription also reports the taking of prisoners or hostages from the preceding lands. Unfortunately, there are many obscurities in the text owing to a large number of unknown and unprecedented words (Salvini 2008:569), which may indicate scribal innovation. Nonetheless, the text may constitute an elaborate performed ritual including the sacrifice of animals and possibly involving the cult statues of Haldi and his consort ‘Arubaini. Moreover, the Rusite era is also the only known example of literacy having been employed for the mundane purpose of record keeping, indicating a change in bureaucratic practices (Zimansky 2006).

A number of Assyrian inscriptions dating to the mid-to-late seventh century suggest a shift in Urartian fortunes, though these may be distortions based upon the requirements of royal propaganda. An epigraph on a relief in Aššurbanipal’s palace at Nineveh shows a marked downward turn in the relationship between Urartu and Assyria. One particular scene depicts an Urartian diplomatic delegation that is forced to witness the humiliation and execution of an Elamite delegation (Kaelin 1999:26, 28, 30–31: scenes 52, 55, 58, 60, 73–74; Radner 2011). Roughly a decade

\textsuperscript{26}CTU A 12-1 is also repeated in fragmentary duplicate at Karmir Blur, Kef Kalesi and Armavir (CTU A 12-2, 12-3 & 12-4).
later, the Urartians are presented as vassals in Assyrian propaganda from the reign of Assurbanipal (Radner 2011:742; Borger 1996:71–72, 250; Prism A).

There is little agreement among scholars about the causes or timing of the collapse of the Urartian state. In contrast to previous views that placed the fall of Urartu during the sixth century, a number of scholars are now convinced that it must have occurred during the mid-seventh century (Fuchs 1994; Hellwag 2012; Kroll 1984a; Seidl 2004). The correct dynastic order of the king formerly known as Rusa III, Rusa son of Erimena, is the crux of the argument. Previous interpretations placed Rusa son of Erimena at the end of the dynastic line (Salvini 1995) though a growing scholarly consensus now argues that his reign dates to an earlier time (Kroll et al. 2012: 20). There are no Urartian sources that can be dated to the second half of the seventh century, and the available archaeological evidence primarily consists of destruction levels at Rusa the Great’s imperial sites. A previous scholarly emphasis on external explanations for the fall of Urartu may be misplaced. Recent trends in anthropology emphasize the importance of internal social, political and economic processes in the development and functioning of complex polities (Stein 2002:23). Specifically, the seeds of destruction may have been sown from within, similar to Edward Gibbon’s classic eighteenth-century thesis on the fall of Rome (Gibbon and Milman 1970). There is certainly evidence in the Sargonid epistolary corpus for profound internal division in Urartu. Before the ascension of Rusa the Great, a series of letters document a bloody attempted coup at the highest levels of Urartian administration (SAA 5 91, SAA 5 92, SAA 5 93). Some
external force, be it the Scythians, Assyrians or Babylonians, may have sought to capitalize upon a demonstrated internal weakness much like the Visigoths who opportunistically sacked Rome in 410 CE.

Given that the historical causes for the fall of Urartu are unknown, speculation abounds and scholars have rounded up “the usual suspects” for the mysterious collapse of the empire (Hellwag 2012). Nomadic peoples such as the Cimmerians and Scythians have been implicated. Defeat by a coalition of Medes and Babylonians is a popular theory, though one predicated upon the earlier scholarly understanding of a later date for the Urartian collapse (Barnett 1982:363–365).27 One notion proposes that Rusa the Great impoverished the empire, much like the “mad king” Ludwig II whose megalomaniacal construction of castles bankrupted the Bavarian state in the late nineteenth century (Hellwag 2012:237). In such a scenario, it could be imagined that the people rebelled against an abusive and exploitative regime that perpetrated asymmetrical power relationships and that the people destroyed the fortresses of Rusa. Natural disaster and environmental degradation have also been implicated (e.g. Çilingiroğlu 2002:487–488). One thing is clear: the end was relatively sudden and possibly violent.28

27 By all accounts, Assyria was a thriving power in the 640s but a swift change of fortunes led to the sacking of Nineveh in 612 (Van de Mieroop 2007:267). A number of previous approaches conceived of the fall of Nineveh and the fall of Urartu as roughly contemporary events (Hellwag 2012).
28 Destruction layers have only been found at the Rusite fortresses.
2.4 Previous Archaeological Excavation and Survey

The first archaeological excavation at an Urartian site was undertaken by Hormuzd Rassam, the famed agent of the British Museum, at the site of Topprakkale, located approximately 5 km east of Van Kalesi (Barnett 1950; Barnett 1954). Despite the discovery of inscribed bronze shields, cauldrons and ivories in 1880, the excavations were abandoned after a few months, presumably because results did not compare to the splendors of Nimrud, Kuyunjik and Babylon, also excavated by Rassam during the same period (Barnett 1982). The results of Rassam’s investigations were not known until Barnett published the archived materials many years later (Barnett 1982:316–317; Barnett 1950; Barnett 1954). Waldemar Belck and Carl Ferdinand Friedrich Lehman-Haupt recommenced excavation at Topprakale in 1898 and were able to determine that the structure previously excavated by Rassam’s team was a temple dedicated to Haldi (Lehmann-Haupt 1907).

A number of small-scale projects characterized the war years (Barnett 1982:317–318), after which time B. B. Piotrovsky began investigations near Tsovinar south of Lake Sevan (Piotrovskii 1959). He identified two groups of “cyclopean” Urartian fortresses. The first of these was near modern-day Yerevan at Karmir-Blur and Arin-berd, and the second of these was at Nor-Bayazit and Tsovinar.

29 With Piotrovsky’s distinction of these as “cyclopean” there is some indication that they are stylistically distinct from the regularized ashlar masonry that characterizes the seventh century style of Rusa son of Argishti.
Excavations began in 1939 at Karmir Blur in Armenia by a joint team of the Hermitage Museum and the Armenian Committee for the Preservation of Ancient Monuments under the direction of Piotrovsky and continued for decades afterwards (Piotrovskii 1959; Piotrovskii 1950; Piotrovskii 1952). Karmir Blur is one of the most informative excavations of an Urartian site to date (Zimansky 1998). The fortress consists of a relatively compact citadel and a dispersed lower town. The citadel has been completely exposed, and the full ground plan of its lowest level was well-preserved. The site was founded by Rusa son of Argishti as a part of his building spree in the seventh century.

Two other important sites were excavated in Armenia in the 1950s and 60s. In 1950, excavations began at Arin-berd (ancient Erebuni) in Yerevan under the direction of K. Oganesjan and the Armenian Academy of Sciences (Oganesjan 1961). Unlike most other excavated sites from Urartu, Erebuni dates to the eighth century when it was founded by Argishti I. The architectural plan of the site is relatively well-preserved. The citadel features a temple to Haldi, a smaller tower temple, a columned hall and storage facilities. An expedition of the Armenian Institute of Archaeology and Ethnography began excavations in 1962 at the site of Armavir (ancient Argishtihinili) (Martirosjan 1974), located at the eponymous town near the Turkish border, under the direction of A. A. Martirosjan. The site boasts both eastern and western citadels, although only the remains to the west were important during the Urartian period. Royal annals associate its Urartian foundation with the

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30 These are the primary references for the project, but see Zimansky 1998:267–272 for additional references.
reign of Argishti I. Moreover, Armavir provides rare examples of Urartian residential architecture (Zimansky 1998:250).

In 1959, work began anew in Turkey, inspired in part by Charles Burney’s extensive surveys. Burney identified dozens of Urartian sites and published scale plans of the more substantial ones (Burney 1957; Burney 1960; Kroll et al. 2012:5). At approximately the same time, investigations also resumed at Topprakkale and the previously unexcavated sites of Altıntepe (Özgüç 1966; Özgüç 1969), a smaller fortress, and Çavuştepe (anc. Sardurihinnili) (Erzen 1978), a substantial fortress featuring two tower temples. The former structure dates to the seventh century and is notable for its systematically excavated elite tombs while the latter dates to the reign of Sarduri II in the eighth century and consists of an elongated fortress that stretches for 900 meters along a narrow ridge. In the 1960s, work began at Kef Kalesi (Ögün and Bilgiç 1964), a fortress dating to the reign of Rusa the Great. Burney undertook a single productive season at the small fortress of Kayalıdere in collaboration with Seyton Lloyd (Burney 1966). More recently, long-term projects were conducted at the seventh century fortress of Ayanis (anc. Rusahinili Eidurukai) (Çilingiroğlu and Salvini 2001) and Anzaf (Belli 1999). At Anzaf, which dates to the ninth century, there is a fortress and a fort, upper and lower, and there is also a susi temple. Investigations resumed at Van Kalesi in the 1990s (Tarhan 1994).

In recent years, Raffaele Biscione and Simon Hmayakyan completed seven seasons of regional survey along the southern shores of Lake Sevan (Biscione, Hmayakyan, and Parmegiani 2002; Biscione 2003). Intensive survey on the
Tsaghkahovit plain has revealed the local complexity that characterized settlement in the southern Caucasus starting in the LBA (Smith et al. 2009). Moreover, the ArAGATS project has contributed significantly towards an improved understanding of the role of local traditions in the formation Iron Age fortress-states (Lindsay and Smith 2006:178).

During the 1960s, work began in northwest Iran, revealing the significant extent of the expansion of Urartu into both West and East Azerbaijan. Specifically, Wolfram Kleiss, director of the Deutsches Archäologisches Institut (DAI) in Tehran, conducted numerous seasons of survey in northwestern Iran documenting dozens of Urartian sites (Kleiss 1969; Kleiss 1970; Kleiss 1971; Kleiss 1972; Kleiss 1973a; Kleiss 1973b; Kleiss 1974; Kleiss 1975; Kleiss 1976b; Kleiss 1976a; Kleiss and Kroll 1977; Kleiss 1977; Kleiss and Kroll 1978; Kleiss and Kroll 1979; Kleiss and Kroll 1980). In later seasons, Stephan Kroll assisted, and ultimately published material from East Azerbaijan (Kroll 1984b). Of the sites surveyed by Kleiss and Kroll, more than 211 pertain to the Iron Age, including 73 pertaining to the Urartian Empire (Appendix 1). In addition to these surveys, a team led by Kleiss also conducted important excavations at the large seventh century fortress site of Bastam (Kleiss 1988; Kleiss 1979).

An Italian expedition led by Pecorella completed an important survey west of Lake Urmia as well as excavation at the sites of Ismael Aqa Qaleh and Kordlar Tepe (Pecorella and Salvini 1984). Burney led a number of seasons of excavation at Haftavan Tepe, a multi-period site with an Urartian occupation (Burney 1972;
Burney 1973; Burney 1975). Robert Dyson Jr. from the University of Pennsylvania conducted many seasons of excavation at Hasanlu, an important El kingdom, and excavations of the nearby sites of Agrab Tepe and Dinka Tepe were also undertaken under the auspices of the same project (Dyson 1968; Kroll 2013; Dyson et al. 1969; Muscarella 1973). The nature of Hasanlu's purported Urartian occupation, level IIIa, remains unclear (Kroll 2013). Meanwhile, Agrab Tepe is interpreted as an example of an Urartian assemblage that demonstrates hybridity (Muscarella 1973; Muscarella 2012).

After a long hiatus, work is resuming in Iran, and excavations have also recommenced in Naxçivan. In particular, projects have been initiated by the Iranian Archaeological Service in the Mannean territories of Iran (Mollazadeh 2008; Nobari and Afifi 2009) and a University of Pennsylvania expedition was begun in nearby Naxçivan at the site of Oğlanqala, a site briefly investigated during the Soviet era, and its surroundings (Ristvet et al. 2011; Ristvet et al. 2012; Parker et al. 2011; Hammer 2014). These missions have demonstrated a particular research interest in the frontier dynamics of the Middle Iron Age.

2.5 Previous Interpretations of Spatial Organization
A number of scholars have investigated the spatial organization of El and Urartian fortress-states, but a complete review of these is outside of the scope of the present work. Instead, I will discuss previous work that pertains to arguments that I examine in this dissertation regarding the spatial organization of Iron Age fortress-states.
Paul Zimansky suggested that forts and fortresses were placed to observe routes of communication and that these constituted important nodes in a regional defense network (1985). He proposed that surveillance of the population was a major focus of the military apparatus. Moreover, Zimansky interprets Urartian fortresses as military strongpoints rather than centers of habitation or economic redistribution. Zimansky’s work is particularly successful at incorporating historical testimony with archaeological evidence, and his integration of the available data resulted in an appreciation of the impact of warfare on the development of the empire. Additionally, he argues, royal building inscriptions suggest that the king was less interested in creating places for people to live than in constructing edifices to watch over them (Zimansky 1985:96). For Zimansky, fortresses are “generally situated on high ground at the edges of alluvial plains, where they could at once control avenues of communication and provide administrative oversight of the most productive land of the kingdom.” One methodological goal of the present dissertation is to test if the forts and fortresses of Iran and Armenia follow the patterns that Zimansky describes.

Adam T. Smith has also contributed in an influential manner to the topic of constructed landscapes in Urartu. In particular, he contends that landscapes are socially-constructed theaters that recursively shape and are shaped by the political dramas enacted there (Smith 2003; Smith 1996). According to the described view, spaces and places—along with material objects—are important in the construction

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31 Fortresses clearly have economic importance, particularly where storage is concerned.
of authority as well as its eventual demolition (Smith 2015). For Smith, authority and resistance are two parts of a unified social process and both have consequences that can either be favorable and unfavorable to dominant regimes. Moreover, he contends that the philosophical underpinnings of modernity, penned by political philosophers like Hegel and Marx, privilege time over space in a way that has led to key misunderstandings of the role of the latter. Smith argues that the construction of authority, i.e. politics, is unintelligible when divorced from its spatial and material dimensions (Smith 2015). In the case of Urartu, he contends that the regime used a number of strategies to destroy the populations’ ties, both physical and ideological, with place, giving the impression that the construction of Urartian landscapes constitutes a dramatic departure from the proceeding periods (2003).

Many of Smith’s observations about the spatial organization of Urartu are derived from the results of the spatial analysis that he performed for his dissertation (1996). For this study, Smith’s population consisted of approximately twenty LB/EI fortresses and eleven Urartian-period examplars, mostly located on the Ararat plain. There were two factors that he considered: elevation and geographical relief (“topography”). For the analysis, Smith determined the absolute elevation in MASL for the forts and fortresses for both periods (he combines LBA/IA) and computed their mean.

For the pre-Urartian forts and fortresses, Smith notes that the location of these structures is relatively “inaccessible,” an observation that he tests by

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32 Smith aggregates LBA and EI in his analyses.
33 Some are also located on the adjacent Tsaghkahovit and Shirak plains.
computing what he terms surface grade, also known as aspect in GIS terminology.\textsuperscript{34} One observation he makes about the LB/EI occupation is that there is a chain of forts that straddles a road from Vanadzor then leads into the Tsaghkahovit plain, and he interprets the fort organization as surveillance of inter-regional pathways.

For the Urartian “imperial”\textsuperscript{35} period, Smith observes a marked shift in settlement patterns, with the Urartian constructions having been built at a much lower elevation (1137 MASL vs. 1552 MASL) and on raised spurs near the plains, which leads to the observation that the “topography” of the sites changed between one period and the next. That is to say, Smith observes that Pre-Urartian sites in his study area are generally located at a higher elevation relative to the plain, and that they may be located in steep, inaccessible areas. Urartian sites, Smith notes, are located at a more “immediate” scale, and would have represented a direct presence through regularized surveillance. He interprets the change in location from the LB/EI to the Urartian period, in part, as a spatial response to the militarism of the era but one that should be understood as acting in tandem with other social processes.

On the whole, Smith generalizes the results of his study area to create a uniform view of Urartian political practices rather than interpreting his results to

\textsuperscript{34} There is no surface grade information in Smith 2003, but his dissertation contains “Median Surface Grade” tables (236).

\textsuperscript{35} He divides the Urartian-period sites into an earlier imperial phase and a later reconstruction phase. The comparatively rich historical evidence for the Ararat plain as well as data from excavated sites, allow Smith to provide his study with an admirable level of chronological finesse. On the contrary, in Iran, there are fewer inscriptions that provide chronological information for the sites. Kroll notes that it is sometimes difficult to attribute Iranian sites to the ninth, eighth or seventh century based upon survey alone.
disclose what happened on the Ararat plain during the Urartian period. It is reasonable to suppose that Urartian strategies might have varied over space and time since strategies vary over time in other empires (Sinopoli 2001b). In fact, one methodological goal of the present dissertation is to test if Smith's observations for the Ararat plain hold true for northwestern Iran and the Lake Sevan region in Armenia.36

Emily Hammer (2014) proposes that economic incentives were the primary reason for site placement on the Sharur plain in the Autonomous Republic of Naxçıvan, Azerbaijan, located just to the south of the Selim (alt. Orbelian) pass. Observing that off-site, extensive archaeological survey can contribute much to our understanding of Iron Age landscapes, particularly the role of smaller residential sites in the development of these fortress polities, Hammer and team embarked upon an intensive survey of the zones surrounding Oğlanqala and Qizqala.37 While her investigation has revealed surface scatters of pottery that she has tentatively identified as a lower town, the most discussed findings were substantial fortified wall segments, each hundreds of meters long, two meters thick, and situated north-east of Oğlanqala along the ridges adjacent to the pass.

36 Biscione's comparative analysis of the hierarchical organization of defensive architecture in Iran, Turkey and Armenia is also particularly illustrative that there is a great deal of variation over the geographical expanse that was Urartu.
37 The absence of small residential sites in archaeological survey remains a vexing problem for understanding the Iron Age of the southern Caucasus (Smith 2012). To the contrary, small settlement sites are relatively well attested in Iran where tells were re-occupied during these periods (Chapter Four).
Referring to her recent work with the Naxçivan Archaeological Project (Ristvet et al. 2011; Ristvet et al. 2012), Hammer hypothesized that the location of EI/MI sites suggests that surveillance of agricultural property was an important motivation for site placement, a view that is consistent with the positioning of Oğlanqala and Qızqala on the agriculturally-productive Sharur plain (Hammer 2014:757). Yet, how this surveillance of farmland would have functioned on a practical level or why an extensive investment would have been made in the proposed practice versus other possible interpretations remains to be explained.\(^{38}\)

In addition, Hammer argues that the fortresses in the territory were positioned to control trade routes, emphasizing the economic role of the fortified structures. The role that apparent military architecture or fortified wall segments would have played in a system of regional defense is not directly discussed, although she indicates that they might have had some defensive purpose (Hammer 2014:765).

During the survey, Hammer and team recorded three long wall sections that she reconstructs into a large, round retaining wall for the two fortresses (Figure 7). No wall segments have been discovered to the south or east of the fortresses, a phenomenon that Hammer attributes to modern development and agricultural activity on the plain. She acknowledges that such an arrangement constitutes an

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\(^{38}\) Since the EI/MI fortresses in question are located at the edge of plains that may be dozens of kilometers wide, these installations would not have provided full visibility coverage or detailed views of the proposed target areas. The presence of forts and fortresses in areas unsuitable for agriculture such as the Marand or Maku regions in Iran argue against the proposed interpretation. However, Zimansky's argument that larger Urartian centers functioned as administration sites for state agriculture may prove to be the case (Zimansky 1985:96).
uncharacteristic configuration among sites in northwest Iran and the Southern Caucasus alike.

Figure 7: Position of the Long Wall Segments and Wall Reconstructions
(Credit: Hammer 2014:763)
An alternative hypothesis to consider is that the wall segments may have existed without the proposed reconstruction in order to channel traffic along the road to the north and to fortify the high ground\textsuperscript{39} leading into the pass, which would have forced merchants and soldiers alike to pass under the watchful gaze of Oğlanqala and Qizqala on their way north to the Lake Sevan area. Certainly, the presence of a linear wall\textsuperscript{40} that is 2.8 km long at the northern end of the same pass argues for such an interpretation (Biscione et al., 2002: SV46/47-Joj Kogh). It should be noted that the Joj Kogh wall runs roughly parallel to the river along the high ground at the north end of the pass, much like wall segments A and B found in survey at the southern end of the same pass in Naxçıvan. Nonetheless, future work should elucidate the relationships of these structures to the regional organization of the territory.

\textsuperscript{39} Linear walls that fortify high ground near forts and fortresses are widely attested in northwest Iran and Armenia for these periods (e.g. Smith 1999:55). There is also a large wall at the Urartian site of Karmir Blur in Armenia that is not a surrounding wall. Hammer's reconstruction is reminiscent, instead, of the city walls surrounding Syrian and Mesopotamian Bronze Age sites (For examples, see: Akkermans & Schwartz, 2003; Creekmore & Fisher, 2014), a configuration that is incongruent with the geographical area and time period. Moreover, Oğlanqala represents a naturally defensible refuge with steep rock faces some 130 m above the plain.

\textsuperscript{40} The wall has been dated by Biscione et al. to the El/Urartian periods based upon its association with nearby forts.
Chapter 3 Ancient Warfare and Landscape Formation

There is much to be said for the theoretical link between warfare and political centralization. Many first- and later-generation states of both the Old and New World emerged out of contexts of war, and their development was inextricably tied to their early military expansion.—Arkush 2011:10

In recent decades, anthropologists and historians have shown a renewed interest in understanding the role of violence and aggression in shaping past events (Frayer and Martin 2014; Arkush 2011; Nielsen and Walker 2009; Ralph 2013; Tung 2012; Fry 2013; Arkush and Allen 2006; Rowe 2007). The importance of the historically-attested systematic warfare of the first millennium BCE in the development and regional organization of Biainili emerged as a major theme while conducting the analyses for the present study.

While the significance of warfare in the construction of narratives of the past has always been appreciated among historians of the ancient Near East, particularly those who study martial societies such as Urartu or the Neo-Assyrian empire, landscape archaeologists of the region have primarily focused on economic or enviromental explanations for past change.

Instead, I argue that patterns of warfare structured the world and affected the choices of the ancient people who constructed Iron Age fortress-states, and that traces of warfare can be observed on the regional level. Violence and fear were manifest in, for example, the hundreds of massive fortified complexes ensconced atop windy ridges in northwest Iran and Armenia (Dan 2012). In turn, the fear and hostility embodied in the constructed landscape guided ancient fortress-state
builders towards certain kinds of possible futures and away from others (Arkush 2011; Bachhuber 2014).

Archaeologists of the Americas have argued against what they understand to be a “pacification” of the past (Keeley 1996). The reasons, however, for the underemphasis of warfare in explaining past change may vary according to the regional focus of the scholars in question and depend on historically-contingent histories of scholarship. In particular, the exclusion of warfare from archaeological explanation noted by archaeologists of the Americas appears to be for different reasons than its underutilization in archaeological explanation among landscape archaeologists of the ancient Near East.

3.1 The Pacification of Pre-History in the Americas

Lawrence Keely’s influential thesis in War Before Civilization is that studies of the past have been artificially “pacified” by anthropologists who adopted a mythologized view of primarily peaceful interactions among people in antiquity based upon a Rousseau notion of the innate non-violence of people. According to Keely’s view, most human civilizations, both ancient and modern, engage in warfare (1996).

Both Hobbes and Rosseau advanced influential ideas on the relationship of violence to the formation of human societies, and it is intriguing that two of the earliest philosophical discourses on the role of innate human violence are, in fact, treatises on the state. Keely argues that most twentieth-century American archaeologists adopted a variation upon Jean-Jacques Rousseau’s eighteenth
century view of the “noble savage,” a concept that opposes Thomas Hobbes’ seventeenth-century notion that people are inherently violent and one of the important functions of the state is to regulate violence (Keeley 1996). For Hobbes, states initiate a mutually-beneficial “social contract” without which human existence is replete with continual fear and the danger of violent death. Moreover, life is, “solitary, poor, nasty, brutish and short” (Hobbes and Curley 1994:76). In Rousseau’s critique of Hobbes, he imagined the opposite view, that people are born in a natural state of peace and innocence that is corrupted by the trappings of “civilization” (Rousseau 2010). The latter interpretation ultimately became influential in post-World War II understandings of warfare and violence. Building upon Rousseau’s foundation, anthropologists such as Quincy Wright (1983) and Harry Turney-High (1949) coined the concept of “primitive war,” proposing that non-state societies conducted a stylized, ritually-projected and generally less terrible form of warfare.

Keely mobilizes an impressive body of cross-cultural ethnographic research to demonstrate, rather shockingly, that warfare in non-state or pre-historic societies can be even more frequent and casualty-ridden than the mechanized, systematic wars of the twentieth century (Keeley 1996:25–39).

Keely’s critique prompted a paradigm shift in the study of warfare that resulted in a renewed interest in understanding the role of violence and aggression in social processes in antiquity (Frayer and Martin 2014; Arkush 2011; Nielsen and Walker 2009; Ralph 2013; Tung 2012; Fry 2013; Arkush and Allen 2006). Scholars
studying the role of war in the development of early societies have made important revisions to understandings of state development while attempting to take the effect of violence and need for defense into account. A number of scholars have likewise argued that archaeologists underutilize ethnography and historical sources in the construction of interpretative models (Arkush and Stanish 2005; Gilchrist 2003; Keeley 1996; Arkush and Allen 2006). However, I contend that factors such as the myth of the noble savage or an indifference to the importance of ethnography have had little influence on archaeological interpretation of landscapes in the ancient Near East.

3.2 The Pacification of the Ancient Near East

The paucity of explanatory accounts that incorporate conflict into the archaeological interpretation of past regional development is difficult to understand in the historically well-documented ancient Near East. In particular, the bellicose and violent rhetoric conveyed by texts and images stands in contrast to the primarily economic and ecological interpretations offered by archaeologists for state formation and site placement, particularly those who study large-scale regional phenomena (Hritz 2014; Wilkinson 2003). However, the importance of warfare is readily apparent to historians of the ancient Near East and frequently plays a pivotal role in narratives of the past (e.g. Briant 2002; Van de Mieroop 2007).41

41 For a view disputing the importance of warfare in the development of the earliest Mesopotamian states, see Richardson 2012.
One reason why conflict may be excluded from archaeological explanation and interpretation is the importance of the intellectual legacy of cultural-ecological approaches in ancient Near Eastern scholarship (Ashmore 2004:257). Cultural ecology is the study of human adaptation to social and physical environments and was heavily promoted by anthropologists such as Steward (1949) during the mid-twentieth century. The primary tenet of the cultural-ecological approach is that the natural environment is a major contributor to social organization.


To some extent, a research program emphasizing human-environment dialectic continues to be perpetuated within the field of ancient Near Eastern landscape studies. Ancient Near Eastern approaches to landscape have studied topics such as ancient agriculture, economy, site hierarchies, and the layout of urban centers, but unlike landscape archaeology practiced in other parts of the world, relatively little attention has been paid to certain approaches like ritual landscapes, ancestral geographies or sites of memory (Ristvet 2011:2). Contemporary study of landscapes in the ancient Near East is linked most directly to the scientifically-oriented New Archaeology of the mid-twentieth century (Ashmore 2004; Hritz
2014), which contrasts the wider world of archaeological theory where positivist methodologies have been challenged by post-positivist philosophies, humanist concerns, and calls for social relevance (Ashmore 2004; Wheatley and Gillings 2000; Llobera 1996; Harrower 2006; Harrower in press). Nonetheless, there are notable exceptions to the described trend (e.g. Smith 2003).

Robert Carneiro’s influential and controversial theory (1970; 1988) regarding the role of warfare in the development of early states is another reason why archaeologists of the ancient Near East may remain cautious of incorporating conflict into archaeological explanation. In an intellectual climate in which scholars sought universalizing rather than particularizing theories, Carneiro argued that a single set of conditions could account for all cases of state development (Carneiro 1988:497). His theory consisted of three key elements—environmental circumscription, population pressure and warfare. He maintained that all pristine states emerged in environments where population movement was constrained by geography. As a result, people could not flee in the wake of inevitable warfare. When populations reached critical Malthusian limits, warfare was the inevitable outcome. States emerged, in part, to ameliorate population pressure by coordinating agricultural activities and hydrological works, e.g. irrigation.

Carneiro’s theory is problematic in a number of ways. Scholars immediately noted a number of cases that did not fit Carneiro’s proposed universal narrative (Carneiro 1988). Specifically, the emergence of states in Mesopotamia was not always environmentally-conscribed, and settlement data sometimes indicate a
population decrease preceding state emergence (Wright and Johnson 1975; Keeley and Wilkinson 2015). Carneiro’s model can also be critiqued on the grounds that it is environmentally deterministic. It suggests that circumscription is a necessary pre-requisite for “pristine” state development and that states cannot form without the described environmental impetus. Moreover, Carneiro’s theory implies that geography is the primary source of human conflict. In the wake of the brief but widespread popularity of Carneiro’s theory in anthropology, a number of ancient Near Eastern archaeologists have been reticent to incorporate theories of conflict into narratives of state development (Norman Yoffee, personal communication), although there are exceptions to the general trend (e.g. Johnson 1988/89; Schwartz 2013).

Warfare was not invalidated as an explanation for social change by its inclusion in Carneiro’s theory, just as the importance of water in certain episodes of early state formation has not been nullified by critiques of Wittfogel’s hydrological hypothesis (Harrower 2009a; Harrower in press). Warfare need not be understood as an ancient “prime mover.” Instead, warfare and conflict are widespread human experiences that have social implications and archaeological repercussions. Theories of conflict should be incorporated into archaeological reconstructions along with other socially-transformative institutions.
**Warfare as an Additional Social Factor**

Previous scholars have documented and evaluated the evidence for extensive and systematic warfare in the ancient Near East in general and the Neo-Assyrian/Urartian periods in particular (Bahrani 2008; Reichel 2009; Radner 2012; Richardson 2012; Van de Mieroop 2007; Schwartz 2013a). A comprehensive review of all evidence for warfare in the ancient Near East is outside of the scope of the present chapter. Instead, I will briefly discuss two canonical examples of warfare in the ancient Near East in order to contrast them with historical interpretations advanced in landscape archaeological approaches.

When history dawns on the first Sumerian cities, war and violence are an undeniable preoccupation of royal propaganda. One of the world’s first historical accounts, the Umma-Lagash border conflict, is known from a number of inscriptions from the Early Dynastic III period, c. 2500 BCE. According to the texts, Eannatum, ruler of Lagash, battled with his enemies from Umma over a choice piece of agricultural land called the *Gu’edena*. After a series of battles, the king made a new agreement with Umma, which elongated the boundary channel between the two polities, allotted the use of a parcel of land to Umma, and possibly created history’s first demilitarized buffer zone.\(^{42}\) The texts also detail the heaping of the dead into tall piles in the wake of the conflict. The inscribed monument known as the *Stele of...*

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\(^{42}\) Cooper (1986) La 5.1: “Eannatum, ruler of Lagash, uncle of Enmetena ruler of Lagash, demarcated the border with Enakale, Ruler of Umma. He extended the (boundary) channel, from the Nun-canal to the Gu’edena, leaving a 215 nindari (strip) of Ningirsu’s land under Umma’s control and establishing a no-man’s land there.” The tale is a particularly well-attested episode inscribed in Sumerian on stone and clay objects found in excavation at the ancient city of Girsu: e.g. La 1.6, La 2.1, La 3.1, La 3.5, La 3.6, La 4.2, La 5.1, La 9.1, La 9.2, La 9.3, La 9.4, La 9.5.
*the Vultures* features a text and pictorial narrative, which both describe the Umma-Lagash conflict. In particular, the four-registered reverse of the monument is certainly evocative of violence. The vultures, grasping the severed heads of their enemies in their beaks, were placed above the military campaign while enemies are crushed under chariot wheels just below the fray.

A number of important observations can be made about the Umma-Lagash texts and the stele. First, water rights and access to prime agricultural land were considered plausible *casus belli*. Accordingly, the justifications for war asserted by the Lagash state imply that the recent emphasis by Near Eastern landscape archaeologists on ecology and economy as important social factors is well-placed. Yet, ecological and economic criteria should be understood within a social matrix, including interactions of conflict. Secondly, scholars have noted that the “historicity” of such narratives was a highly manipulated one (Winter 1985; Richardson 2012; Bahrani 2008), and that artistic works are a part of official propaganda. Specifically, ideologically-imbued artifacts of statecraft should be interpreted with hermeneutics of skepticism. Yet, the historical kernel, that warfare was a grim reality of life in ancient Sumer, cannot be dismissed. Graphic details apparent in the relief and texts such as the vultures feasting upon the dead betray first-hand experiences with violence.

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43 The seven extant fragments of the *Stele of the Vultures* are in the collection at the Louvre (AO 16109, AO 50, AO 2246, AO 2348). See Winter, 1985 and Barrelet, 1970 for art-historical treatments. The “war side” of the Standard of Ur is another example of a nearly contemporary artistic representation of war.
One much discussed component of the Umma-Lagash documentation is the development of the role of the ruler, the office known in Sumerian as the Ensí (Winter 1985). It is apparent from an analysis of the texts and relief that an important part of the construction of the social identity of the ruler, Eannatum, is in his role as the smiter of enemies, the agent of destruction on behalf of the patron god, Ningirsu. Flannery (1999) emphasized the historically documented role of individual military leaders in the initial formation of state societies, noting this as an example of individual agency. Therefore, it is important to understand the role of warfare, and the practical needs of defense, as a constituent component of constructions of authority.

The previously described documentation of the Umma-Lagash border conflict is only history’s first example of extensive documentation of warfare, a particularly well-known one, but the evidence for the importance and impact of warfare throughout the historical archaeology of the ancient Near East is substantial and even overwhelming (Bahrani 2008; Schwartz 2013a).

The Neo-Assyrian period (900-700 BCE) historical sources offer yet another unapologetically violent window into a state’s preoccupation with narratives of warfare as well as actual warfare. Assyria was a militaristic society, and the army provided its basic structure and hierarchy (Van de Mieroop 2007:230). In the earliest phases of Neo-Assyrian imperialism, wars were fought annually in the summer, in the period after the winter-sown wheat had been harvested (Van de Mieroop 2007:230). Moreover, annals and plunder lists alike boast of the extreme
human toll of the Assyrians’ systematic warfare: the dead, the enslaved and the deported (Radner 2011).

The previous explanation of the systematic warfare of the Neo-Assyrian period was provided so that I might contrast the documentation with an explanatory account of Neo Assyrian roads as a social institution. Landscape archaeology studies of historically well-documented periods such as the Neo-Assyrian empire frequently focus upon the economics and ecology of these states to the exclusion of accounting for important and transformative social phenomena such as conflict, even though the empire’s systematic warfare would have constituted a major component of the economy of the state (Kuhrt 1995:518–519).

An elaborate imperial program of images, specifically those displayed in royal palaces, reveal a state that utilized psychological terror as a means of social control. By way of example, the relief described in the British Museum’s catalog as “Ashurbanipal and his Queen Enjoying a Banquet”44 from Nineveh is, at first glance, an innocuous scene of dining and lavish repose. Yet, one of the invited guests, Teumann, king of Elam, is noticeably missing his body. The king’s dismembered head hangs ornamentally from a stylized tree near the seated diners. While memorable, the thematic content of the above-described relief is not an exceptional case in the Neo-Assyrian artistic repertoire (Bahrani 2008). A number of reliefs from the northwest palace of Nimrud (Kalhu) depict Assyrian soldiers decapitating fallen enemies (ME 115634; ME 118903). In one particular example, two soldiers

44 ME 124920 in the British Museum, North Palace, Room S.
celebrate with a severed head in each hand, displaying their trophies to scribes, presumably so that they could claim the head prices (Kuhrt 1995:519–520).

While landscape archaeology as a discipline began to call for the incorporation of social theory into reconstructions of past regional phenomena decades ago (Knapp and Ashmore 1999), practitioners working in the ancient Near East have, in some cases, remained dedicated to research programs emphasizing ancient economies and environment. The most common approaches conceive of the past landscape as a palimpsest that can be read with the latest technology available (Hritz 2014), a promising start that may result in a catalog of relict features that can be detected from space or spy photography. However, the lists of features are not always incorporated into robust reconstructions of the social institutions. Some recent treatments argue for the need to incorporate social theory into regional analyses (Wilkinson 2003; Hritz 2014), but the goal has not been universally realized.

Moreover, when social institutions are discussed, they tend to emphasize ecological and economic modes of interaction, even when there is compelling evidence that other social factors like warfare played a significant role in establishing regional settlement patterns. Wilkinson et al. (2005) confront the topic of Neo-Assyrian roads, arguing that there were both primary and secondary roads in the empire. The research team provides numerous examples of hollow ways that were detected with CORONA imagery and explains that the function of these embedded features was, in part, to serve as secondary transport routes. They
determine that the primary purpose of royal roads was rapid communication between regions and key cities, and that secondary roads also existed (Wilkinson et al. 2005:37).

The described reconstruction of Neo-Assyrian roads does not account for the complexity of social interactions embedded in these landscape features, particularly their relationship to the systematic warfare of the Neo-Assyrian period. A number of recent approaches to Neo-Assyrian roads typify an understanding of ancient road systems that is primarily functional, which has been termed the *economic-cum-transport* model (Hassig 1991). Wilkinson et al. engage with a number of cuneiform texts to elucidate how royal roads might have functioned on a practical level, utilizing letters from the archives of Sargon II. Since the Sargonid epistolary corpus is remarkable for its vivid portrayal of the role of roads in surveillance, espionage, and the traffic of human beings in the Neo-Assyrian empire (Parpola 1987; Lafranchi and Parpola 1990; Fuchs and Parpola 2001; Radner 2011), it is significant that Wilkinson et al. do not mention the role of war in their socio-economic reconstruction, focusing instead on the king’s need to dispatch messengers quickly.45

45 The authors mention the Assyrian policy of deportation elsewhere in the same article but not in their reconstruction of road systems. Specifically, they argue that the goal of resettling war hostages was to effect a dramatic restructuring of the economy: “The simultaneous creation of massive capital cities, deportation of conquered populations (while maintaining their economically productive social groups), redistribution of rural labor in an agriculturally efficient manner, and installment of vast canal networks could all be seen as the result of a carefully planned program to remake the economy and demography of Assyria” (Wilkinson et al. 2005:32). While there would have been profound economic implications for the large-scale resettlement of people, the finding that the desire to enact economic reforms was the primary objective of such policies remains to be demonstrated.
Yet, a renewed interest in the study of ancient road networks suggests that much can be learned by exploring the multifaceted societal and cultural context of these landscape features (Alcock et al. 2012:1–5). Complex cultural constructions such as the royal roads of Assyria are unintelligible when divorced from their social matrix, which is inextricably linked to the war machine that its existence served. In fact, "harrānu\textsuperscript{46}, the Assyrian word for road, is also the word for military campaign. Even at the lexical level, the concepts of road and war were associated. Arguably, improved roads and rapid communication would have served the purpose of facilitating the Neo-Assyrian empire's systematic warfare. In fact, one of the primary purposes of Assyrian roads may have been to facilitate its systematic warfare and expansionist aims.

Morandi Bonacossi instead interprets the formation of landscapes in the Syrian Jezireh to be linked to the intense traffic created by the systematic warfare of Assyria, arguing that the continuous stream of soldiers, merchants, prisoners of war, booty from military campaigns, taxes and tributes would have had a dramatic effect on the local economy and the formation of the landscape alike (2000:5). Specifically, roads do not simply pass through places as much as they are embedded within a social matrix. Roads shape and are shaped by social processes.

The example of Assyrian roads illustrates a need for increased engagement in comprehending and theorizing the important role that constant and persistent warfare would have played in the development of ancient landscapes. Certainly,

\textsuperscript{46} CAD "h", AHw I : 4.
peaceful exchange and political cooperation were sometimes practiced in ancient states, yet so was persistent and ubiquitous warfare (Schwartz 2013a:6; Arkush and Stanish 2005). Moreover, the effects of conflict and insecurity are archaeologically detectable (Creekmore 2014:44, 51–57), particularly when considered alongside available historical documentation. While some recent scholarship has begun to address the need to incorporate textual and archaeological evidence in order to understand war and its repercussions (e.g. Schwartz 2013), it would be valuable to investigate the effects of warfare on the economic and environmental conditions of the ancient Near East.

Pacification of the past is also present in pre-historic archaeological interpretations of the ancient Near East. One particular example can be found among recent scholarly treatments of patterns of regional settlement during the Late Chalcolithic (LC) period (4400-3000 BCE) in the Khabur region of Syria. In a recent assessment of millennia of settlement in the environs of Tell Hamoukar (Ur 2013), Ur is reluctant to interpret regional patterns as the result of conflict, which is particularly noteworthy given that Hamoukar is a site where there is an abundant evidence for participation in regional warfare during the fourth millennium (Bower 2008; Reichel 2009).47 In particular, the Late Chalcolithic city was destroyed by a

47 In response to a widespread theory that proposes that an extreme climatic event precipitated patterns of regional abandonment at the end of the third millennium BCE (Weiss and Courty 1993), Ur explains that there are signs of violence and looting present at Hamoukar in destruction layers that contain deliberately smashed vessels and partially articulated human remains lying upon floors (Colantoni and Ur 2011; Ur 2013), leading the author to acknowledge that there is evidence for “interpolity conflict” (Ur 2013:157). In the context of Neo Assyrian settlement patterns, the author allows that the empire’s deportation and settlement program is one of three possible explanations why there is a return to settled life during the period.
violent conflagration c. 3500 BC. Human remains unceremoniously interred under collapsed structures along with more than 1200 clay sling bullets complete the violent tableau. While there is an acknowledgement of the ubiquity of ancient warfare in the context of the EBA collapse attested at the site (Ur 2013:157), the role of conflict is omitted from explanatory narratives of the Late Chalcolithic regional settlement.

Regional conflict is virtually absent\footnote{The possibility of conflict is mentioned for LC4 only. Conflict is not incorporated into theories of trade diaspora.} from a recent interpretation of the emergence of complex societies in Upper Mesopotamia during the Ubaid through the LC4 periods at key sites in the Euphrates, Balikh, Khabur, and Tigris drainages (Stein 2012), a lacuna that stands in contrast to compelling evidence for site-level and regional warfare from sites such as Tell Brak and Hamoukar (Reichel 2009; Lawler 2009; McMahon et al. 2007). Additional evidence of regional insecurity is provided by community enclosure walls at Habuba Kabira and Sheikh Hassan (Strommenger 1980; Boese 1995) as well as the presence of a structure interpreted as a fort at Mashnaqa on the Middle Khabur (Akkermans and Schwartz 2003:208; Sürenhagen 1986). The evidence for conflict across the region suggests a need to better theorize and comprehend the effects of warfare and insecurity more generally, particularly pertaining to state development and regional organization in pre-historic periods.

It would be informative to understand the role of regional conflict in proposed models of colonization and trade diaspora during the Uruk Expansion in
particular (Algaze 2005; Stein 1999). Johnson (1988/89) argued that warfare should be understood as an important factor in the expansion of the southern Uruk polities. Recent anthropological studies have concluded that escalations in trade and conflict frequently co-occur (Vehik 2002; Junker 1994), and expansions in trade networks have been correlated to significant escalation in conflict in the relevant anthropological literature (Reedy-Maschner and Maschner 1999).

3.3 Landscapes of Warfare: Towards a Regional Approach

A comprehensive study of patterns of conflict requires a large-scale, regional perspective, in addition to site-level and off-site studies (Arkush 2011; Arkush and Allen 2006). If violence and warfare are important and socially transformative processes, then how do war and peace affect patterns of regional settlement? How can conflict be evaluated in the archaeological record? One objective of the present study is to identify ways in which patterns of conflict are discernable at the regional level in the ancient states studied.

By way of illustration, the defensive origins of certain features can shape subsequent regional landscape development. The tell, the most characteristic of ancient Near Eastern settlement types, was born from a landscape of pervasive warfare. Wilkinson (2003) hints at the defensive origin of these features, noting that an important cultural factor in the formation of tell mounds is the presence of an outer defensive wall that inhibits the erosional expansion of the sediments, thereby damming them up (108). If one considers the described relationship in reverse, it can be proposed that the defense preoccupations represented by the
construction of outer defensive walls are, instead, among the social practices that led to tell development in the ancient Near East. In fact, in order for the tell to develop, there must be a compelling reason for people to stay in one place, either the need to stay within a defensive wall or because the place holds some special significance (Wilkinson 2003:108).

It is worth noting, of course, that defensive concerns and the significance of place are not mutually exclusive categories, but are, instead, mutually reinforcing. Besides obvious utility in defending ancient cities from threat, city walls came to be highly symbolic of urbanism, kingship, and place more generally (Ristvet 2007; Creekmore 2014). It is clear from the opening lines of the Mesopotamian *Epic of Gilgamesh* that the great walls of Uruk were a symbol of civic pride and were associated with the figure of the king (George 2003:539). Moreover, in *Gilgamesh*, the city walls are Uruk. These structures became complex and mutually reinforcing symbols of defense, authority and urbanism more generally. Yet, the practical needs of defense must be accounted for in order to understand the social origins of city walls, a complex symbol.

Elevated places such as tells and fortresses, besides providing impressive views out onto a landscape, are also highly visible from the landscape itself. Visually, they act as focal anchor points when moving through these landscapes. Their presence over time creates a socially-constructed place that is symbolically embedded within its surroundings and with which individuals and communities create strong ties and enduring relationships (Bachhuber 2014). Moreover, the
history of long establishment and the connection to ancestors implied in constructions such as tells would have been a source whose social power priests and kings alike could have drawn upon (Wilkinson 2003:108). Visual presence and cultural cachet are some of the special symbolic qualities of prominent places such as tells and fortresses. Places that evoke the social memory of violence, like fortresses, may be complicit in reproducing violence and beget future outbreaks of conflict (Rowe 2007).

The “Toblerone line” in Canton Vaud, Switzerland, is an example of traces of insecurity imbedded in a modern regional landscape (Figure 8). It may, at first glance, seem surprising that a country that has not been at war in more than five hundred years exhibits lasting marks of the systematic warfare that characterized the modern era in Europe. Yet, in the early years of the World War II, the Swiss began to quietly fortify their entire country with more than 21,000 fortified structures including the construction of a line of fifteen elaborate subterranean fortresses north of Lake Geneva that concealed vast underground complexes and artillery installations (Debraine 2014). In addition to the fortresses, the Swiss constructed the “Toblerone line.” The structure consisted of 2,700 nine-ton concrete blocks, each shaped like a piece of the eponymous Swiss chocolate, stretching more than ten kilometers, north to south. The Toblerones were meant to render a tank invasion into Switzerland from the west a prohibitively costly proposition for the Nazi forces. In the described example, the prospect of violence
structured the Swiss world-view and affected the choices of the people who constructed the state in question.

Figure 8: The Toblerone Line, Lake Geneva, Switzerland
(Credit: Author)

The Toblerones are, furthermore, an illustration of the principle that defensive concerns and the significance of place are mutually reinforcing categories. Besides their practical role in a system of regional defense, the Toblerones have become potent symbols of regional and national identity. A textbook on national symbols for Swiss school children helpfully explains that these constructions are an important part of Swiss national identity, their shared cultural heritage of neutralité defensive (Haver 2011:68):

Le réduit national se compose d'un réseau de fortifications souterraines qui ont fait la renommée d'une Suisse fortifiée. En plus des ouvrages visibles, comme les barrages antichars (parfois appelés
Today, the Toblerone line has been dedicated as a didactic hiking and bicycle trail with the explicit purpose of memorializing and commemorating Switzerland’s defensive achievements as a fortress-state *par excellence* (Debraine 2014).

Vision is an important factor in the construction of landscapes of warfare in a number of ways. Particularly among sedentary societies, vision is one of the most important senses because enemies can be seen from some distance from the relative safety of reinforced architecture (Arkush 2011). Commemoration is another social practice embedded in the act of seeing (Mills and Walker 2008:7), as illustrated by the example of the Swiss Toblerone Line. Certain markers such as tombs and monumental inscriptions may be placed in landscapes with the specific purpose of promoting social remembrance (Schwartz 2013b; Fitzjohn 2007).

In the context of a landscape of warfare, the visual cues of memory are intimately related to narratives of past military heroism, victories and defeats. Moreover, the sight of fortified architecture may provoke a host of complex associations from a reassurance of safety to a reminder of insecurity. Accordingly, visibility studies have explored symbolic meanings of constructed landscapes (Fitzjohn 2007; Supernant and Cookson 2014), as well as the more practical

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49 Emphasis original publication. The *réduit national* is the term the Swiss use to refer to their national fortification system.
implications of defense (Panagiotakis et al. 2013). Visibility is also important where it pertains to communication (Swanson 2003), particularly in the context of defensive communication networks (Earley-Spadoni 2015; Panagiotakis et al. 2013). Therefore, visibility studies are well-adapted to investigating the effects of insecurity in the development of landscapes, particularly on a regional scale.

3.4 Iron Age Fortress-States as a Particular Case and a Case Study

_Toutes les beautés contiennent, comme tous les phénomènes possibles, quelque chose d'éternel et quelque chose de transitoire — d'absolu et de particulier._

—Charles Baudelaire, _Les Fleurs du Mal_

This dissertation investigates the evidence for conflict on the regional scale in the particular and historically-contingent examples of EI fortress-states and Urartu under the premise that parallels undoubtedly exist with other societies, both ancient and modern.

There is abundant evidence that the Iron Age fortress-states studied in this dissertation were particularly martial societies that developed in conditions of regional insecurity, and that the effects of warfare are embedded in EI and Urartian landscapes (Smith 2012). The heavy fortification of sites can be understood as a proxy indicator of the perceived threat in an environment (Arkush 2011:60).

Though constructed landscapes represent complex superimpositions of elements that have polyvalent social meanings, the effects of warfare can be seen across the fortress-states in question (Smith 2012) in the anxiety revealed in the predominance of fortified military installations and the increasing investment in fortification over time. Even in the context of ancient Near Eastern artistic
traditions, Urartian art and representation is overwhelmingly dominated by martial images (Seidl 2004). Equally, dozens of rock-inscribed Urartian texts are dedicated to the theme of military conquest (Salvini 2008). Moreover, lists of plunder from the reigns of Menua and Argishti I in the eighth century (CTU A 5-2, CTU A 5-24, CTU A 8-1, CTU A 8-3 I-VI, CTU A 9-1, CTU A 9-3 I-IV, CTU A 9-5, CTU A 9-6) detail human spoils among the booty collected during Urartian military campaigns, constituting a policy of deportation and resettlement of vanquished enemies (Burney 2012; Zimansky 2012). The espionage and counter-espionage of Urartu are frequent concerns of the Neo-Assyrian imperial correspondence (Radner 2012). It is also clear from Neo-Assyrian letters that nomadic groups such as the Cimmerians were a particular threat in the northern frontier zones, i.e. the Lake Sevan area (Lafranchi and Parpola 1990).

3.5 Summary

Warfare is underutilized by landscape archaeologists of the ancient Near East to interpret and explain regional settlement patterns, even in cases for which abundant evidence of warfare exists. Rather than being the result of a general skepticism of the existence of conflict in the past, the traditional ancient Near Eastern landscape emphasis on economy and ecology may be considered an intellectual legacy that may be productively supplemented with new perspectives. Warfare and insecurity should be studied in the regional patterning of sites since these social factors leave indelible traces on landscapes at the regional scale (Arkush 2011; Arkush and Allen 2006).
The development of the Neo-Assyrian system of roads was an example in which archaeologists could better theorize the impact of systematic warfare on the development of roads over time. Meanwhile, pre-historical cases from fourth millennium Syria provide additional illustration of regions where there is evidence that conflict played an important role in state development yet archaeological interpretation does not universally take warfare into account. The described observations suggest a need to better theorize the effects of conflict on the spatial organization at the regional level.
Chapter 4 Survey Data and Methodology

In general most surveys in greater Mesopotamia have treated the agricultural economy, population trends, or relationships between settlement and the environment. Unlike in Mesoamerica, few have explicitly examined political development.

—Wilkinson 2000: 221

The investigations in this dissertation incorporate survey data deriving from three research projects conducted over a period of fifty years. In all three cases, these were European projects operating in an ancient Near Eastern research setting. Accordingly, it is illuminating to evaluate the intellectual traditions from which these projects arise. Simultaneously, it is important to appraise research design as well as potential variation in method that existed among these survey projects.

4.1 Ancient Near Eastern Survey

Archaeological survey, once utilized solely as a means to identify sites for excavation, is now a primary method of research in its own right. In the context of Old World archaeology, there are at least two major intellectual traditions of survey, each coming from distinct and at times divergent research foci and conditions. Debates in the literature over the relative merits of intensive or extensive methodologies can fail to acknowledge that the archaeologists who practice one or the other strategy may have different goals or understand archaeological remains with different models (Banning 2002: 11).

50 In addition to these, rescue survey is another important kind of study employed in ancient Near East. It is often conducted in the lead up to a major development project such as the Tabqa and Tishrin dams in Syria or the Ilisu-Carchemish or Birecik dams in Turkey. However, none of the results in this dissertation were the result of rescue survey.
In the study of the ancient Near East, the first survey as primary means of research began with the pioneering work of Robert J. Braidwood (1937) in the Syrian Amuq and was followed by Thorkild Jacobsen’s (1982) efforts in the Diyala Valley of Mesopotamia (Yukich 2013:54; Akkermans and Schwartz 2003:11–12). Certainly, Robert McCormick Adams’ (Adams 1981; Adams 1965) work on Mesopotamian urbanism in the mid-twentieth century was also seminal and influential in bringing the impressive objectives and accomplishments of Near Eastern archaeological survey to a wider audience (Banning 2002:5; Cherry 1983:405).

The described projects investigated broad expanses of territory, employing an extensive approach that remains common in surveys conducted in the Middle East (Wilkinson 2000). Moreover, expansive regional survey is an appropriate methodology to answer questions that pertain to grand-scale social organization beyond the scope of a single site. At times, ancient Near Eastern-style survey endeavors to understand sites as a part of a particular ecological niche or physiographic region, e.g. the Amuq Valley Research Project or the Erbil Plain Archaeological Survey (Yener et al. 2000; Ur et al. 2013).

In part, a common settlement type of the Middle East, the tell, enables a more extensive methodology since it is a relatively visible feature constructed of superimposed layers of mudbrick detritus. On a practical level, ancient Near Eastern survey often takes the form of jeep-based reconnaissance supplemented with leads from local informants, maps, and remote sensing data (Yukich 2013:70; Ur
One critique of ancient Near Eastern survey is that in its quest of the grand-scale view, the methodology favors large-scale features, sacrificing visibility of ephemeral traces of agriculture or the evidence of more mundane forms of existence, e.g. campsites or small shallow sites (Wilkinson 2000). The ancient Near Eastern approach favors more visible sites such as fortifications and tells, and as such survey results may obscure, for example, flatter Hellenistic and Byzantine settlements.

However, while the Near Eastern approach is grand-scale oriented, it has also developed a specialized set of techniques to analyze more ephemeral features that would be explored on foot in other parts of the world. Adams, one of its first practitioners, used aerial photographs to discern ancient levees (Adams 1981: 5). Researchers in subsequent decades utilized emerging technologies such as remote sensing data and de-classified CORONA imagery to detect sites and relict river channels (Casana and Cothren 2008; Ur 2007; Wilkinson 1998). In sum, ancient Near Eastern regional survey strategies seek to answer large-scale research questions, such as the temporal and spatial distribution of sites by site size, and do so using a specialized set of strategies adapted to the arid terrain and unique site formation processes of the ancient Near East.

In order to properly contextualize ancient Near Eastern-style survey, it is useful to compare it to Mediterranean-style survey. Before the more recent influence of British-style micro-methodological approaches on Mediterranean archaeological survey, continental archeologists were dedicated to the completion
of regional projects, and the production of large-scale site atlases or Gazetteers was an important goal of research (Kowalewski 2008: 229). Since the 1980s, Graeco-Roman or Mediterranean-style survey, performed predominantly in Italy and Greece, is characterized by reliance upon intensive pedestrian survey and a focus on archaeological traces that may be "off-site" or "near-site" areas (Alcock and Cherry 2004). Field walking, or the walking of evenly-spaced transects, and the at-times total recording of found materials, even of single, isolated sherds, typify such approaches (Terrenato 2004). Mediterranean-style survey is effective at detecting settlement patterns that are less urban, less visible and more dispersed. Unlike tells of the Middle East, the settlements of the Greco-Roman world are often not visible from a distance and require extreme proximity for detection. On some level, the shallow sites of the Hellenistic and Roman world may require a more intensive approach to render meaningful results. The described approach allows researchers to ask questions related to land use and tenure, agricultural strategies, as well as document more ephemeral, off-site archaeological traces (Cherry 1983). One weakness of the intensive approach is that in its myopia, it can lack the broad coverage needed to answer large-scale questions of inter-regional scope (Alcock and Cherry 2003: 4). While an intensive survey can document many more archaeological features within a small area, it covers much less ground (Terrenato 2004: 38).

51 The Greco-Roman style of research may also pertain to Hellenistic or Roman sites in the wider Mediterranean, e.g. Cyprus or Turkey.
52 Field walking was a methodology developed by prehistoric archeologists of Britain searching for the ephemeral traces of ancient campfires or lithic scatters, for example.
Some proponents of intensive methodology are so enthusiastic that they believe the superiority of the method is self-evident (Mattingly 2000: 5), while others remain equivocal or even skeptical (Alcock and Cherry 2004: 4). Terrenato, in particular, observed that in its extreme forms, the "intensive" Mediterranean approach is harmful at an epistemological level as it reduces the overall sample size available for archaeological conclusions (2004: 42). Kowaleski, an archeologist who works primarily in Central America, contends that the intensive survey is inappropriate for regional survey and even wonders if it might be more appropriately termed "surface artifact survey" (2008: 250).

In 1977, when asked what style of archaeological survey archaeologists should use, Robert Hope Simpson, scholar of Mycenaean settlement, replied: "Quite obviously a mixture of extensive and intensive survey work" (Cherry 1983:393).

On some level, it may be a bit misrepresentative to discuss either a Near Eastern survey style or a Mediterranean survey style in contemporary archeological practice since practitioners from both survey traditions have adopted certain methods of the other “group.” Archaeological survey projects, both in the Mediterranean and ancient Near Eastern domains, now employ hybrid approaches, combining extensive survey with more intensive focus areas (Düring et al. 2009; Matthews and Glatz 2009; Yener et al. 2000), a trend that acknowledges that both the ancient Near Eastern and Mediterranean-style approaches are specialized to answer different kinds of research questions and to account for different situations on the ground.
Tony Wilkinson has utilized hybrid approaches to combine large-scale studies with investigation of off-site or intra-site features such as ancient roads, hydrological installations and the at-times ephemeral traces of agriculture (Wilkinson 1998; Yener et al. 2000). Flexible approaches benefit from the methodological strengths of both extensive and intensive survey styles (Wilkinson 2003).

4.2 Factors Affecting Survey Research Design

The success of archaeological survey depends on the ability of the researcher to select an appropriate project design that takes into account both the situation on the ground and research objectives. It is important to comprehend how criteria such as intensity and visibility affect the construction of a research plan as well as appreciate how goals of research should dictate survey strategy. Understanding these factors allows one to evaluate the strengths and weaknesses of research design more generally.

4.2.1 Intensity

Survey intensity is an important consideration when evaluating the strengths and weaknesses of a particular research design; ideally, survey intensity should depend on the resolution needed to achieve the desired research goals. Intensity may be defined as the density of effort in an archaeological survey (Banning 2001:60) and can be calculated in terms of human-hours per inspection unit. Others define intensity as the "spacing between team members as they walk across the landscape"
(Cherry 1983:390). While it can be expected that the more time that investigators spend surveying a particular region the number of discovered archaeological features should increase, a principle of diminishing returns governs the described relationship (Yukich 2014: 65; Banning 2002: 60-61).

The terms intensive and extensive are frequently used to describe the intensity or resolution of an archaeological project, but since the terms are qualitative, what each means on a practical level varies widely from case to case. Generally speaking, intensive may connote a high-resolution, pedestrian-based survey while extensive may indicate a site-based, large-scale approach. Some researchers argue that missed sites are inevitable regardless of survey intensity (Redman 1982: 377). Certainly, a one-hundred percent detection rate for sites need not be the goal of a survey, though there should always be some level of awareness of criteria that affect visibility as well as sampling biases in the data (Yukich 2013:65).

Another factor related to survey intensity is the intended scale of study. The detection of small residential sites, for example, requires a more intensive approach (Wilkinson 2000). Siteless or off-site survey (Dunnell and Dancey 1983) aims to detect more ephemeral traces of human activity that are not centered upon ancient human settlements, e.g. field scatters,53 campsites or hydrological installations (Caraher et al. 2007; Wilkinson 2000; Hammer 2014). Because of the subtle, less visible nature of such evidence, intensive methodologies such as transect walking

53 An increased ceramic density in a field may be a small, shallow archaeological occupation or may be related to the practice of hauling organic refuse to fertilize fields (Wilkinson 2000:228).
are required to detect these kinds of artifact scatters. A recent increase in off-site methodologies reflects, moreover, post-modern concerns with multi-vocality and non-elite narratives (Foley 1981).

4.2.2 Visibility

A variety of issues may affect the visibility of archaeological sites. For example, the shape and size affect the level of intensity required to detect the site (Banning 2002:46). The effort that is required to detect archaeological traces in a landscape varies greatly depending on factors such as vegetation and modern development (Yukich 2013:65–67). As a broad generalization, archaeological remains are less visible where human population or environmental moisture are high, whereas, sparsely populated, arid zones favor good visibility (Wilkinson 2000: 229). Seasonality may also dramatically affect visibility. Researchers who performed survey of classical sites in southern Italy noted that only a portion of sites can be seen in any one season given the variability presented by vegetation and agricultural activity (Terrenato and Ammerman 1996).

Site formation processes also affect survey visibility, a concept that is brought into particular relief in the Middle East, a landscape of tells. A tell is a complex deposit resulting from the superimposition of building levels and other materials at a site over time. Tells can range in size from relatively modest to massive. Tell Brak in Northern Mesopotamia is more than 40 meters high and 43 hectares in area (Akkermans and Schwartz 2003:185), while Tell Hamoukar in the
Khabur river basin of Syria is more than 100 ha in extent (Wilkinson 2003:109). Generally speaking, the tell is a mélange of accumulated cultural detritus primarily composed of refuse, collapsed mudbrick, water and wind-borne sediments, as well as the result of a variety of biogenic and geochemical processes (Wilkinson 2003: 108). Although emblematic of the Bronze Age, tells are frequently loci of reoccupation in subsequent eras. The reasons for reoccupation range from practical, such as defense, to ideological, such as continuity of perceived kinship ties (Wilkinson 2003:109). In contrast to building materials like stone, mudbrick is much less likely to be robbed from occupational debris since it is easy to make new specimens (Yukich 2013:66). Moreover, unfired mudbrick must be rebuilt and restored regularly since it degrades over time. Outer defensive walls play an important role in the development of the tell, since their presence may act as a dam and prevent the erosion of sediments (Wilkinson 2003: 108).

Certainly, the conspicuousness of a site in a landscape increases its likelihood of discovery. Redman reports that a large tell can be spotted by a surveyor from half a kilometer away or more while a smaller tell could be visible within 200 m of a viewer’s location (Redman 1982:377). Following the described logic, surveyors could utilize one km transects to identify all large tells in an area (Yukich 2013:67).

4.2.3 Research Objectives

Ideally, research questions should guide survey design. Survey research design can be divided into two broad categories: prospection and statistical survey (Banning
2002:27-38; Schiffer et al. 1978; Plog et al. 1978). These categories are not mutually exclusive and may overlap. Moreover, a focus upon research objectives can allow the researcher to simply select the most efficient method for achieving goals. All three projects whose results were utilized for the analyses in this dissertation employed a prospection (alt. purposive) strategy.

The explicit goal of prospection is to find archaeological sites. Well-designed prospection is an opportunistic methodology which takes advantage of any available information that may increase the likelihood of discovering archaeological remains (Renfrew & Bahn, 2004:82). A well-designed survey takes a wide variety of sources into account to determine which locations are most likely to yield archaeological information such as geological data, historical evidence, ethnography, maps, place names, previously conducted survey and local information (Schiffer et al. 1978). Banning observes that critiquing prospection on the grounds that its results are biased is like critiquing the results of a search and rescue because it is geared toward detecting lifeboats over the open sea (2002:29). However, prospection, while optimized to detect archaeological sites in an area, is unsuited for making quantitative generalizations about entire populations.

Statistical or probabilistic survey is an appropriate methodology to estimate population parameters, build predictive models, or test probabilistic hypotheses

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54 A seldom-used category, the structural survey, is defined as a survey methodology which aims to understand the spatial patterning of sites and features as continuous distributions. Examples of such patterns include settlement lattices, road networks, and trade routes. These are individual features that, in many cases, form nodes of a network (Banning 2002:34). In practice, continuous pattern recognition requires some level of observation at every grid unit, though it may constitute a de facto sampling strategy (Banning 2002:34). Thus, such studies resemble "total" surveys.
(Renfrew and Bahn 2004:80). Moreover, statistical survey can provide an alternative to surveying a larger area while providing the capability to extrapolate beyond the areas surveyed. One potential bias of the method, sometimes called the Teotihuacán problem, is the possibility of missing an important, but rare, data point (Schiffer et al. 1978). Statistical survey is typically conducted by applying a grid to a research area and then using a statistical method to select which subset of the squares, or the population, to study. One potential bias of the method, sometimes called the Teotihuacán problem, is the possibility of missing an important, but rare, data point (Schiffer et al. 1978). Statistical survey is typically conducted by applying a grid to a research area and then using a statistical method to select which subset of the squares, or the population, to study. Probabilistic survey is favored in the study of the Americas, as well as in the Mediterranean rim and Europe (Yukich 2013:61).

None of the survey projects presented below employed a statistical sampling strategy. Statistical sampling methods of survey areas are little-used in the ancient Near East (Wilkinson 2000), and it can be argued that the reason is that many site types, such as tells and fortresses, are well-suited to efficient survey.

4.3 Survey Data Utilized

The present study utilizes survey data that from three archaeological research projects performed during a fifty-year period, and all were expeditions originating from Europe and operating in an Ancient Near Eastern research setting. In this

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55 Renfrew and Bahn divide the kinds of probabilistic sampling in statistical surveys into four categories: 1) simple random, 2) stratified random, 3) systematic, and 4) stratified unaligned systematic (2004). Before performing the study, the survey area is typically divided into grid squares. The simple random method, as the name applies, is a random draw from every grid square (2004:80). Stratified random sampling divides the grid squares into classes (for example, forest or river) from which squares are randomly selected to ensure representation from each class. The systematic method aims at fuller coverage by proposing a uniform method over the entire area, for example, by selecting every nth square (80). The stratified unaligned systematic method combines the elements of class creation with the element of using a formulaic selection. All of these probabilistic sampling methods were applied to a survey area in the Valley of Oaxaca by a team that concluded that there were no statistically significant differences among the methods (Plog et al. 1978).
section, I will assess research design as well as any possible variation in method or implementation that existed among these investigations, detailing the projects' geographical recording methods as well as my method for incorporating these data into my study. Ultimately, the methodologies and research goals of the investigators are closely aligned, making the comparison of data reasonable. Moreover, it is expected that research design favors an over-representation of large, visible sites.

4.3.1 The DAI Surveys of West and East Azerbaijan Provinces of Iran

4.3.1.1 DAI Expedition Methodology

Between 1967 and 1978, Wolfram Kleiss, director of the Deutsches Archäologisches Institut (DAI) in Tehran, conducted numerous seasons of survey in northwestern Iran, specifically in the West Azerbaijan and East Azerbaijan provinces, documenting more than 1000 sites of all periods over a territory of more than 40,000 km². The data for northwest Iran were collected from fourteen distinct survey regions. In later seasons, Stephan Kroll participated in the project, and he ultimately published the material from East Azerbaijan (Kroll 1984b). Of these sites, more than 200 pertain to the Early or Middle Iron Age, including the Urartian period (Figure 9). In addition to the described surveys, Kleiss also conducted important excavations at the large fortress site of Bastam (Kleiss 1988; Kleiss 1979).
Figure 9: EI, Urartian and MI Sites in Iranian Surveys
The results from the described decades of survey were published serially in dozens of German-language articles in the DAI journals *Istanbuler Mitteilungen* and *Archaeologische Mitteilungen aus Iran*. The publications contain almost no cartographically accurate maps; most representations of sites are sketch maps. While a final publication of all sites was never the object of the described investigations, the lack of one does make the data difficult to incorporate into analyses.

The DAI survey utilized the jeep-based reconnaissance style common in the Near East. The team also benefitted from local informants for leads about potential sites (Kroll, personal communication). In the earliest publications, Kleiss documented relatively few tepes, particularly small ones. During the 1970s, when Kroll began to participate in the work, there was an improved effort to document modest sites (Kroll, personal communication). The project was explicitly a site-base survey so the team did not employ field walking as a strategy nor did they document isolated sherd scatters. Accordingly, one may expect a bias in the data towards larger, visually prominent sites.

The German team was unable to document the geographical coordinates for any of sites they recorded in their surveys due to the unavailability of maps for the region (Kroll, personal communication). While there were some United States

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56 The entire dataset is reconsidered and summarized in Kroll’s unpublished 1994 habilitation, from which he made available the Gazetteer (summary of sites with periodization) as well as a collection of useful sketch and cartographic maps indicating the sites’ general locations. For his Habilitation research, Kroll returned to Iran to study the entire ceramic corpus and re-evaluated the dating of sites. I have followed his dating and periodization of sites.
Geographical Survey (USGS) maps available to the team, they were not useful for the documentation of sites since they did not represent modern places or roads. Kleiss adopted a highly descriptive narrative style using nearby towns and roads to explain the relative location of sites. In many cases, he supplemented these descriptions with sketch maps and scale-drawings of the larger installations.

4.3.1.2 Incorporation of DAI Data into a GIS

The lack of geographical coordinates for the DAI project data posed a major obstacle to the incorporation of the data in GIS analyses. Moreover, the absence of geographical coordinates for these survey data has led to their underutilization in subsequent scholarly research on the Iron Age of Iran, particularly in the era of GIS-enabled research.\(^{57}\)

In order to incorporate these data in a GIS, I utilized high-resolution satellite images, freely-available from the Google Earth (GE) project, to locate the precise geographical coordinates of the sites surveyed by the DAI. In a few cases, I cross-referenced the GE scenes with declassified CORONA images.\(^{58}\) I was able to use Kleiss’ narrative descriptions of the locations, often anchored to still-extant features such as a roads or villages, to locate a majority of the sites.\(^{59}\)

\(^{57}\) Another difficulty has been posed by the publication of the data as descriptive narrative in German language only, a reality that Kroll worries could prevent access to researchers in Iran, Turkey and the Caucasus (http://www.biainili-urartu.de/Iran/North-West-Iran.html).

\(^{58}\) The resolution and visibility of sites is far superior in GE. However, there were a number of cases in which modern development obscured the traces of ancient sites.

\(^{59}\) I was able to positively identify the precise location of all fortified site types. Tells sometimes presented more difficulty since they possess fewer distinguishing characteristics. In order to determine the feasibility of the study, preliminary tests were performed on the Iron Age sites from
included sketch or scale drawings of the majority of sites in their publications (Figure 10) and these were compared with satellite imagery (Figure 11).  

The site data were subsequently entered in a Microsoft Access relational database for later use in ArcGIS. Attributes such as site size, fortification wall size (where present), dating, and geographic coordinates were recorded for later query (Figure 12). The site data collected in the database are presented in Appendix 1.

I was able to identify the coordinates of all fortified installations using high-resolution satellite imagery, and it was possible to identify all but two low-mounded tepe sites. For DAI-project sites that I was not able to place with certainty, I approximated the location and excluded the sites from analyses in which their possible locational offset would affect the results. Approximated sites have been noted in Appendix 1. Place names are frequently inaccurate or not present in GE, particularly in rural locations. Therefore, I utilized declassified governmental databases of place names to identify many of the villages or geographical features that Kleiss and Kroll mention in their reports. The quality of GE imagery continues to improve rapidly. In a few cases, it was possible to identify previously unidentifiable sites as higher-resolution images were released by the project.

60 I owe Stephan Kroll a debt of gratitude since he was kind enough to confirm a number of the identifications through the process. His expertise and personal experience were much appreciated.
Figure 10: Plan of Çeragah-e Amir Fortress Site (Kleiss 1975: p. 60, Abb. 9)

Figure 11: Satellite Imagery of Çeragah-e Amir
Imagery from Digital Globe, Google Earth

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4.3.2 The ISMEA Survey of the Lake Urmia Region

The Urmian survey, completed in one summer season in 1976, was led by Dr. Paolo Emilio Pecorella of the Università di Firenze. The survey was followed by small-scale excavations (soundings) at Qal'eh Ismail Aqa in 1977 and Tappeh Gijla in 1978 (Pecorella and Salvini 1984:7–8). The project, initiated by ISMEA at what is now the Consiglio Nazionale di Ricerche (CNR) in Rome, was prompted by the promising results yielded by Kleiss’ work at the Bastam fortress and Dyson’s excavation of Hasanlu (Pecorella and Salvini 1984: 7). The interest area defined by the researchers was in the Iranian province of West Azerbaijan, spanning from the Urmian plain in the north to the Ušnāviyeh valley to the south. The eastern and
western edges were delimited by Lake Urmia and the Zagros Mountains, respectively.

Originally envisioned as a project to survey and study the eastern provinces of Urartu, the project was *de facto* expanded to become a total survey of the archaeological sites of all periods (Pecorella and Salvini 1984: 11) since the researchers could not know *a priori* if a site pertained to the Urartian period (Biscione, personal communication). The size of the survey universe is approximately 600 km². In total, the researchers documented 141 sites in their survey area from all periods (*Figure 13*). Of these sites, thirty-nine pertain to the EI, Urartian or Middle Iron periods. The survey was envisioned to explore the traces of Urartu in the area (Pecorella and Salvini 1984:7; Biscione, personal communication). The team visited every site that existed in the literature, appeared in aerial photos, or was indicated by local inhabitants in each area, recording the site data at each site. Like the D.A.I project, the ISMEA survey utilized an opportunistic jeep-based reconnaissance style. The project was explicitly a site-based survey so the team did not employ field walking as a strategy or document isolated sherd scatters etc.

61 Kroll reviewed the dating of a number of these sites as a part of his Habilitation and notes several points of disagreement with the field determinations of dating by Pecorella et al. Given Kroll's subsequent work on the re-evaluation of these chronologies (i.e. Kroll 1994; Kroll 1976), I have followed him in his chronological assignments. In general, these points of diversion relate to determinations within the Iron Age. Pecorella et al. choose to assign continuity to epochs, e.g. the Iron Age, where there is only, for Kroll, material from one sub-period present (e.g. Early Iron), cf. their treatment of Balu Tepe.

62 The area was previously surveyed by Schwieriger, Burney, Kleiss, Kromer and Lippert (Kroll 1994).
The results of the investigation appear in a multi-author final volume report which integrates historical analysis by Mirjo Salvini as well as archaeological specialist reports on obsidian sourcing and archaeobotany (Pecorella and Salvini 1984). The publication is richly illustrated, including cartographic maps. The team employed a cartographer who utilized 1:500,000 scale maps (Biscione, personal communication), resulting in cartographically-accurate maps of the sites. To incorporate these data, I scanned and geo-referenced the maps using roads. Subsequently, I verified the sites’ coordinates within GE and made the necessary adjustments. Despite the precision lost in the digitization and georeferencing process, not to mention the large-scale 1:500,000 map, most sites were less than one kilometer away from their locations as detailed in GE.

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63 I would like to thank Raffaele Biscione and Mirjo Salvini for hosting me during a visit to Rome in winter 2012 when I was conducting a feasibility study for my dissertation. I would also like thank them for sharing with me so much of their work, some unpublished, which was informative and instructive. Moreover, I would like to thank them both for their subsequent helpfulness and availability via email.

64 I avoided georeferencing the sites using Lake Urmia because of its rapidly changing shore line (Zarghami 2011).

65 The conversion of a flat paper map to points within a GIS increases potential error versus importing points reported in geographical coordinates. Moreover, the paper map must be “anchored” to the GIS model with common points. Small discrepancies in the matching of the common points are sources of error (Wheatley and Gilings 2002:56–62).
Figure 13: Sites Surveyed in Urmia Survey
4.3.3 The CRN-YSU Archaeological Survey of Lake Sevan

The most recent of the three projects, the Armenian-Italian Archaeological Survey of the Lake Sevan Region, was co-directed by Raffaele Biscione of the Consiglio Nazionale di Ricerche (CRN) and Simon Hmayakyan of Yerevan State University (YSU). The regional survey took place over five field seasons from 1995 through 2000 in Armenia (Biscione, Hmayakyan, and Parmegiani 2002:13–14). The geographical extent of the area was the southern basin of Lake Sevan, specifically in the former rayons of Vardenis and Martuni (Biscione, Hmayakyan, and Parmegiani 2002:14). The study area is approximately 2000 km². The archaeological survey was complemented by philological and historical studies by Mirjo Salvini, as well as specialized scientific studies such as geomorphological analysis. In total, the project identified eighty-two archaeological sites in the study area, of which thirty-eight had surface finds dating to the Early or Middle Iron Age (Figure 14).

The general methodology followed was similar to the approach adopted for the DAI survey in northwest Iran as well as the survey performed in the Urmia region by the ISMEA. The goal of the project was to focus on the Urartean presence in the survey area, and above all the systems of control of the territory, i.e. fortifications (Biscione, personal communication). These, along with necropoles form the most prominent traces in the archaeological landscape (Biscione, personal communication). The CNR-YSU survey utilized an opportunistic jeep-based

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66 Biscione was a participant of the Urmia project several decades earlier and his co-direction of this project provides continuity among the data sets. He was kind enough to explain the methodologies employed for both of these projects.
reconnaissance style common in the study of the ancient Near East, employing local informants, previous research and remote-sensing data. However, as the researchers did not know which sites were Urartian or not, they visited and recorded each site, even those that did not pertain to the target period (example: Roman, Byzantine etc.). The project was site-based so the team did not employ field walking, except in a few cases around some of the larger sites, to little effect (Biscione, personal communication).

The team utilized hand-held GPS units to determine the geographical coordinates of sites. Nonetheless, the precision was relatively poor since the project was completed prior to the descrambling, termed selected availability, of global positioning satellites in May 2000 (Zumberge and Gendt 2001). Accordingly, the coordinates of all sites were verified and in some cases corrected using high-resolution satellite imagery in GE.67

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67 The coordinates utilized in the studies are presented in the Appendix.
Figure 14: Iron Age Sites in Sevan Study Region
4.4 Overview of the Iran Data

The survey data utilized from northwest Iran are a combination of the ISMEA survey data collected near Lake Urmia and Kleiss and Krolls’ surveys in East and West Azerbaijan. A few sites, moreover, were incorporated from other sources such as Stein and Swiney’s surveys of Iran (Stein 1940; Swiney 1975) or recent work by the Iranian archaeological service (Hassanzadeh 2009; Nobari and Afifi 2009). Since the dataset represents an aggregate of discrete survey projects, it should prove useful to present a few points of summary here.

4.4.1 Chronological Determinations

Chronological markers for periodization were provided from three sources: surface collection of pottery, architectural styles and inscriptive evidence.

Surface collection of pottery was the predominant method by which Kroll and Biscione distinguished between El and Middle Iron assemblages (Kroll 1994; Kroll 1976; Biscione, Hmayakyan, and Parmegiani 2002). Many ceramic types are not restricted to either the El or MI assemblages as much as there are some styles that are predominant in one period versus the other period (Kroll 1994; Kroll 1976). Therefore, the prevalence of certain styles is important in chronological determinations.

68 A number of these sites were also treated by Kleiss and Kroll.
Table 1: Archaeological Periodization (after Kroll 1994)

<table>
<thead>
<tr>
<th>Years BCE</th>
<th>Periodization</th>
<th>Historical Correlate</th>
</tr>
</thead>
<tbody>
<tr>
<td>1500-1200</td>
<td>Late Bronze Age (LBA)</td>
<td></td>
</tr>
<tr>
<td>1200-800</td>
<td>Early Iron Age (EI or FEZ)</td>
<td>Rise of Urartu</td>
</tr>
<tr>
<td>800-600</td>
<td>Middle Iron Age (MI or MEZ)</td>
<td>Apogée and Decline of Urartu</td>
</tr>
<tr>
<td>600-300</td>
<td>Late Iron Age (SFZ)</td>
<td>Medes, Achaemenids</td>
</tr>
</tbody>
</table>

While sometimes precisely equated with the Middle Iron (MI) period, Urartian material culture and architecture is a historical phenomenon tied to a particular political entity that overlaps chronologically with both EI and MI local material culture styles (Smith et al. 2009:34, 40), as illustrated in Table 1. The “intrusive” Urartian pottery, inscriptions and architectural traits are contemporaneous with both local EI- and MI-period styles, particularly in Iran where there is epigraphic evidence for Urartian incursion early in the empire’s history, during the ninth century (Salvini 2008:140–141). Therefore, the Urartian

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69 Certain styles such as large-diameter *pithoi* were obviously constructed locally for practical reasons, and Red-Polished Wares may have been produced locally, too. The effects of hybridity on local traditions by intrusive Urartian models remains unclear due to a lack of systematically excavated Urartian sites, however, results from Agrab Tepe near Hasanlu suggest that hybridity was observable (Muscarella 1973).
state and its archaeological correlates (Zimansky 1995a) are coeval with the latest phases of local EI traditions and roughly coterminal with the end of the MI, as defined below (Kroll 1994).

Characteristic ceramic types associated with the earlier phase of the Iranian EI (Early Iron-G) include Gray Ware, Red Ware, Red-Brown Ware, Rillenkeramik, and Buckelkeramik (Kroll 1994:c. 3). The later phase of the Iranian EI (Early Iron-H) is characterized by a prevalence of Red-Brown Ware, Gray Ware, Rillenkeramik, and Buckelkeramik. “Urartian” sites may be identified based upon the the presence of Red-Polished Ware, large storage pithoi, and to a lesser extent, Red-Brown Ware. The generically Middle Iron (local) wares are Red-Brown and Buff, known primarily from Iron III contexts at Ziwiye and Zendan-I Suleiman (I-II) (Kroll 1994:c. 3).

The characteristic ceramic type associated with the fortress-empire of Urartu requires further comment. It is a fine, wheel-made pottery that is a lustrous red. It is known in the scholarly literature as Red-Polished Ware (Kroll 1976), although it is sometimes called Topprakkale Ware after the Anatolian site where it was first discovered. Urartian pottery is, moreover, a rare archaeological example of a material-culture style that correlates to a historical or political period (Zimansky 1995a). However, Urartian Red-Polished Ware may prove to be more common in seventh-century contexts since nearly all secure contexts in which Red-Polished Ware has been excavated are at seventh-century sites. In certain ways, it may be compared to Nuzi Ware, associated with the LBA Mitanni empire (Schwartz 2014),
since Urartian Red-Polished Ware is rarely present in great quantities, even at the largest administrative centers, and is seldom found outside of “elite” nodes.\textsuperscript{70}

Urartian fortresses and other administrative contexts may also contain large, locally-produced storage \textit{pithoi}—inscribed with Urartian cuneiform volumetric units of measure—that were used to store liquids such as oil or wine (Earley-Spadoni n.d.).

Architectural styles, when known from survey or excavation, provide additional chronological finesse to the present study.\textsuperscript{71} Pre-Urartian (local) fortress styles tend to employ cyclopean architecture and exploit the contours of the terrain. For “Urartian” forts and fortresses, architectural styles in Iran can be divided into an early and a late style (Kleiss 1976a), although architectural styles are not always apparent from surface reconnaissance. The early style dates to the ninth or eighth century, and the late style to the seventh-century. While a growing scholarly consensus has begun to acknowledge that there is significant variation among Urartian architectural styles, particularly in Anatolia and the southern Caucasus (Biscione 2012; Smith 1996), Kleiss’ architectural typologies appear sound for Iran based upon the information that scholars have at present.

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\textsuperscript{70} Red-Polished Ware typically constitutes less than five percent of all pottery found, even at large administrative centers (Kroll 1976:62).

\textsuperscript{71} Previous scholarly opinion held that pre-Urartian (local) fortress styles were cyclopean and later Urartian fortresses were characterized by ashlar masonry (Ristvet et al. 2012; Smith 2012). However, like a number of traits once considered distinguishing of the Urartian state, ashlar masonry may only be widespread in the seventh century, the era of Rusa the Great (Dan 2014).
The final marker utilized for chronological determinations is inscriptive evidence from the kings of Urartu. There are more than 200 stone-cut inscriptions distributed throughout the empire that provide chronological complements for the ceramic and architectural data since most reference a particular king (Salvini 2008). Many of these are dedicatory foundation texts carved into rock walls at or near forts or fortresses and almost all can be associated with the king who commissioned the structure. One such inscription, an eighth-century text discovered at the typologically “EI” (local-style) fortress of Libliuni (Kleiss and Kroll 1980), is an illustration of an Urartian inscription at a stylistically EI fortress.

For the purposes of this study, sites classified “Urartian” and sites designated “MI” should be considered related phenomena since they are contemporaneous and some, but not all, MI sites would have been under Urartian control. Urartian sites were designated such based on the presence of Urartian Red-Polished Ware, Urartian inscriptions and Urartian-style fortress architecture. However, settlements or forts within the sphere of Urartian control may not demonstrate any of the described “typically Urartian” traits, particularly in surface survey (Kroll 1976). Therefore, MI settlements and forts that would have been under the political control of Urartu may be at times indistinguishable at the site level from settlements outside of the sphere of Urartian control. Therefore, MI sites must be evaluated within the context overall patterns of settlement in a region in order to understand whether or not these places were under the dominion of the empire in question. For example, small typologically MI forts and settlements (e.g. NQ 11 or NQ 13) may be located
along a road bookended by significant Urartian centers, as has been observed in the Ushnu-Naqadeh region.

4.4.2 Iranian Sites by Period, Size and Site Type

Among the 211 sites documented in northwest Iran, 129 were designated EI, seventy-three Urartian, and seventy-eight were generically Middle Iron (MI). A number of sites pertain to two or three of the chronological categories, i.e. IA, Urartian or MI (Table 2).

I have distinguished between forts and fortresses in Iran and Armenia. Fortresses are larger, more architecturally complex constructions with polyvalent functions such as administration, storage and temples; fortresses are typically larger than 100 meters on each side. Forts tend to be smaller in size than fortresses with simpler, usually four-sided, architectural schemes. There are no known emic (Urartian) systems of classification that shed light on the distinction that I propose, although it is apparent in the Neo-Assyrian sources that the Assyrians distinguished among a number of different kinds of fortified structures that they encountered in enemy lands, e.g. *birtu* and *āl dennāti* (Zimansky 1985:40–44).

Settlements are the most common site type for the EI in Iran, and a third of the known settlements are observed in the Lake Urmia area surveyed by ISMEA.

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72 The periodization of the sites was determined by Kroll for his 1994 Habilitation. The MI ceramic styles defined by Kroll are local traditions contemporaneous with Urartu. Some of these sites with pottery expressing a generically MI style are inside the empire while others are well outside. When the data for MI and Urartu are combined there are a total of 144 sites. Some sites are attributed to both MI and the Urartian period because they demonstrate both Urartian characteristics as well as a marked affiliation to the local MI ceramic traditions.
Forts and fortified settlements are also well-attested. Most sites from the IA are small (Figure 15), though there are also a number of larger sites.

The total number of forts increased dramatically during the Urartian and Middle Iron periods. When the data are aggregated for the Urartian and MI periods, there are sixty forts versus the twenty-seven forts present during the EI. Fortresses also increase in prevalence during the Urartian period.

Most Urartian sites in Iran are small—between one-half and one hectare—although there is an increase in the medium, large and extra-large site sizes (Figure 16). The MI sites demonstrate the largest percentage of small sites (Figure 17). The tendency towards smaller site size among MI sites is unsurprising since these are residential in character and demonstrate a local, non-Urartian material culture.

While Urartu is known primarily through its fortresses, the survey data from Iran indicate that settlements form a significant part of the archaeological record. Settlements diminish in number during the Urartian period in northwest Iran, but they do not disappear entirely. Urartian pottery or architecture is present at fifteen settlement sites while there are an additional thirty-nine contemporaneous sites that demonstrate a generic MI assemblage. Combined, there are fifty-four settlements in Iran contemporaneous with the Urartian occupation compared to the eighty-eight known from EI Iran. While representing a marked decline in the number of settlements from one period to the next, the presence of many unexcavated settlements means that there is much to discover in Iran regarding the rural, non-elite expression of the Urartian Empire.
The fourteen sub-regions represented in the survey data did not yield the same density of sites (Table 3), though the reasons for the observed differences vary. Some sub-regions were subjected to more intensive investigation while other sub-regions inevitably have differing histories of occupation. For example, Khoy and Maku were particular foci of Kleiss’ survey efforts in the early years of his surveys. The investigations of the Hasanlu project led by Robert Dyson, Jr. led to the Ushnu-Naqedeh area benefitting from an increase in site recognition (Dyson 1968). The Pecorella-led ISMEA survey similarly resulted in the discovery of many sites along the Urmia basin. Marand, though well-explored, demonstrated a lower site density, perhaps owing to physiographic characteristics that are less appealing for dense settlement (Zimansky 1985).
Table 2: Sites in Iran by Site Type

<table>
<thead>
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<th>Site Type</th>
<th>EL Sites</th>
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<tr>
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<td>34</td>
</tr>
<tr>
<td>Fortress</td>
<td>7</td>
<td>14</td>
</tr>
<tr>
<td>Fortified Settlement</td>
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<td>Settlement</td>
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<tr>
<td>Building</td>
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<tr>
<td>Fortified Settlement</td>
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<tr>
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<tr>
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<tr>
<td>Other</td>
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</tbody>
</table>

![Figure 15: Early Iron Site Distribution by Size in Iran](image-url)

Figure 15: Early Iron Site Distribution by Size in Iran
Figure 16: Urarian Site Distribution by Size in Iran

Figure 17: Middle Iron Site Distribution by Size in Iran
<table>
<thead>
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<th>Mahabad</th>
<th>Maku</th>
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<td>4</td>
<td>11</td>
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<td>1</td>
<td>1</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Ex-Large (&gt;5 ha)</td>
<td>-</td>
<td>2</td>
<td>-</td>
<td>3</td>
</tr>
<tr>
<td><strong>Total</strong></td>
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<td>7</td>
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<td>-</td>
<td>1</td>
<td>-</td>
<td>4</td>
</tr>
<tr>
<td>Ex-Large (&gt;5 ha)</td>
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<td>2</td>
<td>-</td>
<td>2</td>
</tr>
<tr>
<td><strong>Total</strong></td>
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</tr>
<tr>
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<td>-</td>
<td>-</td>
<td>-</td>
<td>2</td>
</tr>
<tr>
<td>Ex-Large (&gt;5 ha)</td>
<td>-</td>
<td>1</td>
<td>-</td>
<td>1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
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<td>12</td>
<td>2</td>
<td>6</td>
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<th>Ushnu-Naqadeh</th>
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<td>9</td>
</tr>
<tr>
<td>Small (&gt; .5 - 1 ha.)</td>
<td>18</td>
<td>10</td>
</tr>
<tr>
<td>Medium (&gt;1 - 3 ha)</td>
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<tr>
<td>Large (&gt;3 - 5 ha)</td>
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<td>1</td>
</tr>
<tr>
<td>Ex-Large (&gt;5 ha)</td>
<td>6</td>
<td>3</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>66</td>
<td>23</td>
</tr>
</tbody>
</table>
4.5 Discussion

Ultimately, the methodologies and research goals of the three archaeological projects from which the survey data presented in this chapter derive are closely aligned, making the comparison of the data reasonable. Moreover, the data biases that exist favor an over-representation of large, visible sites, a characteristic that preferences recovery of fortified sites, a particular focus of the studies presented in this dissertation. Yet, one surprising observation from the aggregated data from Iran is that small sites and settlements are the pre-dominant site types for both the EI and Urartian periods. The high visibility of tell-based settlements and small forts may account for this observed trend.
Chapter 5 Visibility Analysis and Archaeology

Buildings would express meaning and impose order. The most impressive were the great domes—the Catholic Cathedral, the Exchange, the Unitarian Church, Saint Paul’s Episcopal Church, First Baptist, and that superb edifice, the Medical College . . . . for [in the] sitting [of] their monumental structures, the builders developed a new appreciation of the natural topography as a stage.

Sherry Olsen in Baltimore, the Building of an American City (1980)

5.1 Introduction

Visibility studies were one of the first implementations of GIS in archaeology, and they remain a vital topic of research (Wheatley and Gillings 2000; McCoy and Ladefoged 2009). The present dissertation extensively utilizes GIS-implemented visibility analyses. Hence, the current chapter describes inter-visibility and viewshed, analytical techniques commonly performed in archaeology. Moreover, this chapter provides an overview of the state-of-the-art in research. Recent approaches address a wide range of research topics from the practical implications of defense to the ideological concerns of monumentality. Within archaeology, the sub-discipline of visibility studies is notable for its diversity of approaches as well as a breadth of research foci. Despite the variety, a number of themes emerge. First, visibility studies are particularly suited for human-agent focused investigations. Second, GIS approaches in archaeology have been critiqued for a general failure to integrate scientific, analytical approaches with social theory. Yet, visibility studies are an exception to the observed trend.
5.2 GIS in Archaeology

During recent decades, Geographical Information Systems (GIS) techniques have offered new ways to answer archaeological research questions, especially investigations oriented toward regional phenomena. A GIS is a computer-based set of tools that allow for the creation, transformation and analysis of geographically referenced datasets; it is a spatial toolbox (Conolly and Lake 2006: 14; Wheatley and Gilings 2002: 7-8). The late 1990s through early 2000s were a watershed for the use of geospatial technologies in archaeology. In a short span of time, inexpensive and accurate global positioning systems (GPS), air and space technologies, image availability, and hardware and software capable of analyzing them all, converged to make new tools available to archaeology (Comer and Harrower 2013: 1; Harrower 2009).

To date, no GIS software has been developed specifically for the use of archaeologists, resulting in researchers adapting tools developed for other purposes such as civic planning, market research or the hard sciences. The most common GIS platforms in archaeology are ESRI's ArcGIS and the open-source GRASS GIS (Hritz 2014: 16-17). With the exception of open-source platforms, GIS programs are expensive, on the order of thousands of dollars per year for a license, effectively limiting use to institutional settings. Of these, ArcGIS is used more than the others in archaeology because of its superior raster-handling and spatial analysis tools (Hritz
The present studies utilize a combination of ESRI’s ArcGIS and MathWorks MATLAB Mapping Toolbox.73

The push towards freely accessible data, for which Google was a vigorous champion, was of importance to the present study. Google Earth (GE) is a tool used by archaeologists for visualizing the world globe and geographically referenced data. The imagery in GE consists of variable resolution, visible-spectrum satellite imagery (Parcak 2009:48–49). GE contains historical imagery, usually from recent decades, that can be toggled by date, a feature that is of great interest to archeologists tracking modern site transformation such as development and looting (Brodie and Barker 2012; Stone 2008; Ur 2006; Contreras 2010).

GE is an ideal platform for public archaeology since it allows easy visualization of sites in the classroom and presentation gallery. The utility contains a number of useful layers that display cultural heritage information such as Global Heritage Fund sites and UNESCO world heritage sites.74 Another valuable feature for archaeology is the presence of high-resolution photos taken by enthusiasts and subsequently geotagged in GE, sometimes representing currently inaccessible archaeological sites or inscriptions. Specifically, one of the future values of GE or other similar platforms to archaeology may be its ability to collect and display crowd-sourced data.

73 MATLAB is a fourth-generation programming language as well as a powerful data analysis and visualization platform. MATLAB is used extensively in engineering and science, but is utilized less frequently in archaeology. I used it to perform certain studies in preference to ArcGIS because of prior experience with the MATLAB coding language, and the good documentation and forum support provided by MATLAB versus ESRI.

74 The Global Awareness Layer: www.globalheritagefund.org
5.3 Visibility Analyses Commonly Employed in Archaeology

ArcGIS and other GIS programs offer three basic variations of visibility analysis. The first is the viewshed, an analysis that simulates that which can be seen across the terrain. The second is a point-to-point analysis which expresses inter-visibility as line between two observer points. The third of these is the cumulative viewshed analysis, which shows the overlapping fields of visibility of a set of observer points. In all three of these implementations, the calculation computes sight based upon the cell values for elevation in a digital elevation model (DEM).

The viewshed calculation (Figure 18) simulates what can be seen by a viewer from a given location within a defined radius. The output of the viewshed analysis tool is binary: visible or not visible. Viewshed analyses are well-suited to assess what parts of the environment are visible or obscured from a particular vantage point. One weakness of the viewshed, a binary model, is that it fails to account for the decay of human eyesight over distances (McCoy and Ladefoged 2009; Wheatley and Gillings 2000; Fisher et al. 1997; Fischer 1994).

The second type of visibility calculation is a line-of-sight analysis (Figure 19). In contrast to the viewshed analysis, the line-of-sight calculation is a point-to-point study. The line-of-sight analysis is the classic method to study intervisibility among features. Rather than compute broad visibility over an area, the line-of-sight calculation simply computes the visibility between two given points, rendering the analysis much less computationally-intensive. Therefore, the line-of-sight method is preferred to the viewshed if it can resolve the research problem at hand.
The final commonly-employed variation on visibility analysis\textsuperscript{75} is called cumulative viewshed analysis (CVA) in much of the literature. The CVA is an aggregate snapshot of the viewshed analyses of a user-specified selection of sites and visualizes areas of overlapping intervisibility. Despite its widespread use in archaeological publications, the CVA can be visually chaotic (\textbf{Figure 20}). Arguably, the CVA is a poor form of data visualization, but may be useful nonetheless for data exploration. In the provided example, only three sites are displayed, and it is difficult to determine what the model predicts can be seen from each site.\textsuperscript{76}

\textsuperscript{75} Although not yet common in archaeology, the computationally-expensive Total Viewshed computes the visibility from every pixel in a raster (Tabik et al. 2013).
\textsuperscript{76} Since the data are communicated via color, the cumulative viewshed analysis is ill-suited for gray-scale publication. It should be noted that ArcGIS limits the number of points that may be evaluated at a time to sixteen, meaning that if a larger dataset requires analysis, it is not possible with the CVA. Some researchers may break their dataset into smaller pieces for analysis, but the proposed strategy presents its own difficulties. This partition requires statistical methods or judgment selection for its execution.
Figure 18: Viewshed Analysis, Areas Visible from SV64

(Site highlighted in blue)

Figure 19: Intervisibility between Geghamasar to Other Forts
5.4 Towards Agent-Based and Agent-Scaled GIS Approaches

This section examines two criticisms of GIS-applications in archaeology, which the methodology of this dissertation addresses directly. The earliest evaluations of GIS-enabled landscape studies focused upon a perception that these methods were environmentally deterministic or demonstrated a general failure to integrate social factors or social theory into explanatory models. Additionally, scholars leveled the critique that GIS approaches tend to depopulate ancient landscapes, leading to a misunderstanding of the role of human agency in past social change.
5.4.1 Integrating GIS and Social Theory

The emphasis on environmental data and large-scale approaches that typified some early GIS studies led to a number of critiques. One such assessment was that the investigations in question utilized environmentally-deterministic methodologies and interpretation (Llobera 1996: 612-613). The basic critique is that scholars who employ GIS methodologies, by the very nature of their datasets, give primacy to environmental explanations, ignoring the substantial influences of human agency and historically-specific and contingent events. By way of example, if a hypothetical archaeologist performs a GIS analysis that compares rainfall data to site density in particular zones and concludes that increased rainfall resulted in increased human settlement, the resulting archaeological interpretation would be environmentally deterministic.\(^{77}\) There was particular scholarly concern that the datasets and methodologies commonly employed in GIS analysis predisposed researchers to interpret the environment as a causal dynamic for societal change because environmental data such as rainfall, temperature and elevation are well-adapted for a GIS study, while complicated social factors are not (Aldenderfer and Maschner 1995; Lock and Stancic 1995; Allen et al. 1990). In response, GIS supporters noted that the consideration of physiographic factors does not condemn an analysis to employing environmental determinism (Llobera 1996). Specifically, flawed archaeological reasoning is the problem and not the GIS model.

\(^{77}\) It can also be said that it conflates correlation with causation.
A related critique is that GIS-enabled approaches may fail to integrate social theory with more quantitative analyses (Llobera 2001:28; Harrower 2006; Harrower 2016). By contrast, the present study aims to integrate social theory, historical documentation, ethnography, and archaeological evidence with a GIS approach, placing a particular emphasis on developing agent-based analyses, a need that has been expressed in reviews of spatial analysis in archaeology for decades (McCoy and Ladefoged 2009; Llobera 2001; Richards-Rissetto and Landau 2014; Llobera 1996). The present study’s use of Social Network Analysis and the human-scale criteria of vision are two examples of a focus on agent-based and agent-scaled methodologies.

5.4.2 Dehumanization and Re-humanization (Agency)

*My approach is to try and get people to drop human scale entirely. And when they think of something, they go into that scale. If you're going to think of galaxies, you've got to think galaxy-like . . . If you don't want to expand yourself to that scale, it's hopeless.*

—Alan Dressler, astronomer (Pickles 1995: 642)

Many forms of archaeological analysis rely on conceptualizations of space and time (Harrower 2016). Recent critique of GIS models argue that they render depopulated, dehumanized ancient landscapes (McCoy and Ladefoged 2009). Within the realm of GIS, there is a propensity to depict broad expanses at the clinical *bombardier-eye view* (Moshenska 2009), i.e. at scales that do not perceive humans or even human-created features (Pickles 1995; Thomas 1993; Pickles 1991).
According to the argument, GIS-simulated landscapes become a subject viewed from afar and bear little resemblance to the version that ancient people would have experienced (Llobera 1996; Tilley 1994). Others argue that technologies like GIS play an ontological God trick and lay the world bare like a corpse under the pathologist’s knife, in the process presenting a view of landscapes that past habitants would scarcely recognize (Thomas 1993:25; Haraway 1988; Aitken and Kwan 2009). A comparable appraisal has been addressed towards computer-aided design (CAD) reconstructions of ancient cities and architecture that present "empty cities," i.e. sterile, depopulated places (McCoy and Ladefoged 2009; Thomas 1996a).

In sum, what is the role of a human being, made of flesh and bone, in a digital ghost town assembled of zeros and ones and rendered at a scale of 1: 1,000,000?

The post-processual emphasis on praxis endeavors to put the human being and above all the human agent back in focus (Bourdieu 1977; Bourdieu 1989; Giddens 1979), and conceives of vision as an embodied process (Haraway 1988). Ingold summarizes the importance of praxis in landscape formation with the following definition: "The landscape is the world as it is known to those who dwell therein, who inhabit its places and journey along the paths connecting them" (1993: 156). A shift towards an emphasis on practices, mirrored in archaeology more generally, combines a number of intellectual currents from a variety of disciplines (Llobera 1996: 613): anthropology and sociology (Bourdieu 1977), sociology (Giddens 1979; Giddens 1984)and philosophy (Heidegger 1972). Yet, is GIS equipped to evaluate practice, particularly that which occurs on a human scale?
In *Outline of a Theory of Practice*, Pierre Bourdieu (1977) advanced his influential view of the relationship of the individual to society. Bourdieu develops the dialogue begun by Marx, Weber, Durkheim, and Deleuze, among others, in the preceding decades. Most discussions in archaeology of Bourdieu focus upon his concept of habitus. Habitus is a lasting matrix of perceptions, appreciations and actions acquired by a human being (Bourdieu 1977:83), and is composed of dispositions, the result of internalization of culture or objective social structures through the experience of an individual or group. Accordingly, habitus is a structuring structure and has agency. Though espousing the notion of a social agent, Bourdieu dismisses the concept of individual intentionality with the idea that an individual's decisions are products of a process of which he or she is not the producer and has no conscious mastery. Dornan vividly describes Bourdieu's habitus as a conductor-less orchestra (2002: 306).

Anthony Giddens' conception of agency is popular among archeologists because he overcomes Bourdieu's limiting notions with his concept of structuration, a concept that focuses on the constraining and above all enabling nature of social structures. In contrast to Bourdieu, Giddens argues that individuals make choices based upon a practical consciousness, which he defines as a non-discursive, conscious knowledge of social institutions (Giddens 1985:11). Thus, the individual is cognizant of these recursive, habitual actions.

Another important departure of Giddens from Bourdieu is that the latter envisions landscape and habitus as being mutually formative while Giddens’s
Structuration theory conceives of space being produced by, while at the same time producing, social action (Giddens 1984). In the latter view, space and social agency are intimately intertwined in a recursive relationship. Returning to the concept of socially-constructed space discussed in the introduction, Giddens argues that space is not an empty dimension along which social groupings become structured, but has to be considered in terms of its involvement in the constitution of systems of interaction (1984: 364).

Recent interest in the topic of material agency, object agency, “secondary” agency, or the agency of things (Gell 1998; Latour 1994; Latour 2005; Hodder 2012; Bennett 2010) may lead scholars to speculate on the ability of certain kinds of landscapes to promote particular social situations like violence or inequality (e.g. Bachhuber 2014). Visibility studies in GIS are well-situated to explore material agency in the past.

A growing scholarly consensus has begun to explicitly define GIS-enabled landscape studies as an interdisciplinary academic discipline focused upon social agents constructing landscapes over time (Anschuetz et al. 2001; Knapp and Ashmore 1999; McCoy and Ladefoged 2009). Landscape studies, thus understood, already have a presence in the study of the ancient Near East (Hritz 2014; Wilkinson 2003). Emphasizing the complex relationship between people and places, Wilkinson argues that, "landscape must be therefore seen as both actively influencing the lives of the inhabitants as well as being in turn heavily influenced by the activities of those inhabitants" (2003:6).
5.5 GIS-Enabled Visibility Studies—Research Trends

Visibility studies were one of the first GIS implementations within the field of archaeology (Wheatley 2004: 3-4), and echoed analog analyses already being performed by the New Archaeology school, namely in the forms of spatial allocation models and site catchment analysis (Wheatley 2004; Clarke 1977; Clarke 1968). Shortly after, predictive site modeling and visibility analysis emerged as the two largest fields of research, particularly in the U.K. (Wheatley 2004). The first applications of GIS-implemented visibility analyses date to the 1990s, though the sub-discipline has quickly burgeoned into a major font of scholarly production.

Vision is an important topic in contemporary archaeological research, and its wide applicability to research problems is demonstrated by the extreme diversity of research questions posed by practitioners in the field. Studies have investigated widely ranging topics from the implications of visibility in the placement of prehistoric boundary markers and tombs (Bongers et al. 2012; Wheatley 1995; Renfrew 1973), to the choice of settlement site for reasons of proximity to resources or defense (Panagiotakis et al. 2013; Jones 2006; Kay and Sly 2001), or the alignment of religious architecture to other terrestrial or celestial features (Briault 2007; Fisher et al. 1997; Ruggles and Medyckyj-Scott 1996). Human-scale investigations have explored the concept of space syntax within architectural complexes or even single rooms such as studies of Byzantine churches in Jordan (Clarke 2007) or task areas in arctic dwellings (Dawson et al. 2007).

78 A few researchers performed intervisibility analyses using analog methods, notably those studying English prehistorical monuments such as Renfrew 1979, Fraser 1983.
Notwithstanding the variety of archaeological problems studied, a number of important themes emerge from the visibility studies performed by archaeologists in recent years. Specifically, the role of human and material agency in the social reproduction of space is an important research trend (Latour 2005; Hodder 2012; Bennett 2010; Smith 2015). The underlying concept of most visibility studies can be understood as either human behavioral modelling or the reconstruction of experiences in past landscapes (Wheatley 2004: 11–12; Lake and Woodman 2003: 694). Both of these foci are well-adapted to an agent-centered approach. For example, a subset of visibility studies has sought to analyze the criteria that people use to make decisions regarding the location of forms or features in the landscape (McCoy and Ladefoged 2009; Lake 2007; Llobera 2007). The development of analytical techniques to detect visual communication networks has been a focus of research in a variety of pre-historical and historical contexts (Earley-Spadoni 2015; Brughmans 2010; Swanson 2003; Rua et al. 2013; Panagiotakis et al. 2013). Several recent studies in space syntax have investigated the placement of architectural elements such as gates and doors, interpreting their placement as an intentional effort to restrict and channel vision and experience. These approaches interpret the built environment as constructed by specific decisions that reflexively alter human behavior (Clarke 2007; Dawson et al. 2007; Osborne and Summers 2014; Fisher 2009; Richards-Rissetto 2010). Such studies reflect a growing recognition of the vital role that constructed landscapes play in social reproduction. In sum, agent-focused studies have become an important subset of visibility research.
Another emerging research trend in visibility studies is the quest to integrate GIS-enabled studies more completely within a social-theoretical framework, (Ashmore 2004; Knapp and Ashmore 1999). For example, Bongers, Arkush and Harrower situate their intervisibility results within the context of an ideational landscape of death, understanding mortuary monuments as complex social messages (2012) and interpret chullpas in the western Titicaca basin as visually prominent representations of memory, identity, ethnicity and territorial claims. Meanwhile, researchers working on the topic of Incan imperial expansion have explored the implications of seeing inherent in political landscapes, spaces that shaped and were shaped by people’s experience with and perception of authority in built environments (Kosiba and Bauer 2013). Supernant and Cookson, instead, utilized visibility analysis as a way to understand insider-outsider perspectives in Lower Fraser River Canyon (2014), concluding that external visibility was an important concern at the entrance to the territory but that its influence waned as one continued into the river valley. In a pioneering study, Llobera sought to systematically evaluate with a GIS model the qualitative assertions made within archaeology about how monumentality channels and shapes movement within landscapes, representing an attempt to integrate the Heideigger-derived concept of “dwelling” with a GIS-based analysis. The examples described above successfully integrate GIS-enabled visibility approaches within a social-theoretical framework, a methodological aim of this dissertation.
5.6 Discussion

Visibility studies play a vital role in GIS-implemented archaeological approaches. In recent decades, GIS methodologies have been critiqued at times on the basis of a perceived tendency to render results that are environmentally deterministic. GIS methodologies have also been faulted for a failure to integrate human-scale criteria within analytical frameworks and for an emphasis on large-scale problems that seem to exclude human agents. Visibility studies are, instead, well-suited to agent-based simulation and human-scale modeling. In particular, recent scholarly contributions have demonstrated success in integrating social theory and empirical approaches. Building upon this foundation, one particular methodological goal of this dissertation is to develop human-scaled analyses that evaluate the decision-making and priorities of social agents.
Chapter 6 Visual Communication Networks

For them to watch out for enemies (?) in the district, towers had been built on mountain peaks and provided with [stores of firewood for signals]. When they saw the (250) bonfires lit, signaling the approach of an enemy, [for which] torches [were kept ready(?)] day and night, announcing [ ], they feared my furious attack, which has no like, terror spread among them, and they were too afraid to fight. Without so much as a glance at their numerous possessions, they forsook their mighty fortresses and disappeared.

--Sargon II’s attack on the Sangibute region (Iran) of Urartu in The Eighth Campaign (Foster 2005: 804)

6.1 Problem & Significance

In this chapter, I evaluate the evidence—archaeological, historical and ethnographic—available to study fire and smoke beacon networks in northwest Iran and Armenia during the El and Urartian periods. In particular, GIS point-to-point intervisibility studies are performed on groups of sites to assess the potential for visual communication networks.

Although fire beacons are well-attested in historical sources, they are virtually unknown archaeologically. However, a number of recent studies have begun to address the under-investigation of ancient visual communication networks (Swanson 2003; Ellis 1991; Kay and Sly 2001; Borowski et al. 1998; Panagiotakis et al. 2013; Kitchen 1986; Zitterkopf and Sidebotham 1989). Due to the renewed scholarly interest in archaeologies of warfare (Arkush and Stanish 2005; Gilchrist 2003; Keeley 1996) and the relevance of fire beacons to the study of defensive
strategies in the past, the investigation of ancient communication networks is gaining momentum.

The reasons for the lack of adequate investigation of fire beacons are varied. In part, the paucity of systematic investigation can be attributed to the regional scope of fire beacons (Earley-Spadoni 2015). For example, a single pyrotechnic feature or signaling station discovered at a site may not be related to other members of its group, and its function may be misidentified. Ethnographic evidence indicates that signaling stations are sometimes small, stand-alone structures located on remote hilltop locations (Panagiotakis et al. 2013). Accordingly, small stations suffer from under-recognition in survey due to a more ephemeral archeological signature.

Moreover, fire beacons may not be recognized because they are a part of a polyvalent construction. For example, signaling installations might be embedded in larger fortified structures, e.g. ramparts, and may be misunderstood as lookout towers only or pyrotechnic installations of some other kind (Earley-Spadoni 2015). Another common kind of signaling station is situated along roads (Zitterkopf and Sidebotham 1989), particularly in flat places such as deserts, and these may be interpreted simply as *caravanserai* or way stations.
6.2 Objectives

The objective of the GIS study presented below is to determine if the necessary conditions of intervisibility were present for the operation of fire beacon networks in EI and Urartian-period Armenia and northwestern Iran using a point-to-point visibility analysis. If these necessary conditions exist, the simulated networks will be subjected to rigorous statistical evaluation. Archaeological evidence, consisting of possible signaling towers in Iran, will also be examined. The results of the investigations will be socially-contextualized with relevant historical and ethnographic documentation.

An additional methodological objective of the analysis is to integrate social theory with a GIS approach, a need that has been expressed in reviews of spatial analysis in archaeology for decades (McCoy and Ladefoged 2009; Llobera 2001; Richards-Rissetto and Landau 2014; Llobera 1996). Accordingly, the analysis presented in the present chapter combines visibility analysis and Social Network Analysis (SNA) to investigate evidence of intentional placement of features for the purpose of communication.
6.3 Methods: Intervisibility Analysis

In order to evaluate the feasibility of signaling systems among the fortified installations\textsuperscript{79} along the southern rim of Lake Sevan and in northwest Iran, the investigation employed a point-to-point intervisibility analysis. The described methodology tests for fire beacon systems that are integrated into towers and ramparts of fortified architecture\textsuperscript{80} rather than a system that employs remote relays. The lines-of-sight were subsequently analyzed using SNA metrics, and random points were generated to provide reference values that could be used to understand the significance of the results. The study employed Kolmogorov-Smirnov (K-S) statistical tests to evaluate the similarity of the archaeological dataset and the randomly-generated points.

The intervisibility analysis was performed under specific technical parameters. A digital elevation model was constructed from thirty-meter resolution ASTER GDEM V2 data. Matlab Mapping Toolbox was used to perform a point-to-point intervisibility analysis, and the results were exported to ArcGIS for visualization. Corrections were applied to account for earth curvature and refraction. A fifteen meter offset was employed to account for the height of architecture, a viewing tower, and the height of a human viewer. The stone

\textsuperscript{79} Unfortified sites, i.e. villages and towns, are of vital importance for understanding any complex political system, and the study of rural, dispersed settlement is woefully under-represented in the study of Urartu more generally (Zimansky 2012:109; Zimansky 1985:46). Nonetheless, some preliminary evidence, presented below, suggests that settlements may have been well-situated to participate in visual communication networks.

\textsuperscript{80} Fortified structures were not exclusively military structures. For example, they were also administrative centers, refuges, temples etc. Moreover, communication systems need not have been exclusively defensive (Earley-Spadoni 2015).
architecture of the period is substantial and these figures are consistent with known tower sizes (Biscione, Hmayakyan, and Parmegiani 2002). Without adjustment, the model would underestimate the number of plausible connections. A bounding radius of 60 km was employed to limit the visible landscape since fire beacons are highly visible features (Swanson 2003:760). Reciprocal visibility (Fisher et al. 1997) was not assumed although all sites did, upon analysis, demonstrate reciprocal visibility. All of these parameters were subsequently adopted for the random-points analysis for comparison purposes. The methodological details presented here in summary form are further elaborated below.

In Iran, sites were divided into groups to test for possible intervisibility within these defined locations (Figure 21). A point-to-point intervisibility analysis was performed in MATLAB for each group. Groups that were isolated, such as the Marand and Ahar sites, were analyzed separately.81

81 I performed a line-of-sight analysis between the closest sites to confirm that they were, in fact, not intervisible. The Khoy-Maku and Urmia groups were originally analyzed together as a set to test for intervisibility, but the decision was made to separate the two because none of the sites were intervisible.
Figure 21: Groups for Intervisibility Analysis
6.3.1 Sites Database

The catalog of sites constructed for the dissertation (Appendix 1) includes the Iron Age sites found in survey by: (1) the DAI surveys of the West Azerbaijan and East Azerbaijan provinces of Iran led by Wolfram Kleiss with the assistance of Stephan Kroll, (2) the ISMEA survey of the Lake Urmia region of Iran led by Paolo Emilio Pecorella, and (3) the CNR/YSU surveys of the Lake Sevan basin in Armenia led by Raffaele Biscione and Simon Hmayakyan. The site catalog forms the basis of the data analyzed in the visibility studies below.

The completeness of the archaeological record is an important consideration for the present analysis. The survey methodology was explicitly extensive, targeting broad regional settlement patterns during all periods. The fortified installations in question are substantial cyclopean stone forts and fortresses, prominent in survey. However, hilltop relays such as those known from the Urartian period in northwest Iran (Kleiss and Kroll 1977:72) might have had a more ephemeral archaeological footprint or be located in remote areas that could be overlooked in survey. Nonetheless, it is understood that unaccounted-for relays would have served to bolster the capabilities of any observed systems.

6.3.2 Digital Elevation Model

The digital elevation model (DEM) was produced from data obtained from the multi-national collaborative effort, The Advanced Spaceborne Thermal Emission and Reflection Radiometer Global Digital Elevation Model, Version 2 (ASTER GDEM V2), a project jointly directed and funded by the United States National Aeronautics and
Space Administration (NASA) and Japan’s Ministry of Economy, Trade, and Industry (METI) (Rexer and Hirt 2014). The high-resolution ASTER GDEM V2 data has a posting interval of one arc-second, or approximately 30 meters, and is available for download from the project’s website as 1 X 1 degree tiles in GeoTIFF format.

6.3.3 Offset A and Offset B

An offset is the vertical distance added to either the observation point or the observation target when computing visibility in a GIS (Figure 22). For the present analysis, a fifteen meter offset was utilized to account for the height of architecture, a viewing tower, and the height of a human viewer since the stone architecture of the period is substantial. Specifically, the fifteen meter offset is consistent with known tower sizes (Biscione, Hmayakyan, and Parmegiani 2002). Without adjustment, the model would underestimate the number of possible intervisible connections. Reciprocity between points A and B was not assumed for the purposes...

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82 Shuttle Radar Topography Mission (SRTM) data represent another viable public-domain option for DEM data, but there were compelling reasons to use ASTER GDEM V2 data instead. Recent studies have shown that while the elevation accuracy, i.e. root square mean height error (RMS), of SRTM DEMS is comparable to that of ASTER GDEM V2, the latter exceeds the former in its accurate coverage of mountainous terrain (Rexer and Hirt 2014; Nikolakopoulos et al. 2006). Furthermore, ASTER GDEM V2 has a much higher resolution than the SRTM data available for non-U.S. world regions, i.e. approximately 90 meters versus 30. A new 30 m resolution version of SRTM data was announced for release in 2015. However, it may be prudent for researchers to wait for independent vetting for quality and accuracy beyond the project’s self-reported statistics when these data are eventually released.

83 http://www.jspacesystems.or.jp/ersdac/GDEM/E/1.html

84 The study area is comprised of approximately forty-five tiles that were stitched together in ArcGIS via a process called Mosaic, a function in the Data Management Tools. After the tiles were thus assembled, they were corrected for possible data artifacts, i.e. spurious data, with the Set Null function in the Spatial Analyst toolbox. Accordingly, all values less than negative ten and greater than 9000 were invalidated for the purpose of analysis.
of the analysis.\textsuperscript{85} Yet, none of the pairs in the analyses presented below demonstrated asymmetrical intervisibility.

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{offsets.png}
\caption{Offset A and Offset B}
\end{figure}

6.3.4 Bounding Function

A bounding radius of 60 km\textsuperscript{86} was employed since fire beacons are highly-visible features (Swanson 2003:760).

The visible range of fire beacons is an important variable for the problem at hand. The range depends on the size of the beacon, i.e. how many lumens it emits, as well as other factors such as weather. Ethnographic studies indicate that even

\textsuperscript{85} As Fischer has elegantly demonstrated (Fisher et al. 1997; Fischer 1994), visibility from A to B does not necessarily predicate visibility from B to A, especially in cases where the viewer height is not negligible and the distances between points are relatively large (Wheatley and Gillings 2001:10).

\textsuperscript{86} Given the distances between sites in the Urmia region, the analyses were performed unbounded. Since it is a point-to-point analysis, the problem of edge effects is not relevant.
modest fires can be seen from substantial distances. Archaeologists studying intervisibility in Mexico were able to see a single burning yucca tree from 42 km away (Swanson 2003:754–755; 759). Moreover, a system in the American southwest had gaps of more than seventy-two km between relays (Ellis 1991). The physical properties of red and orange light contribute to the enhanced perceptibility of fire. Raleigh scattering is an optical wave phenomenon characterized by distortion over long distances due to atmospheric gas; light at the shorter end of the spectrum, i.e. violet, is scattered to a much greater extent than light in the red and orange wavelengths, which tends to travel the farthest along a straight path (Ogburn 2006). Though a bounding radius of sixty km was employed for the analyses, the more distant sites may have been intervisible only under optimal conditions. Other factors such as network density, or the number of connections between sites, would have allowed the network to continue to function when conditions were less than optimal.

6.3.5 Social Network Analysis

Certain analytical tools from Social Network Analysis (SNA) were used to characterize the results from Armenia.

SNA has been productively utilized as a model for understanding human interaction and exchange within sociology and anthropology since the mid-twentieth century. During the last decade, SNA has experienced an important

\[87\] SNA and statistical verification methods were applied to the data from Armenia since the evidence for Iran is more archaeological and historical.
revival in interest (Scott 2011; Borgatti et al. 2009) that may be attributed to a number of factors including improvements in data management and analysis tools, the rise of agent-based social modelling, as well as the current ubiquity of social networking platforms that provide a ready metaphor for explaining the significance of research (Earley-Spadoni 2015). In SNA, social agents are typically modeled by points or nodes that are connected by lines representing some form of interaction, e.g. communication, trade etc. SNA tools evaluate relationships among social entities (Wasserman and Faust 2009).

A common analytical framework for SNA is the mathematical field of graph theory, which defines a formalized methodology for describing networks and their characteristics (Scott 2012:37; Wasserman and Faust 2009).

Network density, a measure of linkage among nodes, is one of the most widely used concepts in graph theory. In the context of graph theory, a “complete” graph is one in which all points are directly connected to all other points. A complete graph is a heuristic ideal that occurs rarely in practice, even among small networks. Network density is, then, a measure of departure from a theoretical state of completion. The more nodes that are connected to one another, the more dense the graph is (Scott 2012:75–76; Wasserman and Faust 2009). Typically, network density is expressed as a ratio in which completed networks have a value of one and non-networks with no connections have a value of zero. Accordingly, values approaching one indicate more redundancy compared to values that are closer to zero. The implications for redundancy, or multiple paths that connect the same
points, depend on the research problem at hand. In the case of fire-beacon transmission, redundancy indicates multiple paths along which a signal could be sent.

Inclusivity, a concept related to network density, is a measure of the number of points connected to the various connected parts of the graph. Network isolates, or points that are not connected to any other points, lower the measure of inclusivity, also expressed as a value between one and zero (Scott 2012:77).

6.3.6 Random Simulation and Statistical Verification Methods

In order to test the significance of the results for the Lake Sevan data, random-point simulations were created in MATLAB to provide a reference value for archaeologically observed values of network density. For the simulation, groups of 27 or 15 random points88 were selected and then evaluated for network density and inclusivity. The process was repeated 200 times, a number of iterations determined to be beyond the convergence of the sum of the means (Figure 23).

The selection bin (Figure 24) was delimited from the plain region to the south of the lake as well as the valley that leads southeast along the Arpa Čay. The bin explicitly excludes the highlands to the south of the Lake Sevan plain as well as points that fall in the lake. In contrast to alpine or hilltop signaling stations known from other parts of the world, the fortified structures in the Lake Sevan survey are largely situated along the edges of the plain. Lake basins form a natural sloped

88 There are 27 EI sites and 15 Urartian sites in the archaeological site groups.
bowl, which favors excellent visibility, and all random points were drawn from the highly-visible sloped terrain that forms the lake basin for most accurate simulation. As such, the random analysis constitutes a constrained population that reflects the local topography to account for the high-visibility bias of the terrain (Swanson 2003:760).

The Kolmogorov-Smirnov “goodness of fit” test (K-S test) has become the most common statistical technique for comparing a randomly-generated referent population to an archeologically observed population, especially in the area of visibility studies (Gonçalves et al. 2014; Garcia 2013; Smith and Cochrane 2011; Bongers et al. 2012; Kay and Sly 2001; Fisher et al. 1997). The purpose of the K-S test is to determine if the characteristics of a “real” set of archeological data might have been the result of chance by comparing them to a randomly generated reference population (Kvamme 1990; Wheatley 1995). Moreover, the K-S test is non-parametric and thus an appropriate method for the non-normal distributions observed in archeological datasets.

A two-sample K-S was applied to the distributions from Armenia using MATLAB. The parameter chosen for K-S test was the continuous distribution of the number of sites (frequency) versus the total number of connections that sites have to the rest of the network (network density).
The plot depicts the mean number of connections of all iterations up until a given point for the EIA simulations. So, the value at 20 along the x-axis is the mean of all 20 iterations, while at 40 it will be the aggregated mean of all 40 iterations. The error bar is 1 sigma, but the population is not a Gaussian distribution. As such, the error bar is a reference for variation in the population, not a measure of error. The “real data” value is 107 connections, plotted as a line.
6.4 Armenia—Results

The results from Armenia are notable for two particular reasons. First, the data show that it is highly likely that the installations were intentionally placed for intervisibility. Second, there is strong evidence that the EI installations were co-opted by the Urartians and that some EI and Urartian emplacements may have been in use at the same time.

The Lake Sevan region would have been important territory for EI kingdoms and the subsequent Urartian empire in terms of regional security and economic importance. The Sevan plain provides sweeping vistas along what may have been a sensitive frontier. Lake Sevan represents a unique physiographic region in the context of ancient Urartu. A high alpine lake located at approximately 2000 MASL, Lake Sevan is one of the most important economic resources in Armenia today in terms of agro-pastoral production. Both cereal crops and livestock pasturage are important sectors of the economy (Biscione et al. 2002). The Sevan basin is also an important fishery. Other primary economic activities near the lake would have included trade and mining (Biscione, Hmayakyan, and Parmegiani 2002).

6.4.1 Lake Sevan Early Iron Age Sites

The 27 sites of the EI period exhibit 107 connections in the inter-visibility model (Figure 25). The lines depicted are lines-of-sight between the fortified emplacements. Most sites have multiple connections to other sites; twenty-two out of the twenty-seven sites, or eighty-eight %, are connected to three or more neighboring sites. Moreover, each site is connected with at least one other site in
the network resulting in an inclusivity measure of one (Table 4), a value that is substantially higher than the mean of the randomly generated systems. The network density of the simulated archaeological system is significantly higher than the network density generated from random data sets. It is also apparent that there is a hierarchy in the network with some nodes acting as primary exchanges (mega-hubs) while others nodes serve the network in a secondary capacity. For example, both SV01 and SV67 have 16 connections with other sites, a redundancy that would have afforded sites the possibility of receiving messages from a variety of directions simultaneously as well as compensating for a failure to communicate in one part of the system. Moreover, the network redundancy would have also provided for situations of limited visibility, allowing a site to receive a message from a neighboring site, a secondary hub, when a more distant primary hub might not have been visible due to fog, for example.
**Table 4: Network Density and Inclusivity, by Period**

<table>
<thead>
<tr>
<th>Archaeological Data</th>
<th>Inclusivity</th>
<th>Density</th>
</tr>
</thead>
<tbody>
<tr>
<td>Early Iron (27 sites)</td>
<td>1.0000</td>
<td>0.3714</td>
</tr>
<tr>
<td>Urartian (15 sites)</td>
<td>0.9333</td>
<td>0.3714</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Random Analyses</th>
<th>Mean Inclusivity</th>
<th>Standard Error</th>
<th>Mean Density</th>
<th>Standard Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>Early Iron</td>
<td>0.6985</td>
<td>0.0943</td>
<td>0.1106</td>
<td>0.0425</td>
</tr>
<tr>
<td>Urartian</td>
<td>0.5883</td>
<td>0.1370</td>
<td>0.1106</td>
<td>0.0425</td>
</tr>
</tbody>
</table>
Figure 25: Intervisibility of Early Iron Age Sites, Armenia
6.4.2 Lake Sevan Region Urartian Sites

The points in the visualization (Figure 26) represent the fortified sites of the Urartian period, and the lines are the lines-of-sight between the installations. Among these fifteen sites, thirty-nine interconnections were identified. From twelve of the fifteen sites, three or more other sites are visible, resulting in eighty % of the sites having visibility of three or more neighboring sites. There is only one network isolate, SV08, resulting in an inclusivity metric is 0.933 versus the randomly-generated population mean of 0.588 (see Table 1). It should be noted that SV08 is the only fortified settlement shown here while the other sites are forts or fortresses. The level of network redundancy apparent in the simulated system would have provided a number of obvious advantages from the ability to receive messages from a variety of cardinal directions to the existence of alternate routes of communication in case of inclement weather or a failure elsewhere in the system. As such, there is archaeological evidence to support the existence of a defensive communication network based on the intervisibility analyses of the Lake Sevan region in the EIA. In fact, the data suggest that such a system predates Urartu, and the Urartian occupation was characterized by a conservation and improvement upon the pre-existing system.
Figure 26: Intervisibility of Urartian Sites, Armenia
6.4.3 Intervisibility of Iron Age Sites: a Hypothetical Reconstruction

For the purposes of hypothetical reconstruction, I consider the possibility that a number of the EI sites detected by the CNR-YSU survey team are contemporaneous with, rather than previous to, the Urartian occupation of Lake Sevan.

There are a number of reasons to consider the possibility of overlap between the EI and Urartian systems. The one-to-one correspondence of “Early Iron,” an archaeological category, and pre-Urartian, a historical designation, is an incorrect equation since stylistically Urartian materials may be contemporaneous with both local Early Iron and Middle Iron pottery traditions (Kroll 1994; Kroll 1976). The Urartian state assemblage (Zimansky 2012; Zimansky 1995a) is, instead, a rare example of an archaeological material culture that can be correlated to a historical phenomenon, but one that existed contemporaneous with both Early Iron and Middle Iron archeological features. Moreover, “typical” Urartian traits such as niching and buttressing may not have been applied to the fortified installations under Urartian control, and certain traits may be, moreover, a relatively late innovation of the Urartian stylistic repertoire (Dan 2014).

Further ambiguity is created by the supposition that “Urartian” sites must have Red-Polished Ware, even though the purported archetypal Urartian pottery is rare, even at the largest seventh century sites (Kroll, Gruber, et al. 2012). In most cases...
cases, it may be concluded that the presence of Urartian pottery or architectural traits indicates that a site is Urartian. However, the absence of Red-Polished Ware combined with the presence of EI/MI local wares at a given site does not preclude it from being part of the Urartian territory. Sites demonstrating local EI/MI stylistic traits must be evaluated in the context of regional patterns of settlement in order to determine their relationship to the Urartian empire. In Iran, there are a number of sites demonstrating MI local material culture that appear to be contemporaneous with and under the dominion of the Urartian empire.

Moreover, the conquest of the Lake Sevan region, according to the annals of Argishti I, son of Menua, is understood to have happened relatively early in the history of Urartu, i.e. in the first quarter of the eighth century (Salvini 2002:40). Yet, the form and the duration that the process of imperial annexation may have taken are not clear. Therefore, the presentation of the data as static views by period cannot accurately reflect what would have been a dynamic process of change over time.

The possible contemporaneity of EI and Urartian sites is brought into relief in the pooled hypothetical reconstruction (Figure 27). In particular, the Urartian sites share a similar logic of placement, represented by lines of site, with the Early Iron settlement pattern. Certainly, the occupation of some of the Early Iron sites may pre-date the Urartian annexation of the area, yet some may not.

Another observation that emerges from a hypothetical superimposition of the sites from the EI and Urartian periods is an Urartian preference for the re-
utilization of existing infrastructure. In the illustration, pink sites indicate pre-existing EIA sites and green sites are attributed to Urartu. Only five of the fifteen Urartian installations appear to be *ex novo* foundations. It is also telling that there is a high level of intervisibility concordance between the two periods. In the hypothetical pooling of systems, there are some 150 connections among the sites, and even the new Urartian foundations are incorporated into pre-existing lines-of-sight. The observed interconnectivity of the EI and Urartian sites supports a proposition that, at least for the Sevan region, the Urartian occupation is characterized by a conservative strategy in which the Urartian administrators incorporated and improved upon existing emplacements, choosing to locate new sites in positions that could exploit pre-existing visual communication networks. If we consider the possibility that Ghegamassar, a typologically Early Iron site, were still utilized in some capacity during the Urartian occupation, then the sole network isolate during the Urartian period, SV08, would have been, instead, integrated into the network.
Figure 27: Intervisibility of Iron Age Sites: Hypothetical Reconstruction, Armenia
6.4.4 Intervisibility Network Random Points Analysis

There are a number of important differences between the distributions of site density when the archaeological sites and the randomly-generated points are compared for the EI in Armenia. While the middle values for density tend to overlap between the datasets, the low and high values differ from the random points in meaningful ways (Figure 28). The archaeologically-attested EI data do not contain network isolates, i.e. any sites from which no other sites can be seen. In the random data, by contrast, the simulations typically contain at least four and as many as twenty sites that are network isolates. On the high end, there are ten sites in the Early Iron data that have twelve or more connections with other sites (“mega-hubs”) while the random data does not demonstrate these dense connections with other sites.

The same general patterns observed for the EI hold true for the Urartian group. The distribution density among sites diverges between the real and random data sets in significant ways (Figure 29). As in the previous case, the middle values overlap between the two datasets, while the low and high values diverge. On the low end, the Urartian data contains only one network isolate, while on the high end, there are ten out of the fifteen total sites that have six or more connections with other sites in the Urartian data set. Scatter plots of network density and inclusivity for the archaeological and randomly-simulated networks during the EI (Figure 30) and Urartian periods (Figure 31) provide additional illustration that the
archaeological examples exhibit a pattern of density and inclusivity that is not attested among simulated groups.

For both the Early Iron and Urartian groups, the K-S test yielded a p-value of approximately .000 and a rejection of the null hypothesis, demonstrating that the two populations, archaeological and randomly-generated, are significantly different at the ninety-five percent confidence interval. These results support the observation that the sites were intentionally placed in order to integrate emplacements into an intervisibility network. Furthermore, it is highly unlikely that the observed patterns of intervisibility would have occurred by chance.
The shaded areas on the histograms show two standard deviations of the random population (ninety-five percent of the population) while the plotted lines show the mean values of the randomly generated datasets vs. the archaeological sites.

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Figure 30: Scatter Plot of EI Network Inclusivity & Density

Figure 31: Scatter Plot of Urartian Network Inclusivity & Density
6.4.5 Discussion

The sites along the southern shore of Lake Sevan demonstrate the characteristics of intentionally-constructed intervisibility networks during both the EI and Urartian periods. I propose that the presence of a fire beacon network explains the observed pattern.

The data indicate that the high levels of network density and inclusivity of the visual communication network are the result of deliberate construction, a conclusion substantiated by the rigorous quantitative analysis described above. While the highly-visible lake-shore environment may account for good visibility from individual sites, the high values for density and inclusivity compared to the randomly-generated populations drawn from high-visibility locations support the argument that the sites in the Sevan region are the result of the intentional construction of a network. Moreover, the general lack of network isolates as well as the presence of mega-hubs did not occur in the random-generated data sets, indicating that these are particular characteristics of purposely-constructed systems. Accordingly, the evaluation of network density and inclusivity provide powerful analytical tools for assessing purpose-built networks as well as the agency of ancient peoples.

The results of the present investigation suggest that the settlement pattern observed in the EI was not the product of the organic development of a state as much as it was the result of a systematically-planned, coherent system of forts and fortresses that composed the fortress-state in question. The Urartian settlement
patterns can be described as an intensification or improvement upon the pre-existing hubs established during the EI. Though contemporaneity of the sites in the two studied periods was not assumed a priori, the results suggest that the fortified structures function as an integrated system, meaning that many of them may have been in operation at the same time.

6.5 Iran—Results

The areas studied for the presence of communication networks in Iran consist of: (1) the Khoy Maku region in northwest Iran in the Western Azerbaijan province, (2) the Urmia lake region located immediately south of Khoy-Maku between the shore of the lake on the east and the Zagros mountains on the west, (3) the Marand region located to the northeast of lake Urmia on the edge of a plain adjacent to mountains in the northeast, and (4) the Ahar region located in the mountainous region east of the Marand plain in Eastern Azerbaijan.

6.5.1 Khoy Maku Region

The region includes the survey areas identified as Maku and Khoy by Kleiss and Kroll. The two groups were pooled for analysis because the division would have isolated intervisible sites. Moreover, the original partition was a matter of geographic convenience for the surveyors, and two adjacent areas attest similar site densities and periods of occupation (Kroll 1994: c. 27).

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93 See Kroll 1994 for divisions by survey region.
To provide geographical context, the Maku region is characterized by a mountainous terrain in the west flanked with plains in the east. The region is visually dominated by Mount Ararat in Turkey to the northwest and possesses a unique lava geology (Kroll 1994:4). Accordingly, the region is also characterized by relatively limited agricultural land. Regarding settlement history, the Maku region has an apogee of settlement in the Early and Middle Iron Age. Furthermore, Kroll observes that in cases in which an Urartian site in Maku also has Early Iron ceramics, these are invariably from the latter half of the EIA or the phase just prior to the Urartian annexation of Maku. There are eight such sites in total including settlements. The implication of this observation is that there is likely no hiatus at such sites.

The adjacent Khoy region to the south is mountainous in the west and has plains watered by the Ak Çay and Qotur Çay to the east (Kroll 1994:27). The important fortress site of Bastam (KH 21), excavated by the DAI from 1968 to 1978, is a notable feature of the Khoy region (Kleiss 1979; Kleiss 1988). Kroll argues that the Iron Age construction of irrigation channels may have permitted a regional boom during the period (Kroll 1994). Khoy has twelve settlements pertaining to the El, and five of these have evidence of subsequent Urartian occupation. Moreover, there are seven new foundations during the Urartian period.

The evidence for intervisibility and therefore visual communication networks among fortified installations in the Khoy-Maku region is more equivocal than the results from Armenia (Figure 32). For the twenty four sites in the Maku-
Khoy group, there are fourteen connections of intervisibility. Only five of the Maku-Khoy sites are well-integrated with the network, defined as having three or more connections with neighboring sites. As such, the simulated network has low levels of network density. Most of the Iron Age fortifications of the Maku-Khoy area, shown in pink, have been identified as having a subsequent Urartian occupation. Specifically, eight of the eleven Iron Age fortifications have a subsequent Urartian occupation. Moreover, the region is equally notable for new Urartian constructions, a veritable “Welle von Siedlungsneugründungen” (Kroll 1994:c. 27). In the Khoy-Maku region, there are fourteen new Urartian foundations, and the Urartian strategy can be characterized as a combined approach of co-opting Early Iron installations along with the construction of new foundations on a roughly one-to-two basis. As in Armenia, many of these new foundations are placed along the lines-of-sight of pre-existing Early Iron fortifications.

Some discrete groups of sites in the Khoy-Maku region demonstrate potential intervisibility connections (Figure 32). The intervisible pairs may constitute vestigial traces of a visual communication network, but if that is the case there are clearly some missing signaling stations. The most significant isolated site is the fortress of Bastam (KH21), a seventh-century foundation, which is not intervisible with any other site.

It is possible that fire beacon installations could have been smaller, stand-alone structures placed along the high ridges of the Maku-Khoy region to connect the sites by the shortest paths. Such an arrangement would constitute a more
efficient and reliable network structure, as is observed from the soroi of an archeologically well-attested Mycenaean network (Panagiotakis et al. 2013). Small signaling installations placed along ridges, in contrast to El/Urartian forts and fortresses located along plains near routes of transport, would be more difficult to detect in archaeological survey. The existence of such installations could account for the apparent lacunae in the simulated system, and poor site preservation conditions or reduced recovery could explain the absence of connecting nodes in the depicted reconstruction of intervisiblity.
Figure 32: Khoy-Maku Region, Early Iron and Urartian Sites Combined
6.5.2 Lake Urmia Region

The Lake Urmia area aggregates the sites originally organized by Kroll under the regions of Salmas, Urmia, and Ušnu-Naqadeh, i.e. the sigla SL, UR and NQ (Kroll 1994). These three contiguous regions border, north to south respectively, the western side of the lake. The Urmia region, from an economic point of view, was possibly the most important territory for Urartu since it is the most agriculturally productive zone in the entire empire (Kroll 1994:c. 27).

Compared to the other zones of northwest Iran, the Urmia region is characterized by a strikingly large number of settlements, both small and large, from the EI and Middle Iron eras alike.\(^{94}\) There are at least two possible explanations for the noted difference. First, the Urmia region was the focus of investigation by both Kleiss from the D.A.I. as well as the focus of a concentrated summer's work by the Italian expedition led by Pecorella. Specifically, the increase in survey intensity may have resulted in improved small site recovery. Second, as the purported bread basket of the Urartian empire and presumably the EI kingdoms that preceded its political coalescence, there might have been a greater concentration of agriculturalists nucleated in settlements here.

Only one third of the Middle Iron sites discovered in the Urmia region can be positively designated as Urartian either on the basis of architecture or the presence of Urartian Red-Polished Ware (Kroll 1994:54). These typically Urartian

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\(^{94}\) There are more than forty settlements in the Lake Urmia region, including the sites with sigla SL, UR and NQ.
characteristics have been designated a “state assemblage,” echoing Incan empire analogs (Zimansky 2012; Stone and Zimansky 2003; Zimansky 1995a). Moreover, typically Urartian sites are spread out across the territory along with many sites that are generically Middle Iron, i.e. expressing a local material culture. In the Urmia region, the appearance of sites displaying local traditions is more common than sites exhibiting the Urartian “state assemblage,” though both are present. Kroll cautions that there is not a sharp break in styles between the latter Early Iron age and the incipient Middle Iron, and that, “es kann auch nicht als gesichert gelten, daß Keramik, die allgemein als früheisenzeitlich bezeichnet wird, nicht doch in der Mittleren Eisenzeit weiter läuft” (Kroll 1994). Thus, some sites identified with the latter portion of the EI on the basis of certain ceramic styles may, in fact, be contemporaneous with the beginning of the Middle Iron age.

Compared to the Maku-Khoy region, the Urmia region demonstrates a higher level of network density (Figure 33). For the twenty four sites represented here, there are twenty four interconnections. Four sites are not integrated into the system. Fourteen of the twenty four sites, or 58.3%, are highly integrated, defined as sharing a line-of-site with three or more neighboring sites. Subsequently, the simulated system is less dense than the reconstructions presented for Armenia. The implication of weak network density is that a failure in one signaling station would more easily result in failure of transmission.

95 Two examples are the Rillenkeramik and Buckelkeramik styles.
The distribution of fortified sites in the Urmia region is relatively sparse. As a result, the distances between sites or the length of nodes is quite long. For example, the distance between intervisible sites UR085 and NQ57 is some eighty kilometers. In such cases, the distances are significant enough that visibility would have been possible only under ideal conditions. In situations of reduced visibility, supplementary signaling stations would have been needed to ensure reliable transmission of the fire or smoke signals. Relays are common when considering systems employed in other parts of the world (Swanson 2003; Panagiotakis et al. 2013) and these structures can be relatively small. All that is needed, besides a line of site on nearby stations, is a stack of wood and a way to keep it dry. Such posts could have been small structures staffed by one or two individuals located in remote locations and, as such, more difficult to detect archeologically. In fact, such a structure was found by Kleiss during survey by accident on a high projection above the fortress Qalatgah, discussed below.

It is also possible that relays were located in or nearby settlements. As described above, settlements have an unusually high representation in the Urmia region making it an ideal zone in which to appraise the possibility of community participation in networks of regional defense. Accordingly, I visualized the Iron Age settlement sites in conjunction with the fortified sites of the region (Figure 34). Intriguingly, a number of settlements are located along lines-of-sight between the fortifications. If fire beacon relays were located at the community level, it would mean that inhabitants could have both participated in and benefitted from the early
warning network that such a system would have provided. A square structure with small towers located above Tappeh Baranduz may constitute such a feature (Pecorella and Salvini 1984:158).

The concept of refuge or refuge fortress is related to community participation in fire beacon networks. A number of Urartologists have contemplated the possibility that one of the possible functions of Urartian citadels was as a Fluchtberg, i.e. a place of refuge for agriculturalists during times of warfare (Zimansky 1985; Kroll 1976; Kleiss 1975). The Fluchtberg has myriad analogs in medieval European castle dynamics and in the Greco-Roman world (Fachard 2012). Community-level participation in fire beacon networks would have provided the populace a way to receive the message that it was time to flee to the designated refuge.

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96 Kleiss argues that the fortress of Sarandaj Qaleh, a sizeable fortress with little pottery or signs of occupation, is a Fluchtberg, though Kroll is skeptical of the association (personal communication).
Figure 33: Urmia Region Intervisibility, Early Iron and Urartian Sites
Figure 34: Urmia Region Intervisibility, Displayed with Settlements
6.5.3 The Watch Tower at Qalatgah in the Urmia Region

A small structure discovered near the fortress of Qalatgah may assist in understanding the Urartian visibility networks in Iran. Kleiss discovered the Qalatgah Gipfelkastel or watch tower (Figure 35) some 350 meters above the sizable fortress of Qalatgah at the summit of a serpentine path. The structure boasts a view commanding the plain below while the fortress itself has relatively poor visibility (Kleiss and Kroll 1977:71). The twenty-by-twenty watch tower, according to the archaeologist’s interpretation, was an auxiliary installation whose primary function was to provide reconnaissance and to connect Qalatgah visually to other sites in its surroundings such as Hasanlu and the fort Yediar. The watchtower’s possible role in a regional visual communication network was noted by Kleiss, who proposed that the site would have been an excellent relay for fire and smoke signals.


The watch tower at Qalatgah is notable for a variety of reasons. First, the watch tower effectively integrates the fortress into the network (Figure 36).

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97 500 x 200 m, See Qalatgah, Site Catalog, Appendix 1
Without it, only the minor fort Gerd-i Qisal would have been visible from Qalatgah, resulting in the fortress’s effective isolation from nearby Hasanlu as well as the sites along Lake Urmia that can be seen from Yediar. Furthermore, the watchtower installation is an example of the small hilltop relay station type that has been observed in other parts of the world (Panagiotakis et al. 2013).

Another structure located in the Urmia region may have been a watch tower. Pecorella notes the presence of a “piccola fortificazione a pianta quadrata con torri rotonde agli angoli” on the summit of the Tappeh Baranduz, a settlement located in the heart of the Urmian plain during the MI period (Pecorella and Salvini 1984:158).98 The presence of a small fortified structure at a site could have a number of possible interpretations. Yet, I propose that Pecorella’s description of the small installation is reminiscent of the Qalatgah watch tower. It is tempting to speculate that visual reconnaissance may have been supplemented by a system of smaller installations located at sites. However, the enigmatic structure at Baranduz is the only evidence for such a practice.

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98 There is no sketch, plan or dimensions of the small structure in their final report.
Figure 35: Qalatgah Watch Tower, Original Publication (Kleiss 1977 Abb. 23)

Figure 36: Intervisibility Network of Qalatgah Watch Tower
6.5.4 Marand Region

The sites in the Marand Region of Iran are located at the end of a valley surrounded by mountains to the south, west and north. In the region, there were a total of six sites analyzed for intervisibility.99 The major Urartian fortress of Livar (MD14) features an El occupation of an undetermined nature.100 There are, furthermore, two Urartian forts101 that appear to be new foundations based upon architecture and surface collection. The first of these, Cheragh-e Amir, is a modestly-sized fortification with an associated settlement (Kroll 1984b:28). The second of these, Gohar Qaleh, is even smaller with dimensions of approximately twenty-five by fifteen meters. In fact, Kroll termed the small structure a “Straßenstation” (Kroll 1984b:29). Given the structure’s small size and elevation above the plain, it may be yet another variation upon a watch tower, a relay situated along a road (Figure 37).102 Gohar Qaleh, much like the Qalatgah watch tower, is located on a rocky outcrop above the settlement of Maledjin, providing visual reconnaissance from the site as well as commanding a view of the nearby thoroughfare.

99 The remains of a wall segment dated to the Urartian period, MD9, were not included in the analysis because the form and function of the structure is not clear.
100 It is unclear what the nature of that occupation might have been based upon surface finds alone. There is also Chalcolithic as well as Early, Middle and Late Bronze age pottery from surface collection.
101 Cheragh-e Amir (50 x70 m, MD19) and Gohar Qaleh (MD21). Cheragh-e Amir also has an associated settlement.
102 The small fort is located approximately 500 meters from a modern N-S secondary road. I infer Iron Age roads from modern ones in northwest Iran.
Figure 37: Gohar Qaleh Way Station\textsuperscript{103}

\textsuperscript{103} Figure from Kleiss 1972, Abb. 21
All sites in the Marand region have a line-of-sight on at least one other fort or habitation (Figure 38). Given the sparse nature of the dataset, I performed the line-of-sight analysis by pooling the three fortified sites of the region with the three settlements. In the reconstruction, each of the fortifications “sees” exactly two other sites. Though an admittedly small dataset, the results agree with intentional site placement for the purpose of intervisibility and potential participation of settlements in fire beacon networks.

One question that remains unanswered by the intervisibility analysis is how installations in the Marand region might have communicated with sites in more distant regions. Sites in the Marand region were tested for intervisibility with sites in the adjacent Khoy and Ahar regions, and there were no connections. It is unclear if sites in the Khoy region might have been connected via relays to the sites in the Khoy or Ahar region. Given the nearby mountainous terrain, mountaintop relays would have provided an efficient solution to connecting isolated regions such as Marand to neighboring regions. To date, no mountaintop relays have been discovered, though it is equally true that there has been no focused effort to do so. The archeological traces of hilltop installations would be both remote and ephemeral (Panagiotakis et al. 2013).

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104 The settlements are Marand Tepe (MD01), Tepe Oestlich Livar (MD14), and Maledjin (MD22). Of these, only Maledjin is not located on a tell but is located on a natural rock outcrop elevated above the plain.

105 The examples of watch towers presented in the chapter, though sometimes located at modest heights, are not, strictly speaking, mountaintop relays. Presumably, these might be quite small and located in remote areas unlikely to be surveyed by either the German or Italian expeditions.

106 Sargon II claims to have seen the beacons of Urartu upon the peaks of the mountain (Foster 2005).
Figure 38: Intervisibility in Marand Region, Iran
6.5.5 Ahar Region

The isolated Ahar region is located some sixty kilometers from the closest site in the Marand group and three Urartian installations as well as a number of smaller sites were discovered here in survey (Figure 39). The Ahar area terrain is mountainous and proved, at times, difficult to survey (Kroll 1984b:71). Kroll reports that the Ahar region was the object of a targeted investigation seeking evidence of Urartian expansion rather than the focus of a more systematic total survey (Kroll 1984b:71). The Ahar region, located farther east than other known Urartian territory, may constitute a frontier region.

In the Ahar region, each site is intervisible with at least one other site. Given the sparse nature of the dataset, a decision was made to perform the line-of-sight analysis by pooling the four fortified sites of the region with the three settlements. It is also notable that all of the known settlements in the region are located within line-of-sight of nearby forts or fortresses. As is the case in the Urmia and Marand regions, the intervisibility of settlements and fortified structures suggests that settlements could have participated in regional communication networks or at the very least, possessed lines-of-sight on beacons at nearby fortified sites.

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107 One of these, Libliuni (AH26), is a local-style fortress (EI) with an associated eighth century Urartian inscription. Libliuni is, therefore, an example of EI and Urartian contemporaneity. There is, at times, a false correspondence in the literature between “Early Iron,” an archeological category, and pre-Urartian, a historical designation. Kroll, in fact, emphasizes that there is no sharp break between the local Early Iron and Middle Iron pottery traditions, seeing continuity in these determinations. The Urartian state assemblage is, instead, a rare archaeological signature of a historical phenomenon, but one that is contemporaneous with certain Early Iron and Middle Iron archeological features.
Figure 39: Intervisibility of Sites Ahar Region, Iran
6.5.6 The Watchtowers Near Varzegan in the Ahar Region

The stone foundations of three structures interpreted by Kleiss and Kroll as watch towers were discovered near Varzegan in the Ahar region, and were tentatively dated to the EIA based upon construction techniques and the contemporaneity of other structures nearby. All three of these towers are located next to a modern road as well as a water source (Kroll 1984b:104–105, 107), and each is a simple, stand-alone rectangular structure varying from eight to thirteen meters across (Figure 40). Indicative of a regional surveillance function, these towers were located on natural rises in the terrain.

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109 AH32, AH33 and AH35 are 8 x 8 m, 8 x 7 m, and 11 x 13 m in dimension, respectively.
Figure 40: Three Watchtowers from the Ahar Region Credit: Kroll 1984
Sketches from AH32, AH35, and AH33, respectively.
6.6 Fire and Smoke Beacons in the Ancient Near East and Beyond

The results presented above demonstrate that it is highly likely that the fortified installations of Armenia constituted a signaling network, and there is compelling evidence for intervisibility among sites and watch towers in northwest Iran. The world’s earliest attestations of fire beacon networks come from the Middle Bronze Age in the ancient Near East, but such systems are attested cross-culturally in many parts of the world during a wide variety of time periods, discussed below. Therefore, it would be valuable to evaluate the historical evidence from the ancient Near East and beyond for evidence of fire and smoke communication systems in order to properly contextualize the regional defense networks of the EI and Urartian periods.

A well-documented system of fire beacons was in use by the state of Mari\(^{110}\) and its enemies by the early second millennium BCE. Georges Dossin (1938) assembled the extensive evidence for fire beacons at Mari from dozens of letters pertaining to them discovered in the palace archive. In one letter, an emissary named Banum writes his lord and master, probably Zimri-Lim, a message stating that while travelling north from Mari, he saw the fire beacons being lit town-by-town by the Benjaminites\(^{111}\) in the district of Terqa (Dossin 1938:178). Banum says

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\(^{110}\) Mari, modern Tell Hariri, was an important state in Middle Bronze Age Syria in the Middle Euphrates region in the early second millennium (Margueron 2004; Margueron 2003; for a summary and additional bibliography, see Akkermans and Schwartz 2003, 313–317). Its archive provides one of the best sources of textual material for the era.

\(^{111}\) The group of Benjaminites described here is known exclusively from the Mari letters, and is distinct from the Benjaminites known from the Hebrew Bible. Many of the years of Zimri-Lim’s reign were characterized by Benjaminite revolts (Heimpel 2003).
he is unsure why the fire beacons have been lit, but will write back with more
details just as soon as he has them. In the meantime, Banum recommends that the
Mari city defenses be reinforced, indicating that by the eighteenth century BCE, fire
beacons were being used as an early warning system to signal other towns within
unified settlement systems about threats. Although the ancient writer does not
know why the beacons have been lit, there seems to be a mutual understanding
between Banum and the intended recipient that these signals are meant to indicate
danger. In another letter, a functionary whose name is not preserved apologizes if
the lighting of the beacons worried his lord and explains that the Benjaminites cities
remain in a state of revolt. The king's loyal servant, the letter reassures, lit the fires
to summon reinforcement troops, and his majesty should not be overly concerned
(Ibid: 181). Yet another letter informs Zimri Lim that an attack near Terqa is
imminent, and his general Sammetar has a force assembled in the general area to
meet the attack. When the fire beacon is lit at the location of attack, unknown at the
moment of writing, Sammetar reassures the king that he will come to the rescue
(182-183). The previous letter indicates that there was previous agreement about
what the meaning of a lit fire would be. In another letter, a certain Zindria responds
to a complaint from the king. Zindria writes that in order to avoid future confusion,
he will muster the troops and signal to other stations only when he sees two fires lit
rather than one (183). The described letter indicates that fire communication was
at times an imperfect system and that the meaning of signals could be contextual
and agreed upon in advance. Lastly, the communiqué indicates that a mustering of troops was a common response to the lighting of the beacons.

Besides the unusually well documented case of Mari, there are a number of additional references to fire beacons in the ancient Near East. An Old Babylonian divination text (YOS 10 31 ix 51) alludes to a lighting of beacons as a metaphor for doom, while a Neo Babylonian letter (ABL 1430:16) mentions that the writer sent a message by means of fire signal. There are references to fire communication in the Hebrew Bible in Jeremiah 6:1 and Judges 20:38\textsuperscript{112} (Borowski et al. 1998). A Lachish letter\textsuperscript{113} warns of the imminent arrival of the Babylonians, noting that the writer would watch for his own doom by Lachish’s fire beacon network. The other notable reference to the use of fire beacons in the ancient Near East is the oft-cited passage from the literary text called Sargon’s Eighth Campaign quoted in introduction to the current chapter. Viewed together, the evidence for the widespread use of fire beacon networks in the ancient Near East is compelling. Accordingly, visual communications constitute an understudied defensive strategy as well as motivation for site placement.

It is tempting to speculate that intervisibility with other sites became an important factor in subsequent site placement. The world’s earliest beacon systems developed in the tell landscapes of the ancient Near East, and the development of regional communication networks was likely a recursive one (Earley-Spadoni

\textsuperscript{112} The reference in Judges appears to refer to smoke signaling. Both refer to, remarkably, a battle with a group of Benjaminites, but not the same Benjaminites known from the Mari letters.

\textsuperscript{113} Letter IV, lines 10-13; See Albright 1969 for translation of text.
Over time as tells grew in height, the inhabitants would have observed that fires at nearby tells were visible, thus suggesting the possibilities of communication. Once the social practice of fire beacon communication was established, it follows that ancient tell-based polities would have chosen locations, in part, because they were intervisible with other sites.

Beyond the ancient Near East, the use of fire and smoke signaling for defensive communication networks occurs in many places and at many times to such an extent that cross-regional, comparative study should shed further light on the subject. Roughly contemporary to the documentation at Mari, a visual communication system has been archaeologically documented for Minoan Crete (Panagiotakis et al. 2013) by the discovery of a system of intervisibile soroi, large stand-alone pyrotechnic signaling installations that would have contained signal pyres. There are myriad examples from the Greco-Roman world (Fachard 2012). The memory of historical fire beacons is preserved in Homer’s vivid description of a beacon system in the Iliad (18. 210-213) as well as the dramatic opening scene of Aeschylus’ Agamemnon.114 Byzantine fire beacon systems were also common (Foss 1991).

The use of fire communication networks is widely known from historical and archaeological evidence from Old World medieval sites, for example, in England, Portugal, Scandinavia, Anatolia and China (Kay and Sly 2001; Rua et al. 2013; Foss

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The Great Wall of China is, among other things, a fire beacon relay (Lovell 2007).

Moreover, fire and smoke communication networks were utilized extensively in the pre-historic Americas (Swanson 2003:754–755; Ellis 1991; Arkush 2011). Signal fires were used to communicate incoming threats during the American Revolutionary War as well as more generally in early colonial America. The historical practice of signal fires is preserved in place names such as Beacon Hill, New Jersey.

6.7 Discussion

The sites along the southern shore of Lake Sevan during both the EI and Urartian periods demonstrate the characteristics of an intentionally-constructed intervisibility network. I propose that the construction of a fire beacon network was a major criteria for the observed site placement, and this observation is supported by extensive historical documentation for the widespread utilization of these systems.

The data indicate that the high levels of network density and inclusivity of the simulated visual communication network in Armenia are the result of deliberate construction, an observation that would not have been apparent without a systematic quantitative analysis. While the highly-visible lake shore environment

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115 The Longfellow poem of “Paul Revere’s Ride” refers to an agreement to place lanterns in the church belfries. “One if by land, Two if by sea,” etc.
may account for good visibility from individual sites, the high values for density and inclusivity compared to the randomly-generated points support the argument that the sites in the region are the result of the intentional construction of a network. Moreover, the general lack of network isolates as well as the presence of mega-hubs did not occur in the randomly generated data sets, indicating that these are particular characteristics of purposely constructed systems. As such, the evaluation of network density and inclusivity provide robust analytical tools for assessing purpose-built networks as well as the agency of ancient peoples.

The results of the investigation suggest that the settlement pattern observed in the EIA at Lake Sevan, Armenia, was not the product of the organic development of the fortress-state in question as much as it was the result of a systematically-constructed, coherent system of forts and fortresses. The level of coordination required to organize a building program on such a scale is, in fact, extraordinary. One can easily imagine these ancient men and women lighting their beacons and peering into the twilight to plan and test their systems in anticipation of attacks. When the dreaded enemies finally arrived, the defenders would have been able to climb atop the stone ramparts and towers to communicate their peril to neighboring forts at the speed of light. It is clear that the built environments of the first millennium B.C.E. were arenas for social actors to reflexively shape and be shaped by the constructed environments (Smith 2003).

Though contemporaneity of the sites in the two periods studied was not assumed *a priori*, the results suggest that the fortified structures function as an
integrated system, meaning that many of them would have been in operation at the same time. Moreover, there is compelling evidence for contemporaneity of El and Urartian sites.

The collaborative, social response to threat embodied by a visual communication network must have been a powerful weapon in the arsenal of the El inhabitants of the region. The importance of the described system in the defense of the region is underscored by the observation that when the Urartian empire annexed Lake Sevan in the early eighth century, the Urartians continued to exploit the acquired elaborate early warning system.

Besides watching for incoming messages, the foci of visibility offered by fortified structures would have provided a platform for watching in general. Such surveillance, besides providing important information about incoming threats, could have also been utilized for scrutiny of the local population in general, a way for these complex polities and empires to gather valuable information about the inhabitants and the movements of people and goods. Complex political systems have as much to fear from threats within as threats without. Therefore, visibility networks can also be understood as having value to the regimes that employ them as an effective means of social control in the form of the unblinking eye of surveillance.\(^\text{116}\)

However, the evidence for defensive communication networks in Iran is more difficult to interpret. Rather than conclude that such systems did not exist or

\(^{116}\) See Chapter 8 for a discussion on the relationship between visibility and social engineering.
were curiously fragmentary, the apparent lacunae in the Iranian system can be understood as having been filled by small installations whose archaeological signatures are less visible than the substantial fortified architecture of the period. Certainly, ethnographic parallels show that relays, often relatively diminutive in size, are a common feature of fire beacon defensive communication networks (Panagiotakis et al. 2013; Swanson 2003). Meanwhile, there is also archeological evidence in Iran supporting the existence of such a system of smaller installations dedicated to visual reconnaissance during the Iron Age. Watch towers of the type that I have argued would have ameliorated the apparent deficiencies in the Iranian fire beacon networks were discovered in the environs of Lake Urmia at Qalatgah and Teppeh Baranduz; three similar towers have been attested near Varzeghan in the Ahar region. An additional “way station” in the Marand region also bears both a functional and architectural resemblance to the other watch towers in the region.

Although the analysis presented above has focused primarily on forts and fortresses, there is also ample evidence that settlements could have been integrated into visual communication networks, and such an arrangement would have served as an early warning network at the community level. A number of tells and settlements located along lines-of-sight in the Urmia region suggest that these communities were well-situated to play a role in regional defense. Additionally, analyses presented here suggest that settlements in the Marand and Ahar regions had lines-of-sight on the forts and fortifications in their environs. Given the natural height of tells above the surrounding terrain, re-inhabited tells would be excellent
locations for signaling relays. Moreover, the enhanced defensibility of tells may, in part, explain why these places were perennially re-inhabited during the Bronze Age and beyond. In fact, tells that are the centers of defensive communication networks in their earliest known iterations at places like Mari.

It is also worth emphasizing that intervisibility among fortifications is not an innovation of the Urartian annexation of these complex Iron Age fortress states. The zones of eastern expansion in Armenia and Iran had complex polities with their own defensive strategies at the time when they were brought under the Urartian banner. In fact, these institutions form the skeleton of the Urartian occupation. Rather than implementing radically different defensive strategies, the Urartian takeover can be characterized in these cases of eastern expansion by its conservation of settlement patterns as well as defensive communication networks. There is also little apparent uniformity in form or function of any of these reconstructed systems, leading to the observation that they varied across time and space according to the exigencies at hand as well as the EI infrastructure available. As such, the view on the ground is that there is no monolithic “Urartian strategy” to speak of, and their policies can be characterized as pragmatic and contextual.

Last, ancient communication networks were complex socio-cultural constructions, and their uses would not have been exclusively military. Unfortunately, the historical records do not provide evidence for non-military uses. Yet, ethnographies indicate that beacons may be employed in ritual or cultic contexts (e.g. Swanson, 2003). Ancient communication networks equally could have
been used to transmit other kinds of messages much in the way that the selection of a pope is communicated by white or black smoke at the Vatican. Bonfires, for example, are cross-cultural displays of community-building and celebration (Cressy 1989). Accordingly, it is tempting to speculate that beacons may have been lit to mark and commemorate culturally-significant events such as the death of a king. The very act of constructing a regional system of communication and participating in it would have undoubtedly engendered feelings of belonging and community. Beacons may also been an important symbol in these Iron Age fortress states, similar to the manner in which defensive city walls became symbols of Mesopotamian urbanism (Creekmore and Fisher 2014; Ristvet 2007). The lighting of the beacons along the southern shore of Lake Sevan would have been a theatrical gesture destined to inspire awe among all who witnessed it.
Chapter 7 The Construction of EI and Urartian Landscapes: Viewshed Analysis of the Iron Age Sites

Another northern experiment with circular canon-platforms occurs in England, as Henry VIII fortified his Channel ports in 1519. . . John Hale calls the resulting forts ‘massively beautiful’ but backward or retardataire. They grasp however the fundamental principle that generates ‘modern’ fortifications, citadels, and ideal cities—symmetrical repetition of the most satisfactory geometrical form on various scales. Henry reinforced the idea of nation-as-fortress, his chain of citadels turn the natural coastline into the nation’s curtain wall punctuated by bastions.

(Pollak 2010:26)

7.1 Introduction

In contrast to the intervisibility studies presented in the preceding chapter, the focus of Chapter Seven is the broad visual catchment from each site as well as the spatial distribution of associated landscape features more generally. Specifically, I examine the patterns of visibility from individual sites and regional systems utilizing GIS viewshed analysis, asking the question: is vision focused upon particular features in the landscape, and if so, which features were of interest? Moreover, the observation that Urartian forts and fortresses were elevated above the plain and located near primary routes of transport (Smith 2003; Zimansky 1985) is systematically examined, region-by-region. I also evaluate the proposition that the Urartian period constitutes a major re-organization from the EI. I conclude Chapter Seven by reviewing the historical evidence for first millennium networks of espionage and surveillance, primarily derived from the Neo-Assyrian Sargonid epistolary corpus.
Viewshed analysis is a central analytical component of the chapter. In archaeology, GIS viewshed studies are employed to simulate broad visual catchment from a particular point within a landscape. In recent years, viewshed analysis has become an important tool used to infer the sociocultural significance of features in constructed landscapes (Llobera 2001; Garcia 2013; Supernant 2014; Bongers et al. 2012; Wheatley 1995; Fitzjohn 2007).

Previous viewshed studies have investigated the social role of the act of visual perception in a variety of ways: defense, monumentality, commemoration, the communication of social messages, pilgrimage and experience of the divine (Wheatley and Gilings 2002; Wheatley and Gillings 2000; McCoy and Ladefoged 2009; Llobera 2007; Fisher 2009; Golden and Davenport 2013). None of these categories are mutually exclusive, although the more abstract and socially-specific of these, e.g. numinous experiences, are more difficult to evaluate archaeologically.\textsuperscript{117}

7.2 Objectives

The goal of study presented in this chapter is two-fold. The first objective is to investigate the importance of visibility as a factor in the selection of site location: was there a locational bias in favor of the visibility from sites? The second goal is to understand the nature of any observed locational biases in order to determine what

\textsuperscript{117} The difficulty of understanding the possible religious meanings of the built environment is brought into relief in the study of the EI peoples of Iran and the Caucasus. There is almost no documentation that informs the modern investigator about EI religious practices, only minimal documentation on the religious practices of Urartu (Kroll et al. 2012).
choices these ancient people made in order to maximize or minimize certain kinds of visibility.

7.3 Methods

This section describes the techniques and parameters of analysis utilized in the viewshed analyses. The section begins with an overview of the methods and the detailed methods are elaborated in greater below.

In contrast to the point-to-point analysis performed in the previous chapter, a viewshed study computes the visibility of every location, or pixel, on a raster from a given location or set of locations. In viewshed results, areas that are visible are highlighted on a map within a user-defined bounding radius or bounding box. Alternatively, results may also represented as a visibility percentage, a ratio of visible pixels to the total number of pixels.

The first methodological step was to perform a viewshed analysis of each site. The viewshed analyses were completed at two scales: one set of studies performed within a two kilometer bounding box from each site and the other at a ten kilometer bounding box from the site.

In order to create comparison values for each site, 150 random points were created at both the two and ten kilometer scales, and a viewshed analysis was performed for each of these. The random points were selected from the bounding box around each site. The simulated viewsheds were subsequently aggregated in order to provide context for the significance of simulated visibility from the
observed archaeological sites. The viewsheds of the archaeological sites were subsequently compared to the heuristic random-points population.

There are numerous reasons to perform a multi-scalar analysis. Human decision making and perception happen at a variety of scales. For the analysis, one of the distances is more immediate (two km) while the other (ten km) is more regional. Additionally, the use of a multi-scalar analysis provided a way to appreciate the effects of scale in the interpretation of data. Last, the multi-scalar approach permits a study of topographical prominence, or the relative prominence of certain landscape features in a terrain, towards developing rigorous methods of evaluating the more interpretive and contextual aspects of landscape (Llobera 2001).

GIS analytical techniques, such as the ones utilized in this chapter, are best understood as a form of exploratory data analysis rather than push-button tools that provide results when fed data (Supernant 2014). Critical engagement with the data, methodology and the theory underlying the analyses, is therefore crucial in correctly appreciating and interpreting the results.

7.3.1 Viewshed Analysis

The viewshed analysis, described above, was the basis of the analyses performed in the investigation. To perform the analysis, a shape file with all point data and attributes was imported into MATLAB mapping toolbox along with the ASTER GDEM V2 derived elevation model. Though ArcGIS can perform viewshed calculations, MATLAB mapping toolbox was preferred for a number of reasons.
First, MATLAB is better adapted for iterative processes, and it also processes these more quickly. Second, I preferred to run the analysis with a bounding box rather than a radius, preventing ambiguity of results on the edges of figures. Last, the design environment of Mapping Toolbox meant that I could easily customize both the analysis and format of output to answer my specific research questions. The site-by-site plots are available in Appendices, while the aggregated data are presented in tabular format and explained below. The chapter expresses the visibility from a sight as a viewshed percentage, herein defined as a ratio of the number of visible pixels to the total number of pixels multiplied by 100.

### 7.3.2 Data Utilized

The catalog of 250 sites (Appendix 1) includes the Early Iron (FEZ), Urartian (URZ) and generically Middle Iron (MEZ) sites found in survey by: (1) the Deutsches Archäologisches Institut surveys of the West Azerbaijan and East Azerbaijan provinces of Iran led by Dr. Wolfram Kleiss with assistance from Stephan Kroll, (2) The Instituto per gli Studi Micenei ed Egeo-Anatolici survey of the Lake Urmia region of Iran led Dr. Paolo Emilio Pecorella, and (3) the Consiglio Nazionale di Ricerche surveys of the Lake Sevan basin in Armenia led by Dr. Raffaele Biscione.

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118 Test analyses showed that certain viewshed processes took three or four minutes to process in ArcGIS versus 30-45 seconds in MATLAB mapping toolbox. Such dramatic differences are appreciable particularly during the random-points simulations that require thousands of iterations.

119 There are 211 sites from Iranian Azerbaijan and 39 sites from Lake Sevan, Armenia.
7.3.3 Digital Elevation Model

The digital elevation models (DEMs) were produced under the technical parameters described in Chapter Six. To briefly recapitulate, the DEMs were produced from high-resolution ASTER GDEM V2 data, a project jointly directed and funded by the U.S. National Aeronautics and Space Administration (NASA) and Japan’s Ministry of Economy, Trade, and Industry (METI) (Rexer and Hirt 2014). The resolution of the data is approximately 30 meters or one arc-second.

7.3.4 Offset A and Offset B

An offset is the vertical distance added to either the observer point or the observation target when computing visibility in a GIS. Offset A is intended to account for the height of towers and Offset B for the height of humans passing through the landscape.

In contrast to the studies performed in Chapter Six, the analysis presented below employs a tiered system of observer offsets (Offset A), which depend on the kind of site to be analyzed (Table 5). For sites understood to have substantial viewing towers and platforms, an offset of 15 m was employed. For these, namely

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120 Shuttle Radar Topography Mission (SRTM) data represents another public domain option for the construction of DEMs for science and research, however, there were a number of compelling reasons to use ASTER GDEM V2 data instead. Recent studies have shown that while the elevation accuracy, i.e. root square mean height error (RMS), of SRTM DEMS is comparable to that of ASTER GDEM V2, the latter excels the former in its accurate coverage of mountainous terrain (Rexer and Hirt 2014; Nikolakopoulos et al. 2006). Furthermore, ASTER GDEM V2 has a much higher resolution than the SRTM data available for non-U.S. world regions, i.e. approximately 90 meters versus 30. A new 30 m resolution version of SRTM data was announced for release sometime in 2015; however, it may be prudent for researchers to wait for independent vetting for quality and accuracy beyond the project’s self-reported statistics when these data are eventually released. The high-resolution ASTER GDEM V2 data has a posting interval of one arc-second, or approximately 30 meters, and is available for download from the project’s website as 1 X 1 degree tiles in GeoTIFF format.
forts, fortresses and fortified settlements, the observation target, Offset B, was set at 1.5 meters.\textsuperscript{121} Settlements were understood as having more modest viewing platforms and the analysis was performed with an Offset A of five meters. Other features in the landscape such as tombs received an offset of 1.5 meters.

The target offset (Offset B) was set at a modest 1.5 meters whereas the Offset B in the previous chapter assumed a fifteen meter height. The implication is that some sites that were intervisible in the previous chapter will not appear as “visible” pixels in the studies presented below, since the viewshed analyses evaluate which features would have been visible in the landscape in contrast to the problem of the intervisibility of towers discussed in the previous chapter.

\textbf{Table 5: Offsets for Visibility Analysis by Type of Site}

<table>
<thead>
<tr>
<th>Settlement Type</th>
<th>Offset A</th>
<th>Offset B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fort</td>
<td>15 m</td>
<td>1.5 m</td>
</tr>
<tr>
<td>Fortress</td>
<td>15 m</td>
<td>1.5 m</td>
</tr>
<tr>
<td>Fortified Settlement</td>
<td>15 m</td>
<td>1.5 m</td>
</tr>
<tr>
<td>Settlement</td>
<td>5 m</td>
<td>1.5 m</td>
</tr>
<tr>
<td>Other features</td>
<td>1.5 m</td>
<td>1.5 m</td>
</tr>
</tbody>
</table>

\textsuperscript{121} Given what is known about the size and scale of Iron Age forts and fortresses in Iran and Armenia, a 15 m offset may be conservative. For example, a 15 m offset accounts for the height of a 13.5 m tower with a 1.5 m person standing on it. Nonetheless, test simulations run with the Armenian data set showed little difference between using a 10, 15 or 20 m offset for the analyses. In the example of the Armenian data, only one particularly sensitive sight out of 37 was affected by changing the offset parameter. Regarding the offset for the human viewer, test runs of data showed little difference in using an Offset B of either 1.5 meter or zero (no offset). At any rate, 1.5 meters is well within the known errors of ASTER or SRTM data.
7.3.5 Bounding Boxes, Scale and MAUP

For viewshed analyses, it is critical to limit or bound the analyzed area to avoid the otherwise inevitable problem of edge effects, which misrepresent the significance of the data (Van Leusen 1999; Wheatley and Gillings 2000).\(^{122}\) For both Iran and Armenia, the viewshed analyses and corresponding random-points studies were computed within 4 km wide and 20 km wide limiting boxes, equivalent to a 2 km or 10 km view radius around each site.\(^{123}\) The utility of a multi-scalar analysis is that it allowed data exploration for both local and more distant phenomena in the landscape.

Moreover, the described two-pronged approach allowed for the appreciation of the effects of the Modifiable Areal Unit Problem (MAUP). MAUP is a phenomenon in which choices in data aggregation, classification, and scale may dramatically alter results (Harrower 2006; Harrower 2009b). The significance of MAUP for archaeological spatial analyses has been mentioned, but seldom described in detail, particularly as relates to spatial analyses. Most academic discussions of MAUP are related to statistical representation problems faced in polling and census.

The terrain surrounding Lake Sevan in Armenia presented special challenges, and provides an archaeological example of MAUP in spatial analysis. The initial

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\(^{122}\) The problems of edge effects apply to viewshed analyses but are not applicable to point-to-point analyses where the only consideration is that all points and their vectors fall on the raster. In an unbounded viewshed analysis, sites in the middle of the DEM will have more pixels available to analyze than those on the edges.

\(^{123}\) In ArcGIS, a radius determines the limits of a visibility analysis, creating a round output that is then displayed inside a square figure. Since a round analysis in a square bounding box may create ambiguity (Is the pixel not visible or was it just not analyzed?), I opted to use a bounding box centered around the observation point for all analyses.
investigations for these sites were performed in 20 km bounding boxes (equivalent to ten km radius), but it became immediately apparent that the terrain changes here are sufficiently dramatic that the random-point results at the larger scale were not particularly representative of visibility conditions for the actual sites.

For example, the watch tower of Ghegamassar (Figure 41) possesses commanding views of the lake. In fact, the site is one of the “mega-hubs” from the previous chapter that is intervisible with sixteen other sites. However, at the 10 km scale, Ghegamassar yields a visibility percentage of 28.7% vs. the random population mean of 36.3%. On the other hand, at the 4 km scale, the site has a visibility percentage of 62.8% vs. a 41.6% random-point mean. Ghegamassar presents a case in which size-of-analysis dramatically impacts results, and provides an example of the benefit of examining results at a variety of scales.

An examination of the geographical context of Gheghamasar reveals that there are steep mountains a few kilometers north of the site, providing a rapid elevation change of some 1000 m. The mountains, outside of the survey area, skew the visibility percentages because of an unusual peculiarity of the topography. Moreover, the dramatically fluctuating elevations in the larger ten km box provided reference values for the Lake Sevan area that had such large standard deviations that they were unhelpful as a comparison value.
Figure 41: Viewshed Analysis of SV1

10 km radius equivalent above, 4 km radius equivalent below
Note: changes in scale necessarily affect the visibility percentages, see in-text discussion.
The previously described example of Ghegamassar is an excellent example of the need to both understand GIS as data exploration, and consider different scales of analysis in order to appreciate the effects of MAUP. Accordingly, the ten km results are optimal for displaying the vistas surrounding each site, as well as the directions in which views are blocked. Meanwhile, the four km radius results better characterize each site’s immediate terrain and visibility. On some level, the 4 km scale may be more representative of choices that ancient planners faced when deciding where to situate a site, especially given the predilection for placing sites at important intersections near roads (as discussed below). Roads, embedded features in the landscape, would have provided a geographical anchor—and constraint—in the placement of sites.

7.3.6 Limits to Visibility

In practice, visibility is restricted by a number of factors such the curvature of the earth or the limits of human eyesight. To account for the limits of human eyesight, corrections for earth curvature and refraction were computed by MATLAB to ensure accuracy of results.

7.3.7 Random-Point Analysis

7.3.7.1 Random-Point Procedure

For each site in the study area, a random-point population of 150 was created using the same parameters and scale-of-analysis as for the archaeological sites, described above. Contrary to approaches that create a selection “bin” from the entire survey
area, 150 points were randomly selected from a bounding box of ten or four km on each side, centered upon each of the actual site locations. Random-point techniques provide a reference population on the site level for interpreting viewshed percentages. Furthermore, the MATLAB routine was written to exclude “random points” that fall in a lake, i.e. either Lake Urmia or Lake Sevan.

The creation of a random-point population solves a common analytical problem. The mean of certain values such as elevation is simple to determine within a GIS since the mean and standard deviation can be computed from the raster values in the DEM (Kvamme 1990). However, for other values such as viewshed percentages, the creation of a random population within the survey area is an efficient, alternative technique to determine a baseline or referent value (Kvamme 1990) for archaeologically observed data sets.

Comparison values are critical for understanding the significance of results. Occasionally, in archeological implementations of viewshed analysis, researchers state that visibility or intervisibility is high, but do not provide context or comparison values. More specifically, the visibility is high or low compared to what? How can we know what constitutes high or low in a particular landscape? How can

124 It is not clear what the actual limits of survey might have been for the projects, so the described approach was also adapted with that reality in mind.
125 The environmental disaster that is destroying Lake Urmia, with its rapidly receding shoreline, is well-known (Zarghami 2011). Accordingly, a map from the 1960s was used to trace the water line to more accurately represent its extent in antiquity (from Pecorella & Salvini, 1984).
126 The routine continues running until 150 non-lake points have been selected. Lake sites were excluded since these would not have been plausible locations for an Iron Age fort or settlement.
127 In theory, one can determine the real mean for viewed percentage on a given raster dataset rather than approximating it numerically (Tabik et al. 2013). In practice, the described computation would be prohibitive, requiring the archeologist to run a viewshed analysis for every pixel in the DEM. Though, for small areas, the described procedure might be preferred.
we numerically characterize the surrounding terrain in order to provide a comparison framework for a dataset that is obviously terrain and scale-sensitive? The random-point procedure described above is an effort to address such methodological questions.

The production of randomly-generated comparison values at the full resolution of the DEM is a computationally-expensive methodology. Besides the processing time per instance, the comparison values require thousands of iterations in total. The 250 sites analyzed in the chapter at two different scales constituted more than 80,000 distinct analyses. Accordingly, I used the Matlab Distributed Computing Grid\textsuperscript{128} operated by the Krieger School of Arts and Sciences at the Johns Hopkins University to complete the study. The routine was written with the Matlab parallel computing toolbox\textsuperscript{129} which permits the analyses to run simultaneously on multiple processors in the computer cluster.

\textsuperscript{128} The KSAS Matlab Distributed Computing grid runs with eight nodes. Each node contains two Intel Xeon X5650 processors with six cores each and 12GB of RAM. The nodes are running Windows 7 and Matlab 2014a 64bit. The study would not have been possible without the assistance and support of Jesse Warford, IT and Computer Support representative from the department of Cognitive Science, and with the facilitation of Jason Oliver, IT and Computer Support representative of the department of Near Eastern Studies. Michael Harrower enlisted their assistance and provided additional computational resources from his own lab.

\textsuperscript{129} http://www.mathworks.com/products/parallel-computing/
7.3.7.2 Determining the Optimal Size of Random-Point Populations

While a number of recent archaeological studies have employed the technique of generating random points to characterize the background distribution of a particular attribute (Bongers et al. 2012; Swanson 2003; Kvamme 1990; Wheatley 1995), I am not aware of any discussion in the archaeological literature that addresses how large a random population should be.

Principles of statistics dictate that a larger sample size will render a more accurate characterization of the sampled population (Feller 1968:152, 243–248). Ninety-nine and 100 are common values for random site population size in visibility studies presumably because these numbers seem appropriately large. The observation that taking more samples or running more simulations should achieve a better approximation of the population’s “real” characteristics is an intuitive one while also a mathematically sound observation.

When sampling a population, researchers seek to represent its characteristics accurately, but at the same time, endeavor to utilize computational resources effectively. An increase in sample size will yield a more accurate characterization of the population being sampled. However, in the context of the problem at hand, running larger than necessary simulations is prohibitive regarding computational resources.

The branch of statistics called Large Number Theory provides principles that are relevant to the problem of the optimal size of a random-point population (Feller 1968:152, 243–248). According to the tenets of the Central Limit Theorem, as the
number of trials increase, the mean of the results will "converge" around a theoretical limit (Feller 1968:244–248). Theory predicts that for sufficiently large samples the sample average will stabilize around that of the actual population average.

By way of illustration of the described principle, the sum of the means of the site of Verahram was plotted and shows that the data stabilize at iterations above 100 (Figure 42). Therefore, 150 iterations were deemed sufficient for characterization of these results.

![Graph of Convergence](image)

**Figure 42: Verahram Random Points Analysis—Illustration of Convergence**

Y-Axis Sum of the Mean of the Viewshed Percentage of Random points
X-Axis Number of Iterations

The example of Verahram also illustrates the importance of achieving a sufficiently large sample size. The extreme fluctuation of the mean of the results in the earliest iterations diverges substantially from the expected value due to small
sample sizes. However, as the number of trials increase, the results converge towards the expected average with the oscillations decreasing in magnitude.

7.3.8 Ancient versus Modern Roads

For the purpose of the analyses presented below, I infer ancient roads from modern ones, a procedure supported by a rigorous evaluation of the evidence. Plotting site locations in a GIS\textsuperscript{130} makes it apparent that there is a strong correlation between Urartian sites and modern roads, suggesting that ancient and modern roads pass nearby to one another where they do not overlap. A high correspondence between ancient and modern roads is to be expected in mountainous environments where movement is channeled through a limited set of options. Generally speaking, people did and do pass through landscapes where there is the least effort involved to do so, i.e. valleys through mountain ranges (Güimil-Fariña and Parcero-Oubiña 2015). Moreover, previous scholarship has noted the Urartian preference for situating fortresses and forts near roads (Zimansky 1985; Smith 2003; Smith 1996), implying an inference of ancient roads from modern ones by previous investigators.

7.4 Results

7.4.1 Armenia: Lake Sevan Region

To provide context for the results presented below, the EI period in Armenia is characterized by an array of small fortress-states that competed for regional control

\textsuperscript{130} A spatial analysis that compares the location of fortresses to roads is discussed in Chapter 9.
Cyclopean stone forts and fortresses typify the architecture of the period and vary in size from modest to large, measuring between forty and 450 meters on each side (Biscione, Hmayakyan, and Parmegiani 2002:350). Though it is possible that the fortified sites observed in the Sevan survey area pertained to more than one distinct polity, the settlement patterns on the plain do not indicate multiple administrative centers (Biscione, Hmayakyan, and Parmegiani 2002). Moreover, the coherence of intervisibility networks along the southern shore of the lake also argues against an interpretation of multiple kingdoms (Earley-Spadoni 2015).

The Urartian armies arrived on the Sevan plain during the final phases of the Early Iron Age in the early eighth century BCE, and eventually annexed the entire territory surrounding Lake Sevan (Salvini 2002). In addition to the results of the CNR-YSU survey, the Urartian presence in the area is attested by historical texts, architecture and stone-cut inscriptions (Salvini 2002).

7.4.1.1 Early Iron

Even within the context of the highly-visible lake environment on the southern shores of Lake Van (Figure 43), it is apparent that the sites in the Sevan region have good visibility of the terrain, although comparable to the randomly-generated reference population in many cases (Table 6).

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131 In contrast to northwest Iran, the discovery of contemporaneous settlements eludes investigators in the Southern Caucasus (Hammer 2014; Smith et al. 2009).
According to the simulations, the low-lying populated areas would have been under the watchful gaze of the fortified installations of the EI installations, though there is a nucleation of visibility focused upon both the east and west entry-exit points to the Sevan plain along roads. Moreover, the situation of a series of four small forts along the pass to the south emphasizes an investment in watching the Selim route and any individuals who utilized it to enter and exit the plain.

In addition to the elaborate defensive communication network detected via the analysis presented in the previous chapter, there is also continuous visual coverage of the territory.

All fortified sites for the EI period demonstrate a visibility percentage at the high end of the randomly-generated reference value mean, with the notable exception of SV67. An examination of the ten km radius data of SV67, however, shows that the site's visibility is well above the mean value from the random analyses. The focus of the visibility from the station appears to have been large-scale rather than nearby, an observation consistent with SV67's status as a “mega-hub” in the reconstructed intervisibility network presented in the previous chapter.

There are four EI necropoles in the Sevan survey area, and there is no observable pattern to their prominence in the landscape, suggesting that each locale’s visible properties were incidental. One of these necropoles, associated with the EI fortress of Tsovinar, has relatively low visibility (SV21), two are moderately visible (SV37 & SV67), and the fourth (SV68) is prominent in the landscape.
Figure 43: Composite Viewshed Sevan Early Iron Age
Routes exiting the plain indicated with white arrows.
<table>
<thead>
<tr>
<th>Site ID</th>
<th>Site Name</th>
<th>Site Type Name</th>
<th>EI</th>
<th>UR</th>
<th>Visibility %</th>
<th>Random Visibility Mean %</th>
<th>Random Visibility Median %</th>
<th>σ</th>
</tr>
</thead>
<tbody>
<tr>
<td>SV01</td>
<td>Geghamasar</td>
<td>Fort (Watch Tower)</td>
<td>Y</td>
<td>N</td>
<td>62.8</td>
<td>41.6</td>
<td>41.5</td>
<td>9.7</td>
</tr>
<tr>
<td>SV04</td>
<td>Sotk 2</td>
<td>Fortified Settlement</td>
<td>Y</td>
<td>N</td>
<td>46.6</td>
<td>37.6</td>
<td>38.1</td>
<td>12.1</td>
</tr>
<tr>
<td>SV05</td>
<td>Norabak 1</td>
<td>Fortress</td>
<td>Y</td>
<td>N</td>
<td>45.0</td>
<td>36.9</td>
<td>36.8</td>
<td>9.6</td>
</tr>
<tr>
<td>SV06</td>
<td>Norabak 2</td>
<td>Fort</td>
<td>Y</td>
<td>N</td>
<td>53.5</td>
<td>36.2</td>
<td>35.2</td>
<td>11.6</td>
</tr>
<tr>
<td>SV10</td>
<td>Kol Pal</td>
<td>Fortress</td>
<td>Y</td>
<td>Y</td>
<td>64.9</td>
<td>38.0</td>
<td>39.0</td>
<td>11.9</td>
</tr>
<tr>
<td>SV13</td>
<td>Tsovak 1</td>
<td>Fortress</td>
<td>Y</td>
<td>Y</td>
<td>41.1</td>
<td>35.0</td>
<td>32.9</td>
<td>12.5</td>
</tr>
<tr>
<td>SV15</td>
<td>Kari Dur</td>
<td>Fort</td>
<td>Y</td>
<td>Y</td>
<td>30.0</td>
<td>37.9</td>
<td>35.3</td>
<td>13.3</td>
</tr>
<tr>
<td>SV19</td>
<td>Bruti Berd</td>
<td>Fort and Necropolis</td>
<td>Y</td>
<td>N</td>
<td>46.4</td>
<td>31.2</td>
<td>30.6</td>
<td>10.5</td>
</tr>
<tr>
<td>SV20</td>
<td>Tsovinar 1(Teishebaini)</td>
<td>Fortress and Lower Town</td>
<td>Y</td>
<td>Y</td>
<td>40.3</td>
<td>27.3</td>
<td>27.4</td>
<td>11.8</td>
</tr>
<tr>
<td>SV21</td>
<td>Tsovinar 2</td>
<td>Necropolis</td>
<td>Y</td>
<td>N</td>
<td>12.0</td>
<td>15.4</td>
<td>14.6</td>
<td>8.4</td>
</tr>
<tr>
<td>SV22</td>
<td>Yerku Jur</td>
<td>Necropolis</td>
<td>Y</td>
<td>N</td>
<td>24.8</td>
<td>15.0</td>
<td>13.8</td>
<td>8.8</td>
</tr>
<tr>
<td>SV28</td>
<td>Vardenik</td>
<td>Fortress</td>
<td>Y</td>
<td>Y</td>
<td>26.2</td>
<td>27.0</td>
<td>27.2</td>
<td>12.1</td>
</tr>
<tr>
<td>SV36</td>
<td>Aloyi Kogh</td>
<td>Fort (Watch Tower)</td>
<td>Y</td>
<td>N</td>
<td>54.0</td>
<td>30.8</td>
<td>31.9</td>
<td>11.1</td>
</tr>
<tr>
<td>SV37</td>
<td>Vanki Dur 2</td>
<td>Necropolis</td>
<td>Y</td>
<td>N</td>
<td>16.0</td>
<td>15.8</td>
<td>14.3</td>
<td>9.2</td>
</tr>
<tr>
<td>SV39</td>
<td>Martuni</td>
<td>Fort (Watch Tower)</td>
<td>Y</td>
<td>Y</td>
<td>42.8</td>
<td>34.5</td>
<td>35.9</td>
<td>9.7</td>
</tr>
<tr>
<td>SV40</td>
<td>Kyurdi Kogh</td>
<td>Fort</td>
<td>Y</td>
<td>N</td>
<td>56.8</td>
<td>31.3</td>
<td>31.1</td>
<td>11.2</td>
</tr>
<tr>
<td>SV45</td>
<td>Al Berd</td>
<td>Fort</td>
<td>Y</td>
<td>Y</td>
<td>25.4</td>
<td>25.6</td>
<td>26.0</td>
<td>9.2</td>
</tr>
<tr>
<td>SV46</td>
<td>Joj Kogh (1 &amp; 2)</td>
<td>Fort and Wall Segment</td>
<td>Y</td>
<td>Y</td>
<td>53.0</td>
<td>26.3</td>
<td>26.6</td>
<td>10.0</td>
</tr>
<tr>
<td>SV48</td>
<td>Mtnadzor</td>
<td>Fortress</td>
<td>Y</td>
<td>N</td>
<td>38.6</td>
<td>24.8</td>
<td>25.6</td>
<td>8.6</td>
</tr>
<tr>
<td>SV49</td>
<td>Heri Berd I</td>
<td>Fort</td>
<td>Y</td>
<td>N</td>
<td>37.8</td>
<td>23.1</td>
<td>22.8</td>
<td>9.2</td>
</tr>
<tr>
<td>SV55</td>
<td>Kare Dzi</td>
<td>Fort</td>
<td>Y</td>
<td>N</td>
<td>41.7</td>
<td>28.9</td>
<td>28.2</td>
<td>10.3</td>
</tr>
<tr>
<td>SV57</td>
<td>Nagharakhan</td>
<td>Fortress</td>
<td>Y</td>
<td>N</td>
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<td>24.6</td>
<td>23.7</td>
<td>10.3</td>
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<tr>
<td>SV60</td>
<td>Belyy Klyuch</td>
<td>Fort</td>
<td>Y</td>
<td>N</td>
<td>56.9</td>
<td>33.4</td>
<td>32.4</td>
<td>11.1</td>
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<td>Fort</td>
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<td>N</td>
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<td>Berdi Dar</td>
<td>Fort</td>
<td>Y</td>
<td>N</td>
<td>41.5</td>
<td>28.7</td>
<td>28.3</td>
<td>10.9</td>
</tr>
</tbody>
</table>

Table 6: Sevan Viewshed Early Iron Age, 2 Kilometer Radius
Table 6 (Cont.): Viewshed Iron Age

<table>
<thead>
<tr>
<th>SiteID</th>
<th>SiteName</th>
<th>Site Type Name</th>
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<th>UR</th>
<th>Visibility %</th>
<th>Random Visibility Mean %</th>
<th>Random Visibility Median %</th>
<th>σ</th>
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<td>SV63</td>
<td>Nerkin Gtashen</td>
<td>Necropolis</td>
<td>Y</td>
<td>Y</td>
<td>23.1</td>
<td>15.1</td>
<td>13.1</td>
<td>8.8</td>
</tr>
<tr>
<td>SV64</td>
<td>Kra</td>
<td>Fortress</td>
<td>Y</td>
<td>Y</td>
<td>45.2</td>
<td>27.5</td>
<td>27.9</td>
<td>9.6</td>
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<tr>
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<td>Negh Boghaz</td>
<td>Fort</td>
<td>Y</td>
<td>N</td>
<td>10.0</td>
<td>14.2</td>
<td>12.6</td>
<td>7.9</td>
</tr>
<tr>
<td>SV68</td>
<td>Shoghan Aghbyur</td>
<td>Necropolis</td>
<td>Y</td>
<td>N</td>
<td>37.7</td>
<td>11.4</td>
<td>10.3</td>
<td>7.0</td>
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<tr>
<td>SV70</td>
<td>Sangar</td>
<td>Fortress</td>
<td>Y</td>
<td>Y</td>
<td>29.1</td>
<td>21.3</td>
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<td>SV71</td>
<td>Berdi Dosh</td>
<td>Fort</td>
<td>Y</td>
<td>N</td>
<td>30.0</td>
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<td>20.3</td>
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</tr>
<tr>
<td>SV74</td>
<td>Murad Khach</td>
<td>Fort</td>
<td>Y</td>
<td>N</td>
<td>72.4</td>
<td>34.5</td>
<td>35.3</td>
<td>11.8</td>
</tr>
</tbody>
</table>
7.4.1.2 Urartian Period

It is to be expected that the patterns of visibility in the Lake Sevan basin during the Urartian period would be similar to those of the Early Iron period since there is much continuity in site placement from one period to the next. In particular, the Lake Sevan area has an unusually high incidence of re-appropriation of site emplacements from the Early Iron period to the Urartian period.

The general pattern present for the Urartian period is one of visibility focused upon roads and critical checkpoints. In particular, the central plain exhibits less consistent coverage than demonstrated in the visibility simulation from the EI period, and visibility is nucleated along the routes of passage that enter the plain. The results from the intervisibility study performed in the previous chapter suggest that certain EI installations may have been in use during the subsequent Urartian annexation. Nonetheless, it is clear that the Urartian installations are focused upon watching the primary routes of travel and travel control points, i.e. the limited number of roads that enter and exit the plain.

All sites of the Urartian period demonstrate a visibility percentage that is greater than each site’s randomly-generated reference value mean with the notable exception of the fort of Kari Dur. The most prominent site from the period, the Urartian fortress of Tsovinar (Figure 45), has visibility that is channeled north from the site and no views to the south, resulting in a targeted view of the east-west route of passage to the south of the lake.
Figure 44: Cumulative Viewshed Sevan Urartian Period, 10 km radius
Figure 45: Visibility from Tsovinar

Figure 46: Views from Tsovivar
(Photo: Author)
Table 7: Visibility Percentage, Sevan Urartian Period, 2 km radius

<table>
<thead>
<tr>
<th>SiteID</th>
<th>SiteName</th>
<th>Site Type Name</th>
<th>EI</th>
<th>UR</th>
<th>Visibility %</th>
<th>Random Visibility Mean %</th>
<th>Random Visibility Median %</th>
<th>σ</th>
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<td>SV02</td>
<td>Kakhakn</td>
<td>Settlement (Scatter)</td>
<td>N</td>
<td>Y</td>
<td>27.2</td>
<td>25.6</td>
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<tr>
<td>SV03</td>
<td>Sotk 1</td>
<td>Fort</td>
<td>N</td>
<td>Y</td>
<td>51.1</td>
<td>44.4</td>
<td>45.8</td>
<td>10.7</td>
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<tr>
<td>SV07</td>
<td>Jaghatsadzor</td>
<td>Fortification Complex</td>
<td>N</td>
<td>Y</td>
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<td>28.8</td>
<td>27.4</td>
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<td>Ayrk</td>
<td>Fortified Settlement</td>
<td>N</td>
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<td>46.2</td>
<td>34.4</td>
<td>32.5</td>
<td>10.0</td>
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<tr>
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<td>Kol Pal</td>
<td>Fortress</td>
<td>Y</td>
<td>Y</td>
<td>64.9</td>
<td>38.0</td>
<td>39.0</td>
<td>11.9</td>
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<tr>
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<td>Tsovak 1</td>
<td>Fortress</td>
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<td>Y</td>
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<td>35.0</td>
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<td>Kari Dur</td>
<td>Fort</td>
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<td>Karchaghbyur</td>
<td>Necropolis</td>
<td>N</td>
<td>Y</td>
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<td>21.9</td>
<td>20.8</td>
<td>10.9</td>
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<tr>
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<td>Fortress and Lower Town</td>
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<td>Y</td>
<td>40.3</td>
<td>27.3</td>
<td>27.4</td>
<td>11.8</td>
</tr>
<tr>
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<td>Vardenik</td>
<td>Fortress</td>
<td>Y</td>
<td>Y</td>
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<td>27.2</td>
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<td>Martuni</td>
<td>Fort (Watch Tower)</td>
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<td>Y</td>
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<td>Ishkhan Nahatak</td>
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<tr>
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<td>Al Berd</td>
<td>Fort</td>
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<td>Y</td>
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<td>26.0</td>
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<tr>
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<td>Joj Kogh (1 &amp; 2)</td>
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<td>Y</td>
<td>53.0</td>
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<td>Nerkin Gtashen</td>
<td>Necropolis</td>
<td>Y</td>
<td>Y</td>
<td>23.1</td>
<td>15.1</td>
<td>13.1</td>
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<td>Kra</td>
<td>Fortress</td>
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<td>Y</td>
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<td>Fort</td>
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<td>Y</td>
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<tr>
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<td>Fortress</td>
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<td>Y</td>
<td>29.1</td>
<td>21.3</td>
<td>19.9</td>
<td>11.1</td>
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</tbody>
</table>
7.4.2 Iran: Maku-Khoy Region

Although the mountainous plains of the Maku-Khoy region have relatively poor annual rainfall, an abundance of ground water renders the area an agriculturally-productive one. The Aq Chay and Qotur Chay are important sources of water in the region. Moreover, a number of key routes pass through the Maku-Khoy plains making the area strategically valuable (Zimansky 1985:22–23). The EI occupation in Maku-Khoy is poorly understood, while the first Urartian structures date to the ninth century (Kroll 1994).

7.4.2.1 Early Iron

There are a number of uncertainties regarding the nature of the EI occupation in the Maku-Khoy region, and an understanding of how visibility worked during the period is hampered by the ambiguity of site function (Table 8), since all of the period are known from survey rather than excavation. At a number of the sites in the region that became fortified centers during the Urartian period, e.g. Evoglu Qiz Qala, typologically EI sherds such as Gray Ware or Rillenkeramik were found in survey (Kroll 1994). The nature of these previous occupations, whether settlements or fortified installations, remains to be clarified.132 The underlying EI occupations are simply not apparent from the surface due to substantial overlying constructions from the Urartian period. The nature of EI occupations at a number of fortified Urartian sites will only be elucidated with future research, when it resumes.

132 Further complicating matters, Kroll has speculated that in some cases the EI sherds may be present as the result of construction fill from nearby tells (Kroll 2011). However, the described phenomenon is an unlikely explanation for all of the sites where EI sherds are observed in Iran.
Founded during the Late Bronze Age, Khoy Qiz Qala may have been the largest fortress and an administrative center in the region during the EIA, although this assertion remains to be clarified due to the otherwise poorly understood EI phase in the Maku-Khoy region, described above. Nonetheless, the structure can be considered a firm reference point, and its commanding views of the surrounding plain are impressive (Figure 48). Khoy Qiz Qala is located between two primary north-south routes of travel, although approximately five kilometers from either. Nonetheless, both routes are visible from the site. Moreover, Khoy Qiz Qala is located 2 km away from the northern edge of the plain, rather than on its edge.133

There are three fortified settlements in the Maku-Khoy region, each with sweeping views of the plains. The region also boasts a number of residential sites located upon tells, which tend to have from good to excellent visibility of the surroundings as well. Besides the reoccupation of tells, there are a number of non-tell settlements, generally located upon high, rocky spurs, indicating a desire to be elevated above the plain. Such site situation would have offered inhabitants advance warning of incoming threats, natural high ground for defense and views of nearby signal and watch towers, as discussed in the previous chapters. Many of these residential sites, particularly the off-tell locations, were abandoned during the subsequent Middle Iron period during the Maku-Khoy region’s annexation into the Urartian empire

133 Given the location of the site two km away from the edge of the plain, it is noteworthy that a fort was placed here during the subsequent Urartian period. The Urartian fort can be dated to the ninth century on architectural grounds. The location was probably re-appropriated for a variety of reasons including its excellent visibility and defensibility.
Figure 47: Composite from EI Sites in Maku-Khoy Region
### Table 8: Early Iron Visibility in Maku-Khoy, 2 km radius

<table>
<thead>
<tr>
<th>SiteID</th>
<th>Site Name</th>
<th>Site Type</th>
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<th>URZ</th>
<th>MEZ</th>
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<th>Random Visibility Mean %</th>
<th>Random Visibility Median %</th>
<th>σ</th>
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<td>Khoı Qız Qaleh</td>
<td>Fortress</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
<td>79.6</td>
<td>57.7</td>
<td>58.4</td>
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<td>Fort</td>
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<td>Y</td>
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<td>Havash Qaleh</td>
<td>Fort</td>
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<td>N</td>
<td>N</td>
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<td>Sanger</td>
<td>Fort</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
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<td>35.6</td>
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<td>Y</td>
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<td>30.8</td>
<td>31.5</td>
<td>9.2</td>
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<td>Danalu</td>
<td>Fort</td>
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<td>Y</td>
<td>N</td>
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<td>Y</td>
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<td>Fort</td>
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<td>N</td>
<td>N</td>
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<td>45.6</td>
<td>46.4</td>
<td>12.8</td>
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<td>Oglu Qaleh</td>
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<td>Y</td>
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<td>39.4</td>
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<td>Evoglu Qız Qaleh</td>
<td>Fort</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
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<td>N</td>
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<td>N</td>
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<td>Y</td>
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<td>10.7</td>
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<tr>
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<td>Zavieh Hassan Khan*</td>
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<td>Settlement (Tepe)</td>
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<td>Y</td>
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<td>Y</td>
<td>N</td>
<td>44.5</td>
<td>28.4</td>
<td>29.2</td>
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</table>

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134 Where the “Site Type” is in bold-face letters, the function of the site is known for the EIA. See discussion above.

237
Table: Iran Maku-Khoy Early Iron Visibility (Continued)

<table>
<thead>
<tr>
<th>SiteID</th>
<th>Site Name</th>
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<th>FEZ</th>
<th>URZ</th>
<th>MEZ</th>
<th>Visibility %</th>
<th>Random Visibility Mean %</th>
<th>Random Visibility Median %</th>
<th>σ</th>
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<td>Gurash</td>
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<td>N</td>
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<td>12.6</td>
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<td>Zurabad South East</td>
<td>Settlement</td>
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<td>N</td>
<td>N</td>
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<td>Settlement (Tepe)</td>
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<td>N</td>
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<td>14.4</td>
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<td>Stone building remains.</td>
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<td>N</td>
<td>Y</td>
<td>36.4</td>
<td>12.4</td>
<td>11.5</td>
<td>7.4</td>
</tr>
</tbody>
</table>
Figure 48: Visibility Khoy Kiz Qaleh, 10 km radius
7.4.2.2 Urartian Period

In the Urmia region, the views from Urartian sites are focused upon roads and control points—e.g. entrances to valleys and intersections of road—rather than providing general coverage of the plains (Figure 49).

The Urartian incursion into the Maku-Khoy region began in the ninth century (Salvini 1984), and the major patterns that characterize the Urartian occupation of the area were established at that time. However, the northernmost parts of Maku where the Urartian fortresses of Sarandaj Qaleh and Verahram were located did not appear to have been previously settled during the EI. The site of Verahram is situated along a road and at an important crossing of the Araxes into Naxçivan and offers particularly good views of the plain to the northeast (Figure 50). Sarandaj (Figure 51) may be an unusual Urartian fortress since no cultural materials were found here in survey, leading Kleiss to hypothesize that the site was a refuge castle (Kleiss 1971; Kleiss 1975). Moreover, the landscape surrounding the site is foreboding with sparsely vegetated lava cliffs that overlook a salt lake. However, Sarandaj’s strategic location at the intersection of the road south to Khoy, the road northwest to Erebuni and the road that passes northeast towards the Selim pass was undoubtedly key in the decision to locate the site here.

There are no major differences in the visibility of the surrounding terrain observed in ninth versus seventh century foundations (Table 9), with the notable exception of the visibility from the fortress of Bastam. The other fortresses in the area, Khezerlu Qaleh (Figure 52), Evoghlu Qiz Qaleh (Figure 53) and Gavur Qaleh
Khoy (Figure 54), offer restricted or channeled views of the plain. In all three cases, the restricted vision is the result of each fortress's location at the edge of plain with mountainous terrain located behind it, a positioning that exchanges visibility in favor of improved defensibility.

Bastam, the only fortress that can be securely dated to the seventh century in the region, has relatively poor visibility of its surroundings. At the two km scale, it has a visibility ratio of nineteen percent versus a mean of 31.9 percent and the value plummets to an abysmal 1% at the 10 km scale (Figure 55). Much like other Urartian forts and fortresses, Bastam is located near an important intersection of roads at the edge of a plain; however, unlike other fortresses in Iran, it is nestled inside the mouth of a valley adjacent to the plain. The surrounding valley serves to block Bastam’s views to the outside, but more importantly, conceals movement of people in and out of the fortress. Bastam's relatively poor visibility and prominence in the landscape could provide the fortress with an advantage that more conspicuous installations lack—the element of surprise. Troops could have been deployed from the fortress in a variety of directions without immediately communicating their movements within the landscape. Furthermore, Bastam’s position in a narrow valley provides a number of defensive advantages. None of the observations described above should be understood to mean that visibility of the surrounding terrain was unimportant to the defensive capabilities of the fortress as much as it indicates that Bastam may have utilized a system of supplementary
lookout towers, a practice that has been attested at a number of sites in Iran (see Chapter 5).

Figure 49: Composite Visibility Maku-Khoy Urartian Sites
Table 9: Iran Maku-Khoy Visibility Urartian Period, 2 km radius
(Early foundations [c. 9th c.] in gray; late foundations [c. 7th c.] in green)

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Figure 50: Visibility from Verahram

Figure 51: Visibility from Sarandj Qaleh
Figure 52: Visibility from Khezerlu Qaleh

Figure 53: Visibility from Evoghlu Qiz Qaleh
Figure 54: Visibility from Gavur Qaleh Khoy

Figure 55: Visibility from Bastam
7.4.3 Iran: Urmia Region (inc. Salmas)

The Urmia plain was the most agriculturally productive area within the empire (Zimansky 1985), and the area would have been an important "bread basket" of Biainili. Besides its natural abundance of ground water, the region has reliable rainfall of more than 350 mm per annum (Biscione 2003).

An inscription at Ain-e Rum commemorating the construction of a fountain by king Menua in the middle of the ninth century provides valuable information about the Urartian presence in the Urmia region (Salvini 2009). Specifically, the Menua inscription suggests that the Urartian conquest of the area was complete by the end of the ninth century BCE, although an Urartian military incursion may have begun even earlier (Salvini 1984).

7.4.3.1 Early Iron

In contrast to the other studied regions in Iran, the density of residential sites during the EI is high across the Urmia plain, and most of these settlements are reoccupied tells (Figure 56). Since these reoccupied tells were situated in locations with generally good visibility, there is broad visual coverage across the plain (Figure 56). By contrast, the subsequent Urartian period is less focused upon broad visibility of the plain in favor of coverage of roads that enter and exit the plain as well as critical control points.

In contrast to the Maku-Khoy region during the Early Iron Age, the EI period on the Urmia plain is somewhat better understood, especially as relates to site function. Therefore, site function can be proposed with greater confidence. The EI
occupation documented on the Urmia is the densest of the studied regions in northwest Iran, especially as pertains to the attestation of settlements. Two of these, Geoy Tepe and Tepe Gidjilar, were the subject of small-scale excavation by Pecorella and team (Pecorella and Salvini 1984). The Urmia region was also widely explored by Kleiss for the larger and more prominent occupations and then more intensively documented by the Italian expedition led by Pecorella (see Chapter 2).

The identity of the important administrative center or centers is uncertain during the EI period on the Urmia plain. One possible candidate is Ismail Agha Qaleh, a substantial fortress during the Urartian annexation where EI sherds are numerous on the surface (Pecorella and Salvini 1984:325). The site, re-founded as an Urartian fortress during the ninth century, was located at an important control point where the Nazlu Chay enters the northern Urmia plain. However, excavations at the site were unable to clarify the nature of the EI occupation since the investigations consisted of soundings instead of broad exposures (Pecorella and Salvini 1984).

The sites on the Urmia plain may have equally been associated with a kingdom centered at Hasanlu, although its location some forty km to the south would suggest the need for a nearer secondary center on the Urmia plain. Geoy Tepe and Tepe Gidjilar (Figure 57 & Figure 58) were also substantial sites during the EI period and may have also been loci of administrative centers. Future research should elucidate these relationships. The forts and fortified settlements along the Urmia plain invariably possess commanding views of the surrounding territories.
Generally speaking, the settlements, the vast majority of which are re-occupied tells, also have excellent visibility, resulting from their relative elevation above the flat plain near the lake.
Figure 56: Composite Visibility from El Sites on Urmia Plain
(El visibility, in light green, is overlain on subsequent Urartian period, in blue.)
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Table 10: Iran Urmia Visibility Early Iron Period, 2 km radius
Table 10: Iran Urmia Visibility Early Iron Period, 2 km radius, Cont.

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<td>11.9</td>
<td>8.4</td>
</tr>
</tbody>
</table>
Figure 57: Visibility from Geoy Tepe

Figure 58: Visibility from Gidjilar Tepe
7.4.2.2 Urartian Period

Generally speaking, the visibility of sites of the Urartian period in the Urmia basin, especially the fortified ones, is focused upon routes of travel and control points such as entrances to valleys and intersections of roads (Figure 59). At the same time, broad visibility is generally good on the Urmia plain though not as dense as in the previous period (Figure 60).

The fortress of Ismail Agha Qaleh was established during the ninth century and was the first known administrative center on the Urmian plain during the Urartian occupation. Ismail Agha Qaleh was located at an important control point where a river, the Nazlu Çay, enters the northern Urmia plain. The strategic placement of the site in a valley limits and channels the views from the fortress (Figure 61), resulting in poor general visibility. Instead, the visibility from Ismail Agha Qaleh is targeted on a critical entry point into the Urmia plain from the north and northwest. The construction of the site was accompanied by the installation of a number of smaller forts in the region, indicating that the Urartians planned and executed a regional system of defense near Ismail Agha Qaleh (Kroll 1994).

The seventh-century fortress of Pir Chavush (Figure 62) is located in the Salmas region at the intersection of three routes: one from the southeast, one from the southwest and one from the north. Pir Chavush was the first and only fortress to be placed in the Salmas region, though it is located just above Vaziri Qaleh, a medium-sized Urartian fort founded during the ninth century that continued to be utilized during the seventh century (Kroll 1994). Both the fort and fortress are
located on an elevated triangular projection above the plain that effectively obstructs the site's view of the north. Even given the described limitation, Pir Chavush continued to be an important emplacement throughout the Urartian occupation, indicating that the most important view was of the intersection of roads.

The fortress Lumbad Qaleh (Figure 63), located near Lake Urmia, is the only other administrative structure besides Pir Chavush that can be firmly dated to the seventh century. Lumbad Qaleh is situated at the southern edge of the Urmia plain, approximately 5 km north of two forts that were founded during the ninth century (Kroll 1994). As such, it can be understood as a reinforcement of previously established territories rather than a radical departure in regional settlement.

Lumbad Qaleh and two small forts (UR120 and UR121) are situated roughly 5 km apart in a north-to-south linear array and were probably located along an ancient road. Because the modern road runs along the flattest parts of the plain, which would have been part of the lake bed in antiquity (Zarghami 2011), the modern road cannot correspond to the ancient one.

There are a number of forts and settlements in the Urmia region that are contemporary with the Urartian occupation that demonstrate local, generically Middle Iron pottery (MEZ), rather than any of the pottery typically associated with fortresses such as the shiny red Red-Polished Ware (Kroll 1994). While the placement of these sites along roads controlled by Urartian forts and fortresses indicates Urartian dominion, it is evident that a local material culture continued to thrive alongside the “intrusive” Urartian one.
Figure 59: Urartian Forts and Fortresses Situated Along Roads
(Forts small hexagons and fortresses large Hexagons; Settlements Points)
Figure 60: Visibility Channeled Around Roads on Urmia Plain, Urartian Period
(Fortresses green hexagons, forts blue hexagons and settlements points.)
Table 11: Iran Urmia Visibility Urartian Period, 2 km radius

(Known early foundations [c. 9th c.] in gray; late foundations [c. seventh c.] in green)

<table>
<thead>
<tr>
<th>SiteID</th>
<th>Site Name</th>
<th>Site Type</th>
<th>FEZ</th>
<th>URZ</th>
<th>Visibility %</th>
<th>Random Visibility Mean %</th>
<th>Random Visibility Median %</th>
<th>σ</th>
</tr>
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<tbody>
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<td>SL07</td>
<td>Vaziri Qaleh</td>
<td>Fort</td>
<td>Y</td>
<td>Y</td>
<td>44.9</td>
<td>42.5</td>
<td>41.9</td>
<td>10.5</td>
</tr>
<tr>
<td>SL09</td>
<td>Ahudarreh Qaleh</td>
<td>Fort</td>
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<td>Y</td>
<td>66.8</td>
<td>39.1</td>
<td>41.3</td>
<td>13.4</td>
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<tr>
<td></td>
<td>Garny Yaruk (Karniarouk)</td>
<td>Fort and Settlement with Rock Tombs</td>
<td>N</td>
<td>Y</td>
<td>38.0</td>
<td>27.7</td>
<td>26.5</td>
<td>10.5</td>
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<tr>
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<td>Chariq (Cariq, Shariq)</td>
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<td>Y</td>
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<td>22.3</td>
<td>22.0</td>
<td>11.9</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>UR103</td>
<td>Kuh-i Zambil</td>
<td>Fort</td>
<td>N</td>
<td>Y</td>
<td>67.8</td>
<td>45.8</td>
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<td>Tazabulaq Qaleh</td>
<td>Fort</td>
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<td>Y</td>
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<td>30.0</td>
<td>28.8</td>
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<tr>
<td></td>
<td>Kamana Qaleh</td>
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<td>Qalat</td>
<td>Fort</td>
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<td>Y</td>
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<td>31.8</td>
<td>33.6</td>
<td>10.8</td>
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<tr>
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<td>Kazimbashi</td>
<td>Fort</td>
<td>N</td>
<td>Y</td>
<td>71.1</td>
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<td>42.3</td>
<td>12.3</td>
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<tr>
<td>SL17</td>
<td>Kafir Qaleh</td>
<td>Fort</td>
<td>N</td>
<td>Y</td>
<td>26.3</td>
<td>32.3</td>
<td>32.9</td>
<td>11.6</td>
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<tr>
<td>SL04</td>
<td>Pir Chavush</td>
<td>Fortress</td>
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<td>Y</td>
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<td>UR087</td>
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<td>Y</td>
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<td>26.7</td>
<td>10.7</td>
</tr>
<tr>
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<td>Y</td>
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<td>32.7</td>
<td>33.6</td>
<td>11.4</td>
</tr>
<tr>
<td>UR105</td>
<td>Farhad Zaqasi</td>
<td>Fortified settlement, Rock chamber, rock niche</td>
<td>N</td>
<td>Y</td>
<td>52.4</td>
<td>28.6</td>
<td>29.8</td>
<td>8.8</td>
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<tr>
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<td>Bilqis Qaleh</td>
<td>Settlement</td>
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<td>Y</td>
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<td>16.5</td>
<td>15.3</td>
<td>8.6</td>
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<tr>
<td>SL16</td>
<td>Kafir Qaleh (II)</td>
<td>Settlement (Tepe)</td>
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<td>Y</td>
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<td>16.4</td>
<td>15.3</td>
<td>7.9</td>
</tr>
<tr>
<td>UR011</td>
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<td>Settlement (Tepe)</td>
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<td>Y</td>
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<td>26.5</td>
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### Iran Urmia Visibility Urartian Period, 2 km radius, Cont.

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<th>Random Visibility Median %</th>
<th>σ</th>
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<tr>
<td>SL01</td>
<td>Haftavan Tepe</td>
<td>Building (elite manor?)</td>
<td>Y</td>
<td>Y</td>
<td>50.3</td>
<td>13.4</td>
<td>11.9</td>
<td>8.4</td>
</tr>
<tr>
<td>UR109</td>
<td>Ain-i Rum</td>
<td>Rock niche with inscription of Menua</td>
<td>N</td>
<td>Y</td>
<td>3.9</td>
<td>21.0</td>
<td>19.0</td>
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<td>Rabat Tepe</td>
<td>Undetermined</td>
<td>N</td>
<td>Y</td>
<td>43.6</td>
<td>21.0</td>
<td>20.5</td>
<td>11.3</td>
</tr>
</tbody>
</table>

**Figure 61: Visibility from Ismail Agha Qaleh**
Figure 62: Visibility from Pir Chavush

Figure 63: Visibility from Lumbad Qaleh
Table 12: Iran Urmia Visibility Middle Iron (MEZ), 2 km radius

<table>
<thead>
<tr>
<th>SiteID</th>
<th>Site Name</th>
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<th>URZ</th>
<th>MEZ</th>
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<th>Random Visibility Median %</th>
<th>σ</th>
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<td>Qiz Qaleh</td>
<td>Fort</td>
<td>Y</td>
<td>N</td>
<td>Y</td>
<td>78.4</td>
<td>43.7</td>
<td>46.4</td>
<td>11.7</td>
</tr>
<tr>
<td>UR085</td>
<td>Bashqaleh</td>
<td>Fort</td>
<td>Y</td>
<td>N</td>
<td>Y</td>
<td>73.3</td>
<td>47.4</td>
<td>49.3</td>
<td>8.0</td>
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<td>Arziyayad</td>
<td>Settlement</td>
<td>Y</td>
<td>N</td>
<td>Y</td>
<td>37.4</td>
<td>31.9</td>
<td>31.9</td>
<td>13.0</td>
</tr>
<tr>
<td>UR012</td>
<td>Nazlu Tepe 2</td>
<td>Settlement</td>
<td>N</td>
<td>N</td>
<td>Y</td>
<td>11.4</td>
<td>20.6</td>
<td>19.2</td>
<td>9.7</td>
</tr>
<tr>
<td>UR007</td>
<td>Baladjuk Tepe</td>
<td>Settlement</td>
<td>Y</td>
<td>N</td>
<td>Y</td>
<td>54.5</td>
<td>22.7</td>
<td>21.6</td>
<td>9.0</td>
</tr>
<tr>
<td>UR039</td>
<td>Aghil 1</td>
<td>Fort or Fortified Settlement</td>
<td>N</td>
<td>N</td>
<td>Y</td>
<td>74.1</td>
<td>47.3</td>
<td>47.1</td>
<td>8.9</td>
</tr>
<tr>
<td>UR037</td>
<td>Qaramanlu 1</td>
<td>Settlement (Tepe)</td>
<td>Y</td>
<td>N</td>
<td>Y</td>
<td>17.7</td>
<td>26.6</td>
<td>25.7</td>
<td>11.0</td>
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<tr>
<td>UR055</td>
<td>Baranduz</td>
<td>Settlement (Tepe) with watch tower</td>
<td>N</td>
<td>N</td>
<td>Y</td>
<td>58.5</td>
<td>25.3</td>
<td>26.4</td>
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<tr>
<td>UR058</td>
<td>Ozan</td>
<td>Settlement</td>
<td>N</td>
<td>N</td>
<td>Y</td>
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<td>25.4</td>
<td>25.6</td>
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</tr>
<tr>
<td>UR074</td>
<td>Djamfeslu Tepe (Jamfeslu)</td>
<td>Settlement (Tepe)</td>
<td>Y</td>
<td>N</td>
<td>Y</td>
<td>57.8</td>
<td>27.0</td>
<td>25.2</td>
<td>9.8</td>
</tr>
<tr>
<td>UR078</td>
<td>Djarabadd Tepe</td>
<td>Settlement</td>
<td>Y</td>
<td>N</td>
<td>Y</td>
<td>38.4</td>
<td>26.6</td>
<td>26.4</td>
<td>11.4</td>
</tr>
<tr>
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<td>Gengacin Tepe</td>
<td>Settlement</td>
<td>N</td>
<td>N</td>
<td>Y</td>
<td>18.1</td>
<td>18.5</td>
<td>18.7</td>
<td>11.5</td>
</tr>
<tr>
<td>UR106</td>
<td>Seylan</td>
<td>Fort</td>
<td>N</td>
<td>N</td>
<td>Y</td>
<td>35.5</td>
<td>27.6</td>
<td>27.2</td>
<td>9.0</td>
</tr>
<tr>
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<td>Settlement</td>
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<td>N</td>
<td>Y</td>
<td>11.2</td>
<td>20.7</td>
<td>18.7</td>
<td>9.8</td>
</tr>
<tr>
<td>UR111</td>
<td>Ain-I Rum II</td>
<td>Settlement</td>
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<td>N</td>
<td>Y</td>
<td>15.1</td>
<td>20.3</td>
<td>18.8</td>
<td>8.9</td>
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<tr>
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<td>Ain-I Rum III</td>
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<td>N</td>
<td>Y</td>
<td>23.7</td>
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</tr>
<tr>
<td>UR113</td>
<td>Rashgund</td>
<td>Fort</td>
<td>N</td>
<td>N</td>
<td>Y</td>
<td>50.1</td>
<td>29.9</td>
<td>29.8</td>
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<tr>
<td>UR114</td>
<td>Rashgund Qaleh</td>
<td>Fortified Settlement</td>
<td>N</td>
<td>N</td>
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<td>55.2</td>
<td>28.2</td>
<td>27.6</td>
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</tr>
</tbody>
</table>
7.4.4 Iran: Ushnu-Naqadeh

The Ushnu and Naqadeh valleys were heavily explored by a University of Pennsylvania expedition led by Robert Dyson, Jr., with excavations at the sites of Hasanlu, Dinkha, Hajji Firuz, Dalma, Pisdeli, Sé Girdan and Agrab Tepe (Dyson et al. 1969; Dyson 1968). While these investigations have undoubtedly shed light on the Early Iron world of the region, the spectacular results of the project have prompted, at times, as many questions as answers, an observation that is particularly true of Hasanlu’s purported Urartian occupation, Hasanlu IIIb.\(^\text{135}\)

Each substantial season of work at Hasanlu resulted in brief preliminary reports which were never followed by a final excavation report or volume (Kroll 2013). Meanwhile, skepticism surrounded the site’s findings, particularly the date of the destruction layer (IVb) that produced the celebrated Hasanlu gold bowl (Magee 2008). The earliest interpretations understood the destruction to coordinate with the arrival of the Urartians in the late ninth century (Muscarella 2012). An alternate hypothesis dates the destruction of Hasanlu to the late eighth century, coordinating it with Sargon II’s eighth campaign (Magee 2008), a theory that Muscarella opposes (2012). In both proposed scenarios, there was an Urartian occupation at Hasanlu, although the nature of the occupation remains unclear. For example, Kroll contends that Hasanlu was not particularly important during the

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\(^{135}\) Stephan Kroll took up the project of producing the belated final publication of Hasanlu III, but for a variety of reasons, he does not intend to continue with the project (personal communication). He summarized his findings in Kroll 2013.
Urartian period (2013), an argument that has merit given the proximity of the large administrative center of Qalatgah.

7.4.4.1 Early Iron

Site distribution and associated visibility are focused upon two important valleys during the EI: the Solduz valley southwest of Lake Urmia and the Ushnu valley located approximately 20 km due east (Figure 64).

Hasanlu, located in the Solduz valley, was undoubtedly the primary center in the area during the Early Iron Age. The visibility from the tell, towering some twenty meters above the surrounding plain, is excellent (Figure 65). Unlike Urartian centers, Hasanlu is located in the middle of a plain rather than at its edge, a pattern present at other important EI centers such as Aslan Qaleh. One of the nearby Early Iron forts, Kuh-I Chorblach, also follows the described pattern. Hasanlu is additionally, unlike Urartian fortresses, located a few kilometers away from the nearest primary east-west route of travel. Nonetheless, the lack of clarity regarding the dating of the destruction of EI Hasanlu, which terminated in a violent conflagration (IVB), complicates attempts to comprehend the chronology of the EI occupation in the Solduz and Ushnu valleys.136

All of the forts and settlements in the Ushnu valley have good to excellent visibility during the EI, though no major center has been discovered in the valley.

136 Muscarella contends, reasonably, that the Urartians are responsible for the attested destruction at Hasanlu. The Urartians built the large fortress of Qalatgah in the nearby Ushnu valley during the ninth century as attested by inscriptions of Menua and Ishpuini (Muscarella 2012; Pecorella and Salvini 1984).
However, the investment in a regional system of defense embodied by a system of forts along Ushnu valley, along with the apparent lack of an administrative center, make it tempting to speculate that the Ushnu valley was under the dominion of Hasanlu during the El. At present, it not possible to confirm if the forts in the nearby Ushnu valley were under the sway of Hasanlu, but their proximity and the splendors of Hasanlu IV certainly argue for such an interpretation. Hasanlu may have even ruled a wider territory beyond the Ushnu and Solduz valleys, but the extent of the site’s authority is unknown (Biscione 2003).
Figure 64: Composite Viewshed Ushnu-Naqadeh Region El Period
Table 13: Iran Ushnu-Naqadeh Visibility Early Iron Age, 2 km radius

<table>
<thead>
<tr>
<th>SiteID</th>
<th>Site Name</th>
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<th>MEZ</th>
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<th>Random Visibility Mean %</th>
<th>Random Visibility Median %</th>
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<td>NQ04</td>
<td>Dosoq Qaléh</td>
<td>Fort</td>
<td>Y</td>
<td>Y</td>
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<td>Y</td>
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<td>32.2</td>
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<td>Y</td>
<td>Y</td>
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<td>13.3</td>
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<td>Settlement (Tepe)</td>
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<td>N</td>
<td>N</td>
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<td>67.7</td>
<td>19.0</td>
<td>18.4</td>
<td>9.3</td>
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</table>
Figure 65: Visibility from Hasanlu

Figure 66: Visibility from Qalatgah
7.4.2.2 Urartian Period

Hasanlu probably took a secondary role to the large Urartian fortress of Qalagah that was founded in the nearby Ushnu valley in the ninth century (Muscarella 1971). The density of sites increased during the period, particularly in the Ushnu valley.

Qalagah (Figure 66 & Figure 67) was built along an important east-west route and a number of forts were installed along the same road at various control points (Figure 68). Unlike Hasanlu, the Urartian fortress at Qalagah was located along a primary east-west route with high mountains to the rear which effectively block the view to the north. However, the watchtower (NQ28B) would have provided the visual reconnaissance necessary to overcome the described defensive
weakness (see previous chapter). The El fort Agrab Tepe, located near Hasanlu, was re-founded Urartian (Muscarella 1973), and, unlike Hasanlu, is located along a primary road. The visibility from the forts and fortresses in these valleys was generally excellent (Table 14), and the visual coverage of the roads in the Ushnu valley is considerably denser.

The Ushnu-Naqadeh region constitutes the southernmost extension of the territories known to be firmly in the grip of the Urartian state.\textsuperscript{137} Many of the sites, particularly settlements and forts, exhibit a generically Middle Iron or “local” expression of material culture (Table 14). The decidedly local nature of the Urartian material culture at the Urartian fort of Agrab Tepe was a particular point of confusion in the early interpretation of the site, though the excavators eventually concluded that it was Urartian (Muscarella 1973; Muscarella 2012). However, expressions of hybridity should be unsurprising here as it is a well-known dynamic along the porous borders of ancient empires (Hales and Hodos 2010). Moreover, the emergence of a markedly different set of traditions and a distinct material culture in Mannea just to the south\textsuperscript{138} provides an intriguing foil for such discussions of emulation and hybridity.

\textsuperscript{137} There is an Urartian inscription at Tashtepe in the Miyandoab region to the south and Muscarella understands it as the southernmost Urartian site. The site itself demonstrates a generically Middle Iron material culture (Muscarella 2012; Kroll 1994). Further research should clarify the role of the site in the empire of Urartu.

\textsuperscript{138} See discussion in Section 6.4.7 of recent archaeological investigations in the Miyandoab region, the apparent Mannean heartland.

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Figure 68: Composite Viewshed Ushnu-Naqadeh Region Urartian Period
Table 14: Iran Ushnu-Naqadeh Visibility Urartian and MI Periods, 2 km radius

<table>
<thead>
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<th>SiteID</th>
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<td>Dosoq Qaleh</td>
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<td>Y</td>
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<td>Y</td>
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<td>32.2</td>
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<td>Y</td>
<td>Y</td>
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<td>Y</td>
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<td>21.8</td>
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<td>Yediar</td>
<td>Fort</td>
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<td>N</td>
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<td>56.3</td>
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<td>Fort</td>
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<td>N</td>
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<td>Settlement (Tepe)</td>
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<td>23.5</td>
<td>23.2</td>
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<td>Fortified Settlement</td>
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<td>Settlement (Tepe)</td>
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<td>NQ54</td>
<td>Balestan Tepe</td>
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<td>30.8</td>
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<td>NQ56</td>
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<td>67.7</td>
<td>19.0</td>
<td>18.4</td>
<td>9.3</td>
</tr>
</tbody>
</table>
7.4.5 Iran: Marand

The sites in the Marand region are located on a plain surrounded by mountains northwest of Lake Urmia. There are few sites here compared to the more prolific surrounding regions of Khoy and Salmas, for example. The importance of the region in antiquity may have been primarily strategic due to the presence of important crossroads located here (Zimansky 1985). Today, the eastern extent of Marand is too saline for agriculture, although it may have been utilized for pastoral pursuits such as horse breeding in antiquity.

7.4.5.1 Early Iron

The Marand plain appears to have been relatively unimportant during the EI (Figure 69). It is unclear if the low EI site density is the result of under exploration in the region or is instead simply an accurate reflection of an ancient reality. There are only two settlements in the Marand region, both tepes, and there is also an undefined EI occupation at the site of Livar, which subsequently became an important Urartian fortress.
Table 15). The visibility from Marand Tepe is lackluster while Parpar Tepe boasts excellent visibility of the terrain.
Figure 69: Composite Viewshed Marand Region El Period
Table 15: Iran Marand Visibility Early Iron Age, 2 km radius

<table>
<thead>
<tr>
<th>SiteID</th>
<th>Site Name</th>
<th>Site Type</th>
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<th>URZ</th>
<th>MEZ</th>
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<th>Random Visibility Mean %</th>
<th>Random Visibility Median %</th>
<th>σ</th>
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<td>Livar</td>
<td>?</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
<td>42.1</td>
<td>46.2</td>
<td>49.6</td>
<td>15.0</td>
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<td>Marand Tepe</td>
<td>Settlement (Tepe)</td>
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<td>Y</td>
<td>7.9</td>
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<td>12.7</td>
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<td>MD05</td>
<td>Parpar Tepe (Baruj)</td>
<td>Settlement (Tepe)</td>
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<td>N</td>
<td>N</td>
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<td>26.6</td>
<td>12.5</td>
</tr>
</tbody>
</table>

7.4.5.2 Urartian Period

The Urartian occupation is denser than the attested Early Iron site distribution (Figure 70 and Table 16), and the attested Urartian sites in the Marand region are larger.

The Urartian fortress of Livar was founded in the Marand region during the ninth century (MD14).139 Defensively, the site is well-positioned (Figure 71), and in typical fashion, it is situated at the edge of a plain with high mountains at its rear to the north. Livar is also just north of a river. Atypically, Livar is situated a few kilometers away from both the major north-south and east-west routes, though it commands a view of both. Since most other Urartian fortresses are located closer to a major road, it may be the case that one or both of these routes passed along a slightly different trajectory in antiquity. Alternatively, the location of the site on a rise between the two routes was sufficient for the Urartians’ needs.

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139 The ninth-century determination is based upon architectural characteristics as well as pottery present in surface collection (Kroll 1994).
There are, furthermore, two Urartian forts\textsuperscript{140} that may be new foundations based upon architectural evidence and sherds found in surface collection (Kroll 1994). The first of these, Cheragh-e Amir, is a modestly-sized structure with an associated settlement (Kroll 1984b:28). The second of these, Gohar Qaleh, is even smaller with dimensions of approximately 25 x 15 meters. Kroll termed these small structures \textit{Straßenstationen} (Kroll 1984b:29). Given their small size and elevation above the plain, these \textit{Straßenstationen} may be yet another variation upon a watch tower, a surveillance point situated along the road.\textsuperscript{141} Gohar Qaleh, much like the Qalatgah watch tower, is located on a rocky outcrop above the adjacent settlement of Maledjin, effectively providing visual reconnaissance at the site as well as commanding a view of the nearby thoroughfare; the overall visibility at the site is not particularly impressive but the structure was placed with both a view of the road as well as the other fort, Cheragh-e Amir.

\textsuperscript{140} Cheragh-e Amir (50 x 70 m) (MD19) and Gohar Qaleh (MD21). Cheragh-e Amir also has an associated settlement.

\textsuperscript{141} The small fort is located approximately 500 meters from a N-S secondary road. Watch towers and fire beacons are also located along roads in Egypt and Persia (Zitterkopf and Sidebotham 1989).
Figure 70: Composite Viewshed Marand Region Urartian Period
Table 16: Iran Marand Visibility Urartian Period, 2 km radius
<table>
<thead>
<tr>
<th>SiteID</th>
<th>Site Name</th>
<th>Site Type</th>
<th>FEZ</th>
<th>URZ</th>
<th>MEZ</th>
<th>Visibility %</th>
<th>Random Visibility Mean %</th>
<th>Random Visibility Median %</th>
<th>σ</th>
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<td>Y</td>
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<td>46.2</td>
<td>49.6</td>
<td>15.0</td>
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<tr>
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<td>Y</td>
<td>N</td>
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<td>21.7</td>
<td>10.2</td>
<td></td>
</tr>
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<td>N</td>
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<td>32.0</td>
<td>11.2</td>
<td></td>
</tr>
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<td>Gohar Qaleh Fort</td>
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<td>Y</td>
<td>N</td>
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<td>25.7</td>
<td>25.4</td>
<td>9.4</td>
<td></td>
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<tr>
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<td>N</td>
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<td>37.9</td>
<td>12.5</td>
<td></td>
</tr>
</tbody>
</table>

**Figure 71: Visibility from Livar**
7.4.6 Iran: Ahar and Tabriz

The Ahar region, consisting of mountains and plains, is situated at an average elevation of 1600 MASL. This region, located approximately sixty kilometers away from the closest site in the Marand group, may have been relatively isolated in antiquity.

7.4.6.1 Early Iron

There was a small but significant occupation on the plain during Early Iron Age. The sites were located in valleys along roads, as attested elsewhere in northwest Iran during the period. Measuring an impressive 230 X 240 m, the unexcavated fortress of Libliuni\(^{142}\) (Figure 73) was undoubtedly an important regional center on the outskirts of what would later become the Urartian frontier (Kleiss and Kroll 1980). The fortress is located on a rocky spur above the Ahar-Varzeghan road. The site is raised above the plain but is not flanked by mountains, in contrast to a pattern commonly observed among Urartian sites, particularly substantial fortress sites.

---

\(^{142}\) Libliuni (AH26) is a typologically EI fortress with an associated 8\(^{\text{th}}\) century Urartian inscription, and constitutes a clear case of EI and Urartian contemporaneity (Kleiss and Kroll 1980).
Figure 72: Composite Viewshed Ahar Region El Period
Table 17: Iran Ahar-Tabriz Visibility EI Period, 2 km radius

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<th>SiteID</th>
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<td>Y</td>
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<td>27.0</td>
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<td>Fort</td>
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<td>N</td>
<td>Y</td>
<td>50.0</td>
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<td>Fortress</td>
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</table>
Figure 73: Visibility from Libliuni

Site: Libliuni (AH26), Elev: 1750 MASL, Visibility ratio: 32.0%

Figure 74: Visibility from Sequindel

Site: Sequindel (AH28), Elev: 1684 MASL, Visibility ratio: 15.0%
7.4.6.2 Urartian Period

The Urartian occupation in the Ahar-Tabriz region is denser than the EI settlement pattern, a situation that is analogous to developments in the Marand area. As in other regions in northwest Iran, the Urartian sites near Ahar are located along roads and near critical control points such as intersections of roads. The visibility from the sites is targeted along routes rather than providing general coverage of the plain. The Urartian fortress of Sequindel (Figure 74) was located just below its substantial IA antecedent. The Urartian fortress is therefore closer to the road and has reduced visibility of the terrain. Certainly, the described move would have also shifted the visual dynamics at the viewer level, making the installation less visible from afar but located at a more “immediate” scale at close range.

The Ahar regional sites, located farther east than other known Urartian sites, constitute a frontier region of the Urartian empire. Much like the southern frontier region of Ushnu-Naqadeh, there are many forts and settlements that boast a generically local Middle Iron material culture alongside sites that demonstrate more typologically Urartian features. One wonders if these presently unexcavated installations, particularly the fortress of Sequindel, would demonstrate the hybridity in construction techniques and material culture that has been observed along other frontier regions of the Urartian empire such as the Lake Sevan region in Armenia (Biscione, Hmayakyan, and Parmegiani 2002) or the Ushnu-Naqadeh region in Western Azerbaijan (Muscarella 1973).
Figure 75: Composite Viewshed Ahar Region Urartian Period
## Table 18: Iran Ahar-Tabriz Visibility Urartian Period, 2 km radius

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## Table 19: Iran Ahar-Tabriz Visibility Middle Iron, 2 km radius

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<th>Site Type</th>
<th>FEZ</th>
<th>URZ</th>
<th>MEZ</th>
<th>Visibility %</th>
<th>Random Visibility Mean %</th>
<th>Random Visibility Median %</th>
<th>σ</th>
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</thead>
<tbody>
<tr>
<td>AH05</td>
<td>Qaleh Dish</td>
<td>Wall Remains</td>
<td>N</td>
<td>N</td>
<td>Y</td>
<td>39.6</td>
<td>21.7</td>
<td>21.5</td>
<td>8.2</td>
</tr>
<tr>
<td>AH17</td>
<td>Tepe 15 km NW Ahar</td>
<td>Settlement (Tepe)</td>
<td>N</td>
<td>N</td>
<td>Y</td>
<td>23.4</td>
<td>19.0</td>
<td>18.5</td>
<td>8.7</td>
</tr>
<tr>
<td>TA04</td>
<td>Bordjii Qa'eh</td>
<td>Fort</td>
<td>Y</td>
<td>N</td>
<td>Y</td>
<td>50.0</td>
<td>33.4</td>
<td>34.5</td>
<td>10.7</td>
</tr>
<tr>
<td>AH21</td>
<td>Qaleh Chassanaq</td>
<td>Fort</td>
<td>N</td>
<td>N</td>
<td>Y</td>
<td>41.4</td>
<td>22.8</td>
<td>23.0</td>
<td>8.2</td>
</tr>
<tr>
<td>AH30</td>
<td>Kuh-e Zamburan</td>
<td>Fortified Settlement</td>
<td>Y</td>
<td>N</td>
<td>Y</td>
<td>54.3</td>
<td>40.8</td>
<td>41.8</td>
<td>13.8</td>
</tr>
<tr>
<td>AH20</td>
<td>Tepe Reshtabad Bala</td>
<td>Settlement (Tepe)</td>
<td>Y</td>
<td>N</td>
<td>Y</td>
<td>37.3</td>
<td>21.1</td>
<td>20.6</td>
<td>10.6</td>
</tr>
<tr>
<td>AH39</td>
<td>Tepe Dashkasen</td>
<td>Settlement (Tepe)</td>
<td>Y</td>
<td>N</td>
<td>Y</td>
<td>21.9</td>
<td>20.0</td>
<td>19.9</td>
<td>10.6</td>
</tr>
<tr>
<td>AH45</td>
<td>Kighal</td>
<td>Settlement</td>
<td>Y</td>
<td>N</td>
<td>Y</td>
<td>21.4</td>
<td>17.3</td>
<td>15.2</td>
<td>9.1</td>
</tr>
<tr>
<td>TA22</td>
<td>Yukari Dagh Qa'eh</td>
<td>Fort</td>
<td>N</td>
<td>N</td>
<td>Y</td>
<td>36.3</td>
<td>35.8</td>
<td>38.5</td>
<td>13.3</td>
</tr>
</tbody>
</table>
7.4.7 Iran: Miyandoab

The Miyandoab region, with two major rivers that supply water to the plain, boasts an agricultural potential comparable to the Urmia plain (Zimansky 1985). The Zarrineh-Rud and the Simineh-Rud form a delta region at approximately 1300 MASL. Unlike the other areas in Iranian Azerbaijan that have received little attention since the late 1970s, the Miyandoab region has been an epicenter of an Iranian Iron Age research *renaissance* with ongoing excavations at Mannean centers (Mollazadeh 2008; Hassanzadeh 2009). Though the region was apparently never Urartian, it has been included here as a comparison case to examine if a neighboring kingdom used similar or dissimilar regional organization pattern in order to evaluate the distinctiveness of Urartian imperial strategies in this region.

7.4.7.1 Early Iron

The Miyandoab region is impressive in the context of the Iron Age I/II of Iranian Azerbaijan for the density and complexity of its settlement (*Figure 76 & Table 20*). These sites—four or five forts143, a fortified settlement, as well as a fortress—are all located along roads at critical intersections. Here, visibility is channeled along roads rather than distributed across the broader expanse of the plains. The fortress of Aslan Qaleh was undoubtedly an important administrative center on the Miyandoab plain during the period preceding the Mannean ascendancy. Reminiscent of the position of Hasanlu in the Solduz valley, Aslan Qaleh is also

---

143 The site function of MY13 Dashband is not clear.
centered in the middle of a plain rather than along its edge, resulting in the site’s excellent visibility over 360 degrees (Figure 77). However, gains in visibility are affected by a loss in defensibility with such an exposed position, though the site is located on a rocky spur some fifty meters above the plain.
Figure 76: Composite Viewshed Miyandoab Region EI Period
<table>
<thead>
<tr>
<th>SiteID</th>
<th>Site Name</th>
<th>Site Type</th>
<th>FEZ</th>
<th>URZ</th>
<th>MEZ</th>
<th>Visibility %</th>
<th>Random Visibility Mean %</th>
<th>Random Visibility Median %</th>
<th>σ</th>
</tr>
</thead>
<tbody>
<tr>
<td>MKSR71</td>
<td>Kiz Qaleh Runyan Duyah</td>
<td>Fort</td>
<td>Y</td>
<td>N</td>
<td>N</td>
<td>51.3</td>
<td>21.6</td>
<td>20.2</td>
<td>10.4</td>
</tr>
<tr>
<td>MY02</td>
<td>Tashtepe</td>
<td>Fort</td>
<td>Y</td>
<td>N</td>
<td>Y</td>
<td>43.0</td>
<td>48.3</td>
<td>49.5</td>
<td>5.9</td>
</tr>
<tr>
<td>MY06</td>
<td>Tazekand Qaleh</td>
<td>Fort</td>
<td>Y</td>
<td>N</td>
<td>Y</td>
<td>75.8</td>
<td>45.4</td>
<td>45.5</td>
<td>7.1</td>
</tr>
<tr>
<td>MY14</td>
<td>Girdahrah Qal'eh</td>
<td>Fort</td>
<td>Y</td>
<td>N</td>
<td>Y</td>
<td>83.2</td>
<td>38.9</td>
<td>40.0</td>
<td>10.4</td>
</tr>
<tr>
<td>MY04</td>
<td>Aslan Qaleh</td>
<td>Fortress</td>
<td>Y</td>
<td>N</td>
<td>N</td>
<td>92.6</td>
<td>47.7</td>
<td>47.5</td>
<td>6.3</td>
</tr>
<tr>
<td>MY38</td>
<td>Zendan-I Suleiman</td>
<td>Fortified Settlement</td>
<td>Y</td>
<td>N</td>
<td>Y</td>
<td>63.0</td>
<td>31.0</td>
<td>30.1</td>
<td>10.4</td>
</tr>
<tr>
<td>MR10</td>
<td>Gol Tepe</td>
<td>Settlement (Tepe)</td>
<td>Y</td>
<td>N</td>
<td>N</td>
<td>63.5</td>
<td>25.6</td>
<td>24.6</td>
<td>9.6</td>
</tr>
<tr>
<td>MR11</td>
<td>Unbekannt (Adjab Shir)</td>
<td>Rock spur with settlement remains</td>
<td>Y</td>
<td>N</td>
<td>N</td>
<td>52.6</td>
<td>28.7</td>
<td>29.6</td>
<td>10.6</td>
</tr>
<tr>
<td>MY09</td>
<td>Zimineh Rud Tepe</td>
<td>Settlement</td>
<td>Y</td>
<td>N</td>
<td>N</td>
<td>72.6</td>
<td>16.9</td>
<td>16.0</td>
<td>8.9</td>
</tr>
<tr>
<td>MY13</td>
<td>Unbekannt (Dashband)</td>
<td>Settlement or Fort</td>
<td>Y</td>
<td>N</td>
<td>Y</td>
<td>72.4</td>
<td>32.0</td>
<td>32.3</td>
<td>10.3</td>
</tr>
<tr>
<td>MY18</td>
<td>Beg Ovase</td>
<td>Settlement</td>
<td>Y</td>
<td>N</td>
<td>Y</td>
<td>53.0</td>
<td>31.6</td>
<td>31.0</td>
<td>8.9</td>
</tr>
<tr>
<td>MY29</td>
<td>Sheitan-e Zendan</td>
<td>Settlement (Tepe)</td>
<td>Y</td>
<td>N</td>
<td>Y</td>
<td>59.3</td>
<td>23.2</td>
<td>21.6</td>
<td>10.2</td>
</tr>
<tr>
<td>MY32</td>
<td>Qalat Tepe</td>
<td>Settlement (Tepe)</td>
<td>Y</td>
<td>N</td>
<td>Y</td>
<td>34.6</td>
<td>17.7</td>
<td>15.3</td>
<td>9.3</td>
</tr>
</tbody>
</table>
Figure 77: Visibility from Aslan Qaleh

Site: Aslan Qaleh (MY04), Elev. 1360 MASL, Visibility ratio: 52.1%

Figure 78: Visibility from Haidar Khan (Qalatchi)

Site: Haidar Khan (Qalatchi) (MY19), Elev. 1512 MASL, Visibility ratio: 21.7%
7.4.7.2 Urartian (Mannean) Period

Zimansky speculated on whether or not the Miyandoab region was a part of the Urartian empire based upon its proximity to other known Urartian territories as well as the extent of its agricultural land (1985, p. 20), but noted that the pottery found in the region did not appear consistent with Urartian presence. Muscarella, instead, attributed the southern extent of Urartu to the region (Muscarella 1971).

However, recent archaeological research in the Miyandoab region by the Iranian Archaeological Service suggests that the area was once the home of the previously elusive Mannean state that had been known previously only from historical sources such as Neo-Assyrian letters (Parpola 1987; Lafranchi and Parpola 1990; Fuchs and Parpola 2001). Archaeological excavation at the sites of Qalatchi, identified with ancient Mannean capital Izirtu, as well as at Qaleh Bardineh and Rabat Tepe in the Piranšahr-Sardašt region have begun to shed light on ancient Mannea for the first time (Hassanzadeh 2009; Mollazadeh 2008; Kargar and Binandeh 2009; Nobari and Afifi 2009; Hassanzadeh 2006).

An inscription in eighth century Aramaic, the so-called Bukan stele, has also been discovered at Qalatchi (Hassanzadeh 2006). Based upon the promising results at the sites described above, it is clear that the material culture of the Mannean state is quite different from that of Urartu. In particular, glazed bricks, reminiscent of those found in excavation of Assyrian Nimrud, are a common decorative element. These were manufactured locally and many feature intricate hand-painted motifs (Mollazadeh 2008).
The general patterns of visibility that were established during the EI in the Miyandoab region, namely the nucleation of sites around critical intersections as well as roads, are also the present during the Mannean period, though there are also a few sites that are located in the middle of plains such as MY 18 and MY 19 (Figure 79 & Table 21). Moreover, a number of the forts situated near the EI center at Aslan Qaleh continued to be occupied during the Mannean period. One notable difference, however, is the placement of the center of Qalatchi, which has been tentatively identified with the Mannean capital of Izirtu (Figure 78). Qalatchi, like Aslan Qaleh, is located in the middle of the plain in contrast to Urartian centers that are often on the edges of plains and flanked by mountains. The general visibility from the site is impeded to the east where higher elevations prevail, resulting in better views to the west and south. Qalatchi, unlike most of the other sites in the region, is located relatively far from a known primary route.
Figure 79: Composite Viewshed Miyandoab Region MEZ Period
Table 21: Iran Miyandoab Visibility Middle Iron Period, 2 km radius

<table>
<thead>
<tr>
<th>SiteID</th>
<th>Site Name</th>
<th>Site Type</th>
<th>FEZ</th>
<th>URZ</th>
<th>MEZ</th>
<th>Visibility %</th>
<th>Random Visibility Mean %</th>
<th>Random Visibility Median %</th>
<th>σ</th>
</tr>
</thead>
<tbody>
<tr>
<td>MY02</td>
<td>Tashtepe</td>
<td>Fort</td>
<td>Y</td>
<td>N</td>
<td>Y</td>
<td>43.0</td>
<td>48.3</td>
<td>49.5</td>
<td>5.9</td>
</tr>
<tr>
<td>MY06</td>
<td>Tazekand Qaleh</td>
<td>Fort</td>
<td>Y</td>
<td>N</td>
<td>Y</td>
<td>75.8</td>
<td>45.4</td>
<td>45.5</td>
<td>7.1</td>
</tr>
<tr>
<td>MR13</td>
<td>Unbekannt (bei Bonab)</td>
<td>Fort</td>
<td>N</td>
<td>N</td>
<td>Y</td>
<td>42.9</td>
<td>36.6</td>
<td>39.3</td>
<td>17.3</td>
</tr>
<tr>
<td>MY14</td>
<td>Girdahrah Qal'eh</td>
<td>Fort</td>
<td>Y</td>
<td>N</td>
<td>Y</td>
<td>83.2</td>
<td>38.9</td>
<td>40.0</td>
<td>10.4</td>
</tr>
<tr>
<td>MY05</td>
<td>Qiz Qal'eh</td>
<td>Fort</td>
<td>N</td>
<td>N</td>
<td>Y</td>
<td>67.2</td>
<td>37.9</td>
<td>39.8</td>
<td>12.0</td>
</tr>
<tr>
<td>MY07</td>
<td>Shah Tepe</td>
<td>Fort with rock tunnel and rock-cut tomb</td>
<td>N</td>
<td>N</td>
<td>Y</td>
<td>61.6</td>
<td>47.0</td>
<td>48.2</td>
<td>7.4</td>
</tr>
<tr>
<td>MY19</td>
<td>Haidar Khan (Qalatchi)</td>
<td>Fortress</td>
<td>N</td>
<td>N</td>
<td>Y</td>
<td>47.7</td>
<td>27.7</td>
<td>26.3</td>
<td>10.9</td>
</tr>
<tr>
<td>MY38</td>
<td>Zendan-I Suleiman</td>
<td>Fortified Settlement</td>
<td>Y</td>
<td>N</td>
<td>Y</td>
<td>63.0</td>
<td>31.0</td>
<td>30.1</td>
<td>10.4</td>
</tr>
<tr>
<td>MY36</td>
<td>Cheshme Ahmad Suleiman</td>
<td>Fortified Settlement</td>
<td>N</td>
<td>N</td>
<td>Y</td>
<td>24.8</td>
<td>24.8</td>
<td>24.0</td>
<td>9.7</td>
</tr>
<tr>
<td>MY11</td>
<td>Chulabad</td>
<td>Settlement</td>
<td>N</td>
<td>N</td>
<td>Y</td>
<td>41.5</td>
<td>25.8</td>
<td>24.9</td>
<td>11.4</td>
</tr>
<tr>
<td>MY17</td>
<td>Karakandi Tepe</td>
<td>Settlement (Tepe)</td>
<td>N</td>
<td>N</td>
<td>Y</td>
<td>35.6</td>
<td>20.0</td>
<td>18.4</td>
<td>9.0</td>
</tr>
<tr>
<td>MY13</td>
<td>Unbekannt (Dashband)</td>
<td>Settlement or Fort</td>
<td>Y</td>
<td>N</td>
<td>Y</td>
<td>72.4</td>
<td>32.0</td>
<td>32.3</td>
<td>10.3</td>
</tr>
<tr>
<td>MY18</td>
<td>Beg Ovase</td>
<td>Settlement</td>
<td>Y</td>
<td>N</td>
<td>Y</td>
<td>53.0</td>
<td>31.6</td>
<td>31.0</td>
<td>8.9</td>
</tr>
<tr>
<td>MY29</td>
<td>Sheitan-e Zendan</td>
<td>Settlement (Tepe)</td>
<td>Y</td>
<td>N</td>
<td>Y</td>
<td>59.3</td>
<td>23.2</td>
<td>21.6</td>
<td>10.2</td>
</tr>
<tr>
<td>MY32</td>
<td>Qalat Tepe</td>
<td>Settlement (Tepe)</td>
<td>Y</td>
<td>N</td>
<td>Y</td>
<td>34.6</td>
<td>17.7</td>
<td>15.3</td>
<td>9.3</td>
</tr>
<tr>
<td>MY53</td>
<td>Qaleh Bardineh</td>
<td>Fort</td>
<td>N</td>
<td>N</td>
<td>Y</td>
<td>42.3</td>
<td>29.0</td>
<td>27.6</td>
<td>10.8</td>
</tr>
</tbody>
</table>
7.5 The Spatial Patterning of Urartian Forts and Fortresses in Iran

While far from being the most common site type known from Biainili-Urartu, (Figure 80) fortresses are certainly the most conspicuous and served as important centers.

Unfortunately, much of what it known about excavated fortresses in Iran is the result of unsystematic excavations or seventh century contexts, a fact that shrouds many facets the Urartian empire's development in relative darkness.
However, northwest Iran, in contrast to the later annexation of the Lake Sevan sites in Armenia, was incorporated into Urartu during its expansion in the ninth century and remained a part of the empire until its mysterious and precipitous end in the seventh century. As discussed above, the foundations of the seventh century are late creations that have a number of special qualities that are atypical of the empire rather than typical.

Therefore, it would be a mistake to understand seventh-century fortresses as representing a static snapshot of Urartu. However, the foundations of the seventh century, while demonstrating certain stylistic and ideological peculiarities at the site level, do not appear to constitute a radical reorganization of space regionally. For many of the more substantial foundations, i.e. fortresses, it is possible to date many of these on the basis of monumental inscriptions, and stylistic differences in architectural techniques (e.g. Kleiss 1994). Three of these can be firmly dated to the seventh century (Figure 81). One observation that can be made of the seventh century constructions is that they are not focused in any particular area. Instead, the emphasis was focused upon bolstering the empire’s presence in its heartland. These constructions appear to supplement rather than replace previous centers, and moreover, did not herald the necessary discontinuation of other forts and fortresses in their respective areas.

However, the chronological picture is more difficult to understand at the numerous forts, or smaller military installations (shown in Figure 81). Kroll notes
that it is quite difficult to attribute the foundations of the described smaller sites to a particular century based upon survey alone (Kroll 2011).

![Figure 81: Urartian Fortresses and Forts in Iran](image)

*Figure 81: Urartian Fortresses and Forts in Iran*

(seventh century fortresses highlighted in green;
Fortresses represented as hexagons and forts as points)

Regarding *ex novo* foundations, there is a predilection for these among the late foundations of the seventh century, during the Rusite renaissance. However, *ex novo* foundations were not preferred during the ninth and eighth centuries (Table 298)
It is difficult to characterize the eighth century in Iranian Azerbaijan with too much detail since the only known constructions dating from the period are Sequindel, perhaps the elite building at Haftavan or the fortress Verahram. The Sevan data, instead, provide a window into eighth-century imperial expansion. Certainly, the results there suggest that re-appropriation was a part of the strategy of the Urartian state.

The broad patterns observed during the Urartian period had already been established during the EI. For example, of the twenty six EI forts in Iran, all but six are situated along a primary route of travel. The well-known EI fortresses of Libliuni, Aslan Qaleh, Hasanlu and Evoghlu Qiz Qala are located 1597, 4352, 3207 and 176 meters respectively from a primary route of travel. Every Urartian fortresses known from Iran is located relatively near a primary route of travel. The mean distance from a primary road for the fourteen fortresses of Iran is 1983 m and the median distance 1254.5 m. Forts, on the other hand are located along both primary and secondary roads. More than half of the 34 Urartian forts in Iran are situated within 2000 meters of a primary route of travel. Most of the remaining forts are located along a secondary route of travel like Chariq in the Salmas district, Allaverdikand in the Maku district or Seyyed Tadj ed-Din Qaleh in the Khoy district.

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144 P. Zimansky, personal communication.
145 As has been discussed in detail above, some of these might not have been forts during the EI. It is simply not possible to say.
146 Primary routes are defined as the major north-south and east-west roads from one district to the other such as the Maku-Khoy road (highway 32). These appear yellow in google earth. Secondary routes appear white by convention in google earth as well as other cartography programs. The smallest roads, traces, only show up in satellite imagery.
147 Calculated using the "Near" tool in the Analysis toolbox in ArcGIS.
An emphasis on forts along secondary roads may be considered an innovation, albeit a subtle one, of the configuration of the defensive network of the region during the Urartian period.

Smith, in his pioneering analysis of the sites on the Ararat plain, argues that Urartian sites were relatively accessible compared to Late Bronze/Early Iron constructions which were relatively inaccessible (1996). By accessible, Smith means that they are close to roads, and not located in steep, high-elevation locations. Smith further observes that the average elevation of Urartian sites is much lower than the LB/IA ones in his study area. Smith (2003) argues that the described dramatic shift was a deliberate effort by the state to bring about an abrupt change in location to prompt a rupture in the social ties to place from previous era.

While a rupture with place was certainly a consequence of the shift noted by Smith on the Aragats plain, the cause may have been the empire’s desire to relocate LB/IA centers from remote hills to loci near roads and important intersections on the Ararat plain. The phenomenon observed by Smith in Armenia could be understood as a functional restructuring to conform to the Urartian need and preference to control and watch movement through the landscape, as observed in the Iranian and Sevan data.
### Table 22: Occupation and Dimensions of Urartian Fortresses in Iran

<table>
<thead>
<tr>
<th>Site ID</th>
<th>Site Name</th>
<th>Founded</th>
<th>Occupation Periods</th>
<th>Sub-Region</th>
<th>Length N-S</th>
<th>Width E-W</th>
</tr>
</thead>
<tbody>
<tr>
<td>KH17</td>
<td>Evoghlu Qiz Qaleh</td>
<td>9th c.</td>
<td>FEZ URZ SEZ MED-ACH-PAR</td>
<td>Khoy</td>
<td>250</td>
<td>175</td>
</tr>
<tr>
<td>MD14</td>
<td>Livar</td>
<td>9th c.</td>
<td>ETC MBZ FEZ URZ SAS-FMA</td>
<td>Marand</td>
<td>700</td>
<td>400</td>
</tr>
<tr>
<td>NQ28A</td>
<td>Qalatgah</td>
<td>9th c.</td>
<td>URZ SEZ 148</td>
<td>Ushnu-Naqadeh</td>
<td>500</td>
<td>200</td>
</tr>
<tr>
<td>UR087</td>
<td>Ismail Agha Qaleh</td>
<td>9th c.</td>
<td>FEZ URZ ACH SEZ HMA</td>
<td>Urmia</td>
<td>500</td>
<td>335</td>
</tr>
<tr>
<td>KH08</td>
<td>Gavur Qaleh Khoy</td>
<td>9th c.</td>
<td>URZ SEZ ACH HMA</td>
<td>Khoy</td>
<td>250</td>
<td>200</td>
</tr>
<tr>
<td>AH28</td>
<td>Sequin Del</td>
<td>8th c.</td>
<td>URZ 149</td>
<td>Ahar</td>
<td>230</td>
<td>119</td>
</tr>
<tr>
<td>MK07</td>
<td>Verahram</td>
<td>8th/7th c.</td>
<td>URZ SEZ ACH-PAR</td>
<td>Maku</td>
<td>700</td>
<td>300</td>
</tr>
<tr>
<td>MD26</td>
<td>Gavur Qaleh</td>
<td>7th c.</td>
<td>URZ ACH HMA</td>
<td>Marand</td>
<td>550</td>
<td>140</td>
</tr>
<tr>
<td>UR115</td>
<td>Lumbad Qaleh</td>
<td>7th c.</td>
<td>URZMED-ACH SEZ PAR-SAS-FMA</td>
<td>Urmia</td>
<td>200</td>
<td>180</td>
</tr>
<tr>
<td>KH21</td>
<td>Bastam (Rusai.URU.TUR)</td>
<td>7th c.</td>
<td>URZ SEZ MED-ACH PAR HMA</td>
<td>Khoy</td>
<td>800</td>
<td>400</td>
</tr>
<tr>
<td>SL04</td>
<td>Pir Chavush</td>
<td>7th c.</td>
<td>URZ HMA</td>
<td>Salmas</td>
<td>200</td>
<td>100</td>
</tr>
<tr>
<td>NQ44</td>
<td>Hasanlu Tepe</td>
<td>Undet.</td>
<td>NEO CHL ETC ALI POW HAB SBZ FEZ URZ ACH-PAR SEZ MA</td>
<td>Ushnu-Naqadeh</td>
<td>350</td>
<td>300</td>
</tr>
<tr>
<td>MK31</td>
<td>Khezerlu Qal`eh</td>
<td>Undet.</td>
<td>ETC MBZ SBZ FEZ URZ SEZ ACH-PAR HMA</td>
<td>Maku</td>
<td>300</td>
<td>125</td>
</tr>
<tr>
<td>MK08</td>
<td>Sarandj Qaleh</td>
<td>Undet.</td>
<td>URZ</td>
<td>Maku</td>
<td>300</td>
<td>75</td>
</tr>
</tbody>
</table>

148 Occupational history has not been explored and is poorly understood (Muscarella 1971).

149 Located adjacent to the El (possibly also Late Bronze) fortress of Libluni.
Table 23: Visibility and Situation of Urartian Fortresses in Iran

<table>
<thead>
<tr>
<th>Site ID</th>
<th>SiteName</th>
<th>Visibility % 10 km</th>
<th>Random Visibility Mean %</th>
<th>Random Visibility Median %</th>
<th>σ</th>
<th>Distance from plain (m)</th>
<th>Meters Above Plain</th>
<th>Avg. Slope in %</th>
</tr>
</thead>
<tbody>
<tr>
<td>KH17</td>
<td>Evoghlu Qiz Qaleh</td>
<td>77.4</td>
<td>53.6</td>
<td>59.2</td>
<td>15.3</td>
<td>110</td>
<td>20</td>
<td>18.2</td>
</tr>
<tr>
<td>MK07</td>
<td>Verahram</td>
<td>65.0</td>
<td>33.2</td>
<td>35.0</td>
<td>10.1</td>
<td>100</td>
<td>15</td>
<td>15.0</td>
</tr>
<tr>
<td>MD14</td>
<td>Livar</td>
<td>42.1</td>
<td>46.2</td>
<td>49.6</td>
<td>15.0</td>
<td>190</td>
<td>30</td>
<td>15.8</td>
</tr>
<tr>
<td>NQ28A</td>
<td>Qalatgah</td>
<td>49.8</td>
<td>35.4</td>
<td>34.2</td>
<td>14.3</td>
<td>400</td>
<td>100</td>
<td>25.0</td>
</tr>
<tr>
<td>UR087</td>
<td>Ismail Agha Qaleh</td>
<td>25.4</td>
<td>31.7</td>
<td>30.7</td>
<td>12.2</td>
<td>200</td>
<td>50</td>
<td>25.0</td>
</tr>
<tr>
<td>KH08</td>
<td>Gavur Qaleh Khoy</td>
<td>56.2</td>
<td>36.0</td>
<td>40.3</td>
<td>13.2</td>
<td>250</td>
<td>90</td>
<td>36.0</td>
</tr>
<tr>
<td>AH28</td>
<td>Sequindel</td>
<td>25.7</td>
<td>35.0</td>
<td>36.1</td>
<td>13.1</td>
<td>130</td>
<td>10</td>
<td>7.7</td>
</tr>
<tr>
<td>MD26</td>
<td>Gavur Qaleh</td>
<td>44.9</td>
<td>36.3</td>
<td>37.9</td>
<td>12.5</td>
<td>150</td>
<td>25</td>
<td>16.7</td>
</tr>
<tr>
<td>UR115</td>
<td>Lumbad Qaleh</td>
<td>43.0</td>
<td>26.8</td>
<td>26.7</td>
<td>10.7</td>
<td>130</td>
<td>40</td>
<td>30.8</td>
</tr>
<tr>
<td>KH21</td>
<td>Bastam (Rusai,URU,TUR)</td>
<td>14.4</td>
<td>31.9</td>
<td>31.7</td>
<td>13.4</td>
<td>240</td>
<td>90</td>
<td>37.5</td>
</tr>
<tr>
<td>SL04</td>
<td>Pir Chavush</td>
<td>60.6</td>
<td>42.4</td>
<td>43.3</td>
<td>9.9</td>
<td>300</td>
<td>120</td>
<td>40.0</td>
</tr>
<tr>
<td>NQ44</td>
<td>Hasanlu Tepe</td>
<td>68.9</td>
<td>41.6</td>
<td>42.6</td>
<td>7.9</td>
<td>120</td>
<td>20</td>
<td>16.7</td>
</tr>
<tr>
<td>MK31</td>
<td>Khezerlu Qal'eh</td>
<td>50.6</td>
<td>28.6</td>
<td>28.2</td>
<td>10.7</td>
<td>150</td>
<td>40</td>
<td>26.7</td>
</tr>
<tr>
<td>MK08</td>
<td>Sarandj Qaleh</td>
<td>20.5</td>
<td>27.5</td>
<td>27.0</td>
<td>9.2</td>
<td>375</td>
<td>110</td>
<td>29.3</td>
</tr>
</tbody>
</table>
Table 24: Fortresses, Distance to Primary Routes of Travel

<table>
<thead>
<tr>
<th>Site ID</th>
<th>SiteName</th>
<th>Distance From Primary Road (meters)</th>
</tr>
</thead>
<tbody>
<tr>
<td>KH17</td>
<td>Evoghlau Qiz Qaleh</td>
<td>69</td>
</tr>
<tr>
<td>MK07</td>
<td>Verahram</td>
<td>557</td>
</tr>
<tr>
<td>MD14</td>
<td>Livar</td>
<td>4583</td>
</tr>
<tr>
<td>NQ28A</td>
<td>Qalatgah</td>
<td>2586</td>
</tr>
<tr>
<td>UR087</td>
<td>Ismail Agha Qaleh</td>
<td>831</td>
</tr>
<tr>
<td>KH08</td>
<td>Gavur Qaleh Khoy</td>
<td>1202</td>
</tr>
<tr>
<td>AH28</td>
<td>Sequindel</td>
<td>1307</td>
</tr>
<tr>
<td>MD26</td>
<td>Gavur Qaleh</td>
<td>202</td>
</tr>
<tr>
<td>UR115</td>
<td>Lumbad Qaleh</td>
<td>1078</td>
</tr>
<tr>
<td>KH21</td>
<td>Bastam</td>
<td>5573</td>
</tr>
<tr>
<td>SL04</td>
<td>Pir Chavush</td>
<td>683</td>
</tr>
<tr>
<td>NQ44</td>
<td>Hasanlu Tepe</td>
<td>3207</td>
</tr>
<tr>
<td>MK31</td>
<td>Khezerlu Qal'eh</td>
<td>2874</td>
</tr>
<tr>
<td>MK08</td>
<td>Sarandj Qaleh</td>
<td>3014</td>
</tr>
</tbody>
</table>
Smith’s observed pattern may, in fact, be a peculiarity of the pre-existing distribution of sites on the Ararat plain. In Iran and near Lake Sevan, where many EI sites were already located along roads, only subtle changes in locational preference are observed. There is, however, an example that is similar, but not identical, to what Smith observes, namely, the shift from a higher elevation to a lower, more accessible one. The fortress of Sequindel is a case in which an Urartian fortress was built at a more “accessible” location than its substantial Early Iron antecedent (Kleiss and Kroll 1980). Yet, while there is an effort to make the Urartian fortress more accessible, it remained anchored to the previous emplacement, making it difficult to argue that there is an ahistorical gesture of forgetting intended in the repositioning of Sequindel.

The results presented above suggest that the fortified installations of the Iranian and Sevan EI/MI were not simply located at the edges of agricultural plains (e.g. Hammer 2014). Instead, Early and Middle Iron Age sites are located along roads at the main intersections of plains and the valley roads that enter and exit them, an observation that applies to sites such as Oğlanqala and Qızqala that are situated at the northern edge of the Sharur plain where it intersects the Arpaçay valley that proceeds north to the Selim/Orbelian pass. Therefore, the important principle in the regional patterning of sites should be understood as surveilling the movement of people where they are channeled into or out of the plain due to a limited number of route options in mountainous environments. The positioning of sites would have had obvious military and economic benefits.
Given the limited route options described, mountain passes would have been strategically important. While it is true that a route like the Selim pass may not have been passable during the winter months (Hammer 2014), the described observation is generally true of all high alpine passes, and an important part of the natural defenses of the region.\(^{150}\) Moreover, it is clear that the Selim route in particular was strategically important, as evidenced by the chains of small forts that line it both in the south near Öğlanqala\(^{151}\) (Parker et al. 2011) and along the same pass in the north in Armenia (Biscione, Hmayakyan, and Parmegiani 2002).\(^{152}\) Smith has also argued for the importance of monitoring strategic intersections along roads in Urartu. He observes that the largest Urartian fortresses in the Ararat plain—Argishtihinili, Aramus, and Artashat—were located on the three primary routes into and out of the plain (Smith 2003:175). Here, Smith highlights an important point. Namely, that by monitoring all points into or out of an area, it becomes superfluous

\(^{150}\) Zimansky (1984:30) may have been the first to note that seasonal roads were an important natural defense mechanism in these territories. The elevation of the Selim pass can be compared to the high passes of the European Alps where travel is only possible from approximately May through October. In antiquity, military campaigns sought to exploit these windows of passability, such as Hannibal’s crossing with elephants into Italy during the Roman period and Napoleon’s crossing of the St. Bernard pass in the early nineteenth century over passes more than 2500 MASL. Moreover, the “war season” of the ancient Near East was during the summer months when the roads would have been passable. Besides the threat that these passes pose defensively, they also offer an economic incentive to take a substantial shortcut when it was available. Accordingly, high alpine passes remain important conduits for trade, commerce and the movement of troops even though they are seasonal.

\(^{151}\) Regarding the chain of forts north of Öğlanqala, there is still a lack of chronological clarity surrounding these structures. Neither the pottery nor drawings of visible architectural remains from these surveys have been published, and there are conflicting reports in Parker et al., 2011 and Hammer 2014 regarding chronological determinations. Scholarly debates also surround the site of Öğlanqala itself, particularly its relationship to the Urartian and Achaemenid empires (e.g. Dan 2014). Continued work in the region as well as the publication of the final excavation volume of the first seasons of work should help clarify these issues.

\(^{152}\) At the time of writing, it is difficult to imagine that any archaeological survey will be able to address the intervening territory in the coming years along the Selim/Oberlian pass since it passes through the sensitive border between Armenia and Azerbaijan.
to monitor that area itself. I argue that the described patterns of settlement presented in this chapter can be explained by an elaborate surveillance network constructed by the fortress-states in question.

Smith (2003) suggests that the Urartian regime used a variety of strategies to destroy the populations’ ties with place, both physical and ideological, proposing that Urartian landscapes constitute a dramatic departure from the states that preceded it. Smith furthermore hypothesized an Urartian predilection for ex novo foundations, a variation upon a theme first promoted by Zimansky who argued that Urartian fortresses owe their existence to a “special set of political, military and social conditions which were not replicated in other eras, and thus tend to be single-period occupations” (1995:174). Smith cites three fortresses as examples in support of the argument: Çavuştepe, Metsamor and Horom North.\textsuperscript{153} The excavators at the site of Oğlanqala in nearby Naxçivan also pick up on the ex novo refrain and employ it to argue that since the site is not a new foundation during the Middle Iron period (Ristvet et al. 2012), it does not fit the usual Urartian model.\textsuperscript{154}

Smith’s results from the Ararat plain provide a contrast to the results from Iranian Azerbaijan as well as the Sevan survey of Armenia. The aggregated data

\textsuperscript{153} Among these, Horom has a long occupation history, including an EI presence. However, Smith observes that at Horom, an Urartian wall is founded directly upon an ETC deposit (i.e. Early Bronze), which indicates a desire to destroy the social memory of the EI occupation. Yet, it is difficult to exclude the more mundane explanation of leveling the foundation (previous occupation rubble) before placing a new and substantial construction upon it.

\textsuperscript{154} There are a number of EI typological features in the building architecture as well as the presence of typologically EI Gray Ware, as Ristvet et al. note (2012). Besides these arguments, the excavators have other reasons, including architectural irregularities, for arguing that their site is not typically Urartian. However, one of these traits, ashlar masonry, may prove to be a specific trait of seventh century constructions (Dan 2014).
from these areas reveal that Urartian sites founded in the ninth and eighth centuries are frequently situated upon or adjacent to locations with long occupation histories, showing an abiding interest in continuity of place in these instances. Four examples of substantial Urartian occupations directly situated on El emplacements in Iran are: Hasanlu, Evonglu Qizqaleh, Livar, and Ismail Aga Qaleh. Moreover, three Urartian fortresses were placed just below their substantial El antecedents at Tsovinar, located south of Lake Sevan (Biscione, Hmayakyan, Parmegiani, et al. 2002) and Sequindel in the Ahar region of East Azerbaijan (Kleiss and Kroll 1980). In Armenia, the Urartian fortresses of Tsovak 1 and the fortress of Kol Pal are examples of Urartian fortresses situated upon El emplacements (Biscione and Dan 2011). Besides the fortresses listed above, there are twelve smaller Urartian forts in Iranian Azerbaijan that are built upon El emplacements (see Appendix 1; Kroll, 1994). Many sites are known exclusively from survey and future excavation may expand the group. The Sevan data in Armenia (Biscione et al., 2002) show a particular bias towards re-utilization.

On the other hand, the large fortress of Bastam is an example of a “new foundation” in Iranian Azerbaijan. Bastam was founded by Rusa the Great in the final hours of the history of Urartu, and may constitute an exceptional case rather than a typical one. Equally, no El remains have been found in surface collection at the sizable fortresses of Qalatgah or Verahram, both founded relatively early in the empire. Yet, these sites have not been excavated so their complete temporal spans remain to be discovered. Of the seventy-three sites that have an Urartian
occupation (including settlements) in Iranian Azerbaijan, only sixteen of these are, strictly speaking, single period, i.e. founded and abandoned during the Urartian period. Thirty-nine of the seventy-three sites were founded for the first time during the Urartian period, i.e. they have subsequent occupations, meaning that thirty-four of the seventy-three Urartian occupations is a re-appropriation.

The source of the misunderstanding regarding ex-novo foundations is probably Rusa the Great himself, whose spectacular constructions were either new foundations or single-period sites. These fortresses, namely Ayanis, Bastam, Karmir Blur, and Kef Kalesi tend to be the largest and most elaborate examples of Urartian architecture. Their special qualities are, perhaps, overly equated with “Urartu,” particularly since these large sites constitute an anomalous last gasp of the empire before its collapse. The sites in the Sevan region, moreover, represent an exceptional case of re-appropriation, with nine of the thirteen sites of the Urartian period having been an EI emplacement.

Smith's more recent work asserts that Urartu should be understood as an “innovative continuation” of earlier southern Caucasian traditions rather than as a radical break, citing the advances made in regional survey by researchers such as Kleiss, Kroll, Burney and Biscione (2012:44). Certainly, ex novo foundations constitute an important part of Urartian building activities, but as I have argued above, so do re-appropriations. In fact, Van Kalesi, ancient Tušpa, the capital of the empire for most of its history, is a multi-period site with occupations dating from the Early Bronze Age (Tarhan 1994). Tušpa was constructed during the reign of
Sarduri son of Lutipri in the early eighth century and may have remained the capital even during the seventh century (Zimansky 1995b). It is a curious fact resulting from the idiosyncratic historical particulars of the study of the empire of Urartu that sites constructed during the final years of the empire are considered more typical than the capital which was constructed during its formative stages and endured for hundreds of years.

7.6 Espionage and Surveillance in the Historical Sources

The results of the viewshed and spatial analyses presented in the previous sections indicate that EI and Urartian installations were positioned so that they could monitor roads and strategic checkpoints such as intersections and river crossings. Accordingly, the installations could have been used as an elaborate apparatus of surveillance and information gathering owing to their favorable locations to watch people where their movement is channeled through a limited number of options in mountainous environments. However, it is not necessarily the case that simply because the installations would have been good for surveillance that they were used for such. Therefore, it should prove useful to evaluate the historical evidence from the period to understand the possible relevance of observed regional defense systems to information gathering during the Urartian period.155

There is abundant historical evidence for espionage and surveillance pertaining to the Urartian period, deriving primarily from the Sargonid epistolary

155 There are not any historical sources that elucidate espionage and surveillance during the EI.
corpus of the Neo-Assyrian empire (Parpola 1987; Lafranchi and Parpola 1990; Fuchs and Parpola 2001). From these documents, it is clear that the relationship between the Neo-Assyrian empire and Urartu was characterized by endless antagonism. The numerous historical accounts, mostly from the Assyrian perspective, reveal a portrait of two empires whose relationship was defined by conflict, treachery and deep mutual suspicion (Radner 2011).

Espionage and counter-espionage pertaining to Urartu are frequent topics in the Neo-Assyrian imperial correspondence from the reign of Sargon II in the late eighth century (Table 25). There are references to espionage conducted by the Urartians themselves, as well as counter-espionage reports regarding what Urartian officials in the capital at Tushpa did or did not know (e.g. SAA 01 29). The exchanges about Urartu among high-level Assyrian officials provide an invaluable window on the complexity of espionage and diplomacy during this period.

In particular, provincial information hubs were an important source of espionage reports for the Assyrian state, and reconstructions of the elaborate espionage network indicate that information about Urartu would have been channeled through myriad hubs and delegates such as those attested at Arzuhina, Birate, Kumme, Mazamua, Parsua, Šubria, and the Urartian city of Harda (Dubovský 2006). In fact, redundant reports of the same events may have been a way for Assyrian kings to ensure honesty among their appointed officials, since conflicting reports would have indicated that something was awry (Dubovský 2006).
It is clear from the Neo-Assyrian epistolary corpus that Assyria employed a host of well-placed spies to send word on the various successes, failures and vulnerabilities of its bitter enemy, Urartu. Military planning and the movement of troops was an important focus of communication (e.g. SAA 5 085, SAA 5 086, SAA 5 087, SAA 5 088, SAA 5 147). In one letter, the king commands Aššur-reṣuwa, his representative in the Anatolian buffer state of Kumme, to send spies to the Urartian capital in order to confirm a particular report (SAA 5 85). The same delegate of the king sent regular letters reporting on the movements of Urartian troops. In particular, the spies of Assyria had information on the Urartian king’s current location, his next planned location as well as his intended destination (SAA 5 89, SAA 5 112, SAA 147), indicating that the intelligence was a compilation of reports from various spies. Another letter details additional movements along the roads of Urartu and Assyria when the Urartian king is observed leaving his kingdom with 3000 troops en route to Musasir (SAA 5 88). It is furthermore apparent that some functionaries were expected to provide regular reports. A number of letters (e.g. SAA 05 001) were sent simply to reassure the king that there is no news on the Urartians.
Table 25: Neo Assyrian Letters Pertaining to Espionage in Urartu

<table>
<thead>
<tr>
<th>Number</th>
<th>Description</th>
<th>Writer</th>
<th>Recipient</th>
</tr>
</thead>
<tbody>
<tr>
<td>SAA 01 01</td>
<td>Midas of Phrygia has agreed to become an ally of Assyria, and has delivered up men who had been ambassadors in Urartu.</td>
<td>King of Assyria (Sargon II)</td>
<td>Aššur-šarru-üşur</td>
</tr>
<tr>
<td>SAA 01 08</td>
<td>An account of an Urartian governor who has defected to Assyria. Fragmentary.</td>
<td>Sennacherib (Crown Prince)</td>
<td>King of Assyria (Sargon II)</td>
</tr>
<tr>
<td>SAA 01 10</td>
<td>Urartian emissaries are given a royal escort to Urzuhina. The king orders that Urartian women not be transported in the company of certain captives and be given food and drink.</td>
<td>King of Assyria (Sargon II)</td>
<td>Nabu-duru-ušu</td>
</tr>
<tr>
<td>SAA 01 29</td>
<td>Report that the ruler of Uku has passed information to the Urartians that Assyria is building a fort in Kumme. The crown prince has heard that the Urartians have ordered that the Assyrian governor be taken hostage and brought to the capital. The Urartian king was unable to achieve a particular goal that was being assisted by the Zikirteans. The Urartian king may have invaded Manean territory.</td>
<td>Sennacherib (Crown Prince)</td>
<td>King of Assyria (Sargon II)</td>
</tr>
<tr>
<td>SAA 01 30</td>
<td>A report that the Urartian army has suffered a defeat at the hands of the Cimmerians, and the governor of Waisi killed.</td>
<td>Sennacherib (Crown Prince)</td>
<td>King of Assyria (Sargon II)</td>
</tr>
<tr>
<td>SAA 01 31</td>
<td>More news on the defeat by Cimmerians. The military commander has been taken prisoner.</td>
<td>Sennacherib (Crown Prince)</td>
<td>King of Assyria (Sargon II)</td>
</tr>
<tr>
<td>SAA 01 32</td>
<td>All quiet on the eastern front. In the wake of the defeat with the Cimmerians, no news is good news from the Urartians.</td>
<td>Sennacherib (Crown Prince)</td>
<td>King of Assyria (Sargon II)</td>
</tr>
<tr>
<td>SAA 01 43</td>
<td>Fragmentary. A report on the king of Urartu.</td>
<td>Tab-šar-Aššur, the treasurer</td>
<td>King of Assyria (Sargon II)</td>
</tr>
<tr>
<td>SAA 05 001</td>
<td>A letter consisting of a report that there is no further news on Urartu.</td>
<td>Nashir-Bēl</td>
<td>King of Assyria (Sargon II)</td>
</tr>
<tr>
<td>SAA 05 002</td>
<td>A functionary reports that the Urartians are attacking Assyrian forts. When the functionary's messenger asks the governor why he attacks when the two countries are at peace, the response is, &quot;Why should I do? If I have trespassed on your territory or forts, call me to account.&quot;</td>
<td>Nashir-Bēl</td>
<td>King of Assyria (Sargon II)</td>
</tr>
<tr>
<td>SAA 05 003</td>
<td>A report from deep within the Urartian empire near Tushpa regarding Urartu's preparations for war.</td>
<td>Nashir-Bēl</td>
<td>King of Assyria (Sargon II)</td>
</tr>
</tbody>
</table>

-CONT-
### Assyrian Letters Pertaining to Espionage in Urartu, Continued

| SAA 05 031 | A functionary reports that Urartian king Argishti is putting pressure on the buffer state of Šubria: "Do not greet Hu-Tešub, and do not accept an agreement (from him), (or) I shall punish you!" | Ša-Aššur-dubbu | King of Assyria (Sargon II) |
| SAA 05 084 | A frontier report that the Manneans raided an Urartian town along the lake shore (presumably Urmia). | Aššur-reṣuwa | King of Assyria (Sargon II) |
| SAA 05 085 | The king requested a dispatch of spies to the Urartian capital in his last request they report on the movement of the king and his governors. | Aššur-reṣuwa | Not preserved |
| SAA 05 086 | Reports the movements of the king and his troops. | Aššur-reṣuwa | King of Assyria (Sargon II) |
| SAA 05 087 | A detailed letter reporting the names and positions of Urartian governors as well as the sizes of their respective forces. | Aššur-reṣuwa | Not preserved |
| SAA 05 088 | A letter reporting the size and movement of Urartian troops heading towards Muṣaṣir. | Aššur-reṣuwa | King of Assyria (Sargon II) |
| SAA 05 089 | The king of Muṣaṣir is seized (presumably by the Urartians) and taken back to Urartu. | Aššur-reṣuwa | King of Assyria (Sargon II) |
| SAA 05 090 | News of a bloody coup at the Urartian capital. The king flees and his son has been made king. Nine governors and other officials were murdered. | Aššur-reṣuwa | King of Assyria (Sargon II) |
| SAA 05 091 | A letter detailing a revolt against the Urartian king. | Aššur-reṣuwa | King of Assyria (Sargon II) |
| SAA 05 092 | The Urartian king regroups after a rout. | Aššur-reṣuwa | King of Assyria (Sargon II) |
| SAA 05 093 | Details on a coup d'etat in Urartu. | Aššur-reṣuwa | King of Assyria (Sargon II) |
| SAA 05 095 | A letter reporting the contents of a letter that the king of Urartu sent to Kumme. | Aššur-reṣuwa | King of Assyria (Sargon II) |
| SAA 05 147 | A letter reporting the movements of both the Urartian king and his governors. The governors have gone to perform rituals in Muṣaṣir. The Assyrian king objects to Urartian king's arrival, but Urzana responds that he is not able to control what kings do. | Urzana | palace herald |

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## Assyrian Letters Pertaining to Espionage in Urartu, Continued

| SAA 05 174 | A report describing an Urartian military defeat. Fragmentary. | Not preserved | Not preserved |
| SAA 05 176 | An account of military movements in the northeastern territories near a pass into Urartu. | Not preserved | Not preserved |
| SAA 05 178 | Fragmentary espionage in Urartu. | Not preserved | Not preserved |
| SAA 05 179 | A letter detailing the change of management in an Urartian territory. The writer is well-informed of internal Urartian events. | Not preserved | Not preserved |
| SAA 05 179 | Fragmentary espionage in Urartu. | Not preserved | Not preserved |
| SAA 05 180 | Fragmentary espionage in Urartu. | Not preserved | Not preserved |
| SAA 05 181 | Fragmentary espionage in Urartu. | Not preserved | Not preserved |
| SAA 05 182 | In response to a letter in which the king asks for reconnaissance on the Urartian situation, the functionary writes back. Remainder fragmentary/broken. | Not preserved | King of Assyria (Sargon II) |
| SAA 05 183 | Fragmentary, espionage in Urartu. | Not preserved | Not preserved |
| SAA 05 184 | A letter reports that 50 former subjects of Urartu were killed while a number of other former Urartian subjects submitted to Assyria. | Not preserved | Not preserved |
| SAA 05 185 | In response to a letter in which the king asks for reconnaissance on the Urartian situation, the functionary writes back that in case of success the Urartians will attack Zikirtu and in case of failure they will remain in Mannea. | Hu-Teššub | King of Assyria (Sargon II) |
| SAA 05 187 | Military operations in Mušašir. | Not preserved | Not preserved |

Compiled from State Archives of Assyria, Volumes 1 & 5 (Lanfranchi & Parpola, 1990; Parpola, 1987)
In contrast to the diplomatic correspondence of the Amarna period during the Late Bronze Age (Cohen and Westbrook 2000), there is relatively little evidence of direct communication between Urartu and Assyria, and there is even less pretense of diplomacy. There is no band of “brothers.” Proxies, threats and indirect communication are the preferred currency. For example, the Anatolian buffer states of Šubria, Kumme, and Ukku frequently bore the brunt of surrogate warfare between Assyria and Urartu (Radner 2012). One letter (SAA 5 31) reports a series of extortions from Argishti, king of Urartu, towards various functionaries in Šubria, due to their continued dealings with Assyria. In particular, it reports that Argishti has threatened to take away gifts and to inflict punishment upon the Šubrians if they do not cease their relationship with Assyria.

The cult center of Muşasir, located between the two empires of Assyria and Urartu in the mountains of present-day Iraqi Kurdistan, was also the focus of a variety of proxy disputes. Although not located in Urartu proper, Muşasir was the cult center of Khaldi, the chief god in the Urartian pantheon. In one letter, in response to a complaint from Sargon II that the Assyrian king was not consulted before the Urartian king visited, an official at Muşasir replied in exasperation that he was unable to control what kings do (SAA 5 147), a fact that is made particularly clear when the king of Muşasir is taken, presumably against his will, to Urartu (SAA 5 89).
A standard element of some Neo-Assyrian letters is a formulaic reassurance that all of the Assyrian forts are well,\textsuperscript{156} i.e., the forts have not been attacked or captured. Such knowledge implies that the Neo-Assyrian informants were well-placed to observe the comings and goings within the empire—in some cases from within the forts themselves. In one letter, the crown prince of Assyria writes the king that all of the guards at the Assyrian forts along the border have sent him the same account regarding an Urartian defeat (SAA 1 31), suggesting that the Assyrian forts, located along roads like Urartian forts, constituted a network of surveillance. Moreover, the described report suggests that the regional network of spy administrators collected information directly from fort personnel.

However, Urartu and Assyria’s networks of surveillance, at times, may have made each of these states more vulnerable to attacks from the outside since their respective systems of information collection could also provide information to the rival state via treacherous double agents. The Sargonid letters give the impression that corruption and double agents were widespread. The case of Hu-Teshub, the king of the Anatolian buffer state of Šubria, is one particularly relevant example since on one occasion he compiled a detailed report on the Assyrians for the Urartian king while on other occasions he supplied the Assyrians with information on the Urartians (SAA 5 44, SAA 5 45, SAA 5 35).

\textsuperscript{156} As in SAA 0131: “šul-mu a-na URU.bi-rat ša LUGAL gab-bu”. According the Chicago Assyrian dictionary, “birtu” can refer to both citadels (the fortified inner portion of a fortress) and forts.
Another class of ancient texts is also informative about regional systems defense studied in the current chapter. Besides casting a wide net among their system of well-placed contacts in the earthly sphere, the Neo-Assyrians also queried the gods for advice about how to handle the Urartians. Such cultic questions are preserved in divination texts from the Neo-Assyrian period (Starr 1990). A number of the described divination texts are requests to the god Šamaš for portents on what the Urartians might do next, employing the cultic evaluation of the entrails of sacrificed animals. The most complete of these texts, SAA 4 18, reflects the Assyrians’ political questions such as: Will Urartu invade Šubria (an important buffer state in eastern Anatolia)? The Assyrians query: “Will they kill what there is to kill, plunder what there is to plunder, and loot what there is to loot? Will they annex any of the fortresses of Šubria, few or many, and turn them into their own?” (Starr 1990: SAA 4 18). Although employing ritual texts requires a certain degree of restraint for use in historical reconstructions, nonetheless, the questions asked about Urartu do echo the Assyrians’ political preoccupations. One important point is the Assyrians fear that Urartu will annex the forts rather than simply destroy them and build their own. Therefore, the text assumes that appropriation of the fort is the more likely scenario.

The appropriation of forts described in the text above is relevant to the discussion of ex-novo construction in Urartu. The data presented in the present dissertation indicate that, in contrast to previous scholarly assertions that ex-novo

157 There are hundreds of such omen texts and a number of them relate specifically to political preoccupations with Urartu, e.g. SAA 4 18, SAA 4 19, SAA 4 205.
foundations constitute the majority of Urartian building activities (Smith 2003; Zimansky 1995a; Ristvet et al. 2012), the Urartians appropriated and re-utilized many emplacements, and the prevalence of new foundations varies greatly over time. The Assyrian fear that the Urartians would appropriate their forts described in the divination text above supports the archaeological evidence for the practice of re-appropriation.

7.7 Discussion

A number of important observations about the construction of Iron Age landscapes in the southern Caucasus and northwestern Iran emerged from the studies presented in this chapter.

EI centers and sites such as Aslan Qaleh, Hasanlu, Libliulini, Geoy Tepe and Gidjilar Tepe were situated in the center of plains and tended to have sweeping 360-degree views of their surroundings, while smaller EI forts were situated along primary roads. Broad visual coverage of plains from forts and fortresses were more commonly observed in the EI than in the Urartian period.

Urartian fortresses in Iran were all elevated from the plain and located near primary routes of transport. Visibility was channeled along roads and critical “control points,” and sites functioned as ideal platforms for surveillance of movement through the territory. Although broad visual coverage may be observed on a few plains, the described pattern is not universal. Instead, the focus was on the control and surveillance of “check points” such as critical intersection of routes that enter or exit a plain via a valley through the mountains. In mountainous
environments where the options of passage are limited among a fixed number of alpine passes, control of strategic intersections ensured control of movement throughout the territory. The Urartian period is also notable for a marked increase in the number of forts along roads, particularly secondary routes.

A sophisticated surveillance network such as the one that appears to have existed during the Urartian period along the roads of Armenia and northwest Iran offers a variety of defense benefits, but the potential for the surveillance of the inhabitants of the empire is also present. Moreover, most of the major patterns of regional defense were already in place by the EI age and the Urartian adoption of and intensification of the observed nodes can be understood as an innovative continuation of established practices.

Besides the obvious defensive benefits, the control of routes in an EI kingdom or in the Urartian empire would have had important economic impacts. The control of trade routes would have allowed for the taxation of goods or the regulation of certain kinds of commerce. The monopolization of certain routes would have also permitted access to certain resources such as metals.

Many of the observations in the chapter, such as the patterns of site placement that are prevalent among Urartian fortresses, are understood as a social response to the insecurity created by persistent warfare or even the threat of it. Explanatory models for socio-cultural phenomena that account for the effects of violent, rather than peaceful, exchange are virtually absent in the study of the ancient Near East despite the wealth of historical documentation pertaining to the
apparent systematic warfare that characterized regimes like Assyria and Urartu. It is clear based upon the results discussed above that pervasive warfare structured the lives of the ancient Elamite and Urartian inhabitants in ways that are archaeologically detectable. Just as previous generations of scholars argued that the effects of certain social factors such as economic incentives or proximity to resources such as water are apparent in the spatial organization of ancient states, the traces of insecurity and conflict were apparent in the analyses presented in the preceding chapters. Understanding the role of conflict in these Iron Age landscapes is critical for the interpretation of spatial patterning of archaeological sites.
Chapter 8 The Unbearable Lightness of Seeing: Post-Modernity and the Study of Vision in Ancient Societies

“People are always shouting they want to create a better future. It's not true. The future is an apathetic void of no interest to anyone. The past is full of life, eager to irritate us, provoke and insult us, tempt us to destroy or repaint it. The only reason people want to be masters of the future is to change the past.”

— Milan Kundera, The Unbearable Lightness of Being

Friedrich Nietzsche conjures one of the thought experiments for which he is most well-known, that of the eternal return, in Die fröhliche Wissenschaft. In this scenario, a demon comes to the reader in the night and tells him that the life he is living, in every detail, will recur over and over again. Everything that will happen has already happened and will continue to happen ad infinitum. For Nietzsche, this gives our actions consequence or weight. In this moment, we are heavy, and history and time are circular. We must accept and even love fate. The pivotal moment of Nietzsche's exposition is the reader's reaction to the demon's whispered question: would he embrace his destiny?

Instead, the primary existential dilemma for Tomáš, the protagonist of Milan Kundera's post-modern novel, The Unbearable Lightness of Being, is that we are unfettered. We float free from any sort of Nietzsche-esque entanglement with history or being. Our existence is singular, particular and transitory, and we suffer from the lightness of it all.

The described intertextual discussion reveals a discrepancy in the human perception of time, which is an irreconcilable contradiction. On the one hand, events in the past possess an utter sameness with an apparent cyclical nature,
seemingly transcending time and place. On the other hand, past events have a startling uniqueness and contingency. The latter view is the particularist essence of post-modernism, and accordingly, an appropriate introduction to the post-processual flavor of phenomenology, one of the major theoretical influences on visibility studies in recent decades (Llobera 2001).

In this chapter, I develop three topics, united by a theme of ancient-modern dialectic, that are relevant to the study of visibility in the ancient empire of Urartu and its EI predecessors. I argue that phenomenological approaches, surveillance studies and cognitive archaeology are fields of research that intersect the investigation of visibility in the past and the interpretive concerns of post-modernity in important ways.

First, I discuss the future of subjective, non-empirical approaches to ancient landscapes epitomized by phenomenological research. Factors such as changes in local ecology and culturally-specific world views alter these experiences, limiting but not eliminating the possibility for ancient-modern analogy. The detrimental and dehumanizing implications of surveillance in Urartu are discussed, and I elaborate the ethical implications of the modern archaeological use of remote-sensing data that have been collected in the context of espionage. Last, I argue that visibility studies are poised to make important contributions within the domain of cognitive archaeology since vision plays an important role in how both ancient and modern people perceive the world.
The post-processual phenomenologists were among the earliest archaeologists to investigate the experience of seeing in antiquity. I will argue that a lack of a coherent methodology is problematic in both the evaluation and repeatability of the results of some phenomenological research. Yet, one of the major goals of phenomenology was the effort to re-situate social agents in ancient landscapes, a thread that has been embraced in the field more generally and in particular by the subdiscipline of cognitive archaeology. Moreover, the theoretical underpinnings of phenomenology can be productively incorporated with empirical approaches to vision and movement in ancient landscapes.

Another major theme of Kundera’s post-modern opus is the power dialectic inherent in surveillance, specifically in the form of the faceless gaze of the secret police during the twentieth-century historical period known as the Prague Spring. Kundera dramatizes the power dialectic inherent in surveillance by having his third-person narrator step out of the shadows into visibility, freeing his observer on the structural level. The narrator then surrenders his anonymous authority to "them," embodied by the secret police. The second section of the chapter, dedicated to the topic of surveillance, will discuss the implications of observation both in the modern practice of landscape archaeology, specifically as it pertains to the use of remote sensing data, as well as understanding the role of visibility in the articulation of power in the past.

The field of cognitive archaeology endeavors to investigate the ways in which ancient people perceived the world (Gaffney et al. 1995; Llobera 2001). Visibility
studies constitute an important subset of cognitive archaeological investigations since they offer a methodology to evaluate a human field of perception: vision.

8.1 Phenomenology

*To understand a landscape truly it must be felt, but to convey some of this feeling to others it has to be talked about, recounted, or written and depicted. In the process of movement a landscape unfolds or unravels before an observer. Beyond one chain of hills another is revealed; the view from a locale makes sense of its positioning. The importance and significance of a place can only be appreciated as part of movement from and to it in relation to others, and the act of moving may be as important as that of arriving.*
(Tilley 1994: 31)

The phenomenological approach in landscape archaeology, perhaps most memorably promoted by Tilley (1994; 2004), emphasizes the personal experiences of the individual and his or her encounters with the material world (e.g. Sartre 1956), an approach that draws heavily upon the work of philosophers such as Heidegger (1972), who argued that places and spaces are created by virtue of humanity “dwelling” within them.

The passage quoted above deftly encapsulates two of the key tenets of the phenomenological approach in landscape archaeology: 1) the value of narrative in communicating essential aspects of the landscape, including the feelings that it invokes, and 2) the idea that the modern landscape must be experienced in order to properly understand and contextualize ancient landscapes.

The supporters of phenomenology within archaeology promoted a new view in which the archeologist sets out to re-create or experience the ancient world at a human scale by living within it (Llobera 2000; Wheatley and Gillings 2000). The
methodology encourages the construction of narratives and explicitly promotes movement through the landscape. As an example of this approach, Tilley visited the long barrows of Cranbourne Chase, Wales, observing and moving around them, interpolating lines-of-sight from a number of points around the landscape (1994).

Tilley’s approach is predicated upon embracing a concept of historically-specific and contingent events versus the search for laws or high-level generalizations. Human agency replaces the role of abstractly formulated models—social and economic “systems”—as the key force in the making of history (Barrett and Ko 2009:276).

Tilley’s formulation explicitly rejects what he perceives to be the methodological consensus of scientific archaeology. At times, Tilley’s archaeological research methods can be understood as a form of performance art meant to assist the archaeological establishment in understanding its positivist foibles by creating a caricature of “objective” and “scientific” procedures. In an oft-cited example, a team of British landscape archaeologists placed and re-placed a large, modern door frame in archaeological landscape contexts, thus framing the scene, in order to, “think about and re-present the specificity of place” (Tilley et al. 2000:55). Team members were encouraged to describe the bounded image. The archaeologists compare their methodology to avante garde installation art, noting the tendency of their frame to “ritually legitimize” landscapes through the power and institutional structures of the art world (55).
Tension exists among archaeologists who use spatial technologies (e.g. GIS) and those who adopt more interpretive, experiential approaches to landscape (Gillings 2012:601). While there has been support for phenomenological approaches (Bender 1998; Thomas 1996), there has also been dissent. Andrew Fleming (2006) has been a vocal critic of the phenomenological school in general and the work of Christopher Tilley in particular. Discussing four books on the phenomenology of landscape, Fleming (2006) warns other scholars that these texts, "invariably include poetry, extended literary evocations of the remote past, uncaptioned photographs, and drawings, photo-collages . . . [and] a certain concern for the ethereal" (267-268). Fleming furthermore accuses practitioners of murky relativism, arguing that phenomenologists have freed themselves from traditional concerns with verification, giving themselves permission to say whatever they like (2006: 268). Perhaps even more serious as an accusation, Fleming challenges Tilley's raw archaeological data and conclusions, asserting that the field data simply do not support his claims. Referring to Tilley (1999), some of the places that were supposed to be visible were not when Fleming went to examine them, leading him to question Tilley's lack of attention to sample quality, poor observational rigor and failure to examine alternate hypotheses. Wheatley and Gillings, more measured in their appraisal, observe that certain phenomenological approaches are notable for the lack of any formal methodology (2002: 181), equating the anecdotal recording methods of phenomenologists to those of early antiquarians (182).
Ultimately, a lack of formal methodology is a salient objection to phenomenological projects as conceived by Tilley (Barrett and Ko 2009). Subjectivity in method prevents repeatability in results. On an epistemological level, the inability to repeat results is a barrier to the production of knowledge, and may produce results of such a particular nature that it becomes difficult to generalize beyond specific cases.

However, it would be a mistake to completely dismiss the potential contribution of phenomenological approaches to visibility studies. For example, an important tenet of phenomenology is its emphasis upon re-situating agents in ancient landscapes, a particular methodological aim of this dissertation. Moreover, the phenomenological focus on movement and experience of places is beginning to revolutionize recent GIS-driven archaeological approaches (Llobera 2000; Richards-Rissetto and Landau 2014; Güimil-Fariña and Parcero-Oubiña 2015). None of the methodological critiques of specific phenomenological research projects prevent landscape archaeologists from productively incorporating GIS and interpretative approaches to explain change in the human past. A closer integration of spatial analysis and social theory can help bridge the needless divide between interpretivist and empiricist approaches to landscape archaeology (Harrower 2016).

Phenomenological approaches have a particular relevance to the visibility studies in this dissertation since the act of seeing is an experience centered in the body. An important contribution of phenomenology is the concept of embodiment, since the body is the locus from which human experiences are arrayed (Desjarlais
and Throop 2011). Vision is an embodied act (Haraway 1988), thus, by simulating experiences of landscapes from the point-of-view of the individual, we may re-situate human beings in ancient landscapes, a particular strength of phenomenological approaches.

Regarding the incorporation of phenomenology with an empirical methodology, another important point worth emphasizing is that the contemporary archaeologist is always in the modern landscape but imagining herself in the ancient one (Thomas 2006). Major changes in climate, vegetation and architecture may radically alter the experience of places and spaces. In the context of archaeology, it is important to identify, where possible, how changes from ancient to modern periods might affect archaeological interpretation. Moreover, the modern investigator is not the ancient social actor and may possess a dramatically different world view (Golden and Davenport 2013). It is, therefore, impossible to fully comprehend the socio-cultural milieu that would have produced and affected ancient perceptions (Desjarlais and Throop 2011).

The first step towards accounting for ancient-modern differences may be the archaeologist identifying her own culturally-specific assumptions. One strategy directly derived from phenomenological approaches in anthropology is the concept of “bracketing,” a method to identify and exclude assumptions that come from one's own cultural and theoretical heritage from one's interpretation of a thing or experience (Husserl 1962). Bracketing is an individual's attempt to recognize unexamined presuppositions that have been incorporated into one's discernment of
what something is in its most essential form (Desjarlais and Throop 2011). The concept of bracketing has been influential in ethnographic interpretation, but it could equally be applied to archaeological interpretation (Thomas 2006).

Analogy based upon commonalties in human perception and experience is one of the most powerful interpretative tools that archaeologists have at their disposal (González-Urquijo et al. 2015), though one that must be used with caution (Wylie 1985). The impossibility of completely understanding culturally-specific world views of past social actors may impede archaeological interpretation, but this difficulty should not eliminate the possibility for ancient-modern analogy where universal facets of human experience transcend cultural specificity (Wierzbicka 1986).

8.2 Surveillance

Evening. It is somewhat foggy. The sky is covered with a milky-golden tissue, and one cannot see what is there, beyond, on the heights. The ancients 'knew' that the greatest, bored skeptic--their god--lived there. We know that crystalline, blue, naked, indecent Nothing is there. I no longer know what is there. I have learned too many things of late. Knowledge, self-confident knowledge, which is sure that it is faultless, is faith.

—D-503 in We

Along with modernism came the epistemological concern that the same technologies that would assist and empower us were also the technologies that would enslave us. George Orwell, with his precocious visions of an all-knowing surveillance state in 1984, was not the first dystopian author to consider the implications of the relationship between seeing and power.
In the 1921 dystopian novel *We*, Yevgeny Zamyatin depicts a protagonist dismally named D-503 who lives in an urban society where the architecture is composed almost entirely of glass. Transparent architecture allows the secret police to monitor the citizens and permits the citizens to monitor each other.

There are certain parallels with the glass structures described in *We* and the ominous Panopticon, a late eighteenth-century prison design that has become a metaphor for power and surveillance across a wide variety of academic disciplines (Lyon 2006; Foucault 1995; Leone and Hurry 1998; Lyon 2007). The design was promoted, but never realized, by Jeremy Bentham,\(^1\) English philosopher and would-be social reformer, in the pamphlet entitled, "Panopticon: Inspection House."

The circular prison in Bentham’s tract was designed such that there was a circular inspection house at its center whose watchman was obscured from the field of view of the inmates. The watchman could not see everyone simultaneously, but they could never be sure if he was looking. Visibility replaces force as the means of control. Bentham described his imagined structure as “a new mode of obtaining power of mind over mind, in a quantity hitherto without example.” An Illinois penitentiary built on a Panopticon plan in the 1930s was called The Mill based upon a presumed saying of Bentham that the structure was a mill for grinding rogues honest (Lamb N.D.: 238). Never one to let a good design go to waste, Bentham even promoted a Panopticon Poorhouse in the tract entitled *Pauper Management Improved* (Himmelfarb 1968) and a Panopticon School (Lamb N.D.), all in the

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\(^1\)The originator of the idea was actually J.B.’s brother, Stuart Bentham, who ran a Panopticon factory of his own design in Russia.
interest of society at large. Of his dream, Bentham writes: "What would you say, if by the gradual adoption and diverse application of this single principle [i.e., the Panoptican], you should see a new scene of things spread itself over the face of civilized society? Morals reformed, health preserved, industry invigorated, instruction diffused, public burdens lightened, economy seated as it were upon a rock, the Gordian knot of the Poor--laws not cut but untied--all by a simple Idea of Architecture" (139). To our (post)modern eyes, the text reads like a Juvenalian parody of rational thought, much like Jonathan Swift's suggestion that the Irish eat their own children to combat famine in *A Modest Proposal*. However, Bentham earnestly pursued the construction of such a prison in Britain his entire life, all the while aware of its enhanced coercive and dehumanizing potential (Lamb N.D.; Himmelfarb 1968).

The benefits of social engineering through the built environment promoted by Bentham were surprisingly influential in the late eighteenth and early nineteenth centuries, particularly in the United States. In a bizarre expression of democratic principles, panoptic elements were combined with Neo-Classical architecture by a number of architects working in Washington D.C. and the Baltimore area during the period (Leone and Hurry 1998). The famed architect Benjamin Henry Latrobe specifically referred to the influences of panoptic principles as well as the work of prison designer John Howard, a Bentham disciple, in his work. It has been argued that Latrobe's *magnus opus*, the highly rational U.S. capitol building, was built incorporating panoptic principles (Leone and Hurry 1998). The link to democracy
envisioned by the designers is that the individual should believe that he is the power behind the state and that such a system would flourish vis-à-vis self-inspection and improvement. Apparently, the architects wished to return the disciplinary power of seeing to the individual.

While Foucault (1995) may be the best-known of 20th century thinkers to revisit the panopticon, he was not the first. Notably, Gertrude Himmelfarb's 1965 essay, "The Haunted House of Jeremy Bentham" was influential in reviving scholarly interest in the topic.\(^{159}\) In *Discipline and Punish*, Foucault argues that the prison design is an attempt by the state to separate individuals from one another and subsequently appropriate their bodies. Moreover, the Panopticon is a laboratory, a machine that can be used to carry out experiments, alter behavior, or train individuals (203). Specifically, Foucault argues that Bentham laid down the principle that authority should be visible and unverifiable (201). Panoptic schemes, according to Foucault, become a principal means for managing populations through the dispersion of disciplinary power more generally. In particular, Foucault argues that modernity is exemplified by a transition from a "culture of spectacle" to a "carceral culture," a shift typified by a movement away from theatrical external punishments like disfigurement in preference to the application of more internal or psychological reforms (1995).

The coercive aspects of seeing are important for the present study from two distinct points-of-view. First, remote sensing data, including those used in

\(^{159}\) The dream of the Panopticon never really died in the hearts and minds of prison architects and was influential in 19th century prison design (Leone and Hurry 1998).
archaeological analyses, frequently derive from modern systems of surveillance (Myers 2010). At present, we are all potentially being observed from above by a satellite. Much like the inmates in the Panopticon, we cannot tell if we are being watched, but the unblinking eyes in the sky may be watching nonetheless. Secondly, the coercive aspects of seeing in the past can be analyzed through visibility studies, and archaeological contexts can be investigated for evidence of structural surveillance.

Regarding the archaeological use of remote-sensing data, what are the moral implications of "consuming" data that are produced without the knowledge or consent of the modern people whose who dwell in these landscapes? The ethics of using archaeological data obtained in the context of espionage mirrors the debates of post-colonial archaeology, e.g. the antiquities trade or the justifiability of working in countries with totalitarian regimes (Steel 2004). In both cases, there is an epistemological need to further knowledge that stands in opposition to the use of data that may have been tainted by morally-ambiguous origins. Steele suggests, though, that one could ethically work in a country with a totalitarian regime, for example, if such work were combined with activism at home or on the community level (2004: 56-57). In this context, archeologists who benefit from the covert collection of data could campaign for more transparency or international cooperation in the establishment of privacy statutes, though it is only a partial solution. The ethical implications of collection of data from above, often from an explicit position of espionage, are of concern both for the observers and the
observed alike, particularly as phenomena like big data and high-resolution imaging techniques develop.

State-sponsored surveillance is sometimes conceived of as a phenomenon that is endemic and unique to modern societies (Foucault 1995; Giddens 1984; Lyon 2007), but there is no compelling reason to maintain this ancient-modern distinction. Customarily, such conclusions derive from modernists who appear to have concluded *a priori* that recent centuries exemplify a major departure from the human history that preceded it. Regarding the study of surveillance in the past, Foucault (1995) argued that a structure like Bentham’s Panopticon represents a fundamental change in society’s structures of discipline and social control, a movement away from the brutal physical punishments which typified “the past” in preference for modern punishments aimed at reforming the inner human or the soul.

Yet, for all of Foucault’s strengths as a sociologist or philosopher, his historical analyses have been critiqued (Gutting 2005; Dreyfus and Rabinow 2014). Foucault’s (1995) historical arguments regarding the development of the institutions of punishment and surveillance are based upon a “past” that has been selectively assembled from sensational and arguably unrepresentative examples from historical archives. Foucault constructs “modernity” in a similar fashion. By contrast, I contend that surveillance need not be understood as an exclusively modern phenomenon, and I argue that it must have existed as a form of social

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160 In response to critiques that he leaves something to be desired as a historian, Foucault replied “I am not a professional historian; nobody is perfect” (Gutting 2005).
control in ancient human societies (Lyon 2007:12). Moreover, studies of the past can be enhanced by investigating how built environments, both ancient and modern, reflect the desire to control and watch.

Previous archaeological studies have rarely investigated apparatuses of observation in the past. However, one notable exception to this trend is the use of spatial analysis and GIS-enabled visibility studies to investigate observation and control mechanisms at plantations in the American south and Caribbean (Leone and Hurry 1998; Singleton 2001; Harmon et al. 2006; Thomas 1998). These investigations suggest that work areas were intentionally structured with surveillance as a priority, a phenomenon that has been productively explored at a variety of scales, both regional and intra-site (Harmon et al. 2006). The studies propose that work areas would be a productive focus for intra-site investigations, particularly in industrial or palatial contexts. Moreover, loci of organized instruction and reform such as schools, hospitals, military garrisons and prisons might also be fruitful contexts in which to explore evidence for constructed surveillance.

In the case of the study at hand, what role does the need to surveiller, to watch and control, play in the situation of early Iron and Urartian military installations? The results from the previous chapter constitute a rare archaeological example of a regional system of surveillance that has been identified in the archaeological record. The data presented in this dissertation suggest that the desire to observe the movement of individuals through the landscape was an
important consideration for the placement of Iron Age sites in northwestern Iran and on the Sevan plain in Armenia. There are indications that the need to surveil augmented over time in these landscapes, as evidenced by an increase in the number of fortified structures situated along roads and key control points by the Urartian era. It is also tempting to speculate to what extent an ancient fortress-state such as Biainili-Urartu represents a “culture of control” or a “surveillance society,” sociological categories used to describe contemporary states that invest in surveillance mechanisms for reasons of social control and security and risk management (David 2001).

It may be argued that surveillance substantively harms those observed, both in the past and present, while unintentionally fomenting resistance and social change (Lyon 2007:20). Domination is only part of the equation, and resistance to surveillance is frequent. One critique of the Foucauldian panoptic model is that regimes which employ aggressive and dehumanizing forms of surveillance are ultimately self-defeating, as phenomena such as prison riots and slave revolts suggest (Boyne 2000). Panoptic schemes, contrary to Bentham’s and Foucault’s predictions, demonstrate a marked failure to produce docile subjects.

Other scholars have argued that the symbolic violence inherent in institutions such as state-sponsored surveillance may open new spaces of political agency and resistance (Topper 2001). Symbolic violence is defined as the violence exercised upon a social agent that he understands as just (Bourdieu 1989). In fact, regimes that employ broad and invasive surveillance programs often do so based on
appeals to the common good or to a common threat (Neal 2006). In the context of
surveillance, an example of symbolic violence would be the fictional citizens in the
dystopian universe of We who accept the government-provided explanation that the
glass architecture is for their own protection and security. Bourdieu contends that
symbolic violence is, in some senses, much more powerful than physical violence in
that it is embedded in the modes of action and structures of cognition of individuals;
it is imposed by the illusion of legitimacy within the social order (1977: 191-194).

Symbolic violence is inflicted upon individuals who understand the system as just, however, not every individual in a given society will be predisposed towards
accepting the ruling regime’s official view. For dissenting individuals, the cognitive
dissonance engendered by the fiction of “protection” versus the reality of “control”
may provoke action among rebellious social actors, enabling them to shape and act
upon those forces that previously shaped and acted upon them. Therefore,
symbolically violent acts like surveillance can provide the motivation for resistance
against the regimes that employ them.

8.3 Visibility Studies as Cognitive Archaeology

People blind from birth who eventually gain vision through medical procedures can
immediately ‘see’ by means of their eyes but have to learn by practical experience to
‘perceive’ actual forms and coordinate perceptual relations between sight and other
senses like touch.

--B. Shore in Culture in Mind: Cognition, Culture and the Problem of Meaning
Cognitive archaeology is a theoretical perspective which investigates the ways that ancient people thought about and perceived their ancient world through the study of material remains (Renfrew and Bahn 2004:393; Coolidge et al. 2015:177). An important subset of cognitive archaeology, cognitive-processual archeology, endeavors to explore symbolic thought, ideology and perception within a scientific framework by harnessing advances in the cognitive and behavioral sciences (Renfrew and Zubrow 1994; Gaffney et al. 1995; Flannery and Marcus 1993; Renfrew 2012; Coolidge et al. 2015). In the context of the described theoretical approach, archaeologists attempt to discover the less tangible aspects of human experience such as symbolism and problem solving.

Certain kinds of GIS visibility studies are a subset of cognitive archaeology since they model a field of human cognition—vision. As suggested by the quote that prefaces this chapter, visual perception is a complex and subtle interaction between the eyes and the human brain.

The interpretive framework provided by cognitive archaeology provides a context within which the act of perception may be investigated (Wheatley and Gillings 2000; Llobera 2001). In particular, GIS-enabled visibility analysis is a rare kind of quantitative study that begins from a model of the field of human vision (Wheatley 2004: 11–12; M. W. Lake and Woodman 2003: 694). Certainly, computer models are not comprehensive facsimiles of human perception since they ignore other senses, for example (Frieman and Gillings 2007). Yet, visibility studies evaluate an important human-scale criterion for decision making. Accordingly,
visibility studies endeavor to restore the human as an agent and to understand the ancient landscape at the scale of human perception (Wheatley 2004: 11–12; M. W. Lake and Woodman 2003: 694).

One notable early investigation of human visual perception employed GIS-based visibility studies to analyze rock art sites in Southwestern Scotland (Gaffney et al. 1995). In this study, cumulative viewsheds were employed to identify areas in the terrain where there would have been increased awareness of the ancient monuments; the density of these features was interpreted as a direct correlate of their socio-symbolic importance. The construction of a cartographic, spatially variable index of perception was central to the described study (Gaffney et al. 1995:54). The implication of these findings is that such research could elucidate the cognitive landscape within which ancient monuments were components (Wheatley and Gillings 2001).

Similarly, Fisher has developed a number of new GIS-based approaches that model the decay in human eyesight that occurs over distances (Fisher et al. 1997; Fischer 1994; Fischer 1992; Fisher 1991), maintaining that viewsheds are best represented as a probability surface rather than a binary proposition (visible or invisible) in order to account for the error inherent in terrain modeling. Accordingly, he proposes that visibility values represent the probability that a given target is visible from the source. Fisher’s implementation utilizes Monte Carlo simulation techniques to achieve the desired goal, generating a number of viewsheds for each source location, each with random error added to the elevation.
model prior to each calculation. These are then aggregated to generate what is meant to be a more realistic approximation of the human field of sight. In addition to probable viewshed, Fisher has undertaken important work in the examination of the fall-off of visual clarity with distance, i.e. decay, through the generation of “fuzzy” viewsheds.

However, despite general enthusiasm for probabilistic modeling in the literature (e.g. McCoy and Ladefoged 2009), there has been a noticeable absence of implementation of these methods within visibility studies (Ogburn 2006). There are a number of reasons why probabilistic modeling has not been widely implemented in archaeology. Fisher’s models are technically complex, and prohibitive to implement. Specifically, execution requires the construction of proprietary models to perform the study (Fisher et al. 1997; Ogburn 2006), indicating a need to develop specialized software to complete these analyses. Additionally, many archaeologists have assimilated the critiques implied in probabilistic methodologies into their interpretations of the data without needing to perform the described additional analytical steps. While researchers may not incorporate error into a computer model, they understand that error exists and that it affects the conclusions drawn (e.g. Supernant 2014). Widespread awareness of factors such as decay of human eyesight and of possible error in the model is already an important correction in the discipline. Moreover, research questions determine the necessity of probabilistic models, and the objectives of study determine whether the rigorous visualization of error is necessary to reach the correct conclusions about the problem at hand.
Cognitive archaeological approaches to visibility such as those described above have been critiqued. Some scholars have pointed out that vision is but one of the senses available to human beings (Verhagen 2015; Frieman and Gillings 2007; Mlekuz 2004), and others argue that visibility studies privilege vision above other senses, sometimes in ways that are anachronistic (Thomas 1993). Human beings, these scholars argue, do not experience sight in isolation. We experience our surroundings within a complex and subtle matrix of multi-sensory and kinesthetic stimuli of which vision is only but one factor. Such critiques suggest a need to develop multi-variate modelling of human cognition that account for a variety of human senses such as sound, smell, taste and touch. Specifically, the described theorists are pushing for the robust development of an archaeology of the senses.

Soundscape or archaeo-acoustics have become a topic of increasing scholarly interest in recent years (Till 2014; Hultman 2014; Noonan 2010; Boivin et al. 2007; Mills 2005; Mlekuz 2004). In fact, the journal *World Archaeology* recently dedicated an entire issue to the topic of sound and music in archaeology. In an echo of visibility studies, some approaches are more phenomenological in character while others are decidedly quantitative (Till 2014). One study in Sweden analyzed of a sonorous stone called a “ringing stone” (Hultman 2014). The researchers produced a soundscape model to understand how ancient people would have experienced the ringing stones. There has been a great deal of research performed in recent years in the acoustical reconstruction of ancient theatres on various topics

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such as sound field analysis and speech intelligibility (Noonan 2010; Declercq and Dekeyser 2007; Vassilantonopoulos et al. 2004). Clearly, such studies allow for the reconstruction of ancient social institutions in new and exciting ways. Moreover, the development of visibility studies and acoustic archaeological approaches should be understood as complementary, as stages along the path to the realization of multivariate cognitive-behavioral modeling in landscape archaeology.

It could be argued that an archaeology of the senses is emerging (Skeates 2010; Frieman and Gillings 2007; Morris 2004; Houston and Taube 2000). A recent article promoted the creation of “synaesthscapes,” i.e. multi-variate simulations that account for a variety of senses (Frieman and Gillings 2007). Along these lines, a recent study developed a culturally-specific inventory of sensory stimuli for each of three dwelling types in pre-historic Malta: houses, caves and temples (Skeates 2010; Skeates 2008). Another recent contribution explicitly attempted to understand the sight, smell and feeling of pre-historic cloth in an experimental archaeology reconstruction (Harris 2014), a kind of study that is particularly intriguing since it appraises features of daily life that are typically not preserved in the archaeological record.

Multi-variate cognitive models of the senses have much to contribute to the study of ancient life. Sound, smell, taste and touch are understudied elements of ancient experience and decision making, and studies of the senses are, therefore, pertinent to the study of ancient people. In particular, investigations of the senses would enhance investigations of pre-historic hunter-gatherer societies, a social
context in which non-visual cues provided valuable information regarding game or livestock, food gathering, illness, medicinal plants and incoming threats. Managing the overstimulation of sounds and smells in ancient cities must have contributed to certain aspects of urban design such as elaborate drainage systems and the provision of internal courtyards, respites from dirty and noisy city life. Ancient cultic contexts are other loci where multi-sensory experiences and performances would have shaped the nature of numinous practice. The combination of lighting, acoustics and the scent of, for example, burning unguents would have channeled these multi-sensory experiences in particular ways (Rappaport 1999). The scholarly trends described above suggest that integration of multi-sensory studies will be the next step in modeling ancient perception.

It is an irreducible contradiction that ancient people, as understood from both their material and textual record, are simultaneously familiar and foreign to the modern investigator. The conclusions of many cognitive-archaeological studies are based upon recent advances in behavioral psychology, linguistics and brain sciences, fields of study that, by necessity, employ modern test subjects to investigate research problems and formulate conclusions. It is, therefore, important to be aware of one of the assumptions that underlies cognitive archaeology, namely, that ancient human cognition is the same as, or similar enough to, contemporary human cognition.

Moreover, it is clear that acts of perception, including vision, are affected by culture and culture-context (Golden and Davenport 2013; Wheatley and Gillings
2000; Llobera 2001). Accordingly, one is constantly obliged to question the value of analogy as a universalizing tool versus historically-specific and contingent factors that may alter ancient versus modern perception when performing cognitive-archaeological studies. Yet, the described ancient-modern distinction should not be understood as a barrier that prevents cognitive-archaeological approaches as much as it is a caution to account for possible ancient-modern differences when possible.

On some level, one must accept that there will always be certain aspects of ancient cognition and perception beyond the grasp of a modern archaeologist. For example, we cannot know an individual’s historically-specific and contingent “world view” based upon material remains alone. Interestingly, one recent contribution did attempt to consider the Maya world view (Golden and Davenport 2013), suggesting an approach that could be of particular interest to archaeologists who study periods with substantial textual documentation. In the context of the Iron Age fortress-states that are the focus of the investigations presented above, signs of insecurity are manifest in features such as heavily fortified architecture and the regional organization of sites. When such features are contextualized within the rich historical data available for the study of the period, it becomes clear that the threat of conflict was an overwhelming concern for the inhabitants of these ancient places.

8.4 Discussion
Phenomenological approaches continue to contribute to the scholarly dialog of visibility in the past, although the results of these studies may not be applicable to other archaeological problems. For the moment, many phenomenological studies
are characterized by methodological individualism (Renfrew and Bahn 2004:497). Methodological individualism links findings to particular cases, a reality that stands in opposition to more quantitative approaches that attempt to develop methodologies and theory that can be applied to a wide variety of cases.

Few studies of visibility have attempted to integrate a qualitative phenomenological approach with quantitative GIS methodologies (Lake and Woodman 2003). However, a recent appraisal (Verhagen 2015) argued that virtual reality simulations may be one arena in which the two opposed camps could find a common purpose. Generally speaking, visibility studies that also attempt to account for movement within a landscape show particular promise in incorporating the Heidegger-derived concept of dwelling that is of vital importance in the phenomenological perspective (Llobera 2000).

The study of surveillance need not be restricted to the modern era. Though the technological innovations of recent centuries have revolutionized the ways in which people can be watched, there are also a number of more traditional methods of surveillance. The corps of spies who acted as the “eyes and ears” of the king in the Neo-Assyrian empire (Parpola 1987; Lafranchi and Parpola 1990) and the Achaemenid empire (Briant 2002:344) are relevant examples as well as the non-technological methods of surveillance employed by the Soviet Union (Lyon 2007). Watching in the past must have been justified by concerns of security and protection, as is the case today (Neal 2006). The study of surveillance has the
potential to become an important subset of visibility studies in both ancient and modern contexts.

An important capability of defensive architecture such as forts and watch towers would have been the ability to scrutinize the movements and actions of inhabitants of those ancient places and spaces. The installation of a system of state architecture could also have provided an infrastructure of surveillance for Iron Age fortress states like Urartu.

The reconnaissance potential of a fortress network like the one observed in the context of the Urartian empire is brought into relief by the findings of the previous chapter, namely that the surveillance apparatus was primarily focused upon roads and critical control points. It is tempting to speculate that some Urartian foundations were made at lower elevations than adjacent Early Iron emplacements so that the state might have a more immediate presence in the territory (Smith 2003:169–180). The increased proximity of the Urartian fortresses to individuals passing through the landscape would have provided another important advantage: the ability to surveil roads and critical check points from closer proximity.

However, an entirely top-down power dialectic is not implied by the described analysis of surveillance apparatuses in Iron Age fortress-states. Acts of surveillance dehumanize those observed, objectify them and may be considered an act of violence by the regimes that employ them. The dehumanizing potential of technologies of surveillance may have been a catalyst for resistance from within the
Urartian empire. In fact, there is an overwhelming tendency to attribute the unknown end of Urartu to external forces while there is also evidence for internal weakness of the regime, particularly during the bloody period of insecurity prior to the reign of Rusa the Great documented in the Sargonid epistolary corpus. Technologies of surveillance could have contributed to the fragility of this ancient state.

Understanding the role of the agent and her place in the past has been a major focus of archaeological research in recent years (Dornan 2002; Dobres and Robb 2000). Moreover, the purported need to shift from the GIS “God scale” to the human scale has been a critique within landscape archaeology (Thomas 1993), and conceiving of vision as an embodied act is one way to achieve the described goal (Haraway 1988). Understanding visibility studies as a subset of cognitive archaeology is a promising avenue for future research that addresses concerns of human agency since it is a rare example of an “embodied” GIS analysis, one that simulates a human field of perception.

As suggested by Shore (1998: 4), the recognition that the mechanical process of seeing is distinct from perceiving, a much more complex and subtle process of human cognition, has important implications for visibility studies more generally.

A variety of recent approaches, discussed above, have confronted a need for more nuance in the interpretation of visibility such as the development of a cartographic, spatially variable index of perception or the rigorous presentation of error, i.e. fuzzy viewsheds. The refinement of these models should be understood as
a stage along the eventual path of multi-variate cognitive modelling of past human landscapes.

Parallel developments in soundscapes as well as the archaeology of the senses more generally may eventually pave the way towards integrated models. Trends within the field suggest that a combination of the described approaches will be the next step towards the development of increasingly sophisticated models. Nevertheless, one must also accept that there will be certain aspects of ancient cognition beyond the grasp of modern archaeologists, for example, understanding an individual's historically-specific and contingent world view.
Chapter 9 Discussion and Conclusions

In this dissertation, I examined visibility and the spatial distribution of sites in Early Iron fortress-states and the ancient empire of Biainili-Urartu. To what extent can an investigation of visibility and spatial organization elucidate the social processes that formed these ancient states? The investigations combine historical, archaeological and ethnographic data with a GIS-analytical approach.

9.1 Summary of Objectives and Contributions

The dissertation achieved a variety of objectives. First, I investigated EI and Urartian archaeological sites to determine if they were located at highly visible or otherwise significant locations by examining the patterns of spatial distribution and visibility among forts, fortresses and settlements.

A subsequent objective was to determine whether the fortress-states of the studied periods incorporated regional systems of visual communication. I contextualized the results with historical evidence and ethnographies in order to understand the observed archaeological patterns within their social milieu.

Another methodological objective was to develop GIS analyses that are both human-scaled and agent-focused in light of recent critiques that have cautioned against approaches that ignore the agency of social actors and human-appropriate scaling (Llobera 2012; Llobera 1996). The described approach is an effort to incorporate social theory with an empirical, GIS methodology (Harrower 2016).
Arguing that certain suppositions have typified studies of the state of Urartu during recent decades, I endeavored to test the assertion that the spatial organization of Urartian sites represents a fundamental departure from patterns established during the Early Iron Age (EI) (Smith 2003:169–180). This assertion had not been previously examined within the framework of a multi-regional, comparative analysis of EI and Urartian settlement.

By contrast, this dissertation constitutes a large-scale study of all known Urartian territories in Iranian Azerbaijan as well as the Lake Sevan region of Armenia during both the EI and Urartian periods. The data from Iran reflect both early and late episodes of expansion of the Urartian empire, while the data from Armenia reflect an episode of imperial expansion during the eighth century.

I contend that large seventh-century sites such as Ayanis, Bastam, Karmir Blur, and Kef Kalesi founded by Rusa son of Argishti are atypical and exceptional rather than representing paradigmatic Urartian cases. Moreover, the findings from these atypical sites have distorted scholarly perceptions of the empire.

A final scholarly convention that I evaluated is that the ancient empire of Urartu was a relatively uniform phenomenon rather than demonstrating marked regional and temporal variation. Accordingly, I performed quantitative investigations of the data from Iran and Armenia in order to test the described hypotheses.

Incorporating three disparate datasets into a single database was complicated given the heterogeneous nature of the information collected by the
respective archaeological expeditions, each with unique procedures for documenting sites. The construction of a unified database of Early Iron, Middle Iron and Urartian archaeological sites for Iranian Azerbaijan with geographical coordinates constitutes a significant contribution to the study of the Iron Age in this part of the world since it provides a point of departure for investigating the spatial organization of the states in question with a GIS. The described dataset is presented in Appendix 1. Since the current political conditions in Iran are not conducive to ongoing research by international research teams, the use of pre-existing data permits continued study of Iranian Azerbaijan.

Furthermore, the creation of a database of Iron Age sites in Iranian Azerbaijan and Lake Sevan, Armenia, allowed for a large-scale and temporally-sensitive study of the development of the fortress-empire of Biainili-Urartu and allowed me to quantitatively evaluate a number of scholarly assertions about the formation of the states under investigation.

9.2 Major Conclusions

In this section, I recapitulate the primary findings of the dissertation and elaborate upon arguments introduced in previous chapters.

9.2.1 Urartu as a Continuation of Local Traditions

Urartu has traditionally been viewed—as a political and archaeological phenomenon—that constituted a radical departure from the preceding Early Iron phase (e.g. Smith 1996; Smith 2003). However, the GIS analyses presented above
show that many of the patterns that typified Urartian organization in northwestern Iran and Lake Sevan, Armenia, were already in place by the EI. For example, an elaborate fire beacon system was already in use during the EI in the Lake Sevan region, and the subsequent Urartian adoption of a similar system constitutes a continuation of previously established patterns. The analyses in the presented herein suggest that Smith’s conclusions—that regional organization changed dramatically upon the arrival of the Urartian empire—reflect an atypical pattern uniquely present in his study area.

The contention that there was an overwhelming predilection for *ex novo* foundations during the Urartian period (Smith 2003; Zimansky 1995c; Ristvet et al. 2012) was rigorously examined. A study of the fortresses in Iran reveals that new foundations were a particular trait of the reign of Rusa the Great. During the ninth and eighth centuries of Urartian expansion, both new foundations and the re-settlement of places were equally likely scenarios in Iran, and the re-appropriation of pre-existing forts and fortresses was the overwhelming pattern along Lake Sevan in the eighth century. The described conclusion was achieved by an analysis of aggregated survey data for the studied regions.

It had also been argued that Urartian inscriptions reflect the empire’s desire to impose a dramatic break with the preceding EI constitution of space (Smith 2003:163). A monumental inscription from Argishti I’s early eighth century founding of the Urartian fortress of Erebuni near modern-day Yerevan in Armenia is one a number of Urartian texts cited in this context:
By the majesty of god Khaldi, Argishti, son of Menua, built this fortress perfectly and [gave to it] the name Irpuni (Erebuni); (It was built) for the greatness of Biainili (and) for the humiliation of the enemy lands. Argishti says: The earth was wilderness; I accomplished great deeds there. (Melikishvili 1960: no. 138)

Smith contends that themes of conquering wilderness are unique to Urartu in the ancient Near Eastern context, and he contrasts them specifically with Neo-Babylonian models.162

When contextualized within the complete corpus, Urartian texts devoted to creation ex nihilo are rare rather than usual, and the most elaborate examples date to the reign of Rusa II. Instead, Urartian inscriptions that detail lists of conquered polities and peoples, i.e. populated places, are common.163 For example, a different inscription from the reign of the same Argishti whose inscription is quoted above was found north of Erebuni. The second inscription records the names of the kingdoms and lands from that same “empty” place that was conquered by the same king.164 As Smith notes (2003: 163-165), it would be a mistake to understand Urartian claims of wilderness conquest too literally, especially since inscriptions are frequently discovered in places in the southern Caucasus where archaeology has

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162 In both form and content, Urartian texts dedicated to creation anew can be compared to the foundation rhetoric of kings from the Middle Assyrian and Neo-Assyrian periods (Harmanşah 2013). Moreover, the trope of turning wilderness steppe land into cultivated land is a recurring preoccupation of Neo-Assyrian kings (Radner 2000). Certainly, the subset of Urartian texts dedicated to ex nihilo themes can be contrasted with the more antiquarian concerns of Neo-Babylonian rulers who preferred to evoke a foundation rhetoric that recounted the restoration of culturally-significant institutions such as temples and emphasized continuity in their rituals of creation (Liverani 2013).

163 The recently released Corpus Testi Urartei is a valuable tool, particularly for understanding the overall character of these sources.

164 Inscription from Elar, Melikishvili 1960: no. 138. Smith is aware of the text and cites it, too.
revealed that a constellation of EI fortress-states were well-entrenched by the time of the arrival of the armies of Biainili.

An examination of the Urartian corpus reveals that creation *ex nihilo* texts exist alongside texts detailing the conquest of inhabited places. The described pattern reflects the archaeological reality, i.e. both re-appropriations and *ex-novo* foundations were important components of imperial statecraft for most of the empire’s history. Moreover, an Urartian interest in the creation of some places while maintaining traditional ties to others mirrors parallel developments observed in the Neo-Assyrian empire (Otto 2015), and the described pattern may be contrasted with Rusa the Great’s transformation of the *ex novo* foundation into a particular obsession.

9.2.2 Landscapes of Warfare—Traces of Conflict on a Regional Scale

I argue that archaeological interpretation does not properly account for the role of warfare in explanations of the regional patterning of sites. The described deficiency is problematic in the study of the ancient Near East since there is ample historical documentation for systematic warfare, particularly during the early first millennium. Previous scholarship focused upon economic and ecological modes of explanation of change in the past (Hritz 2014; Ristvet 2011), and did not consistently account for the social and archaeological ramifications of conflict in regional organization (Johnson 1988/89; Earley-Spadoni 2015).

It is important to identify ways in which patterns of conflict are discernable at the regional level in order to supplement the ecological and economic approaches
common in ancient Near East landscape archaeology. The effects of conflict can be seen across the studied regions during the EI and Urartian periods in the anxiety epitomized by the predominance of fortified military installations and hundreds of prominent display inscriptions cut into stone detailing acts of imperial conquest (Kroll, Gruber, et al. 2012).

In two important ways that I elaborate below, I argue that the spatial patterning of EI states and Urartu can be understood as a response to the demands of the systematic warfare of the early first millennium BCE. The contribution of my approach is the recognition of the effects of conflict on the regional organization of the ancient states in question. I also contend that beyond the specific cases presented, archaeologists and historians have much to gain from looking for the traces of conflict embedded in regional landscapes in other places and at other times.

Visibility studies proved to be a productive way to investigate the effects of conflict on site placement in the fortress-states in question. Structures that exploit visibility in the landscape are an important component of the defensive strategies of the Iron Age states under investigation. In the context of a landscape of warfare, particularly among sedentary societies, vision is one of the most important senses, because enemies can be seen from some distance from the relative safety of reinforced architecture (Arkush 2011). Moreover, there is a commemorative element (Mills and Walker 2008:7) in the act of seeing that is intimately related to narratives of past and future military heroism, and there are bellicose symbolic
messages communicated by the presence of fortified architecture (Smith 2012). Accordingly, visibility studies have explored symbolic meanings of constructed landscapes (Fitzjohn 2007; Supernant 2014; Bongers et al. 2012), as well as the more practical implications of defense (Panagiotakis et al. 2013). Visibility is also important as it relates to communication, particularly in the context of defensive communication networks.

9.2.2.1 The Importance of Roads and “Control Points”

Previous scholarship had noted the Urartian predilection for situating sites near roads by inferring ancient roads from modern ones (Zimansky 1985:96; Smith 2003:175). In fact, plotting site locations in a GIS makes it apparent that there is a strong correlation between Urartian sites and modern roads. Therefore, it must be the case that the ancient and modern roads are quite close to one another, if not overlapping, in most instances. The described observation is hardly surprising since, in mountainous environments, movement is channeled through a limited set of options. Generally speaking, people did and do pass through hilly lands where there is the least effort involved to do so, i.e. valleys through mountain ranges.

Accordingly, one of the most conspicuous findings regarding visibility that emerges from the dissertation is that the views from the forts and fortresses of Urartu are focused upon roads and key strategic checkpoints, and that the described pattern of site placement had already been established during the preceding EI period.
The military advantages of the described organization along roads and checkpoints are numerous. In an environment in which there are a limited number of entry and exit points, monitoring control points means effective control of territory. Channeling or limiting movement is a clear expression of political authority in a landscape (Ristvet 2011:1). Besides the obvious defensive benefits inherent in the described configuration, there would have been clear economic, political and even religious advantages\textsuperscript{165} to controlling the roads of Urartu. The roads of Urartu can be understood, therefore, as social areas within which a variety of important social interactions took place (Smith 2003; Ristvet 2014). Roads do not simply pass through places as much as they are embedded within a social matrix. Roads shape and are shaped by social processes. Moreover, it is abundantly clear from the historical documentation and the results from the analyses presented in this dissertation that the roads of Urartu were embedded within the institutions of war and surveillance.

Moving through a landscape is the main way that people experience it (Tuan 1979:35; Ristvet 2011). Roads would have been a conduit along which certain imperial performances played out such as the king leading armies to war in distant lands. Moreover, the social messages communicated and received would have been complex and, at times, specific to the individual. In particular, historical sources attest to the motley crew of travelers who would have taken to the roads in those

\textsuperscript{165} For example, the practice of pilgrimage to the center of the Urartian religious universe at Muşâşir, located in Rowanduz in Iraqi Kurdistan would have been one such advantage.
days (e.g. Parpola 1987; Lafranchi and Parpola 1990; Fuchs and Parpola 2001). Merchants might have travelled along the road and dreamt about the riches of Urartu. Diplomats from Assyria or the buffer states of Anatolia might have taken the same journey and been filled with foreboding while travelling through a disconcerting, highly militarized landscape. Human deportations also took place along the roads of Iron Age fortress-states. The deported people, the vanquished of war, would have perceived these landscapes through a lens of psychological terror. Spectators of these scenes might have, depending on their own identification with either the soldiers or their prisoners, either mocked and jeered the deportees or hated and feared their captors.

The very act of moving through the landscape of Urartu becomes a kind of visual narrative of military conquest with each new fort or fortress adding another chapter to the story. For those entering Urartu from the outside, the described military constructions are meant, at least in part, to intimidate. The imposing stone structures communicate dread and foreboding.

9.2.2.2 Fire Beacon Networks
There is ample evidence from the ancient Near East, particularly from Mari, that defensive communication networks were a widespread, social response to the need to protect communities from threat. The historical memory of defensive communication networks is preserved in Sargon II's Eighth Campaign. Moreover, the attestation of fire beacon networks across time and space indicates that the
research topic would benefit from cross-regional and comparative approaches towards an improved understanding of this cooperative communication strategy. Studies of the ancient Near East, I argue, have much to offer investigations of ancient communication networks.

The tell landscapes studied in the context of ancient Near Eastern archaeology, particularly during the Bronze Age, have been little explored for the implications of visibility in the distribution of settlements and features, although textual documentation discovered in the palace archive at Mari indicates that visibility must have played an important role in site distribution in Middle Bronze Syria (Dossin 1938).

Besides the utterly practical concerns of defense, which are difficult to underestimate, there are also the powerful, symbolic messages communicated by the state through architecture and art in the construction of landscapes (Smith 2003) or the memory of ancestors (Schwartz 2013b). Ancient communication networks were complex socio-cultural constructions, and their uses would not have been exclusively military. Unfortunately, the historical records do not provide much evidence for anything beyond the beacons’ obvious defense applications. However, ethnographies indicate that beacons may be employed in ritual or cultic contexts (e.g. Swanson, 2003). Ancient communication networks equally could have been used to transmit other kinds of messages much in the way that the selection of a pope is communicated by white or black smoke at the Vatican. Bonfires, for example, are cross-cultural displays of community-building and celebration (Cressy
Accordingly, it is tempting to speculate that the beacons may have been lit to commemorate the death of a king or to mark other culturally-significant events.

The act of constructing a regional system of communication and participating in it would have undoubtedly engendered feelings of belonging since these large-scale activities would have required community participation (Cressy 1989). Beacons may also been an important symbol to these Iron Age states, similar to the manner in which defensive city walls became symbols of Mesopotamian urbanism (Creekmore and Fisher 2014; Ristvet 2007). The lighting of the beacons along the southern shore of Lake Sevan would have inspired complex symbolic associations among all who witnessed the tableau.

Nevertheless, the importance of warfare in the development of Iron Age fortress-states should not be understood to mean that other social factors were unimportant in the spatial organization of the states in question. Specifically, economic incentives and the ideological impact of features shaped the development of the described ancient states.

9.2.3 The Importance of Vision in the Construction of Iron Age Fortress-States

Iron Age fortresses were built to impress and performed specific practical and symbolic roles in Urartian statecraft (Zimansky 1985; Smith 1996). El and Urartian fortresses were polyvalent structures that monumentalized the greatness of the state, commemorated ancestors, performed a valuable administrative role, protected the populace in times of danger, supplied markets for exchange, provided
venues for religious expression, and acted as depots for state assets (Zimansky 1985). Nevertheless, fortresses are defensive architecture, and it is important to contextualize them within a system of regional defense.

Surveillance was determined to be an important function of visibility from the archaeological sites under investigation. The state-designed system of forts and fortresses along roads was an invaluable source of information, and the espionage and counter-espionage of Urartu are well-documented in the Neo Assyrian imperial correspondence (Radner 2012). The emplacements constitute a system of surveillance from which someone may be watching. The benefits of social engineering through the built environment would have been reaped many times over by the regimes that constructed these elaborate mechanisms for observing. Yet, technologies of surveillance substantively harm those observed, both in the past and present, while unintentionally provoking resistance and social change (Moshenska 2009; Topper 2001). Most discussions of the end of Urartu focus on external causes, yet the seeds of the destruction of the Urartian empire may have been sown from within.

An observation that emerges from the Sargonic epistolary corpus is that the network of surveillance made the Urartian state vulnerable to counter-espionage by facilitating the work of treacherous double agents. The apparatuses of watching were, perhaps, as much of a liability as a benefit to the regime.

In keeping with the current scholarly emphasis on social process in the construction of ancient landscapes (Harvey 1973; Giddens 1979; Bourdieu 1977;
Smith 2003), recent anthropological approaches focus upon the social process element of the creation of monumentality (Osborne 2014:8). The monument-status of Urartian fortresses is undeniable. Fortresses are large, highly-visible monuments designed by the empire to perform myriad social functions including communicating the greatness of that ancient state. Vision also plays an important role in the construction of social memories, which are created by the construction of repeated, patterned and engaged social actions like memorializing places and ancestors (Nielson 2008).

Fortresses in general and Urartian fortresses in particular, besides providing impressive views out onto a landscape, are also highly visible from the landscape itself. Visually, they act as focal points when moving through the environments in question (Arkush 2011). The presence of fortresses over time creates a socially-constructed place that is symbolically embedded within its surroundings, and with which individuals and communities create strong ties and enduring relationships (Notroff et al. 2014). Moreover, the history of long establishment and the connection to ancestors implied in constructions of fortresses would have been a source of social power priests and kings alike could have drawn upon (Wilkinson 2003).

It is apparent that Urartian fortresses, besides having excellent views of the landscape, would have been highly visible within the landscape itself, particularly to anyone travelling along its roads. The Urartian predilection towards placing installations above plains near hills or mountains would have resulted in a
repetitive *mise-en-scène*. Each construction was elevated above the plain, and the repeated fortress vignette would have been completed by its respective mountainous backdrop. The described reiteration is a story in itself much like the act of “tagging” in urban graffiti, an act of territorialization, an act of claiming.

In addition to the imposing backdrop of mountains, Urartian fortresses were substantial structures composed of large blocks of stone. Fortresses are complex symbols, and it is certain that some of the described symbolic value was culturally specific and therefore obscure to modern investigators. Yet, it is clear that Urartian fortresses communicate strength and permanence through the force of their location and architecture.

Architecture that communicates permanence is, in turn, its own kind of social message, one intimately related to the constitution of authority in these Iron Age fortress-states (Smith 2012). Legitimization of authority may be constructed upon the great deeds of predecessors, either real or illusory. Monumentality as an architectural act communicates greatness to the builders’ contemporaries as well as aspires to endure in perpetuity for the benefit an imagined group of descendants (Van Dyke 2003). Old, substantial structures communicate to visitors and inhabitants alike that a place has an important history. Most regimes that endure over time, like Urartu, Rome, or the Mayan empire, do so by claiming a long and distinguished past. The re-appropriation by the Urartians of ancestral power centers during the ninth and eighth centuries that is apparent from the present study can be understood as a legitimization argument (Schwartz 2013b).
Certainly, constructed landscapes represent complex superimpositions of elements that have polyvalent social meanings. Accordingly, visibility and movement through the landscape would have also been important for Urartians in the religious sphere (McCorriston 2011; Ristvet 2014; Ristvet 2011). It is clear that pilgrimage was an important component of Urartian religious practice, as least as pertains to the king and his attendants. Muşaşir, home of the cult of Khaldi, the supreme god in the Urartian pantheon, was located in the mountainous Rowanduz province of Iraqi Kurdistan, outside the direct control of the empire. In particular, the sight lines to all of the monuments along the way—fortresses, inscriptions, rock cut stairs—would have constituted an important part of the socio-religious experience of pilgrimage (McCorriston 2011). While there is no firm historical evidence either for or against such a proposition, it is reasonable to assume that the act of pilgrimage was not reserved for the king alone. This could have been an experience in which a range of people participated, from various socio-economic circumstances, as ethnographically attested in episodes of pilgrimage cross-culturally (Badone and Roseman 2004). The social institution of pilgrimage itself should be understood as one that constructs landscapes, both practically and ideationally.
9.3 Future Research

The proposed category of fortress-state can provide a venue for cross-regional and cross-cultural studies, and I contend that multi-regional, GIS-enabled studies paired with the systematic excavation of ninth and eighth-century sites can shed further light on Urartu. Furthermore, it is important to better comprehend the local, regional trajectories of the Early Iron Age states that preceded the rise of the empire in question.

9.3.1 Fortress-States

The fortress-state was a recurring social institution that persisted over time in the Iron Age highlands of the areas studied. I interpret the rise of fortress-states as a social response to the systematic warfare that characterized the Iron Age of the ancient Near East, which is overwhelmingly apparent in both Neo-Assyrian and Urartian historical documentation.

Fortress-states may experience a common set of strategic advantages as well as liabilities. Cross-culturally, fortresses are often located upon easily defensible high ground and at strategic “check points.” Like the polities studied in the present work, the foundation of fortress-states is frequently associated with upticks in regional conflict (Arkush 2011). Moreover, it has been argued that citadels are highly-contested places and the targets of violence, and that cyclical eruptions of warfare typify such constructions (Bachhuber 2014:293). Based upon the preliminary results of the present work, I contend that fortress-states rise from contexts of systematic or rampant warfare, and reinforce cycles of violence. The
persistence of fortress-states over time may, in fact, depend on the presence of conflict, and the existence of fortresses may, in turn, reinforce the described patterns. It would, therefore, be productive to explore the material agency (Gell 1998; Latour 1994; Latour 2005; Bennett 2010; Hodder 2012; Smith 2015) of fortresses and fortress-states in a comparative context. A cross-cultural study of both common and historically-specific traits would prove informative in understanding the dynamics of ancient and modern fortress-states.

In addition to the numerous medieval European examples cited in the introduction, fortress-states are identifiable in a variety of historical and archaeological contexts. A number of fortress-states characterized Late Bronze Mycenaean civilization (Tetlow 2005). The Anatolian state of Gordion is arguably a fortress-state during the Early Phrygian period (950-800 BCE) owing to the dominance of its centrally-located citadel as well as the non-urban character of its modest lower town during the period in question (Burke 2013). States centered upon citadels experienced cycles of destruction and re-birth in Bronze Age Anatolia (Bachhuber 2014:293).

Fortress-states are attested in the Greco-Roman world, an epoch otherwise known for the preeminence of the city-state. The rural, mountainous hinterlands of Eretria, a city-state that has been investigated extensively by the Swiss Archaeological School in Greece, was organized into districts administered by an elaborate system of forts, fortresses and small settlements which existed alongside well-known coastal city-states (Fachard 2012). This arrangement—a possible
fortress-state located in the hinterlands of a city-state—may indicate a political
takeover of an adjacent fortress-state as Eritrea grew in prominence or constitute a
unique administrative strategy for rural hinterlands.

Japanese fortress culture reached an apogee during the sixteenth century CE
in the Tokugawa period (Vaporis 1997; Gordon 2003). Japanese fortress-states
were led by hereditary shoguns whose power centers were elaborate tiered castles
that presided over a mostly rural and dispersed population. The state was centered
at Edo Castle located in modern Tokyo and arose in response to turbulent times
(Gordon 2003). Atypically, Edo fortress was a flatland castle that became the Tokyo
Imperial Castle centuries later.

Fortress-states also existed in the Americas. The Colla state that thrived in
the highland Andes in the early second millennium CE with its characteristic system
of pukara hillforts is one particular prospect as a fortress-state (Arkush 2011).
Certainly, each of the cases mentioned above is unique and developed under
historically-specific and contingent circumstances and must be understood in its
own context. The above examples are presented here to suggest the possibility and
promise of the proposed analytical category, the fortress-state, to facilitate rigorous
comparative studies.
9.3.2 Multi-Regional Studies and Continued Stratigraphic Archaeological Investigation

Although the ancient empire of Urartu was rediscovered in the nineteenth century, the work of understanding the political, historical and archaeological development of this ancient state is still in its formative stages.

Only a handful of Urartian sites have benefited from systematic, stratigraphically-sensitive investigation, and most of these were founded or have significant occupations dating to the anomalous reign of Rusa the Great. The impact of hybridity on both local and Urartian styles, therefore, remains poorly understood due the described paucity of stratigraphic archaeological investigations dating to the ninth and eighth centuries.

The current scholarly ability to comprehend the Iranian EI is even more dismal than the present incomplete comprehension of Urartu. Although much has been discovered (Kroll 2011; Pecorella and Salvini 1984), additional research could clarify many of the ambiguities of the Iranian EI. Future studies will only be possible when the political circumstances of Iran permit investigations to continue. In Armenia, pioneering investigations began decades ago with the goal of revealing Late Bronze/Early Iron fortress landscapes (Lindsay and Smith 2006), and these efforts show the promise of continued work to improve scholarly understanding of the Armenian Iron age.

The present dissertation demonstrates the ability of large-scale investigations to elucidate the development of Urartu and the myriad EI states that preceded it. A lack of comparative regional study has complicated understanding of
the states in question. Modern political boundaries as well as nationalistic disputes impede efforts to implement large-scale studies among Armenia, Azerbaijan, Iran, Iraq and Turkey, although it is my hope that the present study shows the potential benefits of working across borders. Future research should include expanded multi-regional studies towards a more comprehensive understanding of the spatial and temporal variation present in Iron Age fortress-states and the Urartian empire.
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ENVISIONING LANDSCAPES OF WARFARE:
A MULTI-REGIONAL ANALYSIS OF
EARLY IRON FORTRESS-STATES AND BIAINILI-URARTU

Part II

by
Tiffany Celena Earley-Spadoni

A dissertation submitted to Johns Hopkins University in conformity with the requirements for the degree of Doctor of Philosophy

Baltimore, Maryland
September, 2015

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### Appendix 1: Sites in Iran

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Dimensions (in meters):  230 x 119  Coordinates: 38.502509 N, 46.707902 E

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Location Method: Kroll, personal communication.  Aprox:  No

AH30  Kuh-e-Zamburan  Description: Fortified Settlement

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Dimensions (in meters):  50 x 50  Coordinates: 38.493918 N, 46.697023 E

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Location Method: Digital globe public data.  Aprox:  Yes

AH39  TepeDashkasen  Description: Settlement (Tepe)

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Periods:  URZ SEZ MED-ACH PAR HMA

Dimensions (in meters):  800 x 400  Coordinates: 38.885550 N, 44.948981 E

Bibliography:
Kroll 1994; Bastam I; Bastam II.

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KH22  Bastam  Description: Settlement (Tepe)
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Bibliography:
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**Location Method:** Digital globe public data.  
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MK07: Kroll 1994; Kleiss 1971, AMI 4: 60-62, Abb. 11-12, Taf. 7, 3; 8, 1-2; Kleiss, AMI 7, 1974: 82-93 Abb. 1, Taf. 18; Kleiss 1979, AMI 12: 221-222, Abb. 50.
MK08  SarandjQaleh  Description: Fortress

Periods:  URZ

Dimensions (in meters):  300 x 75  Coordinates: 39.571764 N, 44.814005 E

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MK09  Keshmesh I  Description: Settlement (Tepe)

Periods:  URZ

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Bibliography:

Location Method: Digital globe public data.  Aprox: No

MK10  Keshmesh II  Description: Settlement (Tepe)

Periods:  CHL FEZ SEZ ACH-PAR FMA

Dimensions (in meters):  Small  Coordinates: 39.339570 N, 44.388645 E

Bibliography:

Location Method: Digital globe public data.  Aprox: No

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MK11  Djajurd Tepe  Description: Fortified settlement
Periods:  URZ

Dimensions (in meters):  40 x 20  Coordinates: 39.402382 N, 44.450229 E

Bibliography:

Location Method: Digital globe public data.  Aprox:  Yes

MK13  Qizil Dagh  Description: Fortified settlement
Periods:  FEZ

Dimensions (in meters):  Med  Coordinates: 39.256561 N, 44.656011 E

Bibliography:

Location Method: Digital globe public data.  Aprox:  No

MK15  Danalu  Description: Fort
Periods:  FEZ-URZ

Dimensions (in meters):  70 x 80  Coordinates: 39.351363 N, 44.530554 E

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MK24 Soghtileh Qaleh
Description: Stone building remains.
Periods: FEZ-MEZ
Dimensions (in meters): 20 x 10
Coordinates: 39.393877 N, 44.688201 E

Bibliography:

Location Method: Digital globe public data. Aprox: No

MK25 Ilan Qara 1
Description: Fort
Periods: URZ
Dimensions (in meters): 110 x 70
Coordinates: 39.373485 N, 44.773246 E

Bibliography:

Location Method: Digital globe public data. Aprox: Yes

MK29 Rent Qaleh
Description: Fortified Settlement
Periods: EZ? URZ SAS
Dimensions (in meters): Medium
Coordinates: 39.336901 N, 44.600984 E

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Dimensions (in meters): Small

Coordinates: 37.258859 N, 46.065195 E

Bibliography:
Kroll 1994; Swiny 1975: 91, Fig. 3, 11.

Sub-Region: Marand

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**MD01  Marand Tepe**  
Description: Settlement (Tepe)

Periods: C MBZ FEZ MEZ SEZ PAR SAS MA

Dimensions (in meters): 200 x 100

Coordinates: 38.423696 N, 45.781296 E

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**MD05  Parpar Tepe (Baruj)**  
Description: Settlement (Tepe)

Periods: CHL ETC MBZ FEZ HMA

Dimensions (in meters): 200 x 200

Coordinates: 38.492095 N, 45.690461 E

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Location Method: Digital globe public data.  
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Location Method: Digital globe public data.  
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MD14  Livar  Description: Fortress

Periods:  ETC MBZ FEZ URZ SAS-FMA

Dimensions (in meters):  700 x 400  Coordinates: 38.537327 N, 45.680045 E

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MD15  Tepe oestlich Livar  Description: Settlement (Tepe)

Periods:  CHL URZ HMA

Dimensions (in meters):  30 x 30  Coordinates: 38.538862 N, 45.694809 E

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Location Method: Digital globe public data.  Aprox: No

MD19  Cheragah-e Amir  Description: Fort and Settlement

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MKSR71 Kiz Qaleh Runyan Duyah  Description: Fort
Periods: FEZ MEZ?

Bibliography:
Kroll 1984: 66-8, Abb. 15; Kleiss, AMI 2: 19, Abb. 18-19, Taf. 6-7.

Location Method: Digital globe public data.  Aprox: No

Sub-Region: Miyandoab

MY02 Tashepe  Description: Fort
Periods: FEZ-MEZ PAR
Dimensions (in meters): 100 x100  Coordinates: 37.019902 N, 45.936009 E

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441
SL05  Arziyayad  Description: Settlement
Periods:  FEZ MEZ SEZ
Dimensions (in meters):  Small  Coordinates: 38.137305 N, 44.969112 E
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Location Method: Digital globe public data.  Aprox: Yes

SL07  Vaziri Qaleh  Description: Fort
Periods:  I POW MBZ FEZ SBZ URZ
Dimensions (in meters):  70 x 65  Coordinates: 38.149518 N, 44.891278 E
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Location Method: Digital globe public data.  Aprox: No

SL09  Ahudarreh Qaleh  Description: Fort
Periods:  FEZ MEZ-URZ
Dimensions (in meters):  50 x 50  Coordinates: 38.045648 N, 44.958634 E
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Location Method: Digital globe public data.  Aprox: No
**SL12  GarnyYaruk (Karniarouk)**  
Description: Fort and Settlement with Rock Tombs  
Periods: URZ HMA  
Dimensions (in meters): Small  
Coordinates: 38.100947 N, 44.705333 E  

**Bibliography:**  

Location Method: Digital globe public data.  
Aprox: No

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**SL14  Chariq (Cariq, Shariq)**  
Description: Fort  
Periods: URZ  
Dimensions (in meters): Small  
Coordinates: 38.083535 N, 44.593222 E  

**Bibliography:**  

Location Method: Digital globe public data.  
Aprox: No

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**SL15  Kafir Qaleh**  
Description: Fortified settlement  
Periods: ETC URZ  
Dimensions (in meters): 115 x 55  
Coordinates: 38.161317 N, 44.642449 E  

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<td>Kroll 1984: 42-3; Kleiss 1968, IstMitt 18: 43; AMI 5: 172, Abb. 43.</td>
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Sub-Region: Sarab

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**TA11 Yanik Tepe**

Description: Settlement

Periods: NEO CHL ETC ALI MBZ? FEZ PAR-FMA?

Dimensions (in meters): 280 x 280

Coordinates: 37.980784 N, 46.003611 E

**Bibliography:**

Kroll 1994; Burney 1961; Burney 1962.

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**TA16 Qara Tepe Tasudj**

Description: Settlement (Tepe)

Periods: ETC MBZ SBZ FEZ

Dimensions (in meters): 200 x 200

Coordinates: 38.270485 N, 45.357745 E

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**TA22 Yukari Dagh Qal’eh**

Description: Fort

Periods: ETC MEZ SEZ

Dimensions (in meters): 60 x 50

Coordinates: 37.879686 N, 46.752770 E

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UR024  Azravalish  
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Bibliography:
Kroll 1994; Pecorella & Salvini 1984: 148 Fig. 23 E2.

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UR028  Sharbat  
Description: Settlement
Periods:  FEZ
Dimensions (in meters):  200 x 180  
Coordinates: 37.718866 N, 45.156075 E

Bibliography:
Kroll 1994; Pecorella & Salvini 1984: 148 Plan p.150, Carta 3 (B) 1.

Location Method: Digital globe public data.  Aprox: No

UR029  Kelisa Tepe  
Description: Settlement
Periods:  FEZ MA
Dimensions (in meters):  190 x 170  
Coordinates: 37.711594 N, 45.202450 E

Bibliography:
Kroll 1994; Kleiss 1978, AMI 11: 185-186 Abb. 5 Taf. 60, 1; Pecorella & Salvini 1984: 148-149 Plan p. 150 F2, Fig. 30 1-2.

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<td>Kroll 1994; Pecorella &amp; Salvini 1984: 153-154 Plan Fig. 23 F3, Fig. 32, 1-15.</td>
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<td>UR041</td>
<td>Borashan Tepe</td>
<td>Settlement</td>
<td>300 x 150</td>
<td>37.569899 N, 45.157650 E</td>
<td>Pecorella &amp; Salvini 1984: 153-154 Plan Fig. 23 F4, Fig. 32-33, 1-27.</td>
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<td>200 x 200</td>
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<td>Kroll 1994; Pecorella &amp; Salvini 1984: 154 Fig. 23 E3, Fig. 33, 1-18.</td>
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<td>Kroll 1994; Pecorella &amp; Salvini 1984: 155 Plan Fig. 23 E3, Fig. 33, 1-7; Lippert 1978 (Antike Welt 9, 3): 49 Abb. 1.</td>
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**UR074  Djamfeslu Tepe (Jamfeslu)**  
Description: Settlement (Tepe)  
Periods: ETC FEZ-MEZ  
Dimensions (in meters): 135 x 90  
Coordinates: 37.506810 N, 45.029704 E  
**Bibliography:**  
Kroll 1994; Pecorella & Salvini 1984: 163 Plan Fig. 23 E4, Fig. 37, 1-18; Kleiss 1977, AMI 10: 79; Kleiss 1978, AMI 11: 52 Abb. 28 Taf. 1, 1.  

---  

**UR076  Qiz Qaleh**  
Description: Fort  
Periods: FEZ MEZ URZ? HMA  
Coordinates: 37.778184 N, 45.061262 E  
**Bibliography:**  
Kroll 1994; Kleiss Kleiss 1971, AMI 4: 67 Abb. 17; KUFI: 87; Pecorella /Salvini 1984: 164 Plan Fig. 23 E1, Fig. 37, 1-37.  

---  

**UR077  Zeyveh Tepe**  
Description: Settlement and Rock Cut Tomb  
Periods: FEZ EZ MA  
Dimensions (in meters): 130 x 130  
Coordinates: 37.245529 N, 44.901865 E  
**Bibliography:**  
Kroll 1994; Kleiss 1971, AMI 4: 65, Abb. 16; Pecorella & Salvini 1984: 164 Fig. 23 D7.  

---
UR078  **Djarabad Tepe**  Description: Settlement

Periods: CHL ETC FEZ MEZ SEZ

Dimensions (in meters): 80 x 55  Coordinates: 37.226446 N, 44.957423 Y

**Bibliography:**
Kroll 1994; Pecorella & Salvini 1984: 165 Plan Fig. 23 D7, Fig. 37, 1-21.

---

UR081  **Nargi Tepe**  Description: Settlement

Periods: ETC MBZ FEZ

Dimensions (in meters): 170 x 115  Coordinates: 37.296069 N, 44.930066 E

**Bibliography:**
Kroll 1994; Pecorella & Salvini 1984: 166.

---

UR085  **Bashqaleh (Sarandil)**  Description: Fort

Periods: SBZ- FEZ MEZ MA

Dimensions (in meters): Medium  Coordinates: 37.646643 N, 45.130094 E

**Bibliography:**
Kleiss 1972, AMI 5: 153, 156 Abb. 26-27 Taf. 38, 2-4; 76; 31; KUFI: 90; Pecorella & Salvini 1984: 166 Fig. 23 F3.
**UR086**  **Kordlar Tepe**  
Description: Settlement  
Periods: CHLMBZ-SBZ-FEZ  
Dimensions (in meters): 250 x 200  
Coordinates: 37.563971 N, 45.213989 E  
**Bibliography:**  
Location Method: Digital globe public data.  
Aprox: No  

**UR087**  **Ismail Agha Qaleh**  
Description: Fortress  
Periods: FEZ URZ ACH SEZ HMA  
Dimensions (in meters): 500 x 335  
Coordinates: 37.669637 N, 44.922363 E  
**Bibliography:**  
Kroll 1994; Kleiss 1976, AMI 9: 26-29 Abb. 10-13 Taf. 5-8; KUFI: 98-99 Abb. 42; Kleiss 1977, AMI 10: 64-68 Abb. 14-18; Pecorella & Salvini 1984: 167 Fig. 23 D3, 215-239 Fig. 40-55.  
Location Method: Kroll, personal communication.  
Aprox: No  

**UR097**  **Rabat Tepe**  
Description: Undetermined  
Periods: ETC EZ? URZ  
Dimensions (in meters): 170 x 155  
Coordinates: 37.713312 N, 44.687710 E  
**Bibliography:**  
Kroll 1994; Pecorella & Salvini 1984: 169 Plan Fig. 23 B2, Fig. 39, 1-9.  
Location Method: Digital globe public data.  
Aprox: No
**UR098**  **Gengacin Tepe**  
Description: Settlement  
Periods: EZ? MEZ  
Dimensions (in meters): 120 x 120  
Coordinates: 37.756485 N, 44.654797 E  

**Bibliography:**  
Kroll 1994; Pecorella & Salvini 1984: 170 Fig. 23 B2, Fig. 39, 1-13.

**Location Method:** Digital globe public data  
**Aprox:** Yes

---

**UR099**  **Hengirvan Tepe**  
Description: Settlement  
Periods: CHL FEZ  
Dimensions (in meters): 100 x 100  
Coordinates: 37.738693 N, 44.697385 E  

**Bibliography:**  

**Location Method:** Digital globe public data  
**Aprox:** No

---

**UR103**  **Kuh-i-Zambil**  
Description: Fort  
Periods: URZ FMA  
Dimensions (in meters): 160 x 70  
Coordinates: 37.742752 N, 45.235927 E  

**Bibliography:**  
Kroll 1994; Kleiss AMI 7, 1974: 100-101 Abb. 22 Taf. 23, 2; Kleiss 1975, AMI 8: 52-54 Abb. 2-4 Taf. 7, 2-4; KUFI: 88-89 Abb. 36; Pecorella & Salvini 1984 171 Fig. 23 G2

**Location Method:** Digital globe public data  
**Aprox:** No
**UR104  Kukia Tepe**  
Description: Settlement  
**Periods:** ETC MBZ-SBZ FEZ  
**Dimensions (in meters):** 125 x 175  
**Coordinates:** 37.366850 N, 45.129588 E  
**Bibliography:**  
Pecorella & Salvini 1984: 171 Fig. 23 F6; Kleiss 1976, AMI 9: 38.  
Edwards 1986 75 Fig. 3

**Location Method:** Digital globe public data  
**Approx:** Yes

---

**UR105  Farhad Zaqasi**  
Description: Fortified settlement, Rock chamber, rock niche  
**Periods:** URZ  
**Dimensions (in meters):** Unknown  
**Coordinates:** 37.311663 N, 45.114594 E  
**Bibliography:**  
Kroll 1994; Pecorella & Salvini 1984 171 Fig. 23 E6; Kleiss 1971, AMI 4: 65-66,  
Abb. 16, Taf. 9, 2-4.  

**Location Method:** Digital globe public data  
**Approx:** No

---

**UR106  Seylan**  
Description: Fort  
**Periods:** MEZ-SEZ HMA  
**Dimensions (in meters):** Small  
**Coordinates:** 37.290557 N, 45.138323 E  
**Bibliography:**  
Kroll 1994; Pecorella & Salvini 1984: 171 Fig. 23 F7; Kleiss 1977, AMI 10: 42  
Abb. 23.
Location Method: Digital globe public data.

Aprox: No
**UR107  Ain-I Rum Tepe**

Description: Settlement

Periods: FEZ

Dimensions (in meters): Small

Coordinates: 37.211218 N, 45.129539 E

**Bibliography:**


Location Method: Digital globe public data.  Aprox: Yes

**UR108  Tazabulaq Qaleh**

Description: Fort

Periods: URZ?

Dimensions (in meters): 50 x 50

Coordinates: 37.193729 N, 45.131697 E

**Bibliography:**

Kroll 1994; Kleiss 1971, AMI 4: 64, Abb. 15, Taf. 9. 1; Kleiss 1977, AMI 10: 8; Pecorella & Salvini 1984: 171 Fig. 23 F8.

Location Method: Digital globe public data.  Aprox: No

**UR109  Ain-i Rum**

Description: Rock niche with inscription of Menua

Periods: URZ

Dimensions (in meters): n/a

Coordinates: 37.182892 N, 45.133186 E

**Bibliography:**

Kroll 1994; Pecorella & Salvini 1984: 71-76. 171 Fig. 23 F8; Kleiss 1972, AMI 5: 149-152 Abb. 22-23 Taf. 37.3, 38.1.

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UR117  Pir Ali Tepe  
Description: Settlement

Periods: CHL FEZ

Dimensions (in meters): 100 x 100  
Coordinates: 37.313197 N, 45.295277 E

Bibliography:
Kroll 1994; Pecorella & Salvini 1984: 172 Fig. 23 G7; Kleiss 1978, AMI 11: 47 Abb. 21.

Location Method: Digital globe public data.  
Aprox: No

UR119  Pir Copan  
Description: Fort

Periods: FEZ

Dimensions (in meters): 80 x 50  
Coordinates: 37.302520 N, 45.246233 E

Bibliography:
Kroll 1994; Pecorella & Salvini 1984: 172 Fig. 23 G7; Kleiss 1978, AMI 11: 46 Abb. 22; Kroll ebenda 66.

Location Method: Kroll 1994; Pecorella & Salvini 19 Aprox: Yes

UR120  Kamana Qaleh  
Description: Fort and Settlement

Periods: URZ FMA?

Dimensions (in meters): 150 x 100  
Coordinates: 37.273875 N, 45.251611 E

Bibliography:
Kroll 1994; Kleiss 1978, AMI 11: 48-50 Abb. 24-26 Taf. 6, 3 - 8, 2; Pecorella & Salvini 1984: 172 Fig. 23 G7

Location Method: Digital GlobeDigital globe public d  
Aprox: No
UR121  Qalat
Description: Fort
Periods: URZ SEZ SAS HMA
Dimensions (in meters): 235 x 135
Coordinates: 37.241150 N, 45.266149 E

Bibliography:
Kroll 1994; Kleiss/Kroll 1977, AMI 10: 72-76 Abb. 24-25 Taf. 14-16; 110-114, Abb. 7; AMI 11, 41-45 Abb. 18-21; 65-66; Pecorella & Salvini 1984: 172 Fig. 23 G7.

Location Method: Digital globe public data.  Aprox: Yes

UR122  QalatSiedlung
Description: Settlement
Periods: FEZ HMA
Dimensions (in meters): Small
Coordinates: 37.250059 N, 45.265228 E

Bibliography:

Location Method: Digital globe public data.  Aprox: No

UR123  BardjilianTepe
Description: Settlement
Periods: ETC SBZ? FEZ HMA
Dimensions (in meters): Medium
Coordinates: 38.007867 N, 44.782538 E

Bibliography:

Location Method: Digital globe public data.  Aprox: No
UR124  SormanabadTepe  Description: Fortified Settlement
Periods:  FEZ PAR FMA
Dimensions (in meters):  100 x 200  Coordinates: 37.914005 N, 44.721820 E
Bibliography:
Kroll 1994; Kleiss 1971, AMI 4 65, 80 Abb. 33.

Location Method: Digital globe public data.  Aprox:  No

UR126  Kazimbashi  Description: Fort
Periods:  URZ HMA
Dimensions (in meters):  Medium  Coordinates: 38.056585 N, 45.197184 E
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Location Method: Digital globe public data.  Aprox:  No

UR130  Guschi  Description: Grave
Periods:  URZ
Dimensions (in meters):  Unknown  Coordinates: 37.992386 N, 45.039530 E
Bibliography:

Location Method: Digital globe public data.  Aprox:  Yes
**UR131 Bashlamushliq Tepe**  
Description: Settlement  
Periods: SBZ-FEZ  
Dimensions (in meters): 150 x 200  
Coordinates: 37.792601 N, 45.105996 E  
Bibliography:  
Kroll 1994  
  
Location Method: Digital globe public data.  
Aprox: No  

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**UR132 Ismaelu Tepe**  
Description: Settlement  
Periods: FEZ  
Dimensions (in meters): Small  
Coordinates: 37.676224 N, 45.087417 E  
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Location Method: Digital globe public data.  
Aprox: Yes  

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**UR136 Sheytanabad Tepe**  
Description: Settlement  
Periods: SBZ-FEZ HMA  
Dimensions (in meters): 150 x 150  
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| Description: Fort |
| Periods: FEZ-URZ |
| Dimensions (in meters): 50 x 70 |
| Coordinates: 37.153394 N, 45.134051 E |
| Bibliography: Kroll 1994; Kleiss 1979, AMI 12: 195-198, Abb. 17-20; Pecorella & Salvini 1984: 172, Fig. 23 F8 (N. 111). |
| Location Method: Digital globe public data. | Aprox: No |

<p>| <strong>NQ08</strong> Gerd-I Qalat |
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| Periods: FEZ-MEZ |
| Dimensions (in meters): Small |
| Coordinates: 37.137353 N, 45.196006 E |
| Bibliography: Kroll 1994; Pecorella &amp; Salvini 1984: 172, Fig. 23 F9 (N. 113); Kleiss 1979, AMI 12: 213-214, Abb. 42. |
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Appendix 2: Sites in Armenia

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Appendix 3: Viewsheds from Armenian Sites

Site: Geghamasar (SV01)
Elev: 2096 MASL, Visibility ratio: 23.4%

Site: Kakhakn (SV02)
Elev: 2049 MASL, Visibility ratio: 15.5%

Figures depict visible terrain (green) from each respective site (red). The size of the bounding boxes is 20 X 20 km, roughly equivalent to a 10 km radius. Neighboring sites are depicted in yellow. The color scale of each site varies depending on the values of its DEM; the scale has been optimized to best emphasize the surrounding terrain.
Site: Sotk 1 (SV03)
Elev: 2018 MASL, Visibility ratio: 20.4%

Site: Sotk 2 (SV04)
Elev: 2079 MASL, Visibility ratio: 18.1%
Site: Norabak 1 (SV05)
Elev: 2155 MASL, Visibility ratio: 12.2%

Site: Norabak 2 (SV06)
Elev: 2315 MASL, Visibility ratio: 33.6%
Site: Jaghatsadzor (SV07)
Elev: 2113 MASL, Visibility ratio: 17.8%

Site: Ayrk (SV08)
Elev: 2151 MASL, Visibility ratio: 8.4%
Site: Kol Pal (SV10)
Elev: 2017 MASL, Visibility ratio: 24.4%

Site: Tsovak 1 (SV13)
Elev: 1945 MASL, Visibility ratio: 38.4%
Site: Kari Dur (SV15)
Elev: 1943 MASL, Visibility ratio: 30.7%

Site: Karchaghyur (SV17)
Elev: 1926 MASL, Visibility ratio: 42.4%
Site: Bruti Berd (SV19)
Elev: 2073 MASL, Visibility ratio: 44.1%

Site: Tsovinar 1 (Teishebaini) (SV20)
Elev: 2065 MASL, Visibility ratio: 39.4%
Site: Tsovinar 2 (SV21)
Elev: 2044 MASL, Visibility ratio: 26.2%

Site: Yerku Jur (SV22)
Elev: 2150 MASL, Visibility ratio: 10.8%
Site: Vardenik (SV28)
Elev: 2127 MASL, Visibility ratio: 16.3%

Site: Aloyi Kogh (SV36)
Elev: 2166 MASL, Visibility ratio: 50.7%
Site: Vanki Dur 2 (SV37)
Elev: 2221 MASL, Visibility ratio: 5.4%

Site: Martuni (SV39)
Elev: 1998 MASL, Visibility ratio: 35.4%
Site: Kyurdi Kogh (SV40)
Elev: 2129 MASL, Visibility ratio: 41.4%

Site: Ishkhan Nahatak (SV42)
Elev: 1983 MASL, Visibility ratio: 24.6%
Site: Al Berd (SV45)
Elev: 2077 MASL, Visibility ratio: 9.1%

Site: Joj Kogh (1 & 2) (SV46)
Elev: 2276 MASL, Visibility ratio: 39.0%
Site: Mtnadzor (SV48)
Elev: 2260 MASL, Visibility ratio: 8.7%

Site: Heri Berd I (SV49)
Elev: 2263 MASL, Visibility ratio: 10.5%
Site: Kare Dzi (SV55)
Elev: 2330 MASL, Visibility ratio: 22.3%

Site: Nagharakan (SV57)
Elev: 2316 MASL, Visibility ratio: 9.2%
Site: Belyy Klyuch (SV60)
Elev: 2325 MASL, Visibility ratio: 13.3%

Site: Tatev (SV61)
Elev: 2416 MASL, Visibility ratio: 6.5%
Site: Berdi Dar (SV62)
Elev: 2427 MASL, Visibility ratio: 8.4%

Site: Nerkin Gtashen (SV63)
Elev: 1932 MASL, Visibility ratio: 31.3%
Site: Kra (SV64)
Elev: 1939 MASL, Visibility ratio: 38.4%

Site: Dvor (SV65)
Elev: 1926 MASL, Visibility ratio: 38.3%
Site: Negh Boghaz (SV67)
Elev: 2337 MASL, Visibility ratio: 8.7%

Site: Shoghan Aghbyur (SV68)
Elev: 2381 MASL, Visibility ratio: 16.4%
Site: Sangar (SV70)
Elev: 2198 MASL, Visibility ratio: 15.5%

Site: Berdi Dosh (SV71)
Elev: 2181 MASL, Visibility ratio: 32.2%
Site: Murad Khach (SV74)
Elev: 2059 MASL, Visibility ratio: 33.9%
Appendix 4: Viewsheds from Iranian Sites

Site: Qaleh Bozorg Arvandj (AH19)
Elev: 1488 MASL, Visibility ratio: 11.7%

Site: Tepe Reshtabad Bala (AH20)
Elev: 1572 MASL, Visibility ratio: 19.8%
Site: Qaleh Chassanaq (AH21)
Elev: 1709 MASL, Visibility ratio: 7.2%

Site: Libliuni (AH26)
Elev: 1750 MASL, Visibility ratio: 32.0%
Site: Sequindel (AH28)
Elev: 1684 MASL, Visibility ratio: 15.0%

Site: Tepe Dashkasen (AH39)
Elev: 1751 MASL, Visibility ratio: 9.2%
Site: Kighal (AH45)  
Elev: 2115 MASL, Visibility ratio: 1.2%

Site: Khoy Qiz Qaleh (KH01)  
Elev: 1097 MASL, Visibility ratio: 38.6%
Site: Aladagh Qaleh (bei Var) (KH03)
Elev: 1408 MASL, Visibility ratio: 15.4%

Site: Gavur Qaleh Khoy (KH08)
Elev: 1273 MASL, Visibility ratio: 19.7%
Site: Khoy Djiq Qaleh (KH09)
Elev: 1267 MASL, Visibility ratio: 10.8%

Site: Evoghlu Qiz Qaleh (KH17)
Elev: 1007 MASL, Visibility ratio: 35.2%
Site: Bastam (Rusai.URU.TUR) (KH21)
Elev: 1160 MASL, Visibility ratio: 1.0%

Site: Bastam (KH22)
Elev: 1145 MASL, Visibility ratio: 1.7%
Site: Uzub Tepe (KH24)
Elev: 1007 MASL, Visibility ratio: 15.7%

Site: Qara Zia Eddin Tepe (KH25)
Elev: 1094 MASL, Visibility ratio: 15.7%
Site: Allahverdikand (KH31)
Elev: 1076 MASL, Visibility ratio: 22.3%

Site: Kassyan (Chassian) (KH33)
Elev: 1137 MASL, Visibility ratio: 12.2%
Site: Ashaghy Qorul (KH35)
Elev: 1253 MASL, Visibility ratio: 8.1%

Site: Gurash (KH42)
Elev: 1663 MASL, Visibility ratio: 1.2%
Site: Zurabad North (KH45)  
Elev: 1707 MASL, Visibility ratio: 14.1%

Site: Mahabad Tepe (MB01)  
Elev: 1377 MASL, Visibility ratio: 6.4%
Site: Giavar (MB06)
Elev: 1409 MASL, Visibility ratio: 31.5%

Site: Unbekannt (MB14)
Elev: 1862 MASL, Visibility ratio: 4.6%
Site: Parpar Tepe (Baruj) (MD05)
Elev: 1181 MASL, Visibility ratio: 12.8%

Site: Livar (MD14)
Elev: 1266 MASL, Visibility ratio: 24.6%
Site: Tepe oestlich Livar (MD15)
Elev: 1258 MASL, Visibility ratio: 20.0%

Site: Cheragah-e Amir (MD19)
Elev: 1498 MASL, Visibility ratio: 19.1%
Site: Gohar Qaleh (MD21)
Elev: 1746 MASL, Visibility ratio: 19.5%

Site: Maledjin (MD22)
Elev: 1627 MASL, Visibility ratio: 8.9%
Site: Gavur Qaleh (MD26)
Elev: 701 MASL, Visibility ratio: 11.6%

Site: Sangar (MK04)
Elev: 1364 MASL, Visibility ratio: 17.4%
Site: Siah Qaleh (MK05)
Elev: 875 MASL, Visibility ratio: 13.8%

Site: Verahram (MK07)
Elev: 826 MASL, Visibility ratio: 28.9%
Site: Sarandj Qaleh (MK08)
Elev: 837 MASL, Visibility ratio: 9.6%

Site: Keshmesh I (MK09)
Elev: 1403 MASL, Visibility ratio: 16.5%
Site: Keshmesh II (MK10)
Elev: 1436 MASL, Visibility ratio: 21.9%

Site: Qizil Dagh (MK13)
Elev: 1079 MASL, Visibility ratio: 13.0%
Site: Danalu (MK15)
Elev: 1335 MASL, Visibility ratio: 12.8%

Site: Zarinkuh II (MK19)
Elev: 992 MASL, Visibility ratio: 13.1%
Site: Hadjestan Qaleh (MK22)
Elev: 1882 MASL, Visibility ratio: 22.1%

Site: Soghtileh Qaleh (MK24)
Elev: 1463 MASL, Visibility ratio: 2.9%
Site: Rent Qaleh (MK29)
Elev: 1250 MASL, Visibility ratio: 12.8%

Site: Khezerlu Qal’eh (MK31)
Elev: 1967 MASL, Visibility ratio: 24.8%
Site: Turki Tepe (MK32)
Elev: 2015 MASL, Visibility ratio: 21.4%

Site: Qiz Chakhlu I (Kiz Chakhlu) (MK33)
Elev: 2149 MASL, Visibility ratio: 2.8%
Site: Kharab Aghol (MK50)
Elev: 2086 MASL, Visibility ratio: 12.4%

Site: Oglu Qaleh (MK53)
Elev: 1054 MASL, Visibility ratio: 16.3%
Site: Oglu Qaleh Seidlung (MK53A)
Elev: 1054 MASL, Visibility ratio: 12.0%

Site: Ducgagi (MK57)
Elev: 1249 MASL, Visibility ratio: 16.4%
Site: Gol Tepe (MR10)
Elev: 1331 MASL, Visibility ratio: 18.7%

Site: Unbekannt (Adjab Shir) (MR11)
Elev: 1301 MASL, Visibility ratio: 16.9%
Site: Tashtepe (MY02)
Elev: 1281 MASL, Visibility ratio: 8.4%

Site: Aslan Qaleh (MY04)
Elev: 1360 MASL, Visibility ratio: 52.1%
Site: Qiz Qal’eh (MY05)
Elev: 1336 MASL, Visibility ratio: 25.1%

Site: Tazekand Qaleh (MY06)
Elev: 1308 MASL, Visibility ratio: 29.8%
Site: Shah Tepe (MY07)
Elev: 1302 MASL, Visibility ratio: 20.2%

Site: Girdahrah Qal’eh (MY14)
Elev: 1385 MASL, Visibility ratio: 29.1%
Site: Beg Ovase (MY18)
Elev: 1431 MASL, Visibility ratio: 7.9%

Site: Haidar Khan (Qalatchi) (MY19)
Elev: 1512 MASL, Visibility ratio: 21.7%
Site: Cheshme Ahmad Suleiman (MY36)
Elev: 1786 MASL, Visibility ratio: 6.4%

Site: Zendan-I Suleiman (MY38)
Elev: 2253 MASL, Visibility ratio: 25.8%
Site: Girdagun (NQ03)
Elev: 1758 MASL, Visibility ratio: 11.4%

Site: Dosoq Qaleh (NQ04)
Elev: 1830 MASL, Visibility ratio: 12.7%
Site: Gerd-I Qalat (NQ08)
Elev: 2054 MASL, Visibility ratio: 10.2%

Site: Asember (NQ10)
Elev: 1484 MASL, Visibility ratio: 30.1%
Site: Nalivan (NQ11)
Elev: 1460 MASL, Visibility ratio: 20.4%

Site: Gerd-i Siran (NQ13)
Elev: 1517 MASL, Visibility ratio: 26.7%
Site: Gerd-I Qisal (NQ14)
Elev: 1515 MASL, Visibility ratio: 8.2%

Site: Hasanabad Tepe (NQ15)
Elev: 1418 MASL, Visibility ratio: 14.9%
Site: Dinkha Tepe (NQ18)
Elev: 1393 MASL, Visibility ratio: 28.0%

Site: Nalus 1 (Badr Ed-Din) (NQ22)
Elev: 1429 MASL, Visibility ratio: 21.5%
Site: Sodja Tepe (NQ24)
Elev: 1388 MASL, Visibility ratio: 23.1%

Site: Qalatgah (NQ28A)
Elev: 1564 MASL, Visibility ratio: 27.3%
Site: Qalatgah Gipfelkastel (NQ28B)
Elev: 1849 MASL, Visibility ratio: 38.2%

Site: Qalatgah II (NQ29)
Elev: 1633 MASL, Visibility ratio: 26.8%
Site: Hasanlu Tepe (NQ44)
Elev: 1310 MASL, Visibility ratio: 28.7%

Site: Agrab Tepe (NQ49)
Elev: 1291 MASL, Visibility ratio: 9.3%
Site: Yediar (NQ57)
Elev: 1399 MASL, Visibility ratio: 33.2%

Site: Kuh-I Chorblach (NQ59)
Elev: 1302 MASL, Visibility ratio: 13.1%
Site: Unbekannt (bei Djaldyan) (PR22)
Elev: 1515 MASL, Visibility ratio: 11.3%

Site: Gerd-I Surah (PR25)
Elev: 1560 MASL, Visibility ratio: 13.8%
Site: Rabat Tepe (PR31)
Elev: 1138 MASL, Visibility ratio: 19.3%

Site: Razliq (SB06)
Elev: 1980 MASL, Visibility ratio: 2.1%
Site: Nashteban (SB11)
Elev: 2047 MASL, Visibility ratio: 4.8%

Site: Haftavan Tepe (SL01)
Elev: 1374 MASL, Visibility ratio: 29.3%
Site: Pir Chavush (SL04)
Elev: 1477 MASL, Visibility ratio: 37.4%

Site: Vaziri Qaleh (SL07)
Elev: 1420 MASL, Visibility ratio: 14.4%
Site: Ahudarah Qaleh (SL09)
Elev: 1599 MASL, Visibility ratio: 9.9%

Site: Garny Yaruk (Karniarouk) (SL12)
Elev: 1756 MASL, Visibility ratio: 34.4%
Site: Chariq (Cariq, Shariq) (SL14)
Elev: 1569 MASL, Visibility ratio: 4.1%

Site: Kafir Qaleh (SL15)
Elev: 1504 MASL, Visibility ratio: 1.8%
Site: Kafir Qaleh (II) (SL16)
Elev: 1545 MASL, Visibility ratio: 10.9%

Site: Kafir Qaleh (SL17)
Elev: 1514 MASL, Visibility ratio: 6.7%
Site: Bilqis Qaleh (SL18)
Elev: 1536 MASL, Visibility ratio: 9.7%

Site: Yukari Dagh Qal’eh (TA22)
Elev: 1913 MASL, Visibility ratio: 14.1%
Site: Balu Tepe 1 (UR001)
Elev: 1370 MASL, Visibility ratio: 23.6%

Site: Baladjuk Tepe (UR007)
Elev: 1441 MASL, Visibility ratio: 12.3%
Site: Nazlu Tepe 1 (UR011)
Elev: 1364 MASL, Visibility ratio: 12.8%

Site: Gidjilar Tepe (UR016)
Elev: 1311 MASL, Visibility ratio: 20.8%
Site: Azravalish (UR024)
Elev: 1322 MASL, Visibility ratio: 4.2%

Site: Sharbat (UR028)
Elev: 1286 MASL, Visibility ratio: 4.4%
Site: Kelisa Tepe (UR029)
Elev: 1280 MASL, Visibility ratio: 4.2%

Site: Alikhan Tepe (UR030)
Elev: 1283 MASL, Visibility ratio: 3.5%
Site: Kocebash Tepe II (UR035)
Elev: 1347 MASL, Visibility ratio: 8.4%

Site: Aghil 1 (UR039)
Elev: 1346 MASL, Visibility ratio: 48.6%
Site: Djarchalu Tepe (UR040)
Elev: 1357 MASL, Visibility ratio: 20.2%

Site: Shurakand Tepe (UR043)
Elev: 1304 MASL, Visibility ratio: 5.0%
Site: Dailaq Tepe (UR045)
Elev: 1302 MASL, Visibility ratio: 9.9%

Site: Sari Tepe (Saiedlu) (UR046)
Elev: 1299 MASL, Visibility ratio: 12.6%
Site: Geoy Tepe (UR049)
Elev: 1324 MASL, Visibility ratio: 19.9%

Site: Dizadjitake Tepe (UR051)
Elev: 1323 MASL, Visibility ratio: 34.0%
Site: Baranduz (UR055)
Elev: 1343 MASL, Visibility ratio: 16.0%

Site: Ozan (UR058)
Elev: 1318 MASL, Visibility ratio: 14.3%
Site: Qalehdjeg Tepe (UR061)
Elev: 1303 MASL, Visibility ratio: 10.3%

Site: Maki 1 Tepe (UR062)
Elev: 1305 MASL, Visibility ratio: 15.3%
Site: Turkman (UR065)  
Elev: 1298 MASL, Visibility ratio: 23.8%

Site: Qara Tepe (UR069)  
Elev: 1271 MASL, Visibility ratio: 0.1%
Site: Talebbad Tepe (UR070)
Elev: 1287 MASL, Visibility ratio: 19.3%

Site: Djamfeslu Tepe (Jamfeslu) (UR074)
Elev: 1409 MASL, Visibility ratio: 8.7%
Site: Qiz Qaleh (UR076)
Elev: 1414 MASL, Visibility ratio: 46.4%

Site: Zeyveh Tepe (UR077)
Elev: 1522 MASL, Visibility ratio: 44.1%
Site: Nargi Tepe (UR081)
Elev: 1463 MASL, Visibility ratio: 14.4%

Site: Bashqaleh (Sarandil) (UR085)
Elev: 1384 MASL, Visibility ratio: 52.4%
Site: Kordlar Tepe (UR086)
Elev: 1302 MASL, Visibility ratio: 12.1%

Site: Ismail Agha Qaleh (UR087)
Elev: 1427 MASL, Visibility ratio: 7.5%
Site: Rabat Tepe (UR097)
Elev: 1589 MASL, Visibility ratio: 28.0%

Site: Hengirvan Tepe (UR099)
Elev: 1527 MASL, Visibility ratio: 12.1%
Site: Kuh-i Zambil (UR103)
Elev: 1317 MASL, Visibility ratio: 40.0%

Site: Farhad Zaqasi (UR105)
Elev: 1509 MASL, Visibility ratio: 5.4%
Site: Seylan (UR106)
Elev: 1511 MASL, Visibility ratio: 2.6%

Site: Tazabulaq Qaleh (UR108)
Elev: 1765 MASL, Visibility ratio: 10.1%
Site: Ain-i Rum (UR109)
Elev: 1712 MASL, Visibility ratio: 0.9%

Site: Ain-i Rum I (UR110)
Elev: 1718 MASL, Visibility ratio: 3.9%
Site: Ain-I Rum II (UR111)
Elev: 1739 MASL, Visibility ratio: 5.0%

Site: Ain-I Rum III (UR112)
Elev: 1683 MASL, Visibility ratio: 6.3%
Site: Rashgund (UR113)
Elev: 1654 MASL, Visibility ratio: 7.4%

Site: Rashgund Qaleh (UR114)
Elev: 1644 MASL, Visibility ratio: 7.1%
Site: Lumbad Qaleh (UR115)
Elev: 1446 MASL, Visibility ratio: 26.5%

Site: Pir Ali Tepe (UR117)
Elev: 1317 MASL, Visibility ratio: 33.8%
Site: Kamana Qaleh (UR120)
Elev: 1601 MASL, Visibility ratio: 20.2%

Site: Qalat (UR121)
Elev: 1635 MASL, Visibility ratio: 35.5%
Site: Qalat Siedlung (UR122)
Elev: 1509 MASL, Visibility ratio: 14.1%

Site: Bardjilian Tepe (UR123)
Elev: 1831 MASL, Visibility ratio: 5.6%
Site: Sormanabad Tepe (UR124)
Elev: 1811 MASL, Visibility ratio: 15.3%

Site: Kazimbashi (UR126)
Elev: 1436 MASL, Visibility ratio: 58.8%
Site: Bashlamushliq Tepe (UR131)
Elev: 1285 MASL, Visibility ratio: 9.0%

Site: Sheytanabad Tepe (UR136)
Elev: 1359 MASL, Visibility ratio: 18.2%
Tiffany Earley-Spadoni
Curriculum Vitae

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Education

2000  B.A. *Magna cum Laude* in Comparative Literature with Honors Program designation, University of Georgia, Athens, GA

2006-2008  Graduate-level coursework in Archaeology and Ancient History

2008  Georgia State University, Atlanta, GA

2011  M.A. in Near Eastern Archaeology, Johns Hopkins University, Baltimore, MD

2015  Ph.D. in Near Eastern Archaeology, Johns Hopkins University, Baltimore, MD

Minor fields: Classical Archaeology and Akkadian

Peer-Reviewed Publications


Conference Papers


Employment and Academic Appointments

2013-2015 University of Lausanne, Associated Research Scholar, Switzerland
2007-2008 Georgia State University, Graduate Research Assistant, Atlanta, GA
2004-2008 Georgia Institute of Technology, Program Manager, Atlanta, GA

Honors and Awards

2015 P.E. MacAllister Archaeological Excavation Grant
2015 ASOR Annual Meeting Travel Grant
2014 Graduate Representative Organization Travel Grant
2012 Cornelia Harcum Fellowship in Classical Archaeology
2012 Diane Schaefer Research Award
2012 Foundation for Biblical Archaeology Scholarship
2009 Hodson Fellowship in the Humanities
2008 National Science Foundation, GRFP, Honorable Mention
2007 Joseph O. Baylen Fellowship for Graduate Studies
1999 The University System of Georgia Board of Regents Scholarship
1996 The University of Georgia Foundation Fellowship
1996 Robert C. Byrd Honors Scholarship, Department of Education
1996 Valedictorian, Northwest Whitfield High School
Teaching Experience

2013  Instructor, L’Archéologie du Paysage, University of Lausanne
2008-2011  Teaching Assistant, Introduction to Archaeology, Johns Hopkins University
2008  Instructor, Applied Laboratory Methods in Archaeology, Kennesaw State University
2007-2008  Teaching Assistant, Introduction to Western Civilization, Georgia State University, Atlanta, GA
2003-2004  Instructor, SAT Preparation Program, Fulton County Schools
2002-2005  Instructor, SAT and GRE courses, Kaplan Test Prep
2001-2003  Instructor, English for Medical Professions/TOEFL, Kaplan Test Prep
1998-2000  Tutor, Department of Italian, University of Georgia

Field Work

2015  Area Supervisor and Archaeobotanist, Tsovinar Excavation Project, Sevan, Armenia (CNR-Rome and the Erebuni Museum)
2014  Site Supervisor and Archaeobotanist, Kurd Qaburstan, Kurdistan, Iraq (The Johns Hopkins University)
2013  Survey Supervisor, Crotone Archaeological Project, Calabria, Italy (University of Geneva)
2012  Archaeobotany Intern, Museum of Archaeology and Anthropology, (University of Pennsylvania)
2012  Site Supervisor, Zincirli Excavation Project, Gaziantep Province, Turkey (University of Chicago)
2008-2012  Archaeobotanist and Site Supervisor, Naxçıvan Archaeological Project, Azerbaijan (The University of Pennsylvania)
2007  Archaeological Field School, Valcamonica, Italy (Cooperativa Archeologica Le Orme dell’Uomo)