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Landscapes Of Power In The South Caucasus (1500-600 Bce): Gis And Phenomenological Approaches

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Abstract
This research focuses on the relationship between natural landscapes and the built environment in the Urartian Empire, which controlled parts of the South Caucasus, northwestern Iran and eastern Turkey from 800-600 BCE. In particular, this dissertation uses a combination of landscape phenomenology, a qualitative method, and Geographical Information Systems (GIS), a quantitative method, to study landscapes before and during the rise of Urartu. These analyses found that the Urartian Empire founded or reused sites that had a higher degree of visual and physical accessibility compared to what was typical for earlier cultures, suggesting a desire for greater engagement with subject populations. These differences can be observed both subjectively through in-person experiences at the site, and through GIS analysis of Viewsheds and Least Cost Paths. Urartian leaders faced the challenge of controlling a population of largely mobile pastoralists in a mountainous landscape. One way they could have done this would have been by bringing sites physically closer to these populations, and by making them more visually prominent and impressive. The results of this dissertation support previous research on the role of architecture, site location, and natural features in the construction of an Urartian imperial ideology that was based on bombastic displays of power. They also demonstrate the utility of combining qualitative and quantitative approaches for a more complete understanding of landscapes.

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ABSTRACT

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This research focuses on the relationship between natural landscapes and the built environment in the Urartian Empire, which controlled parts of the South Caucasus, northwestern Iran and eastern Turkey from 800-600 BCE. In particular, this dissertation uses a combination of landscape phenomenology, a qualitative method, and Geographical Information Systems (GIS), a quantitative method, to study landscapes before and during the rise of Urartu. These analyses found that the Urartian Empire founded or reused sites that had a higher degree of visual and physical accessibility compared to what was typical for earlier cultures, suggesting a desire for greater engagement with subject populations. These differences can be observed both subjectively through in-person experiences at the site, and through GIS analysis of Viewsheds and Least Cost Paths. Urartian leaders faced the challenge of controlling a population of largely mobile pastoralists in a mountainous landscape. One way they could have done this would have been by bringing sites physically closer to these populations, and by making them more visually prominent and impressive. The results of this dissertation support previous research on the role of architecture, site location, and natural features in the construction of an Urartian imperial ideology that was based on bombastic displays of power. They also demonstrate the utility of combining qualitative and quantitative approaches for a more complete understanding of landscapes.

TABLE OF CONTENTS

ACKNOWLEDGEMENTS..ii

ABSTRACT..iv

LIST OF TABLES…………………………………………………………………...x

LIST OF ILLUSTRATIONS………………………………………………………xiii

CHAPTER 1: INTRODUCTION…………………………………………………....1

Research Question……………………………………………………………....1

Definition of Terms……………………………………………………………....3

Empires and Their Subjects……………………………………………….....3

Landscape Monuments as Markers of Empire…………………………….....8

Archaeology in the South Caucasus…………………………………………16

Research Objectives……………………………………………………………..19

Dissertation Outline……………………………………………………………..22

CHAPTER 2: LANDSCAPE ARCHAEOLOGY: A THEORY OF PLACE, MEANING AND MEMORY…………………………………………………………………....24

Landscape Archaeology: Overview of the Field…………………………….....24

Power, Memory, Resistance and Negotiation: The Social and Political Use and Reuse of Landscapes…………………………………………………………….......30

Phenomenology: A Bodily and Sensory Approach to the Study of Meaningful Places……………………………………………………………………………..40

Conclusion…………………………………………………………………….......54

CHAPTER 3: GIS: A QUANTITATIVE APPROACH TO THE ANALYSIS OF LANDSCAPES………………………………………………………………........57

GIS: Overview of the Field………………………………………………………..57

GIS and Landscape Archaeology………………………………………………......60

Visibility Analysis and Viewshed……………………………………………..65

Least Cost Paths………………………………………………………….....73

Conclusion……………………………………………………………………...82

CHAPTER 4: SOUTH CAUCASUS AND HIGHLAND ANATOLIA
IN THE BRONZE AND IRON AGES………………………………………………..87

Geology and Environment of the South Caucasus and Highland Anatolia……….....87

The Role of Pastoralism in South Caucasian Society and Economy………………...89

Archaeological and Ethnographic Evidence for Pastoralism………………….....90

Pastoralism in the South Caucasus and Highland Anatolia………………….......93

The History and Politics of Archaeology in Highland Anatolia and the South Caucasus……………………………………………………………………….....96

Historical Trajectory of the South Caucasus……………………………………..103

Origins of Complexity: The Bronze Age, 3500-2500 BCE………………….....103

The Growth of States: The Early Iron Age (1150-850 BCE) ………………….110

The Rise of Empire: The Urartian Period (850-643 BCE) ……………………111

Textual Evidence for the Rise of Urartu……………………………………….....121

The Archaeological Evidence: Fortresses, Rock Reliefs and Kurgans……………..123

A Note on Terminology………………………………………………………...123

Fortresses……………………………………………………………………124

Kurgan Burials………………………………………………………………130

Rock Reliefs……………………………………………………………….....135

Conclusions……………………………………………………………………..142

CHAPTER 5: QUANTITATIVE AND QUALITATIVE ANALYSIS OF THE LAKE VAN REGION……………………………………………………………………….146

Overview of the Van Region………………………………………………...................146

Geography and Economy…………………………………………………….....146

History of the Region's Incorporation into Urartu…………………………......148

History of Archaeology in the Region……………………………………….....149

Qualitative Analysis of The Sites……………………………………………………..150

Summary of Phenomenological Results……………………………………......216

Fortresses, Kurgans and Inscriptions……………………………………….....223

Quantitative Analysis of the Sites…………………………………………………….226

Visibility analysis……………………………………………………………….227

Travel Time and Least Cost Paths Analysis……………………………………230

Fortresses, Kurgans and Inscriptions……………………………………….....232.

Combining GIS and Phenomenological Analyses……………………………………237

CHAPTER 6: QUALITATIVE AND QUANTITATIVE ANALYSIS OF THE MOUNT ARAGATS REGION ……………………………………………...240

Overview of the Aragats Region……………………………………………………....240

Geography and Economy……………………………………………………….240

History of the Region's Incorporation into Urartu……………………………..241

History of Archaeology in the Region………………………………………….242

Qualitative Analysis of The Sites……………………………………………………..243

Summary of Phenomenological Results………………………………………..320

Fortresses, Kurgans and Inscriptions…………………………………………...326

Urartian vs. Pre-Urartian Sites………………………………………………….331

Quantitative Analysis of the Sites……………………………………………………….334

Visibility analysis……………………………………………………………….335

Travel Time and Least Cost Paths Analysis……………………………………338

Fortresses, Kurgans and Inscriptions…………………………………………...338

Urartian vs. Pre-Urartian Sites…………………………………………………343

Additional Analysis…………………………………………………………….347

Combining GIS and Phenomenological Analyses…………………………………358

CHAPTER 7: QUALITATIVE AND QUANTITATIVE ANALYSIS
OF THE LAKE SEVAN REGION…………………………………………………,360

Overview of the Sevan Region…………………………………………………...360

Geography and Economy……………………………………………………….360

History of the Region's Incorporation into Urartu……………………………..360

History of Archaeology in the Region………………………………………….361

Qualitative Analysis of The Sites………………………………………………..361

Summary of Phenomenological Results……………………………….....416

Fortresses, Kurgans and Inscriptions…………………………………………...419

Urartian vs. Pre-Urartian Sites…………………………………………………421

Quantitative Analysis of the Sites………………………………………………423

Visibility analysis………………………………………………………………425

Travel Time and Least Cost Paths Analysis……………………………………428

Fortresses, Kurgans and Inscriptions……………………………………….....430

Urartian vs. Pre-Urartian Sites…………………………………………………433

Additional Analysis…………………………………………………………….433

Combining GIS and Phenomenological Analyses……………………………………445

CHAPTER 8: QUALITATIVE AND QUANTITATIVE COMPARISONS ACROSS THE THREE REGIONS...447

Phenomenological Comparisons…………………………………………………448

GIS Comparisons………………………………………………………………...456

Visibility Analysis…………………………………………………………...456

Travel Time and Least Cost Paths Analysis……………………………………464

Combining Phenomenology and GIS……………………………………………471

CHAPTER 9: CONCLUSION: COMBINING PHENOMENOLOGY AND GIS FOR AN UNDERSTANDING OF THE URARTIAN IMPERIAL PROJECT……………..476

The Urartian Imperial Project……………………………………………………476

The Utility of Combining Phenomenology and GIS………………………………483

APPENDIX 1: PHENOMENOLOGICAL DESCRIPTIONS AND RANKINGS OF SITES IN THE VAN REGION…………………………………………………...486

APPENDIX 2: PHOTOS OF SITES IN VAN REGION………………………………513

APPENDIX 3: GIS ANALYSIS OF SITES IN THE VAN REGION…………………527

APPENDIX 4: PHENOMENOLOGICAL DESCRIPTIONS AND RANKINGS OF SITES IN THE ARAGATS REGION…………………………………………………541

APPENDIX 5: PHOTOS OF SITES IN ARAGATS REGION………………………..566

APPENDIX 6: GIS ANALYSIS OF SITES IN THE ARAGATS REGION…………..584

APPENDIX 7: PHENOMENOLOGICAL DESCRIPTIONS AND RANKINGS OF SITES IN THE SEVAN REGION……………………………………………………..601

APPENDIX 8: PHOTOS OF SITES IN SEVAN REGION……………………………623

APPENDIX 9: GIS ANALYSIS OF SITES IN THE SEVAN REGION……………...636

REFERENCES CITED…………………………………………………………………649

LIST OF TABLES

Table 4-1: Chronology of the Bronze and Iron Ages in the South Caucasus and Highland Anatolia....104

Table 5-1: Description of phenomenological criteria used for the three regions of study....153

Table 5-2: Phenomenological characteristics of Van sites....217

Table 5-3: Phenomenological characteristics of sites in the Van region broken down by type of site....225

Table 5-4: GIS analysis of visibility of Van sites....228

Table 5-5: GIS analysis of physical accessibility of Van sites....233

Table 5-6: GIS analysis of visibility of Van sites broken down by site type....234.

Table 5-7: GIS analysis of physical accessibility of Van sites broken down by site type....235

Table 6-1: Phenomenological characteristics of sites in the Aragats region....325

Table 6-2: Phenomenological characteristics of sites in the Aragats region by type of site....329

Table 6-3: Phenomenological characteristics of sites in the Aragats region by time period....332

Table 6-4: GIS analysis of visibility of sites in the Aragats region....336

Table 6-5: GIS physical accessibility analysis of sites in the Aragats region....339

Table 6-6: GIS analysis of visibility of sites in the Aragats region, broken down by type of site....341

Table 6-7: GIS analysis of physical accessibility of sites in the Aragats region, broken down by type of site....342

Table 6-8: GIS analysis of visibility of sites in the Aragats region, broken down by time period....344

Table 6-9: GIS analysis of physical accessibility of sites in the Aragats region, broken down by time period....345

Table 6-10: GIS analysis of visibility of additional sites in the Aragats region....348

Table 6-11: GIS analysis of physical accessibility of additional sites in the Aragats region....351

Table 6-12: GIS analysis of visibility of additional sites in the Aragats region, broken down by time period....352

Table 6-13: GIS analysis of visibility of additional sites in the Aragats region, broken down by type of site....353

Table 6-14: GIS analysis of physical accessibility of additional sites in the Aragats region, broken down by time period....355

Table 6-15: GIS analysis of physical accessibility of additional sites in the Aragats region, broken down by type of site....356

Table 7-1: Phenomenological rankings for sites the Sevan region....364

Table 7-2: Results of phenomenology analysis for the Sevan region broken down by site type....420

Table 7-3: Results of phenomenology analysis for the Sevan region broken down by time period....424

Table 7-4: Results of GIS visibility analysis for the Sevan region....425

Table 7-5 Results of GIS physical accessibility analysis for the Sevan region....429

Table 7-6: Results of GIS visibility analysis for the Sevan region broken down by type of site....431

Table 7-7: Results of GIS accessibility analysis for the Sevan region broken down by type of site....430

Table 7-8: Results of GIS least cost paths analysis for the Sevan region broken down by time period....434

Table 7-9: Results of GIS visibility analysis for the Sevan region broke down by time period....435

Table 7-10: GIS analysis of visibility of additional sites in the Sevan region....437

Table 7-11: GIS analysis of physical accessibility of additional sites in the Sevan region....438

Table 7-12: GIS analysis of visibility of additional sites in the Sevan region, broken down by time period....441

Table 7-13: GIS analysis of visibility of additional sites in the Sevan region, broken down by type of site....442

Table 7-14: GIS analysis of physical accessibility of additional sites in the Sevan region, broken down by type of site....443

Table 7-15: GIS analysis of physical accessibility of additional sites in the Sevan region, broken down by time period....444

Table 8-1: Comparison of phenomenological rankings for sites in the Van, Aragats and Sevan Regions....445

Table 8-2: Comparison of phenomenological rankings for sites in the Van, Aragats and Sevan Regions, broken down by time period....451

Table 8-3: Comparison of GIS visibility analysis for the Van, Aragats and Sevan regions....457

Table 8-4: Comparison of results of GIS visibility analysis for the Van, Aragats and Sevan regions, broken down by time period....461

Table 8-5: Comparison of results of GIS physical accessibility analysis for the Van, Aragats and Sevan regions....465

Table 8-6: Comparison of results of GIS physical accessibility analysis for the Van, Aragats and Sevan regions, broken down by time period....468

LIST OF ILLUSTRATIONS

Figure 4-1: Extent of the Urartian Empire...112

Figure 5-1: Location of the sites surveyed in the Van Region......................................151

Figure 5-2: Plan of Upper and Lower Anzaf 155

Figure 5-3: Satellite image of Lower Anzaf 156

Figure 5-4: Satellite image of Lower Anzaf showing architecture................................157

Figure 5-5: Satellite image of Upper Anzaf 158

Figure 5-6: Satellite image of Upper Anzaf showing architecture................................159

Figure 5-7: Satellite image of Upper and Lower Anzaf and surrounding landscape...160.

Figure 5-8: Topographical plan of Ayanis Upper Town...163

Figure 5-9: Domestic architecture at Ayanis Lower Town...164

Figure 5-10: Satellite image of Ayanis Upper Town and Lower Town........................165

Figure 5-11: Satellite image of Ayanis Upper Town showing architecture...................166

Figure 5-12: Satellite image of Ayanis Lower Town showing architecture...................167

Figure 5-13: Satellite image of Ayanis Upper Town and Lower Town and surrounding landscape...168

Figure 5-14: Plan of Cavuştepe...171

Figure 5-15: Satellite image of Cavustepe...172

Figure 5-16: Satellite image of Cavustepe and surrounding landscape..........................173

Figure 5-17: Satellite image of Dogubeyazit...175

Figure 5-18: Satellite image of Dogubeyazit and surrounding landscape......................176

Figure 5-19: Satellite image of Hosap...179

Figure 5-20: Satellite image of Hosap showing architecture..180

Figure 5-21: Satellite image of Hosap and surrounding landscape................................181

Figure 5-22: Satellite image of Karagunduz...183

Figure 5-23: Satellite image of Karagunduz showing location of the graves.................184

Figure 5-24: Satellite image of Karagunduz and surrounding landscape........................185

Figure 5-25: Plan of Kef Kalesi...187

Figure 5-26: Satellite image of Kef Kalesi...188

Figure 5-27: Satellite image of Kef Kalesi showing architecture...................................189

Figure 5-28: Satellite image of Kef Kalesi and surrounding landscape..........................190

Figure 5-29: Satellite image of Meherkapisi...193

Figure 5-30: Satellite image of Meherkapisi showing location of the inscription...........194

Figure 5-31: Satellite image of Meherkapisi and surrounding landscape.......................195.

Figure 5-32: Satellite image of the Semiramis inscription 197

Figure 5-33: Satellite image of the Semiramis inscription showing the location of the inscription...198

Figure 5-34: Satellite image of the Semiramis inscription and surrounding landscape..199

Figure 5-35: Plan of Van Kalesi showing the location of rock-cut features....................202

Figure 5-36: Satellite image of Van Kalesi..203

Figure 5-37: Satellite image of Van Kalesi showing the entire outcropping..................204

Figure 5-38: Satellite image of the western portion of Van Kalesi................................205

Figure 5-39: Satellite image of the central portion of Van Kalesi.................................206

Figure 5-40: Satellite image of the eastern portion of Van Kalesi.................................207

Figure 5-41: Satellite image of Van Kalesi and surrounding landscape.........................208

Figure 5-42: Plan of Yonçatepe....212

Figure: 5-43 Satellite image of Yoncatepe....213

Figure 5-44: Satellite image of Yoncatepe showing architecture....214

Figure 5-45: Satellite image of Yoncatepe and surrounding landscape....215

Figure 5-46: Cumulative viewshed of sites in the Van region....231

Figure 6-1: Map of sites surveyed in the Aragats region....244

Figure 6-2: Satellite image of Agarak....246

Figure 6-3: Satellite image of Agarak showing architecture....247

Figure 6-4: Satellite image of Agarak and surrounding landscape....248

Figure 6-5: Topographical plan of Aramus fortress....251

Figure 6-6: Satellite image of Aramus....252

Figure 6-7: Satellite image of Aramus showing architecture....253

Figure 6-8: Satellite image of Aramus and surrounding landscape....254

Figure 6-9: Topographical plan of Argishtihinili....256

Figure 6-10: Site plan of western portion of Argishtihinili....257

Figure 6-11: Satellite image of Argishtihinili....258

Figure 6-12: Satellite image of Argishtihinili showing architecture....259

Figure 6-13: Satellite image of Argishtihinili and surrounding landscape....260

Figure 6-14: Site plan of Dovri....262

Figure 6-15: Satellite image of Dovri....263

Figure 6-16: Satellite image of Dovri showing architecture....264

Figure 6-17: Satellite image of Dovri and surrounding landscape....265

Figure 6-18: Site plan of Erebuni....267

Figure 6-19: Architecture at Erebuni..268

Figure 6-20: Satellite image of Erebuni...269

Figure 6-21: Satellite image of Erebuni showing architecture.......................................270

Figure 6-22: Satellite image of Erebuni and surrounding landscape..............................271

Figure 6-23: Satellite image of Gazanots 1...273

Figure 6-24: Satellite image of Gazanots 1 showing architecture..................................274

Figure 6-25: Satellite image of Gazanots 1 and surrounding landscape..........................275

Figure 6-26: Satellite image of Gazanots 2...277

Figure 6-27: Satellite image of Gazanots 2...278

Figure 6-28: Satellite image of Gazanots 2 and surrounding landscape..........................279

Figure 6-29: Site plan of Gegharot Fortress...281

Figure 6-30: Satellite image of Gegharot Fortress..282

Figure 6-31: Satellite image of Gegharot Fortress showing architecture........................283

Figure 6-32: Satellite image of the Gegharot kurgans..284

Figure 6-33: Satellite image of the Gegharot kurgans showing the kurgans..................285

Figure 6-34: Satellite image of Gegharot fortress and kurgans and surrounding landscape..286

Figure 6-35: Site plan of Hnaberd Fortress...289

Figure 6-36: Satellite image of Hnaberd...290

Figure 6-37: Satellite image of Hnaberd showing architecture......................................291

Figure 6-38: Satellite image Hnaberd and surrounding landscape.................................292

Figure 6-39: Site plan of Karmir Blur...294

Figure 6-40: Satellite image of Karmir Blur...295

Figure 6-41: Satellite image of Karmir Blur showing architecture................................296

Figure 6-42: Satellite image of Karmir Blur and surrounding landscape........................297

Figure 6-43: Satellite image of Khojabagher..299

Figure 6-44: Satellite image of Khojabagher showing the location of the kurgans.........300

Figure 6-45: Satellite image of Khojabagher and surrounding landscape.......................301

Figure 6-46: Satellite image of Kuchak 1...303

Figure 6-47: Satellite image of Kuchak 1 and surrounding landscape...........................304

Figure 6-48: Satellite image of Kuchak 2...306

Figure 6-49: Satellite image of Kuchak 2 showing architecture.....................................307

Figure 6-50: Satellite image of Kuchak 2 and surrounding landscape...........................308.

Figure 6-51: Site plan of Metsamor...311

Figure 6-52: Satellite image of Metsmaor...312

Figure 6-53: Satellite image of Metsamor showing architecture....................................313

Figure 6-54: Satellite image of Metsamor and surrounding landscape...........................314

Figure 6-55: Site plan of Oshakan...316

Figure 6-56: Satellite image of Oshakan...317

Figure 6-57: Satellite image of Oshakan showing architecture......................................318

Figure 6-58: Satellite image of Oshakan and surrounding landscape.............................319

Figure 6-59: Site plan of Tsaghkahovit Fortress..321

Figure 6-60: Satellite image of Tsaghkahovit..322.

Figure 6-61: Satellite image of Tsaghkahovit showing architecture..............................323

Figure 6-62: Satellite image of Tsaghkahovit and surrounding landscape.....................324.

Figure 6-63: Cumulative viewshed for sites in the Aragats region................................336

Figure 6-64: Cumulative viewshed analysis of additional sites in the Aragats region....350

Figure 7-1: Map of sites surveyed in the Sevan region..363

Figure 7-2: Site plan of Joj Kogh 1..366

Figure 7-3: Satellite image of Joj Kogh 1..367.

Figure 7-4: Site plan of Joj Kogh 2..369

Figure 7-5: Satellite image of Joj Kogh 2...370

Figure 7-6: Satellite image of Joj Kogh 1 and 2 showing architecture............................371

Figure 7-7: Site plan of Kra 373

Figure 7-8: Satellite image of Kra..374

Figure 7-9: Satellite image of Kra showing architecture 375

Figure 7-10: Satellite image of Kra and surrounding landscape.......................................376

Figure 7-11: Site plan of Kyurdi Kurgh...378

Figure 7-12: Satellite image of Kyurdi Kurgh..379.

Figure 7-13: Satellite image of Kyurdi Kurgh showing architecture................................380

Figure 7-14: Site plan of Martuni...382

Figure 7-15: Satellite image of Martuni...383

Figure 7-16: Satellite image of Martuni showing architecture...384

Figure 7-17: Satellite image of Martuni and surrounding landscape...............................385

Figure 7-18: Site plan of Mtnadzor..387

Figure 7-19: Satellite image of Mtnadzor...388

Figure 7-20: Satellite image of Mtnadzor showing architecture......................................389

Figure 7-21: Satellite image of Mtnadzor and surrounding landscape............................390.

Figure 7-22: Site plan of Norabak..392

Figure 7-23: Satellite image of Norabak 1..393.

Figure 7-24: Satellite image of Norabak 1 showing architecture...................................394

Figure 7-25: Satellite image of Norabak 1 and surrounding landscape..........................395.

Figure 7-26: Site plan of Sangar...398

Figure 7-27: Satellite image of Sangar..399.

Figure 7-28: Satellite image of Sangar showing architecture...400

Figure 7-29: Site plan of Sotk 1...402

Figure 7-30: Satellite image of Sotk 1...403

Figure 7-31: Satellite image of Sotk 1 showing the location of the fort..........................404

Figure 7-32: Satellite image of Sotk 2...405

Figure 7-33: Satellite image of Sotk 2 showing excavated area.....................................406

Figure 7-34: Satellite image of Sotk 1 and 2 and surrounding landscape.......................407

Figure 7-35: Site plan of Tsovinar 1...410

Figure 7-36: Satellite image of Tsovinar 1...411

Figure 7-37: Satellite image of Tsovinar showing architecture......................................412

Figure 7-38: Satellite image of Tsovinar 2...414

Figure 7-39: Satellite image of Tsovinar 1 and 2 and surrounding landscape................415

Figure 7-40: Cumulative viewshed analysis of sites in the Sevan region........................427

Figure 7-41: Cumulative viewshed analysis of additional sites in the Sevan region.......439

Figure 8-1: Comparison of phenomenological rankings for sites in the Van, Aragats and Sevan Regions...450

Figure 8-2: Comparison of phenomenological rankings for sites in the Van, Aragats and Sevan Regions, broken down by time period...452

Figure 8-3: Comparison of GIS visibility analysis for the Van, Aragats and Sevan regions..458

Figure 8-4: Comparison of results of GIS visibility analysis for the Van, Aragats and Sevan regions, broken down by time period...462

Figure 8-5: Comparison of results of GIS physical accessibility analysis for the Van, Aragats and Sevan
regions..466

Figure 8-6: Comparison of results of GIS physical accessibility analysis for the Van, Aragats and Sevan regions, broken down by time period..469

CHAPTER 1—INTRODUCTION: QUANTITATIVE AND QUALITATIVE EXAMINATIONS OF URARTIAN LANDSCAPE USE

Research Question

Traditional research into the developments of states and empires in the Near East has traditionally rested on a core entity of human activity and culture: the city. States and empires in the "cradle of civilization", Mesopotamia, were preceded by the rise of centralized cities with settled populations, and as a result, archaeologists tend to assume that sedentism and urbanism are the foundations of empire (Greene and Lindsay 2013; Lindsay 2006). But as archaeologists have broadened their scope of research in the Near East, they have discovered that pathways to complexity can be more varied than previously assumed. In particular, this research will focus on the relationship between natural landscapes and the built environment in the Urartian Empire, which controlled parts of the South Caucasus, northwestern Iran and eastern Turkey from 800-600 BCE. The Urartian Empire grew to be a large, sophisticated state incorporating multiple ethnic groups despite the fact that its people did not live in cities (Biscione 2003, 2009), something that should not be possible under the urban-centric model of social complexity.

This research thus looks to landscapes, not cities, to explain the development of the Urartian state, by using a combination of quantitative and qualitative methods to assess landscape use before and during the rise of Urartu. While traditional archaeological research has focused on the unit of the site, proponents of the landscape approach to archaeology argue that meaning is created and experienced at the level of the landscape (Anschuetz et. al. 2001; Dunnell 1992; Zedeño and Bowser 2009). In particular, the creation of monuments on the landscape, and the interrelationships between significant natural and built features, can play an important role in the construction of political power and ideology (Bonacossi 1996; DeMarrais et. al. 1996; Smith 2003).

How did engagement with cultural landscapes contribute to the constitution of Urartian political power? How was this engagement similar to or different from the activities of earlier societies, and how did it mediate the relationship between Urartian rulers and the people they conquered and ruled? My research objective is to understand how the spatial arrangement and topographical context of fortresses, rock reliefs, and kurgans (mound burials) contributed to the creation and spread of political power in Iron Age Anatolia and the South Caucasus (Azerbaijan, Armenia, and Georgia) before, during and after the rise of Urartu. These three features represent important elements of the archaeological record in Anatolia and the South Caucasus. This is a region where much of the population has traditionally been mobile or dispersed and where traditional subjects of archaeological investigation such as large cities, are therefore lacking (Greene and Lindsay 2013; Wilkinson 2003; Yakar 2012; Zimansky 1985). I will focus on built features from the Late Bronze Age (1500-1150 BCE), Early Iron Age (1150-850 BCE), and Middle Iron Age (850-600 BCE, roughly corresponding to the Urartian empire) in three regions: the Urartian heartland of Van, Turkey; the region around Mt. Aragats in Armenia, which was incorporated into Urartu in the 8th century BCE, and the Lake Sevan region of Armenia, on the periphery of the territory controlled by Urartu. These regions were chosen because they represent three distinct time periods and strategies in Urartu's history, and because they have been extensively documented in previous research. This study will use a combination of quantitative methods, specifically

Geographical Information Systems (GIS), and qualitative methods involving survey, photography and video recording.

Definition of Terms

Empires and Their Subjects

In order to discuss the Urartian imperial strategy, it is first necessary to understand what is meant by empire, and how the concept of empire informs Urartian archaeology. Adam Smith (2015) argues that governing entities such as empires arise from broadly shared ideas of "civilization" which developed long before the emergence of the empire itself. These ideas are based on a dichotomy of inclusion and exclusion, in which certain people and things are regarded as "civilized" while others are rejected as "uncivilized." The concept of "civilization" is not one imposed by the empire, but rather something that emerges from the bottom up, and which the empire ultimately co-opts in order to consolidate its own power. Ironically, this same dynamic is at play in the scholarship of empire itself. In western scholarship, the definition of empire has been based on examples from the classical world, namely Greece and Rome, due both to the large bodies of textual evidence from these cultures, and because of the western tendency to regard them as the metrics of "civilization" by which all other cultures are judged (Dietler 2010). These traditional models of empire favor sedentary agriculturalists living in large settlements on relatively flat ground at the expense of mobile communities living in hillier territory, who are often regarded as backward and unsophisticated. This is largely because being "civilized" is traditionally associated with being under state control, and mobile hill communities are more difficult for a governing institution to influence than settled valley populations (Scott 2009). However, Classically based models of empire leave out many types of sociopolitical systems that have other important characteristics of empires (Frachetti 2008; Morrison 2001)—including Urartu, where mobile or sparsely settled populations lived in largely isolated communities within a rugged mountain landscape (Yakar 2012; Zimansky 1985). Thus, a more complex and nuanced understanding of empire is in order.

What is an empire? The broadest modern definition of an empire is "an expansive polity incorporating multiple states (or more broadly, incorporating significant internal diversity)" (Morrison 2001:3). The presence of more than one cultural group within a political entity is often what differentiates an empire from other types of centralized polities (Zimansky 2012). More specific characteristics of the traditional empire include "a contiguous landmass, centralized fiscal and cadastral organizations, and a powerful and continuous imperial military presence in peripheries that are rigorously controlled from a well-defined center" (Subrahmanyam 2001:44). Other commonly cited characteristics of empires include that they establish transportation systems to further trade and integration, as they are dependent on a vast region, beyond their local hinterland, to support their population and infrastructure; that they provide military and economic stability and security; that they have postal systems and other systems for relaying information; that they have systems of record-keeping and a common language of communication; and that they maintain a monopoly of force and a legal system (Barfield 2001; Briant 2012; Khatchadourian 2016; Zimansky 1995). Empires are also often associated with uniformed cultural and political traditions that they bring with them to conquered territories (Zimansky 1995, 2012). Some scholars, however, have found that not all empires fit these definitions. The Portuguese influence in Asia was based purely on trade rather than military conquest, but the way in which Portuguese elites maintained influence over Asian political structures, used force to advance their interests, and controlled a variety of locations across a wide area are all indicative of an empire (Subrahmanyam 2001). Similarly, the Wari Empire expanded throughout Peru without the use of writing (Schreiber 2001), and the Satavahana Dynasty of India maintained only loose political and military control of much of their population, but spread their imperial ideology through texts, art and the performance of religious rituals (Sinopoli 2001). In Late Bronze Age Anatolia, Claudia Glatz (2009) found that rather than clear-cut patterns of dominance between the Hittite empire and its subjects, there were varying degrees of dependence, interaction and cultural exchange both within the empire and outside its boundaries.

Kathleen Morrison (2001) argues that what is important is not the determination of whether a polity is an empire or not, but an examination of the qualities used to make this distinction. For the purposes of this research, "internal diversity" will be the focus of the investigation into the role of Urartu as an empire. This diversity is what makes empires different from other types of political organizations, as "empires are organized both to administer and exploit diversity, whether economic, political, religious, or ethnic" (Barfield 2001:29). Empires frequently draw their elites from a variety of regions and subgroups, and while most empires initially divide and subjugate conquered groups, once these groups are subdued, the empire incorporates them, frequently by practicing policies of tolerance (Barfield 2001).

Material culture is one field through which archaeologists can investigate imperial attitudes toward internal diversity. Traditional studies of the material culture of empire have focused on economics, and, in particular, the role of an empire in mobilizing and controlling surplus goods and craft production (Dietler 2010). In this view, conquered populations are represented as individuals passively responding to the demands of the imperial strategy. However, this view ignores the importance of social relations, both in that social relations are integral parts of production and consumption, and in that the goods themselves can be social actors (Khatchadourian 2016). Lori Khatchadourian (2016) argues that because not all empires involve a large amount of face-to-face interaction between subjects and imperial agents, material culture serves as a crucial interface between empires and conquered populations, and that for this reason, it is more valuable to archaeologists of empires than texts. Also implied in the traditional model of empires, though rarely explicitly stated, is the idea that material culture flows in one direction, from more "civilized" societies (i.e. the empire) to indigenous populations, which passively adopt the culture of their conquerors (Glatz 2009; Khatchadourian 2016). Indeed, Thomas Barfield (2001) argues that "one of the reasons that empires were so tolerant of diversity was that they expected that their own cultural system would create a common core of values that would override local variation" (32), and that the degree to which this occurs predicts the empire's long-term success. In this view, the contributions of conquered people to imperial material culture are disregarded or not recognized. Similarly, this model fails to take into account ways in which conquered peoples can reject, ignore or modify the material culture of their conquerors, patterns which occur just as frequently as adoption (Dietler 2010; Khatchadourian 2016).

The Greek and Roman model has often led archaeologists studying empires to expect to see strict political control and the significant imposition of material culture on conquered areas. Empires that left a lighter material trace, such as the Achaemenid Empire and its successors, are often regarded as being less invested in their conquered territory (Briant 2006; Keall 1994; Kuhrt 2001). However, while local languages, religions, economic and political systems tended to endure after Persian conquest, Achaemenid rulers coopted these traditions for their own ends, rather than merely leaving conquered people to their own devices as is traditionally assumed (Kuhrt 2001). Indeed, a combination of adoption and replacement of local traditions is a common strategy of empires, such that most imperial culture actually contains significant contributions from conquered peoples (Schreiber 2001). The need for empires to rely on local institutions and traditions serves as a limit to imperial ambition; at the same time, participation in local traditions that have been incorporated into the empire is also a way in which conquered people subject themselves to imperial control. While the modification or rejection of imperial material culture and the continuation of local traditions can represent resistance, this is not always the case; some traditions may persist in areas of life that the empire does not have access to. Other interactions between local people and imperial material culture may represent patterns of evasion, where indigenous populations adopt imperial material in such a way as to lessen the burden of imperial pressure without actively resisting it (Khatchadourian 2016).

Barfield (2001) argues that all empires have an "imperial project" that seeks to impose some degree of cultural unity on conquered peoples. But there is sometimes a disconnect between the cultural unity that rulers claim to have created, and the reality of how people actually lived under the empire. The Satavahana rulers of India presented themselves as controlling a vast united territory, but the material culture suggests that their empire consisted of a number of small-scale regional polities that had a large degree of local autonomy and that were incorporated into an imperial system only temporarily under an unusually strong leader (Sinopoli 2001). Paul Zimansky (1995, 2012) argues that the same was true of Urartu. Textual evidence presents Urartian leaders as exerting a good deal of control over conquered territories and people, including resettling these people in large numbers. An initial analysis of material culture seems to support the idea of Urartian imperial unity, as Urartian language, pottery, and architectural styles appear to be uniform throughout the empire. But Zimansky argues that this pattern is the result of a focus on texts and material culture that were produced by elites and that it does not reflect the reality of the daily lives of most of Urartu's subjects. He suggests that the Urartian empire's short lifespan would have made it impossible for rulers to impose their "imperial project" on conquered people to the extent they—and many archaeologists—claim; instead, "the apparent coherence of Urartian culture is an illusion enhanced by our own scholarly priorities" (104). Observations by Assyrian spies support this idea, depicting Urartu as "a patchwork of lands ruled by governors who acted with a measure of independence and controlled their own troops" (Zimansky 2005:268). This dissertation will seek to answer the question of whether Urartians did indeed exert a large degree of political, social and cultural control over conquered populations, or whether, as Zimansky (1995), Jak Yakar (2012) and Elizabeth Stone (2012) suggest, people who were incorporated into the empire were still allowed significant autonomy.

Landscape Monuments as Markers of Empire

While some archaeologists (Stone 2012; Stone and Zimansky 2003; Zimansky 1995) have investigated how the Urartian imperial strategy affected its subjects through the analysis of artifacts and domestic excavations, this project will focus on landscape monuments as tools of imperial ideology. Landscape monuments, in this case, refer to monuments that are present on the landscape outside of major settlements. These types of monuments are often referred to elsewhere as "extra-urban monuments" (e.g. Harmansah 2015; Graham and Steiner 2006; Tanyeri-Erdemir 2007), but I will use the term "landscape monument" instead to emphasize the importance of these monuments in their own right, rather than presenting them merely as echoes of those found in cities. Thus, examining landscape monuments first requires a working definition of the terms "landscape" and "monument."

While the "site" has traditionally been the fundamental unit of archaeological research, landscape archaeology arose in response to several criticisms leveled against this concept. Many of these criticisms focused on the fact that the areas designated as "sites" by modern archaeologists are not reflective of how past people conceived of the space in which they lived; instead, significant cultural and political activity often occurred at the level of the landscape (Anschuetz et al. 2001; Bradley 2000; Dunnell 1992). Although many different definitions of landscape have been proposed, most archaeologists focus on landscape as a relationship between people and the environment (e.g. Crumley and Marquardt 1990, Baleé and Erickson 2006). Kurt Anschuetz and colleagues (2001) stress that landscape is not simply another term for the natural environment, because landscapes are human-made. Landscapes are the products of peoples' interactions with the environment, shaped by culture and personal experience, and affected by perceptions and associations (Meinig 1979; Lawrence and Low 1990). These landscapes are dynamic, constantly being created and recreated by different individuals, groups and generations (Anschuetz et al. 2001; Crumley 1994; Ingold 1993). Jeannie Bradbury (2010:210) argues that "the way in which people experience landscapes can be conflictive and chaotic"; similarly, individuals from the same culture can have different experiences of a landscape depending on their role in society or personal preferences (Mohs 1994).

Rather than sites, landscape archaeologists sometimes choose to focus on places. Maria Nieves Zedeño and Brenda Bowser (2009:6) define a place as "a discrete locus of behavior, materials, and memory—a meaningful locale, a product of people's interactions with nature and the supernatural as well as with one another." These places are the product of human interaction with specific locations, through behaviors such as naming, building, ritual, and the creation of myth. Places are a combination of the everyday, small-scale activities of ordinary people and the grandiose political activities of elites (Harmansah 2014), and they often have multiple layers of meaning built up over time or by different groups (Zedeño and Bowser 2009).

The construction of monuments is an important part of place-making. The exact definition of a monument is a subject of debate. Bruce Trigger (1990:119) stresses that a monument's "scale and elaboration exceed the requirements of any practical functions that a building is intended to perform", and focuses in particular on energy investment as a marker of social and political power. Others (e.g. Abrams 1990, Ristvet 2007, Kolb 2006) have also studied the energetics of monument building as an important indicator of the monument's significance or role in society. This approach, however, ignores issue of why people build monuments, treating them only as a passive output (Moore 1996). By contrast, others (e.g. Joyce 2004) view monuments as active agents, capable of influencing the thoughts and actions of their builders and audience. James Osbourne (2014) stresses that while all monuments were built to convey meaning, this meaning can only be understood in the context of the community that built the monument; indeed, he defines a monument as "an object, or suite of objects, that possesses an agreed-upon special meaning to a community of people." (4). Some monuments may not have in fact been originally constructed as such; for example, shell mounds in the American Southeast were likely originally used simply for trash disposal, but may have taken on monument significance over time (Marquardt 2010). In fact, the act of constructing the monument may have been as significant or more significant than the final product of the monument itself (Sherwood and Kidder 2011, Pauketat and Alt 2003). Despite these varied definitions of monuments, this research will follow Trigger (1990) and define a monument as a human-made construction whose energy expenditure exceeds what is necessary for practical purposes. While this research will also be focused largely on the types of monuments Trigger describes—those built by political elites in hierarchical societies—it also both acknowledges that other types of monuments exist, and addresses the contributions that non-elites can make to monument construction and interpretation (discussed further both below and in Chapter 2).

Monuments have often been analyzed as a window into social and political structure. The ability of monuments to represent a claim to the land in the past, present and future thus means that place-making is closely tied to both political territory and social and ritual authority (Canepa 2014, Harmansah 2007), particularly through the construction of funerary monuments (Richards 2005, Nystrom et al 2010, Di Lernia and Tafuri 2013). However, it is important to remember that while monuments can be statements of power on the part of ruling elites, they are also closely connected to the broader culture where they originate, and the agency of ordinary people and indigenous communities is often also at play in place-making (Harmansah 2007, 2014a, 2014b). Place-making and the construction of landscape features are closely tied to social memory; they serve to inscribe the builder's legacy into the landscape for future generations to commemorate, but these monuments are also often built on a history of earlier activity of place-making on the part of local, non-elite people (Oubina et al 1998, Harmansah 2014). Thus, although elite activity on a landscape may be the most obvious to the casual observer, it is important to also consider earlier, less durable place-making activities, and the ability to do this is an advantage that archaeology has over history (Harmansah 2014).

Certain places are particularly likely to inspire monumental activity. For example, places associated with the construction of religious landscapes and ritual are often those which evoke awe, particularly places of natural transformation, abrupt natural change, or unusual natural elements or views. These natural features are typically places where the mundane and the supernatural come together and may be *axis mundi,* or the dwellings of mythical beings (Ashmore 2008). Several scholars (Lucero and Kinkella 2014, Harmansah 2014b) point out that throughout the world, water and living stone are regarded as significant landscape features. The importance of these places serves to challenge the traditional divide between nature and culture (Harmansah 2014b). Similarly, the material nature of a monument can be important to its meaning; for example, the color, type and permeability of soil blocks were deliberately chosen by the builders of mounds in the Mississippi River basin (Sherwood and Kidder 2011). In her analysis of the White Monument at Tell Banat, Anne Porter (2002) found that frequent rebuilding and repairing of burial monuments with plaster and earth was an important way in which communities negotiated both continuity and change. Chris Scarre (2008) found that megalithic monuments in western Europe emphasized connections to sacred locations from which the rock was cut, providing a transition between anthropomorphic natural places of power and manmade monuments, and that particular physical qualities of stones made them attractive as material for megalithic construction.

Monuments are also important tools of political ideology and control. Elizabeth DeMarrais and colleagues (1996) consider ideology to be a form of social power involving the ability to manipulate social action (i.e. labor). Indeed, contemporary texts from Mesopotamia reveal that the construction of monuments was measured in "man-days", suggesting that the value of the monument was contained in the human labor used to build it (Ristvet 2007). In this view, "ideology is as much the material means to communicate and manipulate ideas as it is the ideas themselves" (DeMarrais et. al. 1996:16). These material means include inscriptions, monumental buildings and burials, and their materialization allows dominant groups to control and legitimize meaning in order to impose their ideologies on others (DeMarrais et. al. 1996). Representations of political power serve to instill respect, emphasize legitimacy and present a particular worldview (Therborn 2014). In order for this process to be successful, however, builders of monuments need to ensure that the meaning they intend to convey is in fact received by the audience, which requires a corpus of shared signs and symbols (Therborn 2014;

Winter 2010). Thus, for monuments to be effective as tools of political power, rulers need to be aware of and incorporate the political, religious and social backgrounds of the subject populations with whom those monuments are meant to communicate. For example, Irene Winter (2010) argues that Assyrian palace reliefs served the purpose of promoting social cohesion. This is evidenced in part by the fact that the texts and images appear designed to appeal to a vast audience, with a shift away from mythological scenes, which would have been obscure to many laypeople, to more recognizable historical scenes. She contends that these audiences were those who were socially distant enough to need uniting, but socially close enough to be able to understand shared symbols and common messages. For these audiences, images of battles, conquest of foreign populations and the centrality of Assyrian rule contribute to program of the domination of other groups by the Assyrian Empire. On the other hand, Khatchadourian (2016) argues against the semiotic view of monuments, in which monuments are merely signs that serve to spread messages of imperial power and ideology that are then passively accepted by the subjects who view them. Instead, she sees monuments and objects of imperial power as actors in and of themselves. Monuments are often delegates, "things that take a share in the preservation of the very terms of imperial sovereignty through the force of both their material composition and the practical mediations they help afford" (68-69). That is, they are not simply signs of imperial power, but rather things that allow for practices through which imperial power can be reproduced. Empires become dependent on these delegates, but delegates always take on lives and meanings beyond what was originally intended due to their interactions with conquered populations. Thus, an understanding of imperial material culture, particularly imperial monuments, involves untangling a complicated web of influence and dependency between empires, their subjects, and the objects through which they interacted.

Archaeology in the South Caucasus

The study of the South Caucasus and Highland Anatolia—an area including Azerbaijan, Georgia, Armenia and parts of Russia, Iran and Turkey—has been traditionally framed in terms of borders and frontiers, due to the region's location on the edge of the Achaemenid, Greek and Roman empires, as well as various Mesopotamian kingdoms (Khatchadourian 2008; Kohl 1992; Ristvet et. al. 2011; Ristvet et. al. 2012a; Ristvet et. al. 2012b; Rubinson and Smith 2003; Tsetskhladze 2003). As a result, the Southern Caucasian and Anatolian highlands are more commonly associated with surrounding empires than with the people who actually lived there (Badalyan et. al. 2003; Smith 2005), a tendency that is due in part to the fact that many written records come from outsiders such as the Assyrians (Biscione 2009; Sevin 1999; Zimansky 2012).

This view of the South Caucasus and Highland Anatolia as peripheral is partly a product of the archaeological record and the historical trajectory of archaeology in southwest Asia (Khatchadourian 2014; Lindsay and Smith 2006), but it is also the result of geography and politics. Due to the region's many mountains, agriculture is generally only feasible in isolated pockets of arable land (Burney and Lang 1971; Stone 2012; Wilkinson 2003; Zimansky 1985). Most communities in the past and present practice a combination of sedentary agriculture and mobile pastoralism (Hammer 2014a; Sagona 2004; Sevin 2003), the latter of which tends to leave little archaeological trace (Alizadeh and Ur 2007; Wilkinson 2003). Additionally, the Soviet dominance of archaeology in the

South Caucasus effectively made the area inaccessible to western researchers for much of the twentieth century (Dudwick 1990; Khatchadourian 2008; Smith 2005; Shnirelman 2001). Since the fall of the Soviet Union, archaeology in the South Caucasus has become highly politicized (Cheterian 2012; Kohl and Tsetskhladze 1995).

Despite this, however, western interest in the South Caucasus resurfaced in the latter half of the twentieth century and continues into the twenty-first century. Long-running joint excavations and surveys such as Project ArAGATS in Armenia (Smith et. al. 2009) and the Naxçivan Archaeological Project in Naxçivan, Azerbaijan (Ristvet et. al. 2011; Ristvet et. al. 2012a; Ristvet et. al. 2012b) bring together American and local researchers to participate in archaeological projects. Large-scale surveys (e.g. Biscione et. al. 2002b; Kroll 2005; Özfirat 2009; Smith et. al. 2009) have documented multiphase sites from the Chalcolithic through the Late Iron Age. In these projects, archaeologists use South Caucasus's traditional role as a borderland to examine the interactions between empires and indigenous populations in the Near East (Ristvet et. al. 2012). Others find the South Caucasus useful as a point of contrast to social and cultural trends elsewhere in the Near East (Badalyan et. al. 2003). This research has yielded substantial evidence that the South Caucasus was home to rich cultural traditions that developed indigenously, rather than as byproducts or imports from foreign empires.

The Urartian Empire was the first to unite the South Caucasus and Highland Anatolia (Salvini 2011). Urartu emerged from the unification of tribal groups starting in the ninth century BCE, when, according to Assyrian sources, Urartu's first king, Sarduri I, founded the fortress settlement of Van Kalesi (Salvini 2011). During the eighth and seventh centuries BCE, Urartu expanded to occupy Anatolia, northwestern Iran, and parts of Azerbaijan and Armenia, with some influence in Georgia (Earley-Spadoni 2015; Kleiss and Kroll 1977; Kroll 2004; Salvini 2002; Smith et. al. 2009; Tsetskhladze 2003). The suddenness of Urartu's appearance raises many questions about how a centralized empire arose so rapidly from earlier cultures that were largely mobile or sparsely settled. Most archaeological research has focused on fortified hilltop sites, the main locations of Urartian occupation. While traditional Urartu-centric views highlight social complexity associated with these fortresses as an Urartian invention (Salvini 2011; Zimansky 1995), Tiffany Earley-Spadoni (2015) found that sophisticated networks of visual communication among Armenian fortresses existed before Urartian occupation, and that the Urartians appropriated and improved upon this system. Late Bronze Age economic, political, and social systems, many of which were based around farming and mobile pastoralism, also set the stage for Urartian authority (Greene and Lindsay 2013; Lindsay 2006; Lindsay et. al. 2009). Similarly, social complexity had already emerged from local roots in Naxçivan by the Early Iron Age, before significant contact with Urartu (Ristvet et. al. 2012), and sociopolitical complexity was present elsewhere in the South Caucasus since the Middle Bronze Age (Badalyan et. al. 2003).

Jak Yakar (2012) suggests that mobile pastoralists could have continued to make up a significant portion of Urartu's population, as they did in the region before Urartu's rise to power, and these groups would have been difficult to bring under imperial control. The Urartians had few cities, and those that did exist were founded in the empire's later years (Stone 2012). Hilltop fortresses likely supported a significant population only during times of crisis (Zimansky 1995). Thus, Urartu's strategy of political control required leaders to deal with a population that was diverse, dispersed, and possibly mobile. This is in contrast to other contemporary empires, which would have had the ability to exert political control over large populations consolidated in urban settlements (Biscione 2009). I will argue that the manipulation of the landscape and creation of landscape monuments was essential to the formation and maintenance of Urartian political power and ideology.

The Urartian's own perspective on their empire has sometimes been used as a starting point for archaeological analysis (Zimansky 1995), and one goal of this dissertation is to test archaeologically while this perspective in fact reflected reality. Urartian texts simultaneously emphasize the empty, untouched nature of the land on which they built their fortresses, and detail the people and settlements already present there; presumably, this reflects the Urartian view that the populations living in their conquered territories were "uncivilized" people of little consequence, rather than a true conviction that the lands were deserted (Smith 1999, Smith 2000). Constructions in reliefs were presented as sites of divine blessing, and portrayals of fortresses often depict deities in front of fortress walls. Textual evidence stresses the role of Urartian kings in fortress construction on virgin soil, presenting them as personally responsible for all state construction and for the taming of wild places (Smith 2000). Construction was presented as a political undertaking, associated with the expansion of the empire and the integration of conquered territories, and texts and images related to construction are "narrated as a triumph of the king over wilderness" (Smith 2000:142). Indeed, Urartian fortresses were often constructed directly on bedrock; when they were constructed on top of previous cultural levels, the Urartian builders went out of their way to destroy all evidence of earlier occupation (Smith 2000, Smith 2003, Smith 2012). Unlike in Mesopotamia, where rulers emphasized connections with earlier kings and kingdoms, the Urartian strategy of legitimization involved erasing all traces of the past (Smith 2012). The exception to this rule is the Lake Sevan region of Armenia, where textual evidence describes kings ordering the reuse of older fortifications (Hmayakyan 2002). In this dissertation I investigate how and whether Urartian leaders reused earlier structures in order to understand their attitudes toward the culture of conquered populations.

Research Objectives

This research will seek to determine what the Urartian imperial project was, how or whether Urartian leaders were able to impose that project on their subjects, and how those subjects reacted to it. Zimansky (1995) initially addressed this through a summary of material culture, and later he and Elizabeth Stone (Stone 2012; Stone and Zimansky 2003) investigated the lives of ordinary people using domestic archaeology at Ayanis, Turkey. However, as Stone and Zimansky point out (2003; Stone 2012), most Urartian domestic contexts come from the later years of the empire, and thus are not representative of its development or earlier days. By contrast, landscape data is available for multiple time periods before and during the rise of Urartu. I use a combination of two approaches (GIS and phenomenology) that are both rooted in the field of landscape archaeology. Using these two approaches, I will examine the relationship between landscapes and ideology in Highland Anatolia and the South Caucasus in the Early Iron Age and Urartian periods, and how changes—or lack of change—in landscape use was implicated in the interactions between Urartian rulers and the people they conquered.

An additional goal of this project is to facilitate the unification of two methodologies that have often been at odds. The two methodologies to be used in this project, GIS and landscape phenomenology, are highly representative of, respectively, the processual and post-processual schools of thought. GIS initially arose out of a processual interest in standardizing methods of recording and analyzing spatial data; early GIS analysts were generally interested in the connection between spatial relationships and large-scale processes in the past (Wheatley and Gillings 2002). GIS was appealing to processual archaeologists because of its potential for standardization, its perceived objectivity compared to other forms of analysis, and its ability to process large amounts of data in a systematic fashion (McCoy and Ladefoged 2009). By contrast, GIS has faced many post-processual critiques. Marcos Llobera (1996) argues that there is an element of environmental determinism in most GIS analyses. These analyses also tend to view space as singular, objective and inert, without considering agency or meaning, and to focus on spatial representations fixed in a single moment in time (Llobera 1996; Wheatley and Gillings 2002). Western assumptions about space and time, which underlay many digital analyses (e.g. linear time, Euclidean space), often do not match up with past cultures' conceptions of space and time (Zubrow 2006). Thus, digital analyses, which focus on broad patterns and similarities, appear at odds with post-processual approaches, which focus on differences between people and cultures and on the unique experience of individuals (Kvamme 2006; Zubrow 2006).

Phenomenology, on the other hand, seeks to capture the experience of individuals and restore a human component that is often lacking in archaeological analyses, particularly qualitative approaches such as GIS (Tilley 2008; Watson 2001). Phenomenology in archaeology arose out of the realization that experiences of place, landscape and geography are subjective and culturally defined (Johnson 2006). While processual interpretations of space view it as a container separate from human activity, phenomenology attempts to capture the reality that for past cultures, space was a subjective entity rich with meaning, emotions and relationships (Tilley 1994). Phenomenologists argued that the embodied experience of landscape is more reflective of the experience of past people than are the representations captured in GIS analyses and excavation reports, which feature objective, neutral blocks of space comprised of discrete entities (Thomas 2008). The phenomenological approach challenges the conceptions of two-dimensional, Cartesian space represented in processual approaches, and provides a framework to consider the ways in which space is experienced through the body in three dimensions (Brück 2005). On the other hand, the post-processual nature of phenomenology has been criticized for the fact that it lacks scientific rigor, has no standard methodology and is not evidence-based (Barrett and Ko 2009; Fleming 2006; Gillings 2012; Johnson 2012; Llobera 1996).

Recently, however, an increasing number of archaeologists have argued that these methods can and should be reconciled. GIS analyses need not model only static space; they can also be used to study practices, processes and behavior, including the actions of individuals or small groups (Ebert 2004; Llobera 1996). A number of archaeologists, including Christopher Tilley himself (2010) and others (Hamilton et. al. 2006; Stokkel 2005; Thomas 2008; Watson 2001) have advocated the use of phenomenology in conjunction with other, more scientifically grounded methods of study. Rather than being at odds, this project will demonstrate the ways in which GIS and phenomenology can complement each other. Digital analyses of visibility and movement can be used to quantify phenomenological data on the visual and bodily experience of archaeological features (Llobera 2000, 2003, 2007, 2012; Opitz 2014; Osbourne and Summers 2014; Stokkel 2005). On the other hand, phenomenology can provide information on important aspects of experience that GIS cannot capture. For example, the contrast between an object and its background, in terms of both color and texture, is an important factor in its visibility that is not generally taken into account in a viewshed or other digital analysis, but that can be easily recorded in a phenomenological analysis (Moore 1996).

This dissertation will join the growing body of research that attempts to bridge the divide between processual and post-processual approaches. Combining GIS and phenomenology will demonstrate the utility of a holistic analysis of the archaeology of landscapes, one which takes into account both qualitative, individual, subjective human experiences and broad-scale quantitative patterns. Using these methods together will demonstrate how the strengths in one technique can be used to correct the weaknesses in the other, in order to create a comprehensive analysis of archaeological landscapes that is ultimately more than the sum of its parts.

Dissertation Outline

This dissertation begins with an overview of the methodological backgrounds in landscape archaeology and GIS and the history of Highland Anatolia and the South Caucasus. Chapters 2 and 3 discuss the different approaches this dissertation takes—phenomenology and GIS—in the context of broader patterns in the study of space and landscapes. It explores the specific techniques employed in this study, including phenomenological survey by traveling to sites of interest in person, and Viewshed and

Least Cost Paths analysis using GIS. Chapter 4 details the archaeology of Highland Anatolia and the South Caucasus from the Early Bronze Age through Urartian times, and also examines specific types of archaeological sites—fortresses, kurgans, and inscriptions—that will be relevant for this dissertation. Chapters 5 through 7 present data from, respectively, the Van region of Turkey, the Aragats region of Armenia, and the Sevan region of Armenia. These three regions were chosen because they represent three distinct places and periods in Urartu's history and development. The empire arose around the capital of Van in the ninth century B.C.E., expanded to extensively occupy and control the Armenian highland and the Aragats region in the eighth century B.C.E., and also exerted its influence on the frontier, Sevan, in the eighth century B.C.E. Comparing heartland, new incorporated territory and frontier will reveal how Urartian imperial strategy evolved or remained the same over time and across space. These three regions are also extensively documented in surveys and excavations, meaning that this research can be integrated with a large sample of data and background information. Chapter 8 brings these three regions together to compare the results of the analyses in depth, and finally, Chapter 9 summarizes conclusions and further directions.

CHAPTER 2

LANDSCAPE ARCHAEOLOGY: A THEORY OF PLACE, MEANING AND MEMORY

Landscape Archaeology: Overview of the Field

In American archaeology, initial landscape studies had their roots in a processualist view of the landscape, which focused on scientific analysis, statistics and models, and in which humans played a passive role. The earliest landscape studies were primarily interested in the role of ecology in determining human behavior; these studies also tended to view settlement patterns as maps of social and political systems (Bruno and Thomas 2008; Crumley 1994; Crumley and Marquardt 1990; Higgs and Vita-Finzi 1972; Patterson 2008; Smith 1983). American landscape studies also emerged from large-scale archaeological surveys focused on settlement patterns (Adams 1981; Banning 1996). In Britain, by contrast, landscape studies have their roots in a personal and genealogical attachment to the land (Johnson 2006a). While both of these approaches were initially positivist, landscape studies have since shifted to be more holistic (Ashmore 2004). In contrast to processual archaeology which views space as merely a container, separate from human culture, more recent interpretations of landscape archaeology argue that space has fundamentally important interactions with human behavior as an important component of people's lives (Thomas 2008). These new approaches consider social interpretations of landscapes (Bruno and Thomas 2008), with some even focusing on landscapes that are not physically modified in any way but are cognitively and spiritually significant (Bradley 2000; Colson 1997; Lucero and Kinkella 2014).

Most landscape approaches focus on one of three units: the artifact, the region or the place. Approaches that focus on artifacts as fundamental units support an interpretation of the archaeological record as a distribution of artifacts at varying densities, rather than discrete sites (Dunnell 1992). Instead of basing their research around sites, these approaches utilize a combination of excavation and survey to study continuous landscapes of human occupation (Knapp and Ashmore 1999). Other landscape archaeologists have chosen to focus on the region as a key unit for archaeological work (Kantner 2008; Richards 2005). John Kantner (2008:41) defines a region as an area "for which meaningful relationships can be defined between past human behavior, the material signatures people left behind, and/or the varied and dynamic physical and social contexts in which human activity occurred." Regional archaeology acknowledges that archaeology needs to make a connection between artifacts and meaningful spatial units, and it attempts to determine those units based on both quantitative methods such as the use of GIS, and qualitative methods focused on the perceptions of past populations (Kantner 2008). Finally, landscape archaeologists sometimes choose to focus on places. Maria Zedeño and Brenda Bowser (2009:6) define a place as "a discrete locus of behavior, materials, and memory—a meaningful locale, a product of people's interactions with nature and the supernatural as well as with one another." These places are the product of human interaction with specific locations, through behaviors such as naming, building, ritual, and the creation of myth. They often have multiple layers of meaning built up over time or by different groups using a place simultaneously, as each individual and each group has different meanings associated with a place and different ways of interacting with that place (Zedeño and Bowser 2009).

The interactions between people and landscapes are crucial to landscape archaeology. In landscape archaeology, humans are not simply another species adapted to their ecosystem. Rather, culture is a key determinant of how people interact with their environment, as different cultures can have different ways of interacting with similar ecological circumstances, and different degrees of tolerance toward various types of ecological conditions (Crumley 1994). Landscapes are not static, but rather consist of layers superimposed on each other in which each landscape modifies the previous landscape, and in which previous conditions have an impact on subsequent landscape use (Bailey 2007; Zedeño and Bowser 2009). Landscapes and ideas of landscapes are constantly being created, recreated, and transmitted through teaching and learning (Whittlesey 2009).

Certain landscapes, referred to as signature landscapes (Wilkonson 2003), are so deeply ingrained in the landscape that they shape subsequent settlement and human activity up until the present. For example, in the Near East, irrigation systems and large settlements such as tells are both signature landscapes that are still visible today (Alizadeh and Ur 2007; Lyonnet et. al. 2012; Yoshida et. al. 2014). Even when these types of landscape features are clearly evident, however, and especially when they are not, the palimpsest nature of landscapes is critical to the analysis of landscape features. In many cases, which landscape features are present may have more to do with processes of preservation and destruction than with the reality of past human activity (Bailey 2007; Chapman 1995), including the reuse or avoidance of past archaeological sites (Villamil 2007; Yoffee 2007). Tony Wilkinson (2004) and Jason Ur (2010) contrast zones of survival, areas where little subsequent activity has modified earlier features, with zones of destruction, where significant later activity has destroyed earlier features. For example, in the Near East, pastoral landscape features are more likely to be preserved in rocky highlands than in fertile agricultural lowlands, because the latter are subject to more intensive human activity throughout time, and this activity tends to erase earlier features (Hammer 2014a). This may create the impression that pastoralists utilized the highlands more intensively, when in reality, pastoralists significantly exploited both the highlands and the lowlands (Alizadeh and Ur 2007; Ur and Hammer 2009). Similarly, the palimpsest nature of landscapes is important to keep in mind while attempting to analyze the date and scale of landscapes (Bruno and Thomas 2008; Head 2008). Remote sensing technologies such as ground penetrating radar can partly help to remedy problems of landscape destruction by allowing archaeologists to detect traces of landscape features that are invisible to the naked eye (Alizadeh and Ur 2007; Hritz 2010; Parcak 2007; Ricci et. al. 2012). The field of geoarchaeology can also be useful for analyzing landscape features that were destroyed or buried, particularly through geophysical sensing techniques, such as magnetometry and electrical resistivity, that can be used to detect remains underground (Stafford 1995).

From a socioeconomic point of view, landscape archaeology can be used to study the way in which social and political structures are mapped on the landscape. For example, the organization of agricultural land (Liverani 1996), access to water (Strang 2008; Wilkinson and Rayne 2010), or the layout of road networks (Briant 2012; Erickson 2009; Casana 2013; Snead et. al. 2009,) can all reveal information about the social and political structure of a society. Traditional approaches to political landscapes have focused on settlement hierarchy, or the ranking of certain sites as dominant or subordinate to others, and in particular on administrative hierarchy (e.g. Chapman 1995; Kirch 1990). Carole Crumley and William Marquardt (1990:74-75) argue that while settlement hierarchy can be a valuable tool, archaeologists can benefit from examining heterarchy, "a structural condition in which elements have the potential of being unranked (relative to other elements) or ranked in a number of ways." In this view, an administrative hierarchy is one of many hierarchies imposed on a landscape, and the same element can have different ranks in different hierarchies simultaneously. As a result, archaeologists should focus not just on political boundaries, but also on overlapping or contradictory social, economic and environmental boundaries, and should remember that hierarchies are ultimately constructs created by the archaeologist rather than facts of nature (Crumley 1994).

Similar caution should be taken when using the landscape approach to study territory. Territories are closely related to landscapes, but with several key differences. Landscapes are contiguous, while territory can include multiple unconnected landscapes. From an economic point of view, territory refers to "an area which is habitually exploited" (Higgs and Vita-Finzi 1972); however, culturally and economically important areas, such as ritual sites, can exist outside the exploited territory (Harmansah 2014b, 2007). In addition, territorial boundaries are socially established by groups negotiating claims to land, rather than as products of the viewer's experiences and interests (Bar-Yosef 2008; Zedeño 1997). Territorial behavior is essential to the creation of landscape, and "landscapes tend to be cumulative, incorporating past and present territories" (Zedeño 2008:214). At the same time, archaeologists should keep in mind that past people's concept of territory may have been quite different from our own. Without modern technology, early societies did not have the means to precisely map boundaries or measure distance. In particular, “the view of a nation as a specific and bounded geographical entity is a historically created condition” with origins in seventeenth century Europe, and archaeologists are mistaken to unilaterally apply this idea to the distant past (Casana 2012; Ristvet 2008; Smith 2005:834,). Using the network approach, Monica Smith (2005) argues that rather than envisioning their territories as geometric shapes that were completely “filled in,” past societies and rulers were more interested in the control of specific strategic locations such as cities, ports and roads. Territorial boundaries were continuously shifting and were more porous than the boundaries of many modern states, and territorial control was likely only one form of political power in past societies (VanValkenburgh and Osborne 2013). Additionally, the use of landscape features to reconstruct ancient territories must take into account whether those features present in the archaeological record are reflective of the original distribution (Chapman 1995). Particularly when textual evidence is available (e.g. Casana 2012), archaeologists should attempt to reconstruct territories and landscapes from the point of view of contemporary populations (Smith 2005).

Whether at the level of the artifact, the region or the place, an archaeology of landscapes has numerous benefits over an archaeology of sites. Landscape archaeology provides a way to analyze those areas of past human settlement or behavior that do not fit with the traditional concept of an archaeological site, thus broadening the data available to the archaeologist and contributing to a more complete understanding of human interactions with space and the environment. In contrast to processual approaches, which view past people as passive respondents to environmental conditions, recent approaches in landscape archaeology examine the agency of individuals in their interactions with their environment (Anschuetz et. al. 2001; Erickson 2009; Gillings 2012; Strang 2008). Landscape archaeology focuses not just on particular site-like locations such as towns, but also on the way these locations are connected through pathways such as roads (Snead 2009), how they are related to each other (Earley-Spadoni 2014), and how their relationships are mediated by the land between them (Robin and Rothchild 2002; Tilley 2008). Significant natural places with little human activity are often missed by a site-based approach, which focuses on human settlement as the only indication of a place's significance. Similarly, sites that archaeologists deem abandoned may remain culturally significant "persistent places" that are reused or revisited (Zedeño and Bowser 2009). Thus, landscape archaeology allows for the study of locations that were significant to the people who used them but that would likely be overlooked by a site-based approach. This dissertation will use a landscape approach to look beyond the boundaries of known sites to the landscape as a whole, and it will also examine isolated human-made features such as inscriptions and mound burials, which do not fit the standard definition of a site.

Power, Memory, Resistance and Negotiation: The Social and Political Use and Reuse of Landscapes

The creation of landscape features, and the process of endowing them with meaning—"place-making"—is an important strategy for consolidating and maintaining power for both elites and ordinary people. Adam Smith (1999:46) argues that "the operation of political power requires the promulgation of landscapes that actively promote the complex relationships constituting state power" and that landscapes are essential tools in the creation and maintenance of political authority. In particular, landscapes are ways in which elites materialize ideology, allowing them to convey messages of power and social structure to others (Bonacossi 1996; DeMarrais et. al. 1996; Richards 2005; Smith 2003; Villamil 2007).

One important component of place-making is the performance of rituals at meaningful locations (Ristvet 2014). These rituals frequently serve to tie elite power to religious beliefs or cosmological principles through the creation of ritually significant places. These places tend to be locations that are not only culturally significant but also naturally significant, in particular places of natural transformation, abrupt natural change, or unusual natural elements or views. Water, soil and stone are often important physical and symbolic aspects of a ceremonial landscape, and the designation of ritual places is often related to significant features involving one or more of these three elements, such as striking rock formations or natural springs (Ashmore 2008; Harmansah 2014). Features of ritual sites are can also be linked cognitively with the broader landscape through the creation of architectural elements that mimic natural features (Knapp and Ashmore 1999). These metaphors can be used to establish a site as a social or religious center by association with the natural and supernatural power of important places on the landscape. Stephanie Whittlesey (2009) and Ruth Van Dyke (2007) both demonstrate the ways in which the architecture of the American Southwest alluded to natural landscape features such as mountains. The layout of space is often intertwined with the social, political and supernatural order (Tilley 1994) and sites and landscapes interact to create "a meaningful reflection and reinforcement of cosmological principles and symbols" (Whittlesey 2009:89). The creation and manipulation of ritual landscapes is an important tool by which "ancient states often appropriated symbolic or ritual landscapes, making them durable through their commemorative ceremonies, acts of inscription and building operations" (Harmansah 2007:180). Throughout the Near East, for example, the creation of landscape monuments was an important tool in the development of kingly rhetorics and displays of royal power (Harmansah 2007). On the other hand, Claudia Glatz and Aimée Plourde (2011) found that in Bronze Age Anatolia, rock inscriptions were used by elites to compete for land and power without resorting to all-out war, and therefore represent multiple elite voices.

Christopher Tilley (2010:40) argues that "precisely because the landscape plays such an important role in the constitution of self-identity, controlling knowledge of it may become a primary resource in the creation and the reproduction of repressive power or structures of social dominance." However, it is important to remember that while landscape monuments can be statements of power on the part of ruling elites, they are also closely connected to the broader culture where they originate, and the agency of ordinary people and indigenous communities is often also at play in place-making (Harmansah 2007, 2014a, 2014b). For example, Assyrian royal rock inscriptions were carved, and royal rituals performed, at locations that had previously been significant to earlier cultures (Harmansah 2007, 2014b). Similarly, Ann Steinsapir (2005) found that rural sanctuaries in Roman Syria were built on locations that earlier cultures had already regarded as significant. While the meaning and form of these sanctuaries changed over time, the importance of particular locations on the landscape remained. Romans coopted many of these sites, but indigenous populations also built structures in the same location, suggesting that they retained their autonomy and local traditions in the face of Roman conquest. Roman construction at these sites served to embed Roman culture into the pre-existing social and ritual landscape. However, the traces of local people and local culture remained on the landscape despite Roman attempts to erase them, and local traditions likely mingled with Roman ones. These types of studies support a bottom-up approach to the construction of meaning at significant places; rather than assuming that place-making is simply a process by which elites impose their rhetoric to manipulate public consciousness, archaeologists should remember that ideology is generated by a culture as a whole (Harmansah 2014). Indigenous populations can also use place-making processes as tools of resistance. Patricia Rubertone (2003a) found that monuments to Native American events erected by white colonists often did not reflect native views of the significance of these places or the importance of events that occurred there. Native Americans who objected to colonialist accounts of native places rejected these monuments and instead emphasized their own interpretations and cultural memories.

Place-making and the construction of landscape features are closely tied to social memory; they serve to inscribe the builder's legacy into the landscape for future generations to commemorate, but these monuments are also often built on a history of earlier activity on the part of local, non-elite people that has previously endowed these particular locations with significance (Harmansah 2014; Oubina et al 1998). Ruth Van Dyke and Susan Alcock (2003:2) define social memory as "the construction of a collective notion (not an individual belief) about the way things were in the past." These beliefs, which involve connections to either real or fictitious past people and cultures, are constantly being modified to suit the needs of the present, and elites manipulate these beliefs to legitimize their authority. Unlike historical reconstruction, which creates formal histories based on evidence, social memory creates informal histories that are present in all communities and that are used to create and reinforce a narrative of that community's identity. Paul Connerton (1989) argues that all memory is to an extent social memory, as no individual memory can exist without the framework of the community in which the individual lives and in which the events took place. Many social institutions are responsible for the creation and transmission of social memory, including religious institutions, families, and social classes (Halbwachs 1992[1925]). Ritual activity, in particular, is an important tool of social memory. While all commemorative practices involve implicit continuity with the past, many rituals make these connections explicit by discussing or reenacting historical events. Some rituals commemorate things that have been forgotten by social memory and need to be understood through outside sources; for example, Iranian rituals during the time of the Shah commemorated events that happened during the Achaemenid Empire (Abdi 2001; Connerton 1989; Ristvet 2014). Certain acts of social memory, such as commemorative rituals, require that all individuals involved be physically present at the time of the ritual. Other performances of social memory, such as inscriptions, can be experienced by those who were not present at the event at a later point in time (Connerton 1989). Social memory has a "double character", in that while it involves the commemoration of past events, it is something that is always created and experienced in the present (Hallbwachs 1992).

Archaeologists often study social memory through the lens of "the past in the past"—that is, the reuse of earlier features or traditions by past people (Khatchadourian 2007; Oubina et. al. 1998; Prent 2003; Yoffee 2007). These studies focus on monuments as tools of social memory because monuments that are reused over time “epitomise a creative process by which the significance of the past was constantly rethought and reinterpreted” (Bradley 1993:93). Monuments and other forms of landmarks, both natural and cultural, can serve as tools that do the work of remembering for the viewer, providing sensory stimuli that direct the viewer toward past events (Rubertone 2003b). The manipulation of the past was an important tool for the propagation of social and political power, and elites used control over these memory triggers to influence how people remembered and interpreted the past (Rubertone 2003b; Yoffee 2007). Harnessing the past for the creation of present-day monuments also allowed elites to legitimize their power by connecting themselves to previous inhabitants of the land.

The use of social memory to create connections between past and present people is a key role of funerary monuments. Extensive research (e.g. Giraud 2010; McAnany 1995; Porter 2000; Renfrew 1976; Williams 1998; Steadman 2005) has demonstrated the role of burials in claiming the land on which they stand for the descendants of the interred and the community to which they belonged. This is true for both mobile pastoralists (e.g. Frachetti 2008; Reinhold and Korobov 2007) and sedentary agriculturalists (Semple 1998; Williams 1998) and across a wide variety of cultures, time periods and geographic locations. Monuments to the dead create a “genealogy of place” which is essential in the maintenance and transmission of power (McAnany 2013 [1995]). Funerary monuments also make connections to the past not just by commemorating ancestors, but also through their physical or visual association with older monuments. For example, monuments to the dead may be located with prominent sight lines to the monuments of ancestors (Richards 2005) or they might be arranged to encourage visitors to walk past earlier monuments (Watson 2001). By emphasizing continuity in ownership and occupation of land, funerary monuments legitimize and naturalize elite power, and also encourage social stability and the maintenance of tradition at a time of social rupture (i.e. the death of an important individual) (McAnany 1995).

Other types of monuments are also used to “trigger” social memory and remind viewers of the values associated with these memories. Throughout the Near East, kings carved rock inscriptions in places with older rock inscriptions, made both by their own ancestors and the kings of earlier cultures (discussed further in Chapter 4). Similarly, Armenian kings used language and traditions borrowed from their Achaemenid and Urartian predecessors in the creation of royal monuments (Khatchadourian 2007). Later Hellenistic rulers also reused, repaired and expanded Urartian ruins, harnessing the “symbolic capital” of the Urartian past to reinforce their authority. While textual evidence suggests that Urartian history was generally forgotten by its successors, the archaeological evidence indicates that past ruins still had power. The Hellenistic practice of establishing capitals at Urartian centers may have been a symbol of stability and long-term authority, which would have been valuable in an atmosphere of near-continuous military conflict with neighboring powers. At the same time, forgetting the meaning of Urartian landscapes allowed Hellenistic elites to create their own meaning at significant places (Khatchadourian 2007).

The processes by which people create connections between the present and the past are complicated and not always intuitive. Archaeologists often tend to assume that people are connected to past populations by biological descent, or to assume that continuity in style and material culture marks continuity in cultural identity. However, non-western cultures often have other ways of creating social memory. For example, Rubertone (2003b) points out that in many communities, people view past inhabitants of the land as their ancestors, even if they are not biologically or culturally descended from them, by virtue of these people sharing the same space. Thus, places themselves have the ability to create shared histories. Jennifer Gates-Foster (2012) found that the reuse of Egyptian roadside shrines by Greek and Roman travelers created a community between past and present travelers based on a shared experience of place, even though the Greek and Roman travelers likely had little understanding of the content of the earlier shrines. This community was held together not by the continuity of cultural traditions, but rather by a perception of common experiences, real or imaginary, that were tied to the specific location of the Egyptian desert. Roads are themselves vehicles of social memory, as practices of repeated movement across a landscape create memories and traditions that are remembered with each journey (Joyce 2003).

The use of the past in the past can also serve as a platform for resistance and negotiation. While imitation of other cultural forms involves the simple maintenance of these forms, negotiating involves "actively remembering, manipulating, or erasing the past" (Ambridge 2007: 141). Lindsay Ambridge (2007) analyzed the continuation of local Nubian funerary traditions and the adoption of Egyptian traditions during the New Kingdom. Though the Nubian use of Egyptian architectural styles in funerary monuments has been taken as evidence that they passively adopted Egyptian culture, Ambridge found that Nubian funerary monuments in fact involved integrating Egyptian traditions with indigenous traditions. For conquered or colonized people, the continuance of local traditions of landscape use, and the rejection or modification of the traditions of the conquering group, create landscapes where multiple pasts are visible simultaneously (Ambridge 2007; Rubertone 2003). Similarly, Laura Villamil (2007) found that the Maya site of Margarita, the collapse of high elite culture was associated with the reoccupation of elite areas of the site by non-elites. These non-elites destroyed or modified ceremonial architecture, rejecting the previous organization of space and of the elite culture that space represented.

Archaeologists should be careful not to assume that every reuse of a landscape feature indicates social memory. Specifically, "What may superficially appear to reflect continuity and memorialization might instead represent a palimpsest of meanings and a protean attitude to locality" (Meskell 2003:36). Sometimes the reuse of past places can simply be practical, if they are located in well-traveled areas or are economically advantageous; in these cases, reuse may not involve truly remembering (Thomas 2013). Lynn Meskell (2003) found that while Greek and Roman travelers reused earlier New Kingdom mortuary landscapes in Egypt, they did so without a true understanding of the practices they were emulating. Gates-Foster (2012) found that the concept of roads as liminal spaces persisted from Egyptian to Greek and Roman times, and that even though specific practices changed, the reuse of roadside shrines and markers represented a shared understanding of meaning. With funerary monuments, however, the situation is slightly different; Meskell (2003) notes that while Greeks and Romans buried their dead at sites with Egyptian burials, they placed the burials in the domestic part of the site, rather than reappropriating previous funerary space. Unlike Gates-Foster's travelers, these Greeks and Romans did not truly understand the structure and meaning of the spaces they were reusing. The notion that a place is important may survive over many cultures and generations, but the specific meaning associated with it is often lost and recreated by later generations. Similarly, Lori Khatchadourian (2007) found that when Hellenistic rulers in Armenia reused Urartian ruins, the meaning of these sites was likely lost. Indeed, forgetting can be intentional and valuable; social memory is selective based on the needs of the present (Gillespie 2008; Joyce 2008; Torres-Rouffe 2012) and can be part of identity negotiation (Ambridge 2007; Prent 2003; Rubertone 2008). For example, the mounds at the Mississippian site of Cahokia appear to be part of a longstanding tradition of mound construction in central North America, but Timothy Pauketat and Susan Alt (2003) argue that time and distance between events of mound construction would have meant that people at Cahokia probably had only a vague sense of the significance of past mounds. Instead, the process of mound-building was a form of social negotiation in which the people of outlying settlements and the residents of Cahokia incorporated each other's traditions in order to create a new, uniquely Cahokian identity. Additionally, both remembering and forgetting play significant roles in the construction of political legitimacy and as technologies of social control (Joyce 2003b; Van Dyke and Alcock 2003), and as a result, the meaning of landscapes can be completely transformed or forgotten over very short periods of time (Khatchadourian 2007). Indeed, Pauketat and Alt (2003:161) argue that "*traditions are the media of change*, co-opted and promoted in ways that selectively draw from the past", and that the interpretations of the past in the past may be quite different from what was intended by the original creators. When social memory did allow for the transmission of meaning, the true significance of the process may in fact have been lost on the people participating in it (Pauketat and Alt 2003). This dissertation will consider social memory in the context of Urartian reuse or avoidance of previous sites, and the transmission or loss of meaning that ensued.

Phenomenology: A Bodily and Sensory Approach to the Study of Meaningful Places

While landscape archaeology can be useful for studying a wider variety of places than is typical of the site-based approach, and for situating these places in their broader context, traditional settlement surveys and other forms of landscape mapping projects have been criticized for their failure to consider actual human experience (Johnson 2006; Tilley 1994). Early post-processual studies of landscape were based in structuralist and post-structuralist approaches, which analyzed material culture as a text. However this view ignored the materiality of landscapes and culture and the fact that "the material nature of stuff…is important and irreducible to a nonmaterial baseline" (Johnson 2006:270-271). Traditional interpretations of landscape also ignore the fundamental ways in which bodily experience is important to experiences of landscape, and are often less concerned with the subjectivity of human experiences of landscape (Tilley 1994, 2004). Finally, they tend to take a top-down approach to the study of landscapes, one that ignores the experience of individuals (Johnson 2006). These studies' reliance on maps, diagrams and fieldwork methodologies also encourages a two-dimensional, depersonalized view of past spaces (Watson 2001).

As a counterpoint to both processual and structuralist approaches to landscapes, Christopher Tilley (1994, 2004, 2010) was one of the pioneers of landscape phenomenology. Landscape phenomenology is based on the works of philosophers such as Martin Heidegger (1962, 1971), Edmund Husserl (1964 [1907]), and Maurice

Merleau-Ponty (1945), all of whom studied consciousness as it relates to an individual's bodily presence in the world. In particular, these philosophers argued that human experience is inseparable from the body and the senses, and thus, the world can only be understood from this perspective. Landscape phenomenology similarly adopts this focus on embodied experience. Phenomenology is based on Heidegger's notion of "dwelling", which sees human immersion in the landscape as their natural state of being, in contrast to a "building" perspective that sees humans as extrinsic to the landscape, important only when they impose their activities upon untouched neutral space. "Dwelling" involves mutual interdependence and interconnection between humans and the natural world, and human-made features are an outgrowth of it rather than an imposition on the land (Thomas 2008). According to Tilley (2004:1):

> *Phenomenology is a style or manner of thought rather than a set of doctrines, rules or procedures that may be followed, a way of Being in the world and a way of thinking in it. It stands directly opposed to the empiricist or positivist (scientific) "natural attitude" when applied to the study of people or society. Such thought may tell us something of value about physical objects, but it is incapable of coping with that attribute which is most distinctively human: subjectivity.*

Phenomenology in landscape archaeology came out of the realization that experience of place, landscape and geography are subjective and culturally defined (Johnson 2006). Proponents of phenomenology believe that this subjectivity can only be captured by physically traveling to, observing and interacting with archaeological locations, rather than examining site plans or using technological tools such as GIS. Phenomenologists argue that there is no "outside" vantage point from which we can study the world, as we are always embedded within it (Tilley 2004); instead, they study the landscape from "inside", as participant observers (Tilley 2008). Traditional phenomenology rejects formalized methodology, and encourages archaeologists to approach past landscapes with no prior hypotheses (Tilley 2008). For a phenomenologist, the human body is the primary tool of research, and for this reason phenomenological studies are necessarily small-scale and time consuming (Tilley 2010). An archaeologist who wishes to take a phenomenological approach to landscapes should explore landscapes of interest as though they are completely unfamiliar, by focusing on his or her own sensory and physical experience while interacting with the landscape, rather than imposing pre-conceived notions of what the landscape looked like or which aspects were or were not important (Barrett and Ko 2009; Tilley 2008, 2010).

Early phenomenological landscape studies focused almost exclusively on ritual sites, and on understanding the way in which bodily experience connected to cosmological principles (Smith 2003). Tilley (2008) argues that it is necessary to experience past landscapes through walking, as ancient people did, and he encourages archaeologists to "explore first before recording anything" (2004:223). This exploration generally involves walking throughout a site and observing its impacts on the senses and the body, with a particular focus on movement, emotions, and change over time and across space (Tilley 1994, 2004). Observations are recorded in a notebook with a focus on thick description; Tilley (2004) stresses the importance of extremely detailed recordings, as word choice can influence the type of information conveyed and its interpretation. Indeed, language is crucial to the phenomenological approach, as "the aim of a phenomenological analysis is to produce a fresh understanding of place and landscape through an evocative thick linguistic redescription stemming from our carnal experience" (Tilley 2004:30). Tilley (2008, 2010) also stresses the importance of achieving familiarity with a landscape by repeatedly walking around it at different times of day and in different seasons. Use of technical equipment should be minimal, as it interprets and limits the archaeologist's bodily experience. According to Tilley (2004:218), "There can be no substitute for the human experience of place—of being there—and it is only after this that the various technologies of representation come into play." By exploring and recording in this way, the archaeologist can observe a landscape's constraints and affordances—that is, the activities, experiences and emotions that landscape features allow or limit.

Tilley (2004:29) asserts that because "meaning is grounded in the sensuous embodied relation between persons and the world", landscapes are not completely open to any interpretation the archaeologists wishes, but rather have intrinsic meaning that can be "read" with careful observation. While phenomenology acknowledges the subjectivity of experience of landscapes, both the universal nature of the human body and the agency of landscapes limit possible interpretations, allowing archaeologists to connect their experience of landscapes in the present to the experiences of past people (Tilley 2004). This is why it is so important to approach a landscape with no preconceived hypotheses: only by physically experiencing the landscape, by "being there", can the archaeologist observe its affordances and constraints. There is no way to tell in advance what features will be important or what meaning can be derived from them.

Another key component of phenomenology is the idea that both individuals and cultures are shaped by the landscapes they inhabit. Tilley (2010:34) argues that "the identities of persons are significantly related to the topographies and the geologies of the landscapes that they inhabit—they become part of people's characterful existence, as fundamental as the languages that they speak, the occupations that they pursue, and the material things that they create and use." Because landscapes impact human bodies just as human bodies impact landscapes, different topographies provide different sensory and bodily experiences for the people living there, and these experiences help to create individual and cultural identity. This process, however, is not deterministic, as people do have choices in how they use landscapes. This ties into the notion of landscapes as affordances: landscapes can suggest certain meanings and identities, but do not contain a single truth (Tilley 2010). The combination of affordances and human activity means that the activities of past people, as well as the meaning and intention behind these activities, are written into landscapes as narratives, and the archaeologist can record and interpret these narratives by putting themselves "in the footsteps" of individuals who previously inhabited these landscapes (Barrett and Ko 2009; Tilley 1994, 2010).

There are several benefits of a phenomenological approach. Joanna Brück (2005:58) sees phenomenology as useful in that it can "both challenge objectivist models of space and encourage the archaeologist to engage critically with the ways in which experiences of place are created." Phenomenology challenges ideas of Cartesian space and two-dimensional, abstract representations of archaeological space, and instead reminds archaeologists that space is experienced through the body. Phenomenology also provides a framework to consider the agency of landscape features—that is, their ability to influence people and other objects—and how this agency allows landscapes to impact human behavior (Brück 2005).

Tilley (2008) argues that because it can be done by anyone and has no set power structure, phenomenological research is more democratic than traditional methods such as excavation. Similarly, phenomenological observations can be verified, rejected or elaborated upon by anyone who is able to travel to the landscapes of interest. Excavation, by contrast, is non-reproducible, as it destroys its object of study. The recording and interpretation of excavation results are determined by choices made by the excavators; because material can only be excavated once, the small number of individuals involved in the initial excavation have a large amount of privilege and authority over what future research can be done. With a phenomenological study, all of the evidence is still present and can be revisited many times and by many people, all of whom have equal access to and control of the information (Tilley 2008).

Several other archaeologists have adopted a similar focus on the senses when studying sites and landscapes. Ann Steinsapir (2005:5) believes that “the human body is a broad cross-cultural and cross-temporal determinant”, and that as a result, the phenomenological approach is often the best way to interpret the meaning of landscapes belonging to people who left little or no textual record. In her study of the ritual landscape of Roman Syria, Steinsapir surveyed a number of rural sanctuaries several times during the day and night and also during different seasons, with a focus on both the physical and visual experiences of the journey to and from these locations. In particular, she emphasized changes in visual and physical experience as visitors approached the sanctuaries, as well as how the sanctuary would have been perceived from the surrounding landscape. She concluded that ritual processions up to the sanctuaries would have reinforced connections between pilgrims, the sacred natural features associated with the sanctuaries, and the deities who resided in those sanctuaries. She also noted a contrast between physical and visual accessibility: namely, features that served to make the sites more visible, such as tall walls, also restricted the movement of pilgrims within the site, while making activities within the site less visible as well. On the other hand, towers for ritual activity, and the building of large ritual fires, would have allowed some aspects of the ceremony to be observed from the surrounding landscape even by people who would not have been able to access the site.

Most phenomenological approaches have focused on vision, which archaeologists often perceive as the sense most crucial to the experience of landscapes (Cummings 2002; Llobera 2007). However, a number of other researchers have also conducted archaeological studies based on detailed analyses of other types of sensory experience. Vicki Cummings (2002) analyzed the texture of stone monuments from the British Neolithic. She argues that these monuments intentionally created a contrast between rough and smooth stones, and that the use of texture, as well as color and shape, "might have corresponded to broader conceptions of the world, not only in terms of architecture but the topographic settings of monuments" (Cummings 2002:254). Mary Ann Owoc (2002) focused on the use of soil color in Bronze Age funerary monuments in Britain. Her study suggests that different colors of soil were used to draw attention to different parts of the monument, and that colored elements of the monuments served to reinforce ritual ideas about the meanings of certain colors and to link cosmological principles with the mundane world. For example, yellow clay found at funerary monuments may have had material properties related to the solstice and to movements of the sun. In this way, the colors of natural landscape were appropriated for ritual purposes. In a study of the geoarchaeology of mounds in the Mississippi Basin, Sarah Sherwood and Tristram Kidder (2011) similarly found that builders made strategic choices about soil color and texture. While most archaeological studies of mounds have been more concerned with the buildings on top of them, Sherwood and Kidder argue that more skilled engineering and labor went into the construction of the mounds themselves than was previously thought, and that the construction of the mounds themselves, including the selection of material, was a form of ritual in and of itself. Indeed, the materiality of cultural features is often an important message in and of itself. Harmansah (2014, 2015) and Scarre (2008) argue that the physical properties and experiences of living and cut stone, particularly the feelings of awe or wonder they can provoke, contributed to their role in place making. The solidness of stone, and its association with concepts of durability, serves to reinforce the permanence and immutability of the ideologies conveyed by stone monuments. This is particularly important in stone monuments created by kings and other elites, whose purpose is to embed messages of legitimacy into the landscape for both current and future generations (Harmansah 2014, 2015).

Sound is another important sense that is attracting an increasing amount of attention. Matthew Helmer and David Chicoine (2012) studied the acoustic environment of plazas in Peru. Sound is generally regarded as less permanent than vision, and therefore its contributions to the experience of a site can be harder to analyze; however, based on the presence of panpipes found in plazas, they concluded that acoustics were likely an important factor in plaza construction. Their study recorded the intensity and intelligibility of spoken words at various points both within and outside the plaza, attempting to use other people to recreate the effects of background noise. They concluded that these plazas were designed to amplify noise inside and block outside noise, creating a favorable acoustic environment where sound could be easily transmitted and understood. The acoustic environment of spaces directly outside the plaza, on the other hand, was not as favorable. Thus, these plazas were "exclusive sonic environments" that created a sense of cohesion for those inside them, while excluding those who were outside. Even with evidence such as this, understanding the role of sound at archaeological sites should be undertaken with caution. Chris Scarre (2006) points out that it can be difficult to determine whether acoustic patterns were intentional, as striking sound effects can arise by accident. He compares archaeoacoustics to archaeoastronomy, where the presence of a pattern is not necessarily evidence for intention. In these cases, repeated observations and consistent patterns are important, as is goodness of fit, particularly evidence of consistent change.

Sensations of movement to and from a place are also an important aspect of phenomenology, and thus this approach also lends itself well to the study of roads and trails (Snead et. al. 2009). This is similarly important for ceremonial landscapes, where ritual movement through the landscape "activates the places visited" and reinforces the cosmological ideals that underlie their sacredness (Ashmore 2008:169). Bodily movement through landscapes is also involved in rituals related to the creation of political authority (Ristvet 2011). Aaron Watson (2001) used phenomenology to study monuments at the British Neolithic site of Avebury, paying particular attention to vision and movement. He found that routes through monuments were designed such that earlier monuments came into view before contemporary ones, thus encouraging visitors to make connections to the people who had used the site previously. He also found that the stone circles used at Avebury created a sense of enclosure and containment, which may have represented the idea that this location was viewed as the center of the world. However, he also stresses the way in which visibility varies as one moves through the site, which means that different types of people may have participated in different activities and had different experiences at different parts of the site.

Certain landscape features can evoke particularly strong physical and sensory experiences. For example, Veronica Strang (2008) and Omür Harmansah (2014) discuss the way in which sensory perceptions of water contribute to its social and culture significance, particularly as associated with places of power on the landscape. Strang (2008) found that experiences of water (thirst and drinking, bathing, its glittering surface, the pleasant sound of flowing water) are important to its experience and associated with its social and ritual significance. The sensory experience of certain locations, such as the physical and visual impact of water emerging from living rock at the source of a spring, create what Harmansah (2014) terms "evocative landscapes", which provoke feelings of awe and wonder that connect to these places' roles in ritual and cosmology. Because of its focus on the senses, phenomenology is well suited to capturing the ways in which natural features impact the experience of cultural locations (Steinsapir 2005).

On the other hand, phenomenology has attracted a significant amount of criticism. One of the biggest criticisms of phenomenology is that it rests on the idea that bodies, experiences and meanings are universal and durable. Phenomenology assumes that the constraints imposed by the human body make up for variations across time and culture, and as a result it tends to displace modern, familiar ideas onto ancient people (Brück 2005; Johnson 2006). However, in reality there is a great deal of variation among human bodies. Bodies are culturally created, and therefore cannot be used as a universal metric to provide insight into the minds of past people (Brück 2005; Smith 2003). Additionally, while traditional phenomenologists assert that landscapes and their meanings will preserve over centuries or millennia, the physical form of landscapes can change significantly over time due to both natural and cultural processes. This means that patterns observed today, such as visibility, might merely be coincidences of preservation and would not have been present for past people (Brück 2005). James Snead and colleagues (2009:15) point out that "the passing of time and transformation of the landscape makes it certain that what they saw and what we see…are not the same thing." Furthermore, the human experience of material properties of landscapes is not universal or ahistorical, but rather is situated within the individual's social and cultural context (Smith 2003). Brück (2005:56) argues that "It is therefore unlikely that simply walking through a building, monument or landscape, or handling an artefact, will provide us with an authentic insight into the experiences of ancient people because those experiences are historically constituted." While phenomenologists assert that the intentions behind human activity are built into the landscape in a way that can be understood hundreds or thousands of years later, these motivations, too, are heavily influenced by cultural and historical context (Barrett and Ko 2009). Additionally, the assumption that "certain environments come pre-loaded with specific cultural meanings" (Smith 2003:64) fails to address questions of how meaning is attributed to landscapes and features in the first place. It also ignores the power dynamics that govern how landscapes are shaped and experienced and how meaning is created (Smith 2003).

Another flaw of phenomenology is that it tends to focus only on the experience of individual archaeologists, and is therefore not as useful for describing the experiences of multiple people (Hamilton et. al. 2006). Because of its focus on individual observers, phenomenology "homogenizes human experience and constructs only certain types of person as active agents" (Brück 2005:58); in particular, it tends to represent only the experience of the traditionally white, western male archaeologist. In line with the English Romantic tradition in which it is partially based, phenomenology assumes that the experience of the individual and his or her observations are an empirical method of obtaining an objective truth, when in reality these observations are not as unbiased as traditional phenomenologists would like to believe (Johnson 2012). Additionally, the focus on the individual and his or her body means that phenomenology ignores factors outside the body that can influence perception and experience—namely, social relationships, as well as the presence of other people and activities on the landscape that would have had a significant impact on how human-made features were viewed and interpreted (Brück 2005). While phenomenology connects cultural meaning and landscape features, it ignores the social relationships and institutions that are responsible for the creation of these landscapes and the activities that take place within them (Smith 2003). Similarly, traditional phenomenology's focus on elite use of space to control movement and reinforce social ideologies ignores the agency of non-elite people and fails to consider how spaces can be used in ways other than what was intended by their creators (Brück 2005). Indeed, most phenomenological studies have focused on isolated ritual landscapes and taken little interest in day-to-day activities. However, there is no reason phenomenology cannot be used to study non-ritual, quotidian spaces, as shown by Sherwood and Kidder (2011) and Helmer and Chicoine (2012).

Phenomenology's subjectivity, and its intentional ambivalence, makes theories difficult to prove or disprove. Andrew Fleming (2006:268) states that because of their rejection of objectivity as a research goal, early phenomenologists "had given themselves permission to say more or less whatever they liked." Phenomenology also, often intentionally, does not make rigorous use of evidence or of empirical methodologies (Johnson 2012; Llobera 1996). While proponents (e.g. Tilley 2010) see this lack of formalized methodology as an asset, Sue Hamilton and colleagues (2006) argue that any phenomenological study has some strategy to it, and that this strategy merits discussion and explanation. This is especially true because the methodology used can create bias. For example, in phenomenological analyses of visibility, which features are recorded as visible or regarded as important is left to the archaeologist's discretion, and making connections between features often requires a good deal of imagination and speculation (Fleming 2005). Similarly, phenomenologists believe that the use of photographs and video can help them record and recreate their experiences and impressions of the landscape. However, there is bias present in what is recorded and in how these recordings are presented and edited, something which is usually not acknowledged (Brück 2005). Finally, while phenomenological studies can observe patterns of human activity on the landscape, they often do not consider whether these patterns were intentional or whether they were significant to past people. For example, a modern-day archaeologist might consider the intervisibility between two sites to be important, but past people might not have even noticed it. Even when these patterns are identified systematically, it is difficult to extract meaning from them (Brück 2005).

Another critique of phenomenology is that it focuses on the strangeness of the past, and this strangeness encourages studies to be imaginative and sensual rather than evidence-based (Fleming 2006). This, in turn, leads to a romanticized view of both past people and of the modern day archaeologist's method of research, which turns archaeology into a performance art rather than an investigation. In particular, Andrew Fleming (2006) argues that a phenomenologist whose work involves simply imagining the experiences of past people is no better than a distant observer working at his or her desk who has never been to the site in person—precisely the type of disconnected, depersonalized archaeology that phenomenology claims to reject. While he is not opposed to the use of imagination in archaeology, he believes that traditional landscape archaeology methods already take into account human experience and are capable of immersing the archaeologist in the landscape. The dehumanized nature of traditional landscape archaeology is a result of how archaeologists choose to report their work, rather than a fundamental flaw in the field methodology (Fleming 2006).

These criticisms mean that phenomenology has attained a bad reputation, both in published research and by word of mouth (Hamilton et. al. 2006). However, Hamilton and colleagues (2006:32) believe that "its concern with sensory experience does not, *per se*, make it less amenable than any other archaeological approach to the development of a rigorous methodology, which would allow its results to be assessed in normal academic ways." They suggest several things archaeologists can do to take advantage of the benefits of a phenomenological approach while avoiding its pitfalls, namely: be more detailed and explicit in the development and reporting of field methodology; use a group of people of different genders, ages and backgrounds in order to get a more nuanced picture of the human experience of a place; acknowledge that the form and meaning of places changes over time, but also make reasonable judgments about what features likely stayed the same; use maps and photographs to contribute to an understanding of site location and layout; and, most importantly, combine phenomenology with other methods such as GIS and the analysis of ceramics and architecture. This last observation—that phenomenology is useful, but needs to be supported by other methods—will serve as the basis for this dissertation. Even Tilley (2010) acknowledges that phenomenology is most effective when combined with other methods.

As suggested by Hamilton and colleagues (2006), this project has taken several steps to avoid some of the traditional disadvantages and problems associated with phenomenology. Tilley's basic methodology, in which the archaeologist familiarizes himself or herself with a site or feature by focusing on the senses and bodily experience, will serve as the basis for the qualitative component of this project. However, this project departs from Tilley in that it does not intend to use these experiences as a way to "read" meaning from the landscape or to understand the thoughts and feelings of past people. It also acknowledges that impressions on a single day cannot recreate the experience of traveling to a location habitually, which would have been the nature of most people's interactions with these places. Rather, this project will use phenomenology as a tool to observe certain patterns in architectural design and location. This project is also designed to address Johnson (2012) and Llobera's (1996) critiques through systematic recording and quantitative analyses (discussed in the next chapter).

Conclusion

Landscape archaeology encompasses a variety of subfields, but all of them seek to correct these problems and to provide a more complete, well-rounded view of the past by focusing on locations and behaviors that would traditionally be ignored by the site-based approach. By utilizing a wide variety of data about both cultural and environmental factors, landscape archaeologists can gain valuable information about individual and group interactions with time, space, each other, and the natural world.

A landscape archaeology focused on places, memory and meaning sees landscapes not as canvases on which human activity takes place, but rather as social actors in and of themselves, capable of negotiating interactions between people and also entering into relationships with people. Lucero and Kinkella (2014:1) propose that the focus of landscape archaeology should be "not about determining what people did *to* the landscape, but rather what they did *with* the landscape." Although modern western scholarship emphasizes a distinction between *natural* and *cultural* landscapes, for many past peoples, the two were inextricably intertwined. Indeed, the purpose of many landscape monuments was to align the social and natural orders by insinuating political, social and religious structures and practices into the landscape itself. Elites legitimized their power by connecting it both to past human activities on the landscape, and to the durability and sacredness of natural features. Thus, humans both imbued natural features with meaning through repeated practices, and derived meaning for those practices from the natural features associated with them.

Despite flaws in the traditional methodology, phenomenology is a valuable approach for understanding landscapes as past people understood them: through the experience of "being there", perceiving landscapes with their senses and with their bodies. Several modifications to the phenomenology proposed by Tilley, including systematic recording and supplementing phenomenology with other approaches, can lead to a humanized understanding of landscapes that is not possible with a project that focuses solely on site plans or digital analysis. It is important to remember, however, that landscapes and places were used by individuals from all walks of life, and that they had many meanings, some complementary, others contradictory. As with portable material culture, traditional archaeology takes a top-down approach to the creation of landscapes, one that centers on the activities of elites and on how elites and conquering powers used place-making technologies to impose their ideology on subject populations. In reality, however, the agency of conquered peoples and non-elites played a significant role in how landscapes were imbued with meaning. Rulers and other elites often built upon pre-existing traditions of landscape use, intentionally choosing natural or cultural places that were already significant to local populations. Even when elites modified these places or attempted to impose their own traditions, local practices and meanings often endured. Similarly, landscapes were a medium through which non-elites could choose how to interact with elites and conquering empires. Meaningful places could be locations for resistance to foreign traditions and the reassertion of local identity. At the same time, they could also be locations for the creation of new, plural identities that combined old traditions with new ones. Even within a culture or for a single individual, landscapes can be interpreted in multiple ways. While elites frequently manipulated landscape features to convey certain ideological messages, these messages could be rejected, ignored, misinterpreted, or reinterpreted by their intended recipients. Landscapes are palimpsests of multiple meanings layered over time that interact with each other and with people who use the land. Landscape archaeology is uniquely suited to disentangling these meanings. In particular, a bottom-up approach to landscape, one that focuses on the agency of individuals and the role of landscape in negotiating meaning, can elucidate interactions between elites and non-elites and between empires and the people they conquered.

CHAPTER 3: GIS: A QUANTITATIVE APPROACH TO THE ANALYSIS OF LANDSCAPES

GIS: Overview of the Field

From its inception, archaeology has been deeply concerned with space; the location of features, the relationships among them, and their relationships to other aspects of the environment have always been a fundamental concern of the discipline. Processual archaeologists have regarded space as theoretically neutral (Wheatley 1993), while post-processual archaeologists have emphasized that space, rather than being objective and unproblematic, is in fact a constructed concept that serves as "a meaningful medium for human action" (Wheatley and Gillings 2002:7). Traditional techniques to analyze spatial relationships, however, are often subjective, and lack the ability to link spatial locations to other characteristics, such as chronology, in a rigorous way (Wheatley and Gillings 2002).

More recently, archaeologists in all geographic regions and subfields have come to rely increasingly on Geographical Information Systems (GIS) and remote sensing tools such as satellite imagery and aerial photography to conduct spatial analyses. Similar to many archaeological methods, GIS in the United States has its origins in another field of study: digital cartography projects initiated by universities and government agencies in the 1960s and 1970s. In the late 1970s, as GIS programs became increasingly commercially available, their use continued to broaden (Wheatley and Gillings 2002). Originally available only to those with special training, this formerly obscure tool has become widely accessible and relatively easy to learn to use (Hritz 2014; Wheatley and Gillings 2002). GIS has become invaluable to archaeologists due to its ability to record and manipulate large amounts of spatial data faster and more accurately than would be possible by hand, as well as its ability to combine spatial data with other types of data in the form of attributes. The use of GIS and remote sensing has allowed archaeologists to conduct much larger surveys than could be done on foot, and to work in areas that might be physically inaccessible due to difficult terrain or political conflict (Hritz 2014; Parcak 2007; Wheatley and Gillings 2002). GIS analyses can also be easily combined with other types of computerized statistical analyses, including significance tests and interpolation (Conolly and Lake 2006; Kvamme 1990; Spikens et. al. 2002).

As discussed in the previous chapter, landscape phenomenology, a key component of this dissertation is a valuable technique for understanding landscapes, but it is most effective when combined with other methods. Thus, this dissertation will use GIS analysis to complement phenomenology and the other qualitative types of landscape approaches discussed in Chapter 2. GIS was chosen because, like phenomenology, it is well-suited to study space and landscapes. GIS was also chosen because of its perception (discussed below) as one of the most quantitative and objective methodologies in archaeology, compared to phenomenology, which is perceived as one of the most qualitative and subjective. The rest of the chapter will discuss how the history, development, and modern uses of GIS make it valuable for the landscape approach used by this dissertation, and particularly as a counterpoint to phenomenology.

As in its non-archaeological uses, archaeological GIS was initially designed for processual projects such as site survey and environmental analysis; in particular, it was used for predictive modeling of archaeological site location (Llobera 1996; Lock 2001; Zubrow 2006). Proponents of processual approaches saw the distribution of archaeological remains as the result of past processes and relationships. They also regarded hand-drawn maps and visual examination as subjective and inaccurate and sought a more scientific way of explaining spatial patterns. For this reason they often found GIS appealing (Wheatley and Gillings 2002). These early approaches, which were dominant through the mid-1990s, were criticized for promoting environmental determinism and positivism (Gaffney and Van Leusen 1995; Lock 2001; Verhagen 2007) in stark contrast to other emerging theories in landscape archaeology from the same time period, which emphasized the role of space as a social construct (Lawrence and Low 1990; Meinig 1979; Tilley 1994). From that point forward, archaeologists looked for ways to integrate GIS into the prevailing humanistic approach to space and time, and indeed many more modern GIS projects have considered smaller-scale entities such as sites, sub-sites and agents (e.g. Zubrow 2006) and cultural context (e.g. Harrower 2008; Llobera 1996).

In the Near East, dramatic changes in scale and human interaction over time makes spatial modeling an important tool in landscape studies. Carrie Hritz (2014) argues that because the Near East has an unusually long and complex archaeological record, standard GIS tools are not always useful for addressing issues of long-term change in complex societies where textual records provide insights into decision-making processes. Instead, many of these tools are more useful for less integrated, nonliterate societies. However, newer methods such as agent-based modeling (Graham and Steiner 2008) have been developed that try to account for complex patterns of human decision-making. Landscape studies and spatial analysis can "move beyond local historical topics and site-specific studies and address broad and complex human–environment interactions preserved in the ancient landscape" (Hritz 2014: 255).

GIS and Landscape Archaeology

GIS is closely intertwined with landscape archaeology since both are concerned with multi-scalar analyses of the use of space (Llobera 1996; Lock 2001; McCoy and Ladefoged 2009), and this connection will be the focus of the rest of this chapter and of this dissertation. In addition to its ability to process large amounts of data, which lends itself well to the study of entire landscapes, there are several other reasons that GIS is often combined with a landscape approach. An often underutitlized strength of GIS is that it can be used to analyze both the presence and absence of archaeological features, as well as the relationship between archaeological features and the space between them, something that is important to landscape archaeology and that other forms of analysis cannot do as effectively (Gaffney et. al. 1996). Additionally, while GIS is most often used to map human-made objects and features, landscape archaeology has demonstrated that natural features are often just as important in people's interactions with space (e.g. Bradley 2000), and GIS analyses can and should include natural features as well as cultural ones (Bernardini 2013; Gaffney et. al. 1996).

Carrie Hritz (2014) discusses four approaches to space and landscapes that characterize most uses of GIS in landscape archaeology: landscape as static artifact, landscape as built features, landscape as system, and landscape as dynamic construct. All four approaches are still evolving, and each uses GIS for different purposes and in different ways, but they can and do often overlap. The *landscape as static artifact* approach views landscapes as records of the past that can be "read" by examination. This approach is most often concerned with mapping and recording archaeological features.

For example, declassified satellite imagery from the United States and the former Soviet Union, such as Landsat, SPOT, CORONA and Quickbird, can provide detailed images of most areas of the world that can be used in conjunction with GIS to locate archaeological features (Casana 2012; Deadman 2012; Parcak 2007, 2009; Wilkinson and Rayne 2010). Aerial photographs (Gleason 1994) and LiDAR (Johnson and Ouimet 2014; Poirier et. al. 2013) can also be used to "see" landscape features that might be invisible on the ground. Additionally, tools such as magnetometry and ground-penetrating radar can detect features underground without needing to excavate (Aspinall et. al. 2008; Kvamme 2003; Lindsay et al 2009; McCoy and Ladefoged 2009; Stafford 1995).

Older satellite images and aerial photographs can also reveal landscape features that have now been destroyed or lost. This information is of interest to archaeologists who take the *landscape as built features* approach, focusing on how features survive or are destroyed. Multi-spectral imaging, which uses wavelengths of light outside the visible spectrum, can reveal sites and features that do not appear to the naked eye in images or on the ground (Hritz 2014; Menze and Ur 2012; Parcak 2007). Similarly, Karim Alizadeh and Jason Ur (2007) used CORONA satellite imagery to detect the presence of nomadic campsites on the Mughan Steppe in northwestern Iran. Similarly, Bjoern Menze and Jason Ur (2012) used satellite imagery and digital elevation models (DEMs) to estimate the length of occupation of tell sites based on the tell's volume. Thus, GIS can not only document new sites, but can also provide insight into formation processes.

The *landscape as system* approach focuses on the distribution of sites, their spatial relationships, and their connections to social, political and economic systems (Hritz

2014). This reflects one of the most straightforward uses of GIS, for the detection and mapping of new sites, both to understand past settlement patterns (Casanaa 2013; Ur 2003) and to understand modern behaviors such as the destruction of archaeological heritage (Beck et. al. 2007; Parcak 2007; Parcak et. al. 2016). One of the most important and basic aspects of GIS studies is the ability to georeference and overlay multiple maps and images from different sources and time periods and to query these layers to produce new derived layers for analysis and interpretation (Wilkinson 2003). Michael Harrower and colleagues (2013) and Anthony Beck and colleagues (2007) used GIS to combine data from multiple sources, such as satellite imagery, aerial photographs, and hand-drawn maps, in order to detect traces of natural and archaeological features. Similarly, GIS is a valuable recording and planning tool for cultural resources management projects (Ebert 2004; Lock and Harris 2006; Wescott 2006; van Leusen 1995).

The landscape as system approach can also use GIS to model the social and political patterns behind the distribution of archaeological features. Adam Smith (1999:45) argues that “The production of landscapes is fundamental to the constitution of political authority. It is impossible to describe regimes independent of the spatial order they created.” Indeed, the spatial arrangement of sites has frequently been taken as a reflection of social or political structure, with larger sites representing major centers and small, nearby sites representing subordinate settlements (Biscione 2012; Haroutunian 2015). Many studies of landscapes of power are based in the notion that “the relationships of power…have a precise spatial correlation and are therefore reflected directly on the configuration that human settlement takes on within a given region” (Bonacassi 1996:16). GIS can map these arrangements precisely and thus provide a quantitative analysis of social patterns. In addition, GIS can also be used to create predictive models that suggest where more archaeological remains might be found. These models are based on the premise that "human behavior is patterned with respect to the natural environment and to social environments created by humanity itself" (Kvamme 2006:4). For example, archaeologists can use GIS to predict associations between site location and significant environmental features (Harrower and D'Andrea 2014), and in turn can use the environmental characteristics of known sites to create a probability surface indicating where additional sites of that type are likely to be found (Ebert 2004; Kvamme 2006).

This dissertation will focus both on the landscape as system approach and in particular on the final approach, *landscape as dynamic construct,* which examines the ways in which landscapes are altered, inhabited and changed over time (Hritz 2014). For example, Adam Smith (1999) used GIS, and in particular the analysis of slope and topography, to study changing patterns of fortress location in Armenia. Pre-Urartian fortresses were located on steep slopes, suggesting that they were not designed to be physically accessible and that pre-Urartian leaders maintained both physical and symbolic distance between themselves and subject populations. During the period of Urartian imperial expansion, political centers shifted dramatically from the mountains to the plains, suggesting closer oversight of subjects. These Urartian fortresses were located on more gentle slopes, suggesting a greater degree of interaction between elites and subject populations. Additionally, sites showed a reorganization based on size, with smaller sites clustering around larger ones. Thus, changes in site location were reflective both of changes political organization and of changing attitudes toward space.

Despite these many applications, GIS and archaeological theory have a complicated relationship. GIS analyses are often viewed as out of step with modern archaeological approaches with focus on cultural context and human agency (Gaffney and Van Leusen 1995; Lock 2001; McCoy and Ladefoged 2009; Wheatley 1993; Zubrow 2006). Many archaeologists (e.g. Llobera 1996; Zubrow 2006) argue that GIS also imposes western ideas of time and space on past cultures. On the other hand, David Wheatley (2012) pushes back against the notion that non-western cultures did not undertake "map-like thinking", or visualizing space in the top-down fashion that is used in modern map-making. He cites examples of top-down maps from cultures around the world that date back millennia as evidence that this type of thinking might be universal and innate, rather than a western cultural construct. He also cautions against assuming that non-western cultures were not capable of spatial abstraction, as feats of engineering such as the Nazca Lines prove that past populations had a sophisticated ability to visualize space. In this case, GIS analyses and modern maps may be more reflective of past, non-western conceptions of space than is typically assumed.

While they are sometimes considered to be at odds, some studies have shown that GIS and remote sensing can reinforce qualitative approaches to landscapes, including those based in post-processualism. One promising avenue is agent-based modeling, through which archaeologists can create landscapes—either real or imaginary—and model the action of social agents such as households (Bankes 2002; Ebert 2004). For example, Shawn Graham and James Steiner (2008) used agent-based modeling to explore how settlement patterns could have emerged from the movements of individual travellers in Geometric Greece and Protohistoric Italy. Others have chosen to integrate GIS with more qualitative approaches. Clark Erickson (2009) combined GIS mapping of roads and canals in the Bolivian Amazon with a focus on agency and movement. GIS has also been combined with phenomenology (e.g. Opitz 2014). As discussed in the previous chapter, phenomenology focuses on the personal and emotional experience of space as perceived through the body and the senses. Phenomenology's rejection of quantitative and technological methods may on the surface make it seem incompatible with GIS. However, "cognitive information on the way communities perceive and interpret their environment should be patterned", which "indicates that such qualities will be measurable and potentially mappable" (Gaffney et. al. 1996: 134). Furthermore, GIS can be used to assign value to space, as with the calculation of cost surfaces (discussed below). In doing so, GIS is not a tool of objective measurement, but rather a technique that can be used to explore the cognitive aspects of space, including values and belief systems (Gaffney et. al. 1996). While Christopher Tilley (2008) advocates walking through and around sites of interest and focusing on one's experiences there, other archaeologists have attempted to take a more objective and empirical approach to the lived experience of landscapes through the use of GIS. Several GIS tools exist which can be used to supplement phenomenology by quantifying the sensory and bodily experience of places. In particular, this project will make use of Viewshed Analysis and Least Cost Paths in order to complement phenomenological observations and provide additional information about factors that a phenomenological analysis cannot capture.

Visibility Analysis and Viewshed

The bodily experience of space can involve sight, sound, touch, smell and movement. Out of all of these, however, it is vision that has generally received the most attention in archaeological studies, particularly those involving GIS, and visibility analyses that have been most commonly used to attempt to combine GIS and phenomenology. GIS-based visibility analyses have their roots in a long tradition of other forms of visibility analysis, such as those associated with cognitive archaeology. While GIS is often used to quantify or automate pre-existing methods of visibility analysis, GIS has also led to the development of new and unique techniques (Wheatley and Gillings 2000).

First, however, it is valuable to consider whether the archaeological focus on vision is deserved. Some archaeologists (e.g. Helmer and Chicoine 2013; Scarre 2006) believe that the privileging of vision is purely a result of scholarly bias and that other senses should be given equal weight. David Wheatley (2012) identifies two major critiques of the dominance of visibility analyses in the archaeological study of the senses. The first is that a focus on vision represents a western male perspective that is not reflective of past cultures. Frieman and Gillings (2007) connect the notion of vision as the primary sense to the development of rational science and the Enlightenment, and point out that the prioritization of the senses is different in different cultures. However, Wheatley believes that while “there is a benefit in being forced to confront the culturally specific way we represent space because it reminds us that there are *other* ways we might choose to do so” (Wheatley 2012:121), the utility of visibility studies is that they do not in fact depend on past cultures’ conception of vision or the senses. Visibility analyses provide information on patterns of visual structure, and the existence of these patterns is separate from explanations of why people organized space the way they did or how they saw the world, though it can sometimes be used to speculate about these questions. Visual structures and spatial patterns occur regardless of how people conceived of space and vision and thus can be mapped empirically (Wheatley 2012).

The other critique of visibility studies, which Wheatley regards as more substantial, is that they artificially separate vision from the other senses in a way that is not reflective of real-life sensory and bodily experiences. On the one hand, there is evidence that vision has a privileged role in the brain. Several studies (Bertelson and Aschersleben 1998; Flanagn and Beltzner 2000; McGurk and MacDonald 1976) have demonstrated that in humans, when visual input conflicts with auditory or tactile input, vision "overrides" the other senses. Marcos Llobera (2007) argues that the study of visibility is particularly valuable because it provides the most spatial information of any sense and is more permanent than smell and sound. Despite this evidence, however, it is an oversimplification to say that humans are primarily visual animals or that vision is our dominant sense, because in real life, humans experience the world through an interplay of senses (Wheatley 2012). The degree to which the senses overlap and influence each other has been given little attention in both phenomenological studies and GIS analyses, and Wheatley advocates for a new theoretical framework to explore this area, beyond merely developing new case studies or methodological techniques. In particular, archaeologists might explore the interrelatedness of the senses through the perspective of spatial scale. At close range, bodily experience is a complex mixture of all five senses; at greater distances, the role of taste and smell diminish, and vision is the main sense through which long distances are experienced, such as on the horizon (Bernardini 2013;

Wheatley 2012). Thus, visibility analyses may be most valuable when analyzing a broader spatial scale, and less effective at close range, where input from the other senses might significantly impact the visual experience (Wheatley 2012).

Because of the popularity of visual analyses in archaeology, a number of technological methods have emerged for quantifying vision. These methods usually involve the generation of a viewshed, a map that determines the visibility of each pixel on a grid to an input point or set of points. These "sheds are characterized by their singular focus and the lack of direct engagement that attends their creation" (Frieman and Gillings 2007); that is, they an allow an archaeologist to make binary, clear-cut distinctions between seen and not seen without, in fact, actually seeing the location in question at all. The utility of these viewsheds has been a subject of debate. On the one hand, they allow archaeologists to analyze more points, across greater distances, more efficiently than would be possible by surveying the locations in person. Viewsheds can also be used to quantify how much of a feature is visible or what range of visibility a feature has over the surrounding landscape in a way that can be difficult to describe using human observation alone. Additionally, the existence of specific tools for Viewshed analyses in most GIS packages means that it is relatively easy for archaeologists to use GIS to complement phenomenological or other types of qualitative approaches to vision (Lageras 2002). On the other hand, there are several issues with viewsheds, both technical and theoretical. Viewsheds often fail to take into account limits on visibility, including the eyesight of the viewer, atmospheric conditions, and the size, brightness, contrast and shape of the target. Indeed, while the Viewshed tool can calculate how light travels from one point to another, relatively little work has been done on how actual humans perceive objects under various conditions, particularly across different distances (Ogburn 2006). Viewsheds also often fail to take into account the presence of vegetation, which can be difficult to reconstruct in the past anyway. These and other technical and pragmatic issues—such as object-background clarity, variation in visibility depending on season or time of day, inaccuracies in DEMs, and edge effects for regions on the margin of the study area—can be offset with a variety of technical fixes, by varying the input parameters, by using different distance ranges, and by combining multiple viewsheds (Wheatley and Gillings 2000).

From a more theoretical point of view, the use of viewsheds fails to consider the role of senses other than vision, and it also does not take into account the impact of movement. Furthermore, a simple analysis of seen and not seen does not provide information on perception, which is culturally constructed and which is more valuable to an understanding of the behaviors and attitudes of past populations (Frieman and Gillings 2007). Indeed, visibility is unimportant if there was no one at the location in question to do the viewing; viewership is dependent not just on a line of sight between two points, but by the number of people who could see a feature, the frequency and duration for which they could see it, and the context of the viewing, e.g., from one's own house, from a pathway, etc. (Bernardini 2013). While "the shed is increasingly regarded as a valid proxy for perception and visibility a synonym for sensory engagement" (Frieman and Gillings 2007:5), in reality a variety of other factors might have impacted viewership. Finally, analyses of intervisibility between features often run the risk of conflating features from different time periods, and of condensing or obscuring temporal sequences and processes (Wheatley and Gillings 2000).

Although the simple calculation of viewsheds faces several of the problems outlined above, archaeologists are increasingly using innovative methods to expand visibility studies beyond simple maps of “visible” and “not visible” and into techniques that can provide insight into the social structure, attitudes and values of past populations. Viewshed analyses can be combined with statistical methods such as the Komolgorov-Smirnov test in order to demonstrate intentionality: by comparing the visibility of a group of sites to the visibility of a background population of random points, archaeologists can demonstrate that sites were systematically located in places with an unusually high degree of visibility. This pattern, in turn, suggests that visibility was an important factor in site location, and additional evidence, such as other patterns of site location and excavation findings, can indicate the role that visibility played in a particular culture (Lageras 2002; Wheatley 1995). For example, David Wheatley (1995) used cumulative viewshed analysis to compare the visibility of two sets of Neolithic barrows in England. Cumulative viewshed analysis involves combining the viewsheds of each site to generate a grid depicting the total number of sites that can see each point. Using the Kolmogorov-Smirnov goodness-of-fit test, he found that barrows in the Stonehenge region of the United Kingdom significantly differed from the background population, suggesting that their builders intentionally placed them in areas of unusually high visibility. While this visibility may have been associated with territoriality, Wheatley cautions that it may in fact be related to other factors, such as a desire to place the barrows at high elevation. This study also demonstrates the utility of visibility analysis in understanding ritual behavior. Several studies (Renfrew 1976; Richards 2005; Williams 1999) have found that elite burials are often located in sight of older burials, making visibility an important tool of social memory. Visibility analyses can also be used to address human interaction with sacred natural features. Indeed, visibility is often the best way to study natural features that may bear no physical sign of human use but that would have been regarded as cosmically significant (Bernardini 2013).

In addition to phenomenological and ritual experiences, archaeologists can use Viewshed analyses to understand systems of control, surveillance, and defense. In many past cultures, intervisibility would have been important for communication of messages via fire beacons, smoke signaling, and the use of mirrors. This communication could have been used for both military and ritual purposes (Earley-Spadoni 2015). Tiffany Earley-Spadoni found that pre-Urartian and Urartian fortresses in Armenia were more intervisible to each other than were random points on the landscape, and she suggests that this visibility was related to the use of fire signaling, probably for defensive purposes. Similarly, John Kantner and Robin Hobgood (2003) used Viewshed analysis to conclude that kiva towers in the Chaco Canyon region increased visibility of the surrounding area, possibly connecting the great houses associated with the towers to nearby communities through lines of sight. Peter Stokkel (2005) used Viewshed analysis to study the location of Hittite rock reliefs. He concluded that some of these reliefs were territorial and propagandistic, designed to convey an elite's claim to the land. These reliefs were larger, and featured scenes of armed elites interacting with deities, and they were highly visible from the landscape in general, as well as from the main roads. By contrast, ceremonial reliefs, which were smaller and depicted scenes of elites engaging in ritual activity, were generally hidden from sight. Based on this analysis, he argues that the territorial reliefs were meant to be seen by as many people as possible, to convey their message of elite power, whereas the ceremonial reliefs were meant only for the eyes of elites with special ritual knowledge.

Other archaeologists have attempted to address the effect of movement on visibility. Vision is often related to movement, and informed by the presence of other natural and human-made features that are experienced through movement (Llobera 2003). Bernardini and colleagues (2013) took this issue to its logical conclusion by analyzing how the visual experience of landscapes would have changed as populations migrated over hundreds of years. Marcos Llobera (2003:26) advocates for expanding visibility analyses beyond static viewsheds, choosing to focus instead on visualscapes, which he defines as "all possible ways in which the structure of visual space may be defined, broken down and represented." The visualscape considers not only which features are visible, but also angles of visibility, the amount of a feature that is visible, and the visual experience of a feature as one moves toward and away from it. Llobera (2007) used this concept to examine how the view of Neolithic barrow clusters in northern England might change as an observer approached a particular cluster, and concluded that barrow clusters may have been visible while approaching other clusters, or in the middle ground between clusters.

Viewsheds are not the only way to understand visibility using GIS. The shape of natural and cultural features is also important to understanding past people's visual experiences of them. For example, visual prominence would have been a key determinant of the significance of landscape features such as mountains. The deviation of these features from the horizon line, their relationship to surrounding features, and their shape, can all contribute to the feature's visual impact. Bernardini and colleagues

(2013) analyzed the visual prominence of landscape features in the American Southwest with line simplification, a set of tools available in ArcGIS. Combining this analysis with population data from sites in the region allowed them to reconstruct the visual importance of natural features based both on their prominence and on the number of people viewing them. More importantly, they were able to model how viewership changed through time as populations migrated (Bernardini et. al. 2013). Digital reconstructions can also be used to study visual experiences; these models are not merely “pretty pictures”, but a valuable way of integrating GIS and archaeological theory, including post-processual theories that focus on the subjectivity of visual experiences (Wheatley 2000). Rachel Opitz (2014) used terrestrial laser scanning to create a 3D reconstruction of a stone burial chamber in Knowth, Ireland. Specifically, she analyzed sight lines and curvature surfaces of the inside of the tomb’s passage to determine how a viewer moving through the passage would have experienced different elements of the tomb.

This dissertation uses Viewshed analysis to measure the visibility of sites to and from the surrounding landscape. Rather than a single point, this analysis measures visibility from multiple points throughout a site to provide a more accurate assessment. It also combines visibility with movement by analyzing the visibility of Least Cost Paths (described below). Finally, it examines the intentionality of visual patterns by comparing the visibility of site points with the visibility of a background population of random points nearby.

Least Cost Paths

Separate from its impact on vision, movement is an important aspect of both bodily experience and ancient landscapes that is of interest to archaeologists. GIS can be useful for quantifying movement (Bradbury 2010; Kantner 2008; Llobera 1996; Renfrew 1976). Movement through and between sites can be studied using Least Cost Paths (LCPs), which calculate the "cost" (time or energy) of moving through a particular location and find the path with the lowest cost (Bell et. al. 2002; Kantner 1997). According to Herzog (2013:179), "LCP analysis is based on the assumption that people optimise the costs of routes which are taken frequently, and that, over time, this leads to the development of the real-world equivalent of an LCP." LCPs are commonly used in the study of roads, trails and paths in order to predict how past people might have moved across a landscape (Snead et. al. 2009). LCPs are valuable because of their ability to reconstruct dynamic behavior, to produce repeatable, testable results, and to produce a formal methodology for the analysis of routes and movement (Bevan 2011). On the other hand, while LCPs provide valuable information on the results of repeated movement over time, the temporal patterns of route formation themselves are more difficult to discern, in particular because routine actions alter the landscape in which they occur, constantly creating new constraints and opportunities (Mlekuz 2010). Additionally, LCPs, like Viewsheds, are disconnected, birds-eye analyses that do not necessarily represent the embodied experiences of real-life people. Just as Viewsheds artificially separate vision from the other senses, "representing movement, pinning it down on maps, has the effect of arresting movement outside the flows of its temporal and spatial contexts" (Mlekuz 2014:5). Nonetheless, LCPs are still valuable in their ability to analyze *possibilities* of movement, rather than in necessarily calculating precise routes (Mlekuz 2014).

The use of Least Cost Paths is particularly effective in cases where there is archaeological evidence of past trails exists that can be compared to the computer analysis (Herzog 2013). Bell and colleagues (2012) found that in Italy, routes predicted by LCP analysis often aligned with modern-day farming trackways, which in turn may represent travel and communication routes dating back to Samnite times. However, more interesting are cases where predicted routes do not match up with the archaeological record. Least Cost Paths make the assumption that the primary determination of an individual's choice of path is efficiency of movement, that is, the desire to take the mathematically most cost-effective route. When observed past pathways do not correspond to Least Cost Paths, this could suggest other factors are at play in the choice of path. For example, John Kantner (1997) used Least Cost Paths to analyze Chaco roadways. He found that formal roads did not correspond to mathematically calculated least cost paths, meaning that they did not represent an efficient means of travel between towns, though they did often connect ritual sites such as great houses and kivas. Informal footpaths, however, did follow the optimal routes calculated by Least Cost Paths. This suggests that while Chaco people used informal roads to travel between towns as efficiently as possible, the formal roadways were not designed to minimize transportation costs. Instead, their alignment with the cardinal directions indicates that they may have been used for ritual processions.

Determining which factors will contribute to the cost surface is a crucial component of LCP analysis. The default cost surface created by ArcGIS is generated from a topography grid and uses slope as the main predictor of cost, but an archaeologist can create a cost matrix using whatever factors they deem significant. Bell and colleagues (2002) argue that because topography and geography cannot be changed, these should be the most important factors in a cost matrix; other factors, such as vegetation, can be more easily modified. One issue with cost surfaces derived from slope is that they fail to consider anisotropic costs of movement—that is, costs that are different depending on the direction of movement. However several functions can be used to calculate the cost of passage across different kinds of topography, including more complex functions that take into account factors such as the direction and magnitude of slope (Bell et. al. 2002; Herzog 2013; Kantner 1996). Other modifications can account for the fact that certain areas can be both high and low friction depending on the circumstances; for instance, a river is a barrier to foot travel, but can be an efficient means of water travel (Wheatley and Gillings 2002).

Another limit to LCPs is that they require a known point of origin and a known destination. Thus, while standard LCPs can be used to generate networks of paths among sites or other important locations, they are not well-suited to modeling more generalized movements across the landscape. This method of modeling movement also fails to take into account that journeys across long distances likely had several stops. Several archaeologists, however, have devised ways to work around this problem. By mapping many possible routes across the landscape, LCPs can be used to reconstruct accessibility. White and Barber (2012) used LCPs to create a "From Everywhere to Everywhere" (FETE) model, which they used to study the probability of movement across complex networks with many origins and many destinations. This method generated LCPs between a large number of random points, then created a grid for the intervening terrain indicating how many of these paths passed through a given cell. Rather than simply mapping routes between known points, this model provided information on travel patterns across the entire landscape. A closely related method, cumulative cost paths, also combines multiple LCPs to generate a grid indicating how many paths cross a given point. The number of LCPs that pass through a particular location can be taken as a measure of accessibility, and like the FETE model, it does not require known starting and end points (Verhagen 2013).

Because social relations are governed in large part by movement, "Consideration of potential, rather than actual, paths of movement allows us to model spatial relations on the scale of neighborhoods, cities, or regions" (Richards-Rissetto and Landau 2014). As movement reflects social interactions, patterns of movement can be read as social networks, and differences in patterns among segments of society can translate to social inequality. Accessibility—which is dependent both on ease of access, and on integration, or connectedness to other accessible areas—can have important consequences for social interaction (Richards-Rissetto and Landau 2014). At the Maya site of Copán, Honduras, cost surface analysis revealed that elite parts of the city were more accessible to important community locations, such as religious centers and urban water sources, than non-elite areas. For non-elites to participate in public activities, they had to pass through elite neighborhoods, where they would confront displays of elite power and prestige. Furthermore, while elite parts of the city were highly accessible to each other, this was not the case in non-elite areas. Thus, the elite strategy of spatial organization used movement and accessibility in order to reinforce patterns of social inequality (Richards-Rissetto and Landau 2014). On the other hand, patterns of movement can also be used to subvert elite power. For example, while hillforts in Roman Slovenia were often situated in positions of control over major routes, everyday patterns of routine movement likely would have followed a wider network of smaller paths that were outside the influence of elites (Mlekuz 2014).

Several functions exist to convert cost surfaces to travel time, the most popular of which is the Tobler hiking function (Herzog 2013; Kanter 1997). Because of this, Least Cost Paths can be used to model the effects of time as well as space on social organization. LCPs are often used in site catchment analysis, which assumes that individuals will exploit resources that are within the minimal travel time of their location (Brodsky et. al. 2013). Cost-of-passage maps can be used to define site catchments by determining how far or how long individuals are willing to travel to obtain resources, then mapping the catchment that is within that distance or time budget (Anderson 2012; Mlekuz 2010). This type of analysis can be used to gather data on population, available resources, whether the population was self-sufficient, and the relationship between resources and site location (Conolly and Lake 2006). Matthew Taliaferro and colleagues (2010) combined LCP analysis with theories of human behavior ecology to examine the cost of procuring obsidian from sources in the Mimbres Valley. They found that travel time to obsidian sources was not a significant factor in choosing a source, likely because most people obtained obsidian through trade networks. Their methodology had the added advantage of incorporating concepts of human agency and decision-making, factors that are missing from many GIS analyses.

Other models, such as the gravity model or the Xtent model, also take into account the size of the site when determining spheres of influence (Hare 2004). While the simplest peer polity models assume that all sites are equal in power, more complex models can also examine the territories of hierarchically organized settlements (Bevan

2011). By changing site size and cost factors, these analyses can be used to model changing territorial boundaries during times of expansion. Similarly, the cumulative path area and potential path field approaches can include travel time as a measure of accessibility. The former measures how many LCP starting points are accessible from a location within a given travel time, while the latter shows accessibility within a given time budget of a location from all points on the landscape. Accessibility maps can reveal busy areas that were frequent loci of interaction, and they can also reveal areas of the landscape that may have been ignored or avoided (Mlekuz 2010). However, these analyses cannot measure social factors governing interaction, such as class and ethnicity, and they cannot reveal how spatial patterns are produced over time. Territory models need to be combined with settlement and artifact data, and they also need to take into account other terrain-based factors such as visibility and accessibility. If used correctly, however, these models can provide valuable insights into settlement organization, the expansion and contraction of polities, and the agency of populations living in border regions (Hare 2004).

The bigger point of contention around cost surfaces, however, suggests both a problem and an opportunity: the inclusion of factors other than topography, particularly cultural factors. Many factors other than efficiency of travel dictate movement, including the desire to follow ritual or ceremonial paths; the desire to stop at waypoints to rest or resupply; the desire to take advantage of natural resources, such as for hunting; or the need to remain unseen, such as for smuggling or covert military operations (Bevan 2011; Herzog 2013). Combining LCP analysis with visibility analyses can provide valuable insights into the connection between vision and movement (Madry and Rakos 1996).

Canosa-Betes (2016) combined LCPs and Viewshed Analysis to analyze Andalusian fortress control over mountain passes on the Iberian Peninsula, based on the assumption that fortresses that were near and in sight of travel routes were effectively placed to control those routes. Similarly, Sabine Reinhold and Dmitrij Korobov (2007) developed a comprehensive GIS to map the archaeology of mountain landscapes in the Kislovodsk basin in the North Caucasus. Based on GIS analysis, they concluded that the spacing and arrangement of kurgan (mound) burials in this region mirrored the spacing and arrangement of settlements and were located close to important communication routes. Adding Viewshed analysis demonstrated that the kurgans were in highly visible locations, and in particular were highly visible from calculated travel routes. This suggests that kurgans were related to territorial organization, and were intended to be highly visible to mobile populations traveling through the landscape, who would have then been aware that these burials marked the territory of specific groups associated with nearby settlements. Similar patterns of visibility and topography—in which tombs are located at highly visible locations along travel routes—can be seen in medieval England (Williams 1999) and the pre-Columbian Lake Titicaca Basin (Bongers et. al. 2012).

Visibility can also be included as a cultural factor in LCP analysis. Llobera (2000) used Least Cost Paths to study the way in which monuments influence movement. Llobera created a cost matrix that took into account the impact that human-made features had on movement and whether that impact repels, attracts or is neutral to movement. For example, he hypothesized that because burials are often regarded as sacred and even taboo, people participating in day-to-day activities likely went out of their way to avoid them. Taking the burial's viewshed as its area of influence, he added this avoidance into the cost matrix in order to analyze how people might have moved through the landscape if staying out of sight of the burials was a priority. This example demonstrates how GIS can analyze the interplay between different types of costs, include those that are culturally based. In general, however, socials costs are difficult to establish objectively, especially because they would have been different for different people, and they leave little archaeological trace (Herzog 2013). Additionally, it can be difficult to determine a good methodology for combining social costs with environmental costs, and attempting to include all possible costs can make a model too complex to be useful (Bevan 2011).

Despite initial excitement over their applications, the first wave of LCP analyses in archaeology received significant criticism due to their inability to produce consistent and accurate results. Much of this is due to the fact that standard LCP tools can only calculate movement in eight directions, and thus often create paths that are longer than the actual optimal route (Bevan 2011). LCP analyses can also be quite sensitive to small changes in the input parameters, meaning that they are highly precise but not necessarily accurate (Mlekuz 2010). Herzog (2013) suggests that several analyses should be run with different cost surfaces and slightly different starting and ending points in order to test the robustness of the analysis. Running multiple related analyses can produce "trail bundles", or close but slightly different alternate routes that better encompass variation in paths. However, sometimes even the best analyses can produce vastly different LCPs with only slight variation in the input parameters, suggesting that there may have been multiple best routes over a landscape, or that people may have had several path options depending on factors such as weather conditions. Whenever possible, LCP analysis should be combined with other types of evidence from excavations, survey, and other forms of GIS analysis (Hare 2004).

This dissertation uses LCP analysis, specifically the calculation of travel time for paths around a site, as a measure of physical accessibility. The use of multiple LCPs helps to compensate for any errors in individual LCPs and which can help to determine patterns of movement across a landscape, rather than relying on individual paths. Additionally, LCPs are combined with phenomenological measures of physical accessibility in order to examine multiple perspectives, and to analyze aspects of accessibility that are not considered in GIS.

Conclusion

There are many advantages to the use of GIS in archaeology. Its ability to analyze large amounts of data in a variety of ways provides a valuable methodology for quantifying spatial relationships, including sensory experiences associated with vision and movement. Because it can model entire landscapes, not just locations where sites are found, GIS can also be used to study interactions between humans and both natural and cultural spaces. While GIS was not originally designed to model human behavior, there are a number of users options and methods, ranging from simple to highly complex, that can be used to incorporate social factors and human agency into the functions provided by a GIS software package. Additionally, GIS analyses can be enhanced by combining them with other methods. For example, Michael Harrower (2008) used GIS to model the hydrology of landscapes in southwest Arabia to examine how irrigators used a sophisticated knowledge of hydrology and terrain to design their irrigation systems.

Harrower's project combined GIS with an ethnographic analysis of cairn tombs, which were frequently found near irrigation features. As a result, his study was able to take into account both the environmental and social drivers of human behavior in regards to water resources. GIS and remote sensing can also be combined with settlement surveys (e.g. Ur 2010) or textual evidence (e.g. Stokkel 2005).

GIS was not originally designed to be used in archaeology, and the archaeologist must recognize and adapt to this fact, rather than blame GIS itself for not being well-suited to certain archaeological projects (Gaffney and van Leusen 1995). GIS technology has often advanced faster than archaeologists' familiarity and skill with it, leading to flawed analyses and poorly collected and managed datasets (Wheatley and Gillings 2002). The rapid evolution and adoption of GIS technologies for data management similarly means that there has been a lack of standardization in recording practices (McCoy and Ladefoged 2009). Additionally, all GIS studies are limited by issues of resolution, scale and projection (Kvamme 1990; Zubrow 2006). Archaeologists must acknowledge these limitations and resist the urge to become caught up in "digital toys," which seem exciting and technologically advanced but are not actually suited to the research question (Zubrow 2006). The main issue with GIS, however, is that it is commonly regarded only as a recording device or methodological tool, and users of GIS in archaeology often fail to connect its use to broader archaeological theory (Gillings 2012; Lock 2001). The use of GIS can also lead archaeologists to unwittingly restrict inquiries to questions easily answered by GIS, particularly those related to issues of environment and topography, and to avoid other types of questions under the assumption that they are too difficult to address with GIS (Gaffney et. al. 1996). GIS analyses thus far have mainly been restricted to monumental landscapes with a relatively high degree of topographic relief, but GIS can and should be expanded to cover a much broader range of landscape studies and research questions (Llobera 2012). Similarly, Viewshed analysis remains the main tool by which archaeologists attempt to recreate the lived experience of landscapes, and while it can yield valuable results, it still provides only a limited perspective (Zubrow 2006).

Gaffney and colleagues (1996) advocate for the development of methods and tools that are specific to archaeology. And indeed, continually evolving approaches seek to create increasingly complex models that can take into account patterns of human decision-making in the past (Bankes 2002; Hritz 2014; Llobera 1996; Zubrow 2006), and these new methods suggest that the value of GIS to archaeology will only expand.
Over several decades, GIS has been also been transformed into a tool that can be combined with other types of analysis and that can make valuable contributions to archaeological theory.

This dissertation combines Viewshed analysis and Least Cost Paths with phenomenological analysis to study patterns of visibility and movement on the Urartian landscape. I will focus on using both GIS and phenomenology to examine these experiences holistically, to address dynamic sensory experiences rather than static ones, and to examine the interplay of senses and other types of bodily experiences. Finally, I will connect these analyses to patterns of social and political change in order to understand how the use of landscapes reflected and facilitated interactions between Urartian elites and their subjects.

This dissertation acknowledges some of the problems inherent in GIS and in particular in Viewshed analysis and LCPs. In particular, it acknowledges that these analyses consider all space equally and regard that space as neutral, while in reality, cultural practices and associations can cause different aspects of space to be perceived differently. For example, Viewshed analysis measures the total area visible to a site, often in terms of square kilometers or percentage of the total area within a certain distance. However, a Viewshed of the same size that contained substantial views of important features such as old burials, major settlements, or scared mountains, would have a very different impact than a Viewshed that did not contain these lines of sight. Human discernment is necessary to analyze how the contents of a Viewshed could have influenced its perception and to determine what role vision played in a particular culture. Similarly, while mathematical cost is one measure of a location's accessibility, humans are not always aware of the mathematically most efficient path, and many other considerations also govern movement, such as whether a path passes by or avoids other important features. Additionally, the contrast of an object or location to its background can dramatically influence its impact in a way that is not measured by GIS. For example, a hill on flat ground might seem imposing and inaccessible, but the same hill would appear less intimidating and more approachable if it was surrounded by higher hills.

Combining GIS analysis with phenomenology will help to remedy the problems discussed above by allowing me to survey the site in person and make judgments about the emotional impact of features that GIS cannot capture. Similarly, because we have textual evidence from Urartian times (discussed in the next chapter), we have some insight into how Urartians perceived space and the natural world. Combining this knowledge with GIS and phenomenological analysis will provide cultural context for spatial patterns. While GIS is a useful tool for determining *what* is seen and *where* paths lead, it is not always the best tool for answering questions of *how* and *why.* This dissertation attempts to use phenomenology to fill in these gaps in a GIS analysis. At the same time, the standardized and systematic nature of GIS is valuable when used in conjunction with methods such as phenomenology that, by their nature, cannot be as systematic. This dissertation thus uses GIS as a way to measure and standardize space and spatial relationships, while always keeping in mind that these measurements must be tempered with human judgment, common sense, and cultural context.

CHAPTER 4: SOUTH CAUCASUS AND HIGHLAND ANATOLIA IN THE BRONZE AND IRON AGES

The South Caucasus and Highland Anatolia—a region consisting of Azerbaijan, Georgia, Armenia, and eastern Turkey—has traditionally received little archaeological attention. Ian Lindsay and Adam Smith (2006:165) refer to the South Caucasus as "Western archaeology's geographic blind spot" due to its history of neglect. The area is often studied as a periphery or border region in regards to larger, better known polities such as the Achaemenid Empire or the various kingdoms of Mesopotamia. These studies tend to present the South Caucasus and Highland Anatolia as an unstable borderland that lacked political unity (Rubinson and Smith 2003) or as a "simple provincial backwater or dependent periphery to more developed 'core' areas to the south" (Kohl 1992:135). The assumption that any social complexity found in the South Caucasus must have been an import from the south has shaped archaeological research in this area (Badalyan et. al. 2003; Smith 2015). However, an increasing number of archaeologists have come to challenge this assumption, and have demonstrated that instead, the South Caucasus and Highland Anatolia were home to autonomous, stratified and wealthy states that were adapted to the unique social and environmental conditions of the region (Badalyan et. al. 2003; Earley-Spadoni 2015; Kohl 1992; Ristvet et. al. 2012). These complex polities emerged as early as the Middle Bronze Age (Badalyan et. al. 2003). Thus, this dissertation examines how social complexity developed indigenously in the South Caucasus and Highland Anatolia.

Geology and Environment of the South Caucasus and Highland Anatolia

The "borderlands" of Caucasia can include parts or all of Azerbaijan, Georgia, Armenia, Iran, Russia and Turkey (Rubinson and Smith 2003). However, for the purposes of this dissertation, the South Caucasus will refer to Azerbaijan, Georgia and Armenia, while Highland Anatolia will refer to eastern Turkey; however, northwest Iran and the Urmia basin can also be included in this designation. Though fragmented today by modern politics, the South Caucasus and Highland Anatolia are geographically contiguous and share similar terrain and climate (Rubinson and Smith 2003), and as discussed below, they also shared material culture and social and political traditions.

The defining feature of the South Caucasus is the Great Caucasus Range, which runs between the Black Sea and the Caspian Sea (Lindsay and Smith 2006). This range serves as a physical and cultural boundary to the north, though the region has no such clear southern boundary. In addition to the mountains, the region is defined by the Kura and the Araxes rivers (Kohl 1992). The region generally has a continental climate, with cold winters and hot summers (Haroutunian 2015), and these cold winters in particular were a significant barrier to both travel and foreign invasion in Urartian times (Zimansky 1985). Paleobotanical data is limited, but the climate in the Urartian period was likely very similar to the climate today, though it may have been somewhat less dry in preceding periods (Zimansky 1985). Dramatic differences in elevation are tied to diverse physical landscapes and climates, which means that the South Caucasus is home to a variety of ecological niches (Rubinson and Smith 2003). The region was an independent center of the domestication of plants such as grapes, and also has rich metal deposits, making it an important center for metallurgy (Kohl 1992; Lindsay and Smith 2006).

One of the defining characteristics of Highland Anatolia and the South Caucasus is its ruggedness. While mountains are common throughout the Near East, Highland Anatolia and the South Caucasus are unique in that they mark the intersection of the Taurus and Zagros mountain chains, creating more complicated patterns of mountain ranges and valleys than are found in neighboring territories (Zimansky 1985). The region's mountainous landscape meant that settlements were small and isolated, and relatively few parcels of land were fit for agriculture. Populations tended to be clustered around major lakes, namely Lake Urmia in Iran, Lake Sevan in Armenia, and Lake Van in Turkey, and also in river basins (Zimansky 1995). These lakes are fed by a number of smaller rivers. Unlike in Mesopotamia, where civilizations arose along major waterways, in the South Caucasus and Highland Anatolia, water flows in numerous directions and along a variety of channels, meaning that water supplies could not have been easily controlled by a centralized authority (Zimansky 1985). The many rivers and mountains are traditionally regarded as constraints on movement and communication, especially because heavy snowfall would have limited travel for much of the year (Zimansky 1995). In reality, however, limited travel routes actually lead to improved communication, and most landscapes, regardless of topography, tend to have only a small number of commonly used routes anyway, so this does not in and of itself suggest isolation (Rubinson and Smith 2003).

The Role of Pastoralism in South Caucasian Society and Economy

As discussed below, pastoralism played a key role in the economy of Eastern Anatolia and the South Caucasus throughout the Bronze and Iron Ages, and thus deserves special attention. Pastoralism involves transhumance, the routine (often seasonal) movement of people in association with domestic herd animals, as well as the social, economic and ritual behaviors that are connected to this movement and lifestyle. A pastoralist landscape, then, is the physical and cognitive landscape that results from the experiences of these people (Frachetti 2008). Pastoralism is a major element in the archaeology of most mountainous regions in the Near East; in the South Caucasus, a combination of sedentary agriculture and pastoralism has formed the basis of subsistence almost since the beginning of human occupation of the region (Burney 2012; Lindsay and Smith 2006). This section examines pastoralism around the world and in particular in the South Caucasus and Highland Anatolia.

Archaeological and Ethnographic Evidence for Pastoralism

Despite the fact that pastoral landscapes have existed around the world since the Neolithic, they have traditionally been neglected in the archaeological record. However, the desire to distinguish pastoral landscapes from the landscapes of hunter-gatherers or agriculturalists rests on the notion that there are clear-cut distinctions between these three groups and that there is such a thing as “pure” pastoralism (Chang and Koster 1986). Pastoralism, loosely defined as dependence on animal husbandry, is often linked with nomadism, loosely defined as a high degree of mobility and lack of settled communities, to form a category of “pastoral-nomads” who have been the topic of anthropological research in the twentieth century. However, Claudia Chang and Harold Koster (1986) note that there is no set of social or cultural characteristics that is common and unique to all pastoral nomads and that would serve to justify their classification as a unique social group. While this dissertation uses the concept of pastoral nomadism because that is how most source material approaches the issue in the Near East, it also acknowledges that this is not a discrete category and that pastoral nomadism encompasses a broad variety of cultures and traditions.

Most populations who are largely dependent on the seasonal movements of animals still sometimes take advantage of other modes of subsistence, and what is traditionally thought of as nomadic pastoralism is usually closely tied to agriculture and/or hunting and gathering. In southern Africa in the Neolithic, Karim Sadr (2003) argues that the culture that left behind traces of animal husbandry were primarily hunters; he classifies these people as "hunters-with-sheep" rather than pastoralists. In Neolithic France, the movement of animals into the highland may have developed as a means of keeping them away from the lowlands, where their presence would interfere with agriculture (Chang and Koster 1986). Pastoralism can also be a form of specialization that develops hand-in-hand with agricultural specialization (Chang and Koster 1986). In the Andes, modern-day pastoral populations are often dependent on nearby agricultural settlements for food, and the two groups are connected to varying degrees by networks of trade and kinship (Kuznar 1995). Similar patterns can be found among yak herders in Tibet, and indeed, it is almost always the case that pastoralists are socially and economically reliant on other types of communities, particularly settled agricultural communities (Chang and Koster 1986; Khazanov 1984). The archaeological record indicates that the same culture can cycle through different degrees of pastoralism over time, depending on environmental and social circumstances (Sadr 2003; Webley 2007). On the other hand, relations between pastoralists and other types of communities are not always peaceful and collaborative. Lawrence Kuznar (1995) found that the greatest threat to pastoral herds is the theft of livestock by agriculturalists, and minimizing the potential for theft is a significant factor in the pastoralists' grazing and movement patterns. In addition, the seasonal movement of herders in and out of agricultural regions means that groups are regularly forced to renegotiate claims and compete for territory, mainly through a combination of family alliances and the threat or practice of violence.

Traditionally, archaeologists have used faunal analysis as the main means of detecting and analyzing pastoral landscapes. These analyses focused on creating profiles of herds by age and sex in order to recreate patterns of consumption and production (Chang and Koster 1986). However, the correlations between animal age and sex, human influence on breeding, and the exploitation of animal products such as wool and milk, are not always as clear-cut or universally applicable as their proponents suggest (Chang and Koster 1986). More recent studies have focused on other ways to detect pastoral landscapes, namely through evidence for ritual practices such as burials, the use and modification of shared spaces such as pastures, and the material traces of social interactions such as marriage (Frachetti 2008). A large-scale analysis of the distribution of artifact scatters and structures such as livestock enclosures can also provide a broader picture of the movement and landscape use of pastoral people (Anderson et al. 2014). Evidence of pastoral activity can be found in seasonal settlements but also in observation posts or resting places along migration rates, and in religious sites. Awareness of these features combined with an understanding of how modern-day pastoralists in the regions choose their pastureland provides a methodology by which archaeologists can locate pastoral sites on the landscape (Kuznar 1995). Patterns of livestock movement, particularly the repeated movement and seasonal use of grazing space associated with transhumance, can be deduced from chemical traces in the soil (Anthony 2007; Wilkinson 2003). On the other hand, an analysis of soil types in the region and their suitability for agriculture can indicate whether an area could have been used by sedentary agriculturalists (Frachetti 2008). This dual use could have led to degradation of the archaeological record, as activities of one group might erase traces of the other, or this combined use might make it difficult to discern the use of sites (Wilkinson 2003). Burials are also an important source of information about pastoral occupation. For pastoralists, and during times when sedentary settlements were uncommon, the size of cemeteries and number of burials is often greater proportionate to the apparent population of surrounding settlements (Wilkinson 2003). In this case, burials can be the best or only evidence that archaeologists can use to draw conclusions about these societies (Smith et al. 2009). Even when other evidence is available, mortuary customs can be used as important indicators of broader social and economic characteristics (Carr 1995; Williams and Gregoricka 2013).

Pastoralism in the South Caucasus and Highland Anatolia

Pastoralism has a long history in the Near East, dating back to the Neolithic (Chang and Koster 1986). In Mesopotamia, pastoralism may have developed in tandem with agriculture, providing a mode of subsistence for those living in lands not suited to agriculture. The movement of these pastoralists was crucial to fostering networks of trade and transportation between cities, and to creating links between rural and urban settlements (Chang and Koster 1986). The need to move between highland summer pasture and lowland winter pasture was a crucial aspect of social and political organization, as well as of the use of land in more mountainous regions of the Near East, including the highlands of Iran, Anatolia, the South Caucasus and Yemen. While highland groups can become affluent by accumulating livestock, these livestock need to be moved to lowlands for pasture in the winter (Wilkinson 2003). Although pastoralists often left light archaeological trace, they could have comprised a significant proportion of people using mountain and lowland landscapes (Wilkinson 2003).

Pastoralism was a significant part of the economy throughout the history of Highland Anatolia and the South Caucasus. Beginning in the third millennium B.C.E., the large expanses of summer pasture in the mountains of Azerbaijan, Armenia and Georgia served as a powerful economic catalyst, providing a wealth of resources for pastoralists who then became key drivers of social and cultural change and growth (Kushnareva 1997). The presence of the bones of horses and sheep in kurgan burials suggests that these animals were both important resources and symbols of power in the Middle and Late Bronze Ages. Archaeological evidence from fortresses on the Tsaghkahovit Plain in the Late Bronze Age indicates that residents of these fortresses obtained animal products from pastoralists in the region, as these fortresses do not appear to have had their own areas for pastoral production at the site (Monahan 2012). There is also substantial evidence for the use and storage of animal products such as wool, meat, milk, cheese and butter at Ayanis Lower Town in the Urartian period, indicating that pastoral activities were an important part of the economy at this time as well (Çevik and Erdem 2015).

In the Highland Anatolia and the Caucasus, pastoral settlements were often located in the hills surrounding grazing lands, while permanent settlements were located in valleys (Reinhold and Korobov 2007; Wilkinson 2003). From the third millennium BCE onward, a pattern developed in the region in which animals were pastured in the highlands in the summer, then sheltered in enclosures in villages during the winter; this had a significant impact on the size and structure of these villages (Kushnareva 1997). Pastoralism continued to be a common way of life into the twentieth century in eastern Anatolia and northern Iran, with many families traveling throughout the highlands with their herds in the spring and summer (Çifçi 2017). In historic times in the South Caucasus, and likely in prehistoric times as well, the relationship between pastoralists and settled people would have been based on a guest/host model, where sedentary agriculturalists hosted mobile pastoralists in the winter in exchange for access to livestock and trade goods (Yakar 2012). The development of a pastoral economy also led to the development of new forms of material cultural associated with animal products, and new specialization in the production and use of those objects (Kushnareva 1997). Winter pastureland could have been found on valley floors or in the steppe surrounding the valley, and many lowland areas used as winter pasture were also suitable for crops and would have been good locations for agriculture. When pastureland was insufficient, animals would have been provisioned with grain or straw provided by settled agricultural communities, thus creating a connection between pastoral and agricultural peoples; a similar pattern of interactions has existed for centuries in Armenia (Wilkinson 2003; Yakar 2012). With changes in the political climate, people could have cycled between primarily pastoral and primarily agricultural/sedentary modes of subsistence, while still retaining and using important land areas such as pasture.

In the South Caucasus, periods of sedentism and centralization often alternated with periods where settlements were abandoned and mobile pastoralism dominated (Greene and Lindsay 2013; Smith 2015). Throughout the Near East, both agriculturalists and pastoralists were intimately involved in landscape organization, and the economic and cognitive aspects of landscapes tended to be closely related. The combination of transhumant and sedentary strategies "allow[ed] for a dual use of the land, one by intrusive mobile communities and a second by local more sedentary groups" (Wilkinson 2003:218). The dual use of land by both agriculturalists and pastoralists can create a complex web of interactions between the two.

Pastoralism has remained an important component of the South Caucasian and Anatolian economy into historic times (Kushnareva 1997; Yakar 2012; Zimansky 1985). Harsh winters and the boundary of the Taurus Mountains to the south means that modern pastoralists in the region follow similar patterns described above, where they do not engage in the long-distance annual cycles of movement common elsewhere in Mesopotamia, but instead shelter in seasonal valley settlements during the winter (Zimansky 1985). Based on the record of pastoralism in the region throughout history, Zimansky (1985:16) thus suggests that pastoralism in Urartian times was a "system of limited transhumance dependent upon sedentary agriculture." As discussed below, pastoralism was an even larger component of social and economic life in the periods preceding Urartu (Hammer 2014a; Sagona 2004; Sevin 2003), and this should be kept in mind when attempting to understand social and political patterns in the region.

The History and Politics of Archaeology Highland Anatolia and the South Caucasus

Modern politics has significantly impacted the development and current state of archaeology in Highland Anatolia and the South Caucasus. Though the two areas were part of a broad cultural horizon in the Bronze and Iron Ages, modern politics has led to distinct approaches to archaeology in each region (Badalyan et. al. 2003). Additionally, the competing interests of a variety of ethnic groups have led to a great deal of conflict over the interpretation of archaeological remains and the management of archaeological heritage (Kohl and Tsetskhladze 1995).

The earliest archaeology of eastern Turkey was carried out by gentleman scholars, with little scientific basis. Archaeology began in Turkey as an import from Europe, and thus was regarded as an elite pursuit until the beginning of the twentieth century, when survey projects encouraged a more formalized and systematic approach to archaeology in the area, which continued to develop throughout the mid twentieth century (Özdogan 2002; Rubinson and Smith 2003). Though Turkey has a strong tradition of local archaeology that takes advantage of its position at the intersection of Europe and Asia, archaeology in the region has had to deal with nationalism, contempt from European archaeologists, and tensions between Islamic and Western models of history and politics. Despite this, Turkey generally has good relationships with foreign teams (Özdogan 2002). Indeed, the earliest archaeological projects in Turkey were excavations of cemeteries and mounds in the early twentieth century that were carried out by various international teams, particularly those from France and Russia (Rubinson and Smith 2003). These archaeologists were attracted to the Van region by Assyrian texts, which mentioned the presence of a state-level polity there. Early excavations were focused largely on the recovery of inscriptions. However, Boris B. Piotrovskii's excavations at

Karmir Blur in the mid twentieth century were the first to record the context of excavated material, and summaries of his work were published in English, attracting international attention (Kroll et. al. 2012). Throughout the twentieth century, an increasing number of formalized archaeological projects took place in the Van region and in northwestern Iran, including surveys (e.g. Burney and Lang 1971) and excavations at sites such as Cavustepe, Kef Kalesi, Anzaf and Ayanis in Turkey (Kroll et. al. 2012). However, the archaeology of Highland Anatolia is hardly well-known. While there is a rich body of pre-Urartian research in the South Caucasus, in Eastern Turkey, most investigations into social complexity begin with Urartu (Badalyan et. al. 2003). In particular, there is a shortage of research into the second millennium BCE in Eastern Anatolia, with most archaeological material coming from illegal excavations (Özfirat 2001). In general, however, most archaeology of the region has focused only on large fortresses and the remains of elite activity, and many of the twentieth-century excavations are poorly done and poorly published (Zimansky 1985). As discussed below, in the late twentieth and early twenty-first centuries, domestic excavations at places such as Ayanis (e.g. Stone 2012; Stone and Zimansky 2003) and large-scale survey projects in the Van region (e.g. Özfirat 2009) have expanded our understanding of Urartian archaeology in Eastern Turkey.

The archaeology of the South Caucasus has taken quite a different trajectory. Before the Russian Revolution, interest in the South Caucasus was also antiquarian in nature, funded by wealthy nobles and focused on the collection of valuable artifacts, although the later part of this period did show the beginnings of interest in scientific research, and the use of archaeological survey, artifact analysis and texts. The revolution, however, led to a reorganization of academic research and priorities in the areas controlled by the Soviet Union, including the three nations of the South Caucasus. In particular, archaeology in the region was heavily influenced by Marxist interpretations of material culture (Lindsay and Smith 2006). In the later years of the Soviet Union, research projects tended to focus on exceptional sites at their peak, rather than attempting to chronicle development over time. While some western archaeologists were interested in the South Caucasus before the revolution, the Soviet Union soon cut off foreign collaboration (Lindsay and Smith 2006). After World War II, the Soviet Union developed a tradition of "ancient archaeology" in the region that was quite different from western approaches to classical archaeological and that had strong nationalist roots (Khatchadourian 2008). Proponents of this approach, which was later taken up by Armenian archaeologists, regarded the Hellenistic-centered archaeology of the west as a bourgeois attempt to dismiss the accomplishments of local populations in western Asian. Instead, this tradition of ancient archaeology was centered on studying the local origins of South Caucasian, and particularly Armenian, art and high culture (Khatchadourian 2008).

The Soviet takeover of the South Caucasus led to an increase in ethnic tension and to persecution along political and religious lines. Among the longest lasting and most violent of these conflicts was that between the Azeris and the Armenians. The Soviets frequently shifted the boundaries and political status of Azerbaijan and Armenia, most notably the contested areas of Naxçivan and Nagorno-Karabagh (Shnirelman 2001). After the fall of Soviet Union, Naxçivan elected to become part of Azerbaijan; Nagorno-Karabagh was also given to Azerbaijan, but much of the population was Armenian, and resisted this designation. Conflict over the region still continues today. These territorial disputes motivated each side to attempt to create an archaeological narrative in which they were an indigenous nation with a historic right to the disputed areas, and in which the other side were latecomers attempting to steal their homeland (Shnirelman 2001). The Soviets kept a careful eye on the development of archaeology during this time period and frequently intervened to influence scholarship, and it is arguably this influence that is responsible for many of the issues that archaeology in the South Caucasus faces today (Cheterian 2012). Soviet archaeologists were fascinated with tracing the distinct histories of particular ethnic groups in their republics, but they also wanted to eliminate certain kinds of ethnic loyalties that might trump their citizens' loyalty to the Soviet Union. In Azerbaijan, this consisted of Soviet attempts to eliminate pan-Turkism, the desire of Azerbaijanis and other residents of the South Caucasus to focus on the shared heritage of Turkish people across the Middle East and Central Asia. The Soviets were opposed to this desire, seeing it as detrimental to national unity, and therefore Azerbaijani archaeologists were expected to devise a national history which distanced them from the Turkish tribes who were relative later-comers to the area, and instead presented the Azeri people as the inhabitants of their current land since time immemorial (Shnirelman 2001).

This development in Azerbaijani archaeology quickly brought the Azeris into conflict with the Armenians, a group with whom they already had ethnic tension. Again, the Soviets are partly to blame for this; in their attempt to promote cultural unity and suppress ethnic conflict, they caused ethnic groups in the Caucasus to project their tensions into the past and to attempt to settle them academically rather than politically (Dudwick 1990). The Armenians, too, believed that they had occupied the South Caucasus since time immemorial, not just in modern-day Armenia, but in many parts of

Azerbaijan and beyond. They too saw themselves as the rightful heirs of the past populations whose archaeological remains were found throughout the landscape, and they tended to portray the Azeris as descendants of barbaric invaders who had forced the once-great ancient state of Armenia into its modern-day boundaries (Dudwick 1990). Scholarship and textbooks produced by both groups sought to erase traces of the other from the histories of their nations, both groups accused the other of falsifying history to serve their own ends, and both groups centered on the claim of noble ancestors who were destroyed or forcibly assimilated by the late arrival of the other group (Dudwick 1990; Shnirelman 2001).

South Caucasian archaeology, then, has been highly politicized from the start, and has been manipulated in various ways to defend against what various groups regarded as encroachments on their sense of ethnic identity and their right to their territory. With the collapse of the Soviet Union, however, Azerbaijan and Armenia both became nation-states and, "having come into being, a new state has to appeal to history in order to legitimize its right to exist, somehow showing it has deep roots and a continuous historical tradition" (Shnirelman 2001:93). Thus, the scholarly debate has only intensified, and research by both sides has been used to effectively erase the other from history (Kohl and Tsetskhladze 1995). Shortly after the fall of the Soviet Union, Nagorno-Karabagh exploded into a violent ethnic conflict between Azeris and Armenians, which was based in part on the issue of which group had historic rights to the land (Kohl and Tsetskhladze 1995). Thus, while Soviet archaeology encouraged ethnic groups in the Caucasus to project their tensions into the past, with the collapse of the Soviet Union, these tensions are again reemerging in the present, sometimes violently.

The desire of each group to eliminate the other from the historic landscape of the South Caucasus is not limited to textbooks and conferences; each side has accused the other of destroying their archaeological sites. While it is sometimes difficult to say who is responsible, we can confirm that damage is certainly being done. The shrinking number of Islamic sites in Armenia is unlikely to be a coincidence (Kohl and Tsetskhladze 1995), and in Naxçivan, Armenian Christian cemeteries were attacked for several years, with the last one, Djulfa, being destroyed and completely built over in 2005 (Maghakyan 2007).

Beginning with the fall of the Soviet Union, American and European interest in the South Caucasus has seen a resurgence (Lindsay and Smith 2006). While tourism and heritage management have become increasingly important, lack of funding and support from the government have been detrimental to the research of local archaeologists (Lindsay and Smith 2006). Additionally, works in the region are published in many different languages, which can make it difficult to compare sources and share information (Rubinson and Smith 2003). Nonetheless, archaeology in the region today is merging Soviet and Western traditions. In particular, there is value in the "ancient archaeology" tradition, an approach that is distinct from the nationalist traditions that attempted to establish one nation as older or superior to others. This tradition "focuses not so much on peoples without history but those who are cast by Western traditions to the margins of history" (Khatchadourian 2008: 273). "Ancient archaeology" takes an area of the world that has traditionally been presented as being on the periphery of civilization, and places it at the center. This approach has informed many of the growing number of American and European archaeological endeavors in places such as Naxçivan, Azerbaijan, and the Ararat Plain and Mt. Aragats regions of Armenia. This research is often received with great interest by local governments and citizens. Armenians in particular tie their national identity to historical polities, especially the Urartians, whom they regard as their direct ancestors (Badalyan et. al. 2003). On the other hand, ethnic tensions still run high. Though it is generally not prohibitive to research, American archaeologists are conscious of the fact that their work can have political implications, and they need to be careful about how they present results and what terminology they use (Lauren Ristvet personal communication 2015).

Historical Trajectory of the South Caucasus

This dissertation focuses on the Late Bronze Age through the Urartian period; however, several prominent scholars in the region (Greene and Lindsay 2013; Smith 2015; Smith et. al. 2009) have argued that the developments of these time periods were built on changes that occurred beginning in the Early Bronze Age (approximately 3500-2500 BCE). This dissertation also examines how the rise of Urartian was influenced by trends beginning in the Early Bronze Age and continuing through the Middle and Late Bronze Ages (Table 4-1).

Origins of Complexity: The Bronze Age, 3500-2500 BCE

During the Early Bronze Age, the modern-day nations of the South Caucasus were part of a unified cultural horizon, the Kura-Araxes culture (Haroutunian 2015; Kohl 2009). This culture was part of the "technological revolution" taking place throughout Eurasia in the third and fourth millennia BCE, which included advances in the production and use of bronze, the development of the plow and the domestication of the horse

Date (BCE)	Period	Urartian King	Events	Key Sites
710-643	Urartian reconstruction period	Sarduri IV Sarduri III Erimena Rusa III Rusa II Argishti II	Collapse of Urartu Major fortress constructions	Bastam, Ayanis
850-710	Urartian imperial period	Rusa I Sarduri II Argishti I Menua Ishpuini Sarduri I	Expansion into Ararat Plain Foundation of Tushpa	Van Kalesi, Erebuni, Çavuştepe
1000-850	Early Iron II		Emergence of state-level polities	Horom, Metsamor
1150-1000	Early Iron I			Keti
1300-1150	Late Bronze III			Tsaghkahovit, Horom, Aparan
1400-1300	Late Bronze II		Emergence of fortress-based polities	Metsamor
1500-1400	Late Bronze I			Gegharot
1700-1500	Middle Bronze III		Spread of kurgan culture	
2100-1700	Middle Bronze II			Karashamb, Trialeti
2500-2100	Middle Bronze I			Trialeti, Markopi, Bedeni
3500-2500	Early Bronze		Kura-Araxes horizon	Aragats, Gegharot, Shengavit, Arslantepe

Table 4-1: Chronology of the Bronze and Iron Ages in the South Caucasus and Highland Anatolia, after Smith et. al. 2009 and Greene 2013

(Frachetti 2008; Ristvet et. al. 2011; Smith 2005). Kura-Araxes culture appeared around 3500 BCE at a variety of locations in the South Caucasus, at sites such as Shengavit, Mokhra-Blur, Garni, Gegharot and Tsagkhaovit, and Karnut in Armenia; Kyultepe in Azerbaijan; and Kvatskhelebi, Amagleba and Amiranis-Gora in Georgia (Kohl 2007; Simonyan and Rothman 2015; Smith et. al. 2009). By the last quarter of the fourth millennium, Kura-Araxes culture had spread into Anatolia and northwestern Iran, including sites such as Yanik Tepe, Iran, and Sos Hoyuk, Turkey (Kiguradze and Sagona 2003; Kohl 1992, 2009; Palumbi 2003; Schwartz 2009; Sagona 2000). At the end of the fourth millennium BCE, Kura-Araxes culture began to spread into the northern Euphrates Basin, arriving at sites such as Arslantepe, Turkey; by the second quarter of the third millennium BCE, Kura-Araxes culture had expanded to sites such as Khirbet Kerak in Israel (Kohl 2007, 2009). Some sites were fortified, such as Khirbet Kerak and Ravaz in northwestern Iran, while other sites, like Aslantepe, had rich "royal" burials (Kohl 2009; Palumbi 2003, 2011).

The Kura-Araxes period was marked by highly standardized pottery styles, architecture and metalwork, with little evidence for settlement hierarchy or stratification (Kohl 1992; Ristvet et. al. 2011); in fact, Adam Smith (2015) suggests that the material culture of the Kura-Araxes period served to actively resist processes of social stratification that were occurring to the south, as is evident in the collective burials at sites such as Velikent (Badalyan et. al. 2003; Kohl 2009). Some differences within Kura-Araxes settlements do exist, and Hakob Simonyan and Mitchell Rothman (2015) argue that evidence pertaining to ritual at the site of Shengavit suggests increasing centralization by the end of the Kura-Araxes period. Similarly, the foundation of new sites and changing settlement patterns in the first half of the EBA in Armenia suggests hierarchical organization and interregional exchange (Haroutunian 2015). In general, however, Kura-Araxes people lived in "tribal societies or simple chiefdoms" in villages of agriculturalists and stock breeders (Connor and Sagona 2007:32), although many may also have been mobile (Kiguradze and Sagona 2003). The Kura-Araxes culture established a self-contained community that was separate from others, reproduced clear social values of egalitarianism, and created a shared iconography. Though there were no state institutions or formalized leaders to oversee this development, the focus on egalitarianism communities created the idea of a public that would later be susceptible to subjugation, and a concept of "civilization" that would set the stage for the development of institutionalized rule many generations later (Smith 2015).

By the end of the Early Bronze Age, the highlands had become fragmented into several distinct cultures (Avetisyan and Bobokhyan 2008; Badalyan et. al. 2003; Smith 2015). A few sites such as Bedeni, Georgia, and Norsuntepe, Turkey, demonstrate continuity from the Kura-Araxes period, but most sites show significant cultural changes, such as the mass abandonment of sedentary communities, the transition to mobile pastoralism, dramatic improvements in metallurgy, and the movement of both goods and people into and out of the South Caucasus (Badalyan et. al. 2003; Edens 1995; Kohl 2007; Rubinson 2006; Smith 2015). The reason for this sudden shift is unclear. Possibilities include an overexploitation of resources, aridification, or diffusion of new cultural traditions from the north (Kohl 1992; Smith 2015), though these new patterns may also have had local roots (Kushnareva 1997). The Naxçivan region of Azerbaijan is the exception to this pattern, where large fortress settlements with evidence of social stratification have been found from the Middle Bronze Age, suggesting that urbanism and social complexity may have emerged during this time (Hammer 2014b; Ristvet et. al. 2011). Hilltop fortifications also continued to be occupied in the Middle Bronze Age in northwestern Iran (Biscione 2009).

In general, however, archaeological data from the late Early Bronze Age and Middle Bronze Age is overwhelmingly mortuary and comes from kurgans, large mound burials that became common throughout the South Caucasus from about 2500 BCE to the first millennium BCE (Kavtaradze 2004). The popularity of weapons, wheeled vehicles, horses, and oxen in kurgan burials provide further evidence that warfare and mobility were important aspects of daily life throughout the South Caucasus and Highland Anatolia during this time (Kohl 1992, 2007), as does the development of many new metalworking and lithic technologies related to warfare (Smith 2015). Kurgans at sites such as Shengavit, Trialeti, Martkopi and Bedeni show clear signs of social differentiation, including the presence of high-quality metal goblets and other luxury goods (Badalyan et. al. 2003; Kuftin and Field 1946). The amount of effort and coordination required for the construction of kurgans, and the wealth of their contents, may indicate the development of social hierarchy among groups of mobile pastoralists (Greene and Lindsay 2013), which was likely the basis of a system of political authority derived from the military heroics of individual leaders (Badalyan et. al. 2003; Greene 2012). This system created a new concept of "civilization" that was quite different from that of the Kura-Araxes culture: rather than being centered on egalitarianism and unity, it was instead based on segmentation and violence. While the Kura-Araxes culture set the state for a unified public, then, the MBA created the means by which that public could be divided and subjugated through warfare (Smith 2015). Evidence from the broader Caucasus and central Eurasia (Anderson et. al. 2014; Anthony 2007; Frachetti 2008; Palumbi 2011; Reinhold and Korobov 2007; Sagona 2004) suggests that kurgans also likely served as territorial markers and locations for the production of social memory, particularly in times of stress and intergroup conflict.

Evidence from the Late Bronze Age (1500-1150 BCE) documents a return to agrarian-based sedentism, and, in particular, the development of cyclopean fortress constructions, the main form of settlement during this time period (Greene and Lindsay 2013; Lindsay et. al. 2008; Lindsay et. al. 2009; Smith 2015). This includes the occupation and re-occupation of large fortified settlements such as Hnaberd, Gegharot, and Tsaghkahovit on the Tsaghkahovit Plain in Armenia (Smith et. al. 2009). The sudden appearance of these fortresses suggests that the beginning of the LBA was a period of intense social and political change that saw a new system of social organization for the pastoral tribes that dominated the MBA (Lindsay et. al. 2009). Smith (2015) argues that despite the dramatic changes occurring in this period, the new system of sovereignty was in fact based in the developments of the EBA, namely the formation of a shared concept of "civilization"; and of the MBA, namely the creation of efficient technologies and social apparatuses for war. Examples of fortified settlements include Hnaberd and Tsilkar on the Tsaghkahovit Plain in Armenia, as well as the reoccupation of Gegharot and Tsagkhaovit in the same area (Smith et. al. 2009). Fortified settlements can be found on the southwest coast of Lake Sevan (Hmayakyan 2002) and at the sites of Metsamor, Horom, and Keti in Armenia, which also had extensive cemeteries (Badalyan et. al. 2003; Kohl 1992). These fortresses had a variety of functions as political, ritual and military centers (Greene and Lindsay 2013). Burials from the Late Bronze Age were more ubiquitous and less luxurious than the kurgans of the Middle Bronze Age, suggesting that social power was now consolidated and formalized in fortress settlements, rather than in the burials of individual leaders (Greene and Lindsay 2013; Lindsay 2006). However, the transition to sedentism was only partial; in their survey of the Tsaghkahovit Plain in northwestern Armenia, Alan Greene and Ian Lindsay (2013) concluded that much of the population in this time period was mobile during parts of the year. These people likely regularly returned to fortress sites to carry out ritual activities and live in temporary, seasonal settlements. Though excavations have revealed little trace of residential occupation around these fortresses, magnetometry survey has detected evidence of seasonal sedentary settlements (Lindsay et. al. 2009).

LBA authorities controlled these mobile populations through maintenance of socially significant locations and ritual activities, including the control and distribution of animal products (Lindsay et. al. 2009; Monahan 2012). Jewelry, ornaments and other luxury items found at Gegharot fortress in Armenia also suggest that elites controlled subject populations by generating a fascination with and demand for material goods (Smith 2015). This high degree of mobility would have made it difficult for elites to regulate people's movements, and fortresses on the Tsaghkahovit Plain in the LBA do not appear to have been situated with surveillance in mind, nor did they control mountain passes or act as choke points. On the other hand, ceramic evidence suggests that these fortresses may have used tribute as a way to maintain their power over mobile populations (Smith 2015). Thus, LBA fortresses may have served mainly economic and social, rather than political or military, roles. The territories controlled by these fortresses were likely fluid, and the management of socially and ritually important places was more important than the territory as a whole (Greene and Lindsay 2013). The fact that these populations maintained at least partially mobile lifestyles even with the rise of sedentary political institutions challenges traditional models of social complexity, which tie the development of complexity to a transition to full-time sedentism. Instead, this evidence suggests that we need a new model to understand how elites in complex polities maintained control over communities who remained tied to traditional pastoral lifestyles (Lindsay et. al. 2009). This dissertation will address this issue by examining how Urartian leaders manipulated site location and landscape monuments to influence their subjects.

The Growth of States: The Early Iron Age (1150-850 BCE)

In general, the Early Iron Age was a time in which the patterns of political authority developed in the Late Bronze Age were strengthened and solidified. Although the fortresses of the Tsaghkahovit Plain were violently destroyed in the late thirteenth or early twelfth century BCE, the form and institution of the fortress spread throughout the South Caucasus and Highland Anatolia, and continued to be central to political authority throughout the Early Iron Age (1150-850 BCE) (Smith 2015). In the Lake Sevan region, material culture shows continuity between the Late Bronze Age and the Early Iron Age (Biscione 2002). According to Smith (1999:65) “components of state authority coalesced at this time, although without the degree of formalization achieved by the Urartian state”, and fortresses belonged to a variety of competing local polities. These local polities linked religious, bureaucratic and economic functions into a single unit within the institution of the fortress, suggesting a highly integrated, complex social and political system; however, elite rulers appear to have been spatially distant from their subject, with fortresses located in the highlands rather than the agricultural plain (Smith 1999). In the Lake Sevan region of Armenia, a locally developed, united system of fortresses existed during the Early Iron Age, reflecting frequent warfare (Biscione 2003; Earley-Spadoni 2015), and fortresses, forts and fortified settlements were the only types of settlements found in the southern Lake Sevan basin until Hellenistic times (Biscione 2002). A system of unified fortresses also emerged in Naxçivan during this time (Ristvet et. al. 2012). Based on funerary evidence, a culturally unified polity was also present in the Lake Van region during the Early Iron Age (Sevin 1999), and hilltop fortresses from the Iron Age have been found throughout northwestern Iran (Biscione 2009). Funerary customs also, however, indicate a certain degree of egalitarianism, at least in death; in the Van region, there is little evidence of burials specifically designated for kings or warriors, and burials appear to have been fairly uniform across the various ethnic groups that occupied the area (Baştürk 2015). Pastoralism also continued to be an important force during this time period, and indeed the early Urartian tribes described by the Assyrians, prior to the formation of the empire, may have been pastoral nomads (Sevin 1999).

The Rise of Empire: The Urartian Period (850-643 BCE)

The Uratian Empire was the first to unite the South Caucasus and Highland Anatolia (Figure 4-1). Based around the capital of Tushpa near Lake Van, Assyrian sources indicate that Urartu emerged from the unification of tribal groups starting in the ninth century BCE, when Urartu's first king, Sarduri I, founded the fortress settlement of

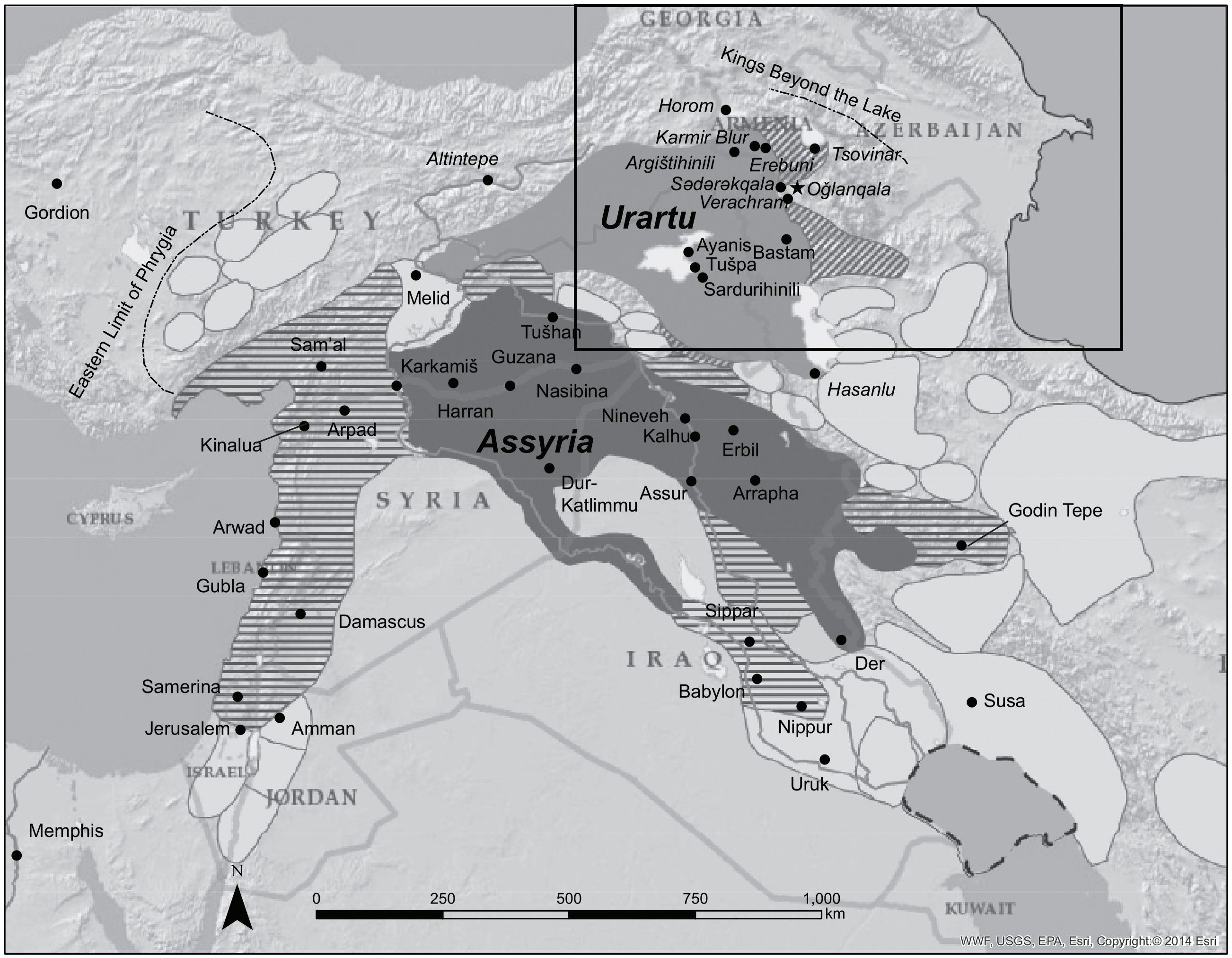


Figure 4-1: Extent of the Urartian Empire (after Ristvet 2018:Figure 7.1a)

Van Kalesi (Salvini 2011). Written evidence suggests that the polities that directly preceded Urartu were strong nations with large, powerful armies, but there is little archaeological evidence for this (Baştürk 2015).

The following two centuries marked the primary period of Urartian expansion into the South Caucasus and northern Iran (Earley-Spadoni 2015; Kleiss and Kroll 1977; Kroll 2004; Salvini 2002; Smith et. al. 2009; Tsetskhladze 2003). Important sites from this time period include Erebuni, the Urartian base in the Ararat plain (Piotrovsky 1969) and Çavuştepe in Eastern Turkey (Çilingiroğlu 2004). This expansion was accompanied by the emergence of an Urartian system of authority, administration and religion (Piotrovksy 1969), with an artistic and textual program that borrowed heavily from Assyria (Piotrovsky 1967; Salvini 2005; Smith 2000; Zimansky 1995, 2005). Kings from this time period are known from inscriptions and from Assyrian sources, and, assuming succession from father to son, the line of succession can be reconstructed. Inscriptions by the king Ishpuini and his son Menua detail their military campaigns and victories in the east, in modern-day Naxçivan, and the southeast, in the area south of Lake Urmia, at the end of the ninth century BCE (Kroll et al. 2012). Menua was also responsible for the creation of the Semiramis Canal, one of the most significant irrigation projects in the Van region. Throughout this time period, Urartian armies came into frequent conflict with Assyrian forces. While the outcome of these battles is not always clear, they were evidently not debilitating to the Urartian military. Menua's successor, Argishti, campaigned extensively throughout modern-day Armenia and in the Lake Urmia region of Iran, founding important sites such as Erebuni and Argishtihinili on the Ararat Plain. Argishti's son, Sarduri, continued the expansion with campaigns in the

Lake Sevan and Lake Urmia regions in the mid eighth century BCE (Kroll et al. 2012). The Ararat Plain remained under Urartian control for the remainder of the empire's rule, while the Sevan region remained under Urartian control for a shorter period, possibly only until the end of the eighth century BCE. Textual accounts from the Assyrians suggest that there may have been an uprising and a brief period of instability at the end of the eighth century BCE, but Urartian accounts make no mention of this (Kroll et al. 2012).

In the early seventh century BCE, the Urartian king Rusa II undertook a reorganization of the empire that included the foundation of fortresses and domestic settlements such as Bastam, the center of Urartian power in the Urmia region (Biscione 2012) and Ayanis in Eastern Turkey (Harmansah 2009; Stone 2012; Stone and Zimansky 2003). However, Rusa's reorganization was a failure, and Urartu was ultimately defeated by the Assyrian Empire at the end of the seventh century BCE (Melville 2016; Zimansky 1995). Thus, the Urartian Empire appeared suddenly, with a seemingly homogenous cultural package, disintegrated just as rapidly, and appears to have been utterly forgotten by subsequent empires until modern times (Kroll et. al. 2012; Zimansky 1995). The influence of Urartian ruins on the use of space into Achaemenid times may be an exception (Biscione 2009; Khatchadourian 2007). Despite often being portrayed as somewhat inept by Assyrian sources and modern-day archaeologists, Urartian rulers successfully conquered, however briefly, a region of the world that is notoriously difficult to control due to its mountainous landscape (Zimansky 2012, 1985).

The suddenness of Urartu's appearance raises many questions about its origins and its relationship with earlier cultures in the Van heartland and its conquered territories.

Diffusionist accounts of Urartian history present the rise of the empire as a side effect of the rise of Assyria, drawing on connections between Urartian and Mesopotamian art (Badalyan et. al. 2003; Yakar 2011). However, while Urartian rulers appear to have used Assyria as a model of culture and kingship (Zimansky 2011), the extent of direct Assyrian involvement in the highlands is unclear and Assyrian military activity in the region may have been a response to the coalescence of Urartu, rather than the other way around (Badalyan et. al. 2003).

The nature of Urartian rule is a subject of a great deal of debate, most of it centered on the amount of direct control Urartian leaders exerted over their subjects. Two general models exist. What I will refer to as the *imposition model* argues that the Urartian state was highly centralized, with a king who exerted strict economic, political, social and religious control over his subjects, and who directly managed and redistributed the labor and resources of conquered territories (Zimansky 1995). By contrast, what I will refer to as the *autonomy model* suggests that Urartian rulers exerted little influence over the day-to-day lives of their subjects, and that conquered territories were ruled by local administrators who had a large degree of independence and who allowed local peoples to continue their pre-existing traditions with minimal interference (Stone 2012; Yakar 2012). It is important to note, however, that these two general models ignore issues of regional variability within the empire (Smith 2015) something that this dissertation will address by comparing Lake Van, Lake Sevan and the Ararat Plain.

The imposition model has been the basis for much of Urartian scholarship (Zimansky 1995), likely because it fits well with the traditional, classically based models of empire discussed in Chapter 1. Urartu does show some evidence of centralization, for example, a state language, religion, and unique architectural and ceramic styles (Zimansky 1995). Similarities between fortresses and rock reliefs also suggest a large degree of cultural unity (Zimansky 1995). Textual evidence indicates that the empire forcibly displaced and resettled large numbers of conquered people (Burney 2012; Stone 2012; Zimansky 2012); Lori Khatchadourian (2014:160) calls Urartu's exploitive political and economic policies "draconian" and "socially destructive." Textual evidence also indicates that conquered kingdoms sent livestock, animal products, human booty, and other forms of tribute to Urartian kings (Burney 2012). Between the EIA and the Urartian Period, political centers shifted to be closer to subject populations, suggesting that the elites who inhabited these fortresses desired a greater degree of oversight and interaction with local people than did their predecessors (Smith 1999). However, it is not clear exactly who controlled these fortresses or how closely connected they were to the Urartian state, especially since in pre-Urartian times these fortresses were likely the centers of a various other polities at different points in time (Smith 1999). Nonetheless, Smith argues that this represents a system of political authority based on direct oversight and close interactions between elites and subjects. Additionally, the Urartian state does show an unusual integration of bureaucratic, religious and economic institutions. Unlike in Mesopotamia, Assyria or Persia, where these three types of authority were often controlled by different groups of people and housed in different facilities, "the entire complex of Urartian institutions seems to have been part of a singular, highly integrated governmental package that followed conquest and occupation" (Smith 1999:67). Smith further suggests that fragmentation and competition between these unified institutions may have led to collapse of the Urartian Empire.

Interestingly, while Urartian kings certainly seem to have viewed themselves as singular figures with complete authority, their focus seemed to be on imposing Urartian culture on landscapes rather than on people. Urartian texts simultaneously emphasize the empty, untouched nature of the land on which they built their fortresses, and detail the people and settlements already present there. Presumably, this reflects the Urartian view that the populations living in their conquered territories were “uncivilized” people of little consequence, rather than a true conviction that the lands were deserted (Smith 1999, 2000). Built features in reliefs, such as stone inscriptions from Kef Kalesi or depictions on various bronze plaques, were presented as sites of divine blessing, and portrayals of fortresses often depicted deities in front of fortress walls. Textual evidence stressed that the king was personally responsible for all state construction and for the taming of wild places (Smith 2000). Construction was presented as a political undertaking, associated with the expansion of the empire and the integration of conquered territories, and texts and images related to construction were “narrated as a triumph of the king over wilderness” (Smith 2000:142). Indeed, Urartian built features were often constructed directly on bedrock; when they were constructed on top of previous cultural levels, the Urartian builders went out of their way to destroy all evidence of earlier occupation (Smith 2000, 2003, 2012). Unlike in Mesopotamia, where rulers emphasized connections with earlier kings and kingdoms, the Urartian strategy of legitimization involved erasing all traces of the past (Smith 2012). The Lake Sevan region of Armenia is an exception, where textual evidence describes kings ordering the reuse of older fortifications (Hmayakyan 2002). In general, however, the taming of wild places seems to have been a prerogative of kings, and in addition to fortress construction, establishing irrigated fields, gardens, and orchards were important projects for Urartian rulers (Belli 1999a; Smith 2012). Smith (2000) argues that while there are generally two types of narratives present in depictions of Urartian royal authority—the taming of wild landscapes through construction as either a form of conquest or as a divine rite—both ideological programs are associated with integrating territory into the broader empire. On the other hand, texts are not always accurate reflections of reality, and some fortresses from the Urartian period may have been constructed by local aristocrats or other powerful individuals acting independently of the state (Çifçi 2017).

There is also significant evidence against the imposition model and in favor of the autonomy model. Jak Yakar (2011) postulates that conquered groups and tribes had considerable autonomy to ensure their cooperation with the Urartian state. Assyrian and Urartian sources mention the existence of provincial governors, who were responsible for administration and for supplying troops to the king. These governors appear to have had both military and diplomatic roles, and may have moved through various positions in the Urartian bureaucracy throughout their careers (Çifçi 2017). The isolated nature of Urartian provinces, and the limited communication routes between them and the capital, likely would have allowed these governors a great deal of independence (Kroll et. al. 2012). Paul Zimansky (1995) questions the assumption that Urartian material culture corresponds to a single people, language, culture, government and time period. For example, no evidence that the Urartian language was widely spoken exists and Urartian rulers sometimes had foreign names. Similarly, the pottery styles that are characterized as distinctly Urartian make up only a small portion of assemblages from this time period; most pottery is of a plain, nondescript style that is widespread beyond the boundaries of

Urartian control (Zimansky 2012). While Assyrian sources describe large numbers of people living in rural communities, there is little trace of these people archaeologically, and the extent to which Urartian culture permeated the general population is unclear (Stone and Zimansky 2003). The view of a unified Urartian culture is instead the result of a tendency for archaeologists to focus almost exclusively on fortresses and therefore on material directly produced by the ruling elite, who intentionally presented their empire as more integrated and homogenous than it actually was (Zimansky 1995).

Evidence from residential settlements further supports the autonomy model. Although extensively utilizing Urartian material culture, subjects did not become a homogenous cultural group and the Urartian government exerted little control over their day-to-day lives (Stone 2012; Zimansky 2012). Evidence from households at Ayanis, Turkey, suggests a high degree of economic independence, with residents keeping cows and sheep and producing grain, milk and cheese. These residents also had access to weapons, and while they lacked the luxury items found in fortresses, they did have high quality material goods. Although the residents of Ayanis may have been forcibly resettled, they appear to have lived comfortably and with a fair amount of freedom (Stone 2012). Similarly, Urartian rulers encouraged the spread of a state religion centered on the god Haldi, but textual evidence depicts the worship of numerous local deities as well (Zimansky 2012).

Although Urartian ideology may have centered on erasing the past, the political and social institutions that formed the basis of Urartian authority were present in the South Caucasus and Anatolia before Urartu's rise. While traditional Urartu-centric views highlight social complexity associated with fortress networks as an Urartian export to the

South Caucasus, recent research has contradicted this. Tiffany Earley-Spadoni (2015) found that sophisticated networks of visual communication among fortresses existed in the Lake Sevan region before Urartian occupation, and that the Urartians simply continued and improved upon this system. Pre-Urartian settlement patterns endured in the Lake Sevan region, suggesting that Urartu had little impact on day-to-day life in this region; by contrast, the arrival of Urartu marked a much greater change in settlement patterns on the Urmia Plain (Biscione 2003). Late Bronze Age economic, political, and social systems, many of which were based around farming and mobile pastoralism, also set the stage for Urartian authority (Greene and Lindsay 2013; Lindsay 2006; Lindsay et. al. 2009). The fortresses of the LBA and EIA, and the social and political institutions associated with them—many of which were based around mobile pastoralism—established complex systems of governance that were already in place when the Urartians arrived (Smith 2012, 2015).

Upon expanding into the South Caucasus, Urartian leaders inherited a subject population that was diverse, dispersed, and at least partially nomadic, and that had become accustomed to maintaining mobility and independence even in the face of increasingly institutionalized power. This is in contrast to other contemporary Near Eastern empires, which would have had the ability to exert political control over large populations consolidated in urban settlements (Biscione 2009). This may have led to the creation of an empire that allowed it subjects a great deal of autonomy. Indeed, Smith (2012:40) argues that "the Urartian landscape, underneath the aggressive bombast, was a worried landscape, concerned to project permanence and immobility", and this concern likely arose out of the fragmented and mobile nature of its conquered populations. As I will argue, the manipulation of natural features of stone and earth was one important way in which Urartian leaders attempted to maintain control over conquered peoples under these circumstances, and to permanently infuse their power into the landscape.

Textual Evidence for the Rise of Urartu

There are two main sources of textual evidence for Urartu: Assyrian records, and inscriptions of Urartian kings themselves. The earliest mentions of Urartu come from Assyrian descriptions of conquests in the region, dating to the thirteenth century BCE, and indeed the name Urartu was the name given by the Assyrians to the region around Lake Van (Kroll et al. 2012; Zimansky 1995). These references depict a geographical area, most likely in the Van region, composed of weak polities with numerous rulers. The earliest mentions of a unified kingdom of Urartu come from Assyrian sources in the mid ninth century BCE. Shortly thereafter, the Urartian king Sarduri I created the first Urartian inscription at Van Kalesi, detailing his foundation of the fortress as the empire's capital (Kroll et al. 2012). While there is a large corpus of texts from Urartian rulers from Sarduri up until the empire's final days in the seventh century BCE (Salvini 2008), these texts focus almost exclusively on the construction and/or religious activities of kings (Zimansky 2005). Inscriptions were found on buildings such as fortresses, granaries, canals, and religiously significant natural places, and many follow a standard format: they state the name of the king responsible, sometimes invoke a god or gods, describe the king's civic and/or military activities—often the construction of buildings, the planting of orchards and vineyards, and the subjection of conquered populations—and finish with a threat or divine retribution against anyone who destroys the text (Salvini

2008). These inscriptions are almost exclusively focused on the king and his interactions with either the landscape or foreign populations. Unlike many other empires in the Near East, Urartians did not use writing for administrative, legal, economic or artistic purposes until the reorganization under Rusa II, during which time there was limited use of writing for economic record-keeping (Zimansky 2005). For most of the Urartian Empire, however, writing was done exclusively by kings and about kings (Smith 2000). These inscriptions provide valuable information about Urartian military expeditions, the construction of fortresses and other buildings, and royal succession; however, they give little insight into the workings of Urartu's economic or political systems, or into the lives of non-royals under the empire (Kroll et al. 2012; Smith 2000; Zimansky 2005).

More information on Urartu comes from Assyrian sources, particularly reports from spies and texts related to military campaigns (Kroll et al. 2012; Zimansky 1995). The former help fill in some of the gaps about Urartu's population and political organization (Sevin 1999; Zimansky 2012), while the latter provide information on historical geography (Kroll et al. 2012; Salvini 2002). Sargon's eighth campaign, for example, appears to have traveled through Urartian territory in modern-day Iran, and records from this campaign describe the organization of Urartian fortresses (Zimansky 1985). Other Assyrian sources describe frequent military clashes between Urartu and Assyria (Kroll et al. 2012), and texts from the campaigns of the Assyrian king Sargon II describe his victories over the Urartian empire under Rusa II (Melville 2016). It is important to note, however, that as Urartu's enemies, Assyrian accounts were likely biased against them (Zimansky 1985, 2012). Additionally, the region described as Urartu in Assyrian texts may have been a broad term used to describe the region north of

Assyria, and may not have always corresponded to the area that Urartians themselves regarded as their empire (Kroll et al. 2012).

The Archaeological Evidence: Fortresses, Rock Reliefs and Kurgans

Because so much of the population was mobile throughout the history of the South Caucasus, there is little evidence of large cities or residential settlements from any time period Exceptions do exist at Ayanis, Karmir Blur and Bastam (e.g. Stone and Zimansky 2003), and Urartian inscriptions describe some small, unfortified villages (Biscione 2002); however, any trace of most of these settlements was likely destroyed by alluvium or by later activity, particularly if they were the types of non-permanent settlements favored by mobile pastoralists. Significant settlements associated with fortresses may have also existed but were destroyed by modern activity (Hammer 2013). Thus, this dissertation will focus on the three major types of archaeological evidence that are found in Armenia and Turkey from the LBA, EIA and Urartian periods: fortresses, rock reliefs and kurgans. In addition to their unique histories in the South Caucasus, these features are part of broader traditions that are found elsewhere in the world, and thus it is useful to examine them cross-culturally as well as in the context of the South Caucasus.

A Note on Terminology

Scholars use a variety of terms to refer the types of archaeological remains found in the South Caucasus, and some use different terminology for the same type of feature. For all sites studied in this dissertation, any large building with defensive structures will be referred to as a fortress, though some literature may refer to such buildings as forts, castles or citadels. A burial consisting of an earthen mound will be referred to as a kurgan, though some literature may use the word mound or tumulus.

Fortresses

The emergence, abandonment and reoccupation of hilltop fortress settlements is one of the central patterns that appears in the archaeological record in the South Caucasus from the Early Bronze Age onward (Biscione 2003; Greene 2013; Smith 1999, 2012, 2015; Smith et. al. 2009). While fortresses in the South Caucasus were part of unique social and cultural trends, fortified landscapes are found throughout the world, and broad similarities are present among them. In particular, the Andes is a useful comparison for the South Caucasus, as both regions are mountainous landscapes with some lowland settlements where pastoralism has traditionally made up a significant part of the economy, and both regions also have long histories of extensive fortification.

Fortified hilltop settlements are found throughout the world, and are traditionally associated with landscapes organized around frequent warfare (Arkush 2008; Canosa-Betés 2016; Earley-Spadoni 2015). Fortifications can be used to understand the nature of both warfare and of political power, and in particular, power dynamics and centralization. In societies where fortifications are widespread, we should not assume that actual warfare is constant or even necessarily common; rather, it is the incessant *threat* of violence that leads people to create a landscape designed for defense (Arkush 2011; Earley-Spadoni 2015). In complex societies, warfare occurs when small numbers of elites mobilize troops to advance their interests. Warfare is more complicated in decentralized societies, where elites have limited control over fighters and where cultural norms dictate that offenses against individuals must be avenged by the group (Arkush 2008). While warfare is often seen as a transformative force that can unite smaller-scale groups into chiefdoms and states, the landscapes created by warfare can also be a force for stasis. Once established, the defensibility and sustainability of fortresses encourages fragmentation and makes it difficult for a political power to unify a landscape and its inhabitants. Thus, "forts and defensive sites…tend to entrench existing political patterns: when closely controlled by a central authority, forts cement that authority, but otherwise, they make it easy for a subordinate group to secede and difficult for a dominant group to reconquer" (Arkush 2011:14).

Landscapes where most settlements are fortified are generally associated with tribal or segmentary societies; in chiefdoms and states, most warfare occurs only at borders, and citizens living in core areas have little need to be concerned about defense. These societies will have heavily fortified outposts at borders, but most settlements in the heartland will be unfortified. Therefore, landscapes dominated by the presence of clusters of fortified settlements "suggest less stable or centralized leadership and a more ruthless form of warfare in which subordinate settlements needed extensive protection" (Arkush 2011:67). These fortresses frequently make use of naturally defensible terrain, and are also generally highly visible (Earley-Spadoni 2015). Visibility would have been important for defense, but it would also have meant that fortresses served as important social points of reference for people living on the surrounding landscape (Arkush 2011; Greene and Lindsay 2013). Though fortresses can have impressive defensive walls, these structures do not necessarily suggest elite control of labor, since in a climate of constant danger, defense would have been important for everyone. Instead, fortifications can also be built by cooperative, egalitarian labor groups (Arkush 2011).

Zimansky (2005) argues that the Inca Empire is a useful point of comparison for Urartu because both empires faced the challenging of controlling a diverse, dispersed population in a mountainous landscape. Thus, an examination of fortifications from the Titicaca Basin could be useful in understanding Urartu. Shortly before the arrival of the Inca Empire, settlement patterns in the Andes shifted from unfortified settlements in the lowlands, to fortified hilltop settlements, suggesting an unprecedented level of conflict in the region. Like Urartian fortresses, these settlements, known as pukaras, were small and located on defensible terrain with good visibility. Most pukaras had no good water supply, suggesting that they were not designed for long-term sieges but rather were used only until reinforcements could arrive; this parallels Zimansky's suggestion that Urartian fortresses were likely refuge points that were used mainly in times of emergency, rather than permanent residential settlements. Like the tradition of fortress construction that existed in the South Caucasus since the Middle Bronze Age, pukaras became an entrenched form of settlement on the landscape. Though pukaras emerged during a time of warfare that may have been triggered by resource scarcity or the collapse of a former centralized state, they remained the main form of settlement even after the crisis had passed (Arkush 2011). Their existence made it difficult for a consolidated state to emerge, in part because they were difficult to capture and control, and in part because the mere existence of structures designed for warfare can be an impetus for warfare to continue. Pukaras formed clusters, alliances and networks of dependence in which smaller sites relied on the protection of larger ones, but these relations were often heterarchical rather than hierarchical in nature, and most pukaras were committed to maintaining independence and egalitarianism. Thus, pukaras demonstrate "tension between the centripetal demands of security and the centrifugal emphasis on subgroup autonomy" (Arkush 2011:140). As a result, the landscape did not see the emergence of a centralized state until the arrival of the Inca Empire, which subdued its neighbors with a "divide and conquer" strategy that exploited the rivalries between various subgroups in the region. Inca invaders often took control of pukaras by modifying earlier architecture or by building their own, and these additions were often ceremonial in nature. However, documented administrative and ethnic boundaries from Inca times align with pukara clusters, suggesting that the social and political patterns created by the pukaras endured even after Inca conquest (Arkush 2009).

As discussed above, hilltop fortresses are the best-known and most obvious archaeological trace of the polities of the Late Iron Age and also of the Urartian Empire. The most central of the Urartian fortresses is Van Kalesi, located at the Urartian capital of Tushpa and situated on a natural rock outcrop, with many of the buildings cut directly into the bedrock (Salvini 2005; Tarhan 1994). However, these fortresses, like their EIA predecessors, were found throughout the regions Urartu conquered. Urartian fortresses were generally "rectilinear in layout with sharp angles and a distinctive system of buttresses and towers protruding from the curtine" (Smith 2000:136), and were often located on promontories with three steep sides (Biscione 2003). Fortresses were made of sun-dried mud brick above a stone socle, with roofs of wooden beams covered in mud plaster. Extensive terracing was done into the stone to prepare the rock for the construction of fortification walls, and these construction techniques would have required sophisticated iron tools. Towers were present at sites that were less naturally defensible, but not at those which had steep cliffs to act as a natural line of defense. Within the fortress walls, the most significant buildings were temples and storehouses (Kroll et. al. 2012). Architecture was precise, skilled and uniform, suggesting that their construction was under the centralized control of elites (Zimansky 1995). In regions such as Lake Urmia, Iran, and Lake Sevan, Armenia, fortresses were arranged in hierarchical clusters, with smaller sites subordinate to large ones (Biscione 2003). In artwork and in founding inscriptions, Urartian fortresses are presented as synonymous with state power, and their physical construction as permanent, significant places on the landscape was an important vehicle of Urartian royal authority (Smith 1999, 2003).

Pre-Urartian fortifications of the Early Iron Age were established in the highlands, while associated arable lands were located in the lowlands, suggesting vertical movement between agricultural centers and political centers. In contrast, Urartian fortresses were located on gentler slopes, making them more physically accessible, while still providing panoptic oversight of agricultural lands (Smith 1999, 2012) or important locations trade routes and mines (Çilingiroğlu 2004). This suggests that Urartian fortresses provided Urartian leaders with a greater degree of interaction with subject populations than had previously been typical in the region (Smith 1999). On the other hand, the transition from highlands to lowlands may have been practical in nature and may suggest that the Urartians were only interested in economically important lands, and left highland people to their own devices (Biscione 2003; Hammer 2014b).

Regardless, these fortresses were the location of a “triumvirate of institutions embedded within the apparatus of the Urartian state: bureaucratic/royal, religious/temple, and economic" (Smith 1999:67), and the layout of most fortresses show the spatial division of these three functions (Smith 2000). Biscione (2003) argues that in this way, Urartian leaders combined characteristics of Near Eastern cities, such as administration, writing and monumental architecture, with a focus on heavy fortifications and military leadership that was indigenous to the South Caucasus. GIS analysis of fortresses in the Lake Sevan region also suggests that the visibility networks used by the Urartians were originally developed by local cultures (Earley-Spadoni 2015). This organization of functional areas may also have existed earlier in the heartland of Urartu, but little archaeological research has been done in that time period (Biscione et. al. 2012). However, evidence from the Iron Age Karagunduz cemetery suggests that most of the area around Lake Ercek and Lake Van was culturally unified before the development of the Urartian state (Sevin 1999).

The landscape of the South Caucasus prior to the arrival of Urartu appears to have been more centralized and hierarchical than the Titicaca Basin. Nonetheless, the above analysis demonstrates that both local elites and Urartian invaders would have had to confront a pattern of landscape use that was in many ways opposed to the consolidation of power and the formation of a state-level organization. Populations may have formed segmented groups along lineage lines, which was likely the case in Andean society and which is also common among pastoralists.

The entrenched nature of fortified settlements would also have meant that people living in this region would likely have had a long tradition of maintaining their autonomy. Because a fortified landscape is one that favors defenders, the Urartians would have needed superior military resources and strategy to conquer the South Caucasus. Beyond that, however, they would have needed social and political strategies to control a population that had spent centuries living with traditions designed to resist just that.

Kurgan Burials

Kurgan burials are part of a common funerary tradition across Eurasia in the Bronze and Iron Ages, including Kazakhstan (Frachetti 2008), Russia (Anthony 2007; Reinhold and Korobov 2007) and other parts of the Caucasus (Anderson et al. 2014; Palumbi 2011; Ristvet et al. 2012). Although their form can vary widely even within the same culture, these structures have a burial chamber dug into the ground and a mound above that chamber built of earth or stone (Frachetti 2008). Kurgans are often located on ridges, hilltops, or other elevated places with high visibility, and have often been regarded as the burials of pastoralists.

Frachetti (2008) examined the role of kurgan burials among pastoralists in Bronze Age Kazakhstan. Although, or perhaps because, these people were non-sedentary, the burial of their ancestors in specific places served to permanently "inter" these communities, along with their dead, in the visible landscape. As a result, these pastoralists designed their migration routes around the locations of kurgans. These kurgans were sometimes found in association with settlements, emphasizing the ancestry of the inhabitants of those settlements and their claim to the land. Although easily accessible, with rich grave goods, the graves appear not to have been disturbed, and indeed their maintenance and preservation provides evidence of "long-term investment" in these burials, indicating a continuing attachment to the land and respect for the ancestors (Frachetti 2008:161). The arrangement of burials within groups appears to have been correlated with prestige, suggesting that these burials were not only marking a community's claim to the landscape for outsiders, but also conveying messages about social structure within the community.

Kurgans appear in the Danube Valley of Russia around 4200 B.C.E. Throughout Russia, kurgans were previously interpreted as the result of a massive invasion of "kurgan-culture" Indo-European speakers from the steppes sweeping into Eastern Europe (Anthony 2007). While this concept has since been discredited, the appearance of kurgans does mark more localized, specific migrations of steppe people into areas such as the Danube Valley and the Don River Valley. These people were herders, and Early Bronze Age kurgans in Eastern Europe contain some of the earliest evidence for the wheel and the wagon, in the form of pictorial depictions and physical remains. Wheeled transport provided mobile herders a means to carry supplies with them, expanding the geographical range they could exploit and permitting the development of larger herds (Anthony 2007). Kurgans were initially located in river valleys, but in the Middle Bronze Age Yamnaya period their location shifts to steppes and plateaus, suggesting this area was now being cultivated or exploited in other ways. Changes in soil morphology suggest that this shift is the result of the seasonal movements of herders between pastures in the valley and pastures in the steppes. These kurgans, located in areas of seasonal use, served as important territorial markers and claims to the landscape and its resources. The infrequency of their construction—one every several years—suggests that they were associated with important individuals (Anthony 2007). Prestige is indicated by rich grave goods, particularly metal, and elaborate architecture, although grave goods do not always mean large kurgans. Based on radiocarbon dating, in this region, cemeteries were used intensively for a relatively short period of time and then abandoned. This behavior was likely the result of the relatively low quality of resources in the area, which rapidly led to overgrazing and thus required frequent relocation. This relocation appears to have resulted in the abandonment of both pastures and cemeteries (Anthony 2007).

Reinhold and Korobov (2007) also considered kurgan burials in Kislovodsk, Russia, to be territorial markers. Similar to Kazakhstan, kurgans were located in prominent places on the landscape and along important communication routes. The spacing and density of kurgan groups mirrors that of sites, suggesting that kurgans were closely related to territorial organization. The Middle Bronze Age saw a transition to larger kurgans, which were also located along major travel routes, and it seems that these communities had a desire to "put the whole territory under the observance of burial mounds, i.e. under the control or protection of the ancestors" (Reinhold and Korobov 2007:192). Unlike those in Kazakhstan, however, kurgans associated with settlements appear to have been used by sedentary people.

Kurgan culture in the Northern Caucasus began at the end of the fourth millennium, and was also influenced by the Kura-Araxes culture in the South Caucasus. During this period settlements were small and sparse, but archaeologists have found disproportionately more and more visible cemeteries and burials, particularly at sites in the North Caucasus such as Majkop and the cemetery of Klady at Novosvobodnaya (Palumbi 2011). Settlements were short-lived and left a light archaeological trace, suggesting a largely pastoral way of life; by contrast, kurgan burials served as permanent, highly visible monuments which likely contained the bodies of important individuals. Size differences in these kurgans reflected differences in the ability of the family of the deceased to mobilize resources and support from the community. Construction of kurgans was time-consuming, involving a sizeable work force to move large stones, earth, and pebbles.

The contents of the graves, particularly large numbers of metal artifacts, and the style of the tomb, also served to reinforce social distinctions. Like kurgans elsewhere, kurgans in the North Caucasus could have been used to create and visualize territorial boundaries, which would have been particularly important for mobile pastoral groups who did not live permanently in one location (Palumbi 2011). In addition, kurgans "could materialise kinship, shape collective memory, define geographical boundaries and strengthen political and group identities" (Palumbi 2011:52) as well as reinforce a lineage's claim to the land and its resources. These kurgans also carried a significant legacy outside the North Caucasus, as kurgan burial was adopted for the important individual buried in the Royal Tomb at Arslantepe, in Eastern Anatolia, at the turn of the third millennium. This tomb was built on the abandoned mound of Arslantepe, and Giulio Palumbi (2011) suggests a strong symbolic connection between mounded funerary monuments and mounded sites, both of which were a way to inscribe social and political hierarchy into the landscape through the creation of highly visible and highly symbolic places. The construction of the kurgan on the abandoned mound served to appropriate the monumental nature of the tell for use as a monument to the deceased; similarly, by burying the deceased at a historical location, the kurgan claimed the power associated with the heritage of that location (Palumbi 2011). This is not surprising, as the dead and their location are almost universally associated with fear, but also often with regrowth or resurrection (Pearson 2003).

Specifically in the South Caucasus, the emergence of kurgans marks an important transition between the Early and Middle Bronze Ages (Smith et al. 2009). Because this transition occurred in conjunction with large-scale abandonment of settled communities, kurgans are often the best source of information about this time period. Kurgan burials in the South Caucasus often included wagons, ox and horse remains, and a variety of weapons. While the presence of weapons in and of itself is not always evidence of warfare, this fact combined with the abandonment of EBA fortresses suggests that this was a time of greater mobility and violence. The size of these kurgans and the rich funerary goods they often contained also indicate an increased degree of social inequality. Evidence from kurgan burials combined with the abandonment of settlements demonstrates that Middle Bronze Age culture involved large-scale pastoralism, with competition between political and military elites that resulted in an increased focus on raiding and warfare (Smith et al. 2009).

With some exceptions (e.g. Palumbi 2011), kurgans across the Caucasus and Eastern Anatolia are generally associated with a mobile, pastoral way of life. In particularly, they were used by pastoralists to claim pasture land based on the permanent interment of ancestors on that landscape. Zedeño (1997) describes how, among the Hopi in North America, groups who had migrated away from their homelands maintained ownership of those lands through revisiting them and engaging in rituals with ancestral locations on the landscape. Deadman (2012) suggests that ancestral burials may have served a similar role for pastoralists, marking their claim to the land in their absence. The maintenance of ancestral ties to the landscape thus may have served to reinforce ideas of ownership when the groups that claimed that land were not present, in this case due to seasonal transhumance rather than permanent relocation.

Because of their broad range, several similarities and differences can be seen among kurgans from different regions. The kurgans found by Michael Frachetti (2008) in Kazakstan, Anthony (2007) in Eastern Europe, Palumbi (2011) in the North Caucasus, and Smith and colleagues (2009) in the South Caucasus were all associated with pastoralists, while those studied by Sabine Reinhold and Dmitrij Korobov (2007) in Russia were associated with sedentary people. Those in Kazakstan, the North Caucasus and the South Caucasus were all associated with long-term use and/or continued social significance over time, while those in Eastern Europe were used only for short periods. In contrast, kurgans in Kazakstan and Russia were located in highly visible places, often on ridges, and along pastoral travel routes.

Rock Reliefs

Rock reliefs were another way in which Urartians publicly inscribed their presence on the landscape (Salvini 2005, 2008) at fortresses and extra-urban sanctuaries such as Hazinepiri Kapısı, Meherkapısı and Yeşilalıç in the Van region (Tanyeri-Erdemir 2007). Most inscriptions focused on warfare or construction activities, while others depicted features of the built environment, particularly fortresses (Smith 2000), and those at sanctuaries dealt with religious ritual (Tanyeri-Erdemir 2007). These rock reliefs were part of a long tradition of monumental rock inscriptions throughout southwest Asia from the mid-third millennium BCE until the nineteenth century CE (Canepa 2014; Glatz 2009; Glatz and Plourde 2011). As is the case throughout Anatolia and the South

Caucasus, the creation of rhetorics of kingship and power was achieved not just through the construction of buildings, but through the manipulation of socially significant natural places and landscape monuments (Glatz 2009; Harmansah 2007, 2009, 2014). In contrast to other rock monuments from the same time period, these inscriptions appear to have been the sole prerogatives of kings, who for most of Urartian history were responsible for most writing (Zimansky 2005).

Stone monuments have a long history in the Near East, including among Urartu's contemporaries, the Assyrians. In many cases, their primary practical role was territorial. Royal stelae and rock reliefs were often erected on the Assyrian frontier, and they were also associated with ritual activity and the expansion of borders (Shafer 2007). Starting in the ninth century BCE, Assyrian rulers also revisited sites used by previous kings, and throughout the following centuries, these monuments were used as symbols of Assyria's territorial expansion (Shafer 2007). Stelae were erected in enemy cities to symbolize political domination, but they were also erected in remote, inaccessible places to symbolize control of the land and its resources (Shafer 2007). In Achaemenid Iran, many rock reliefs "focused on defining their patron's ability to control a global empire", a message which was directed both at their own empire and at conquered peoples (Canepa 2014:176). Rock reliefs brought the king's power to remote parts of conquered regions and also connected him to global systems of power. Rock reliefs such as Bisitun and the Apadana reliefs depicted the royal power of the king, the submission of conquered peoples, and the punishment of those who defied the empire. Viewing the relief puts the viewer in their appropriate social place, and the inscription of these messages in stone served to naturalize the political order (Canepa 2014; Root 2013).

Claudia Glatz and Aimée Plourde (2011) analyzed rock reliefs in the context of costly signaling theory. They focused in particular on Late Bronze Age Anatolia, where rock reliefs were made by a variety of individuals, including rulers, local princes and rival kings. The rock reliefs were constructed at a time when different governance strategies left spatial gaps in political authority that allowed others to contest control over various territories. These monuments were not just a way for kings and princes to glorify themselves through text and art, but also a demonstration of the labor and other resources that they could mobilize to construct them—that is, their cost was intended to be a truthful signal of the power and prestige of the builder. Assuming that the signals generated by these monuments were an accurate reflection of the builder's influence and resources, their construction was a way of conveying the strength and position of rivals so that each could make their decisions and resolve conflicts with the least amount of cost and risk (Glatz and Plourde 2011). Similarly, Sasanian rock reliefs such as the one at Guyum, Iran, were sometimes commissioned by local nobility both the please the king, and also to demonstrate their own importance (Haerink and Overlaet 2009). Thus, reliefs were often used as a way for multiple people to communicate and compete, representing a variety of voices.

On the other hand, stone inscriptions could also be used to encourage social cohesion. Őmür Harmanṣah (2009) argues that monumental building projects were important venues for the circulation of technological knowledge, knowledge that rulers harnessed and displayed to emphasize their authority, but that could also become part of the broader cultural koine. Irene Winter (2010) found that as the Neo-Assyrian Empire expanded, palace reliefs showed a transition from mythological scenes, which would have been obscure to many laypeople, to more recognizable historical scenes that would have appealed to wider audiences. She contends that this represents an attempt on the part of rulers to integrate conquered populations into a broad body of cultural and historical knowledge. Thus, while inscriptions and rock carvings could have been tools of competition, they also could have been a means through which cultural and technological traditions were shared and emulated. Similarly, Emma Thompson (2008) found that Sasanian rock reliefs served the purpose of transmitting artistic styles and technologies.

Rock reliefs also served a ritual purpose. In Iran, reliefs often depicted the rituals and religious activities that presumably would have been carried out at the site, providing guidance to visitors and ensuring the repetition of their performance (Canepa 2014). These rituals were often associated with the reliefs themselves, and with nearby natural features involving water and stone, often with the purpose of "animating" them. Similarly, the carving of rock art could itself be a part of religious rituals, thus creating a cycle in which religious messages were continuously inscribed on the landscape and transmitted to future viewers. The fact that the majority of this activity centered around the king further served to reinforce his command of the landscape and his role in place-making (Canepa 2014). Extraurban Assyrian monuments also served as locations of ritual activity, including elaborate royal processions, and were also likely the site of more informal ritual activity (Shafer 2007).

Finally, reliefs were important tools and locations for the production of social memory. Some Assyrian inscriptions address future viewers, asking them to take care of the site and detailing rituals they should perform; since the next visitor would ideally have been a dynastic successor, these inscriptions were a way for kings to communicate with their descendants (Shafer 2007). This strategy appears to have been successful, as Assyrian kings commonly revisited and re-carved sites used by previous kings. Harmansah (2009) found that carved stone monuments from Assyrian and Syro-Hittite buildings were often associated with historical narratives, making them important sites of social memory. In Anatolia, monuments could be reused or destroyed by later users, and would have required continuous maintenance (Glatz and Plourde 2011). While rock reliefs could be reused by generations of elites from the same culture, these same places were also often re-carved by rulers from later, unrelated cultures, sometimes hundreds of years after the initial inscription (Harmansah 2015, Canepa 2014). Carving an inscription close to an inscription written by a previous king, whether from the same culture or a much earlier one, allowed a ruler or elite to associate himself with great achievements of the past, thus creating a "physical and visual expression of his legitimacy within a long dynastic tradition" (Canepa 2014:57). The Sasanians, for example, frequently reused Achaemenid sites for the carving of rock reliefs, and consciously evoked Achaemenid forms in their reliefs, a way of legitimizing their view of themselves as the heirs to the Achaemenid Empire (Canepa 2014). The combination of their long histories of use and their physical nature as living rock meant that rock reliefs were important symbols of the durability of a ruler's power (Canepa 2014, Harmansah 2015). Canepa (2010) further argues that the Sasanian tradition of evoking Achaemenid history both continued and competed with the traditions of intervening cultures such as Arsacids. The Sasanians presented themselves as heirs of the Achaemenids, and their rituals were intended to make connections to the Achaemenid past. However, they often did this indirectly, through interactions with early post-Achaemenid memory-making ritual activities, which in turn interacted the original Achaemenid material. Furthermore, these memory-making activities did not depend on exact knowledge of Achaemenid history or the function of Achaemenid ritual places, but rather derived their power simply from the knowledge that the Achaemenid features had belonged to great rulers long ago. Indeed, the audience's lack of knowledge of Achaemenid history could in fact have been beneficial, providing space for Sasanian rulers to insert their own history and ideology (Canepa 2010).

Harmansah (2015) argues that while rock reliefs are often categorized as either political or ritual, most rock reliefs likely had multiple uses and multiple meanings. The combination of ritual scenes, political statements, links to the past, and associated natural wonders would have made rock reliefs important places of power for elites and commoners alike. Rock cut monuments "act[ed] as a means of naturalising state power" (Harmansah 2015:384), combining awe-inspiring natural features with deep histories of local practices and traditions and harnessing them to allow the state to "intervene in everyday practices that constitute the ontologies of place and processes of place-making." These monuments blurred the distinction between the natural and the cultural, and, as a result, need to be studied in both their geographical and archaeological contexts (Canepa 2010; Harmansah 2007). Unfortunately, these factors are often neglected in the study of rock reliefs, which tends to focus only on internal composition, artistic style, and historical and literary details (Canepa 2014; Harmansah 2015).

The history of inscriptions in Urartu diverges in many ways from that of other parts of the Near East. The earliest Urartian inscriptions are from around 830 BCE, later than contemporary societies such as Assyria; this delay is due to the fact that Highland

Anatolia and the South Caucasus did not previously have writing. Cuneiform was originally borrowed from the Assyrians, and like them, the language of the inscriptions was initially Akkadian. Later writing transitioned to the Urartian language, though it continued to use the cuneiform script. Most Urartian texts are display inscriptions in stone that describe building activities or religious offers carried out by kings; these texts are generally formulaic, repetitive, and provide minimal information about the king's activities. There are smaller numbers of dedicatory inscriptions on metal objects and bureaucratic texts on clay tablets (Kroll et. al. 2012).

Urartian texts almost exclusively focus on the actions of rulers, creating an idealized picture of imperial unity under the singular authority of the king. Near the end of the empire, the king Rusa II instituted a massive reorganization of the empire which included an attempt to use writing for administrative purposes, and clay tablets and bullae with cuneiform inscriptions have been found from this time period. However, for most of their history, it seems that the Urartians, like the Inca, controlled their empire through military might without the significant use of writing for administrative purposes. This theory is supported by the fact that compared to other cultures that used cuneiform script, Urartian writing was straightforward, simplistic and repetitive, with fewer cuneiform signs and grammatical forms (Zimansky 2005). Urartu's mountainous terrain was comprised of isolated lowlands that could likely have functioned independently, and in this type of setting "orders probably could be passed down the chain of command, through face to face contact of people who knew each other personally, without the need for writing" (Zimansky 2005:269). This would support the autonomy model, which is based on limited control over strategic areas and institutions, rather than the incorporation of conquered regions into a unified bureaucracy, as was the case in Mesopotamia. When writing was used, then, it was designed solely for recording kingly activities in a simplistic, straightforward fashion, and for most of Urartian history there was no attempt or need to make literacy part of the broader culture. Thus, most of the people viewing Urartian inscriptions would not have been able to read them and may not have even spoken the language, but they would have been aware that writing was a tool of royal power.

Conclusion

Smith (2015) describes the unifying, civilizing force of the Kura-Araxes cultural horizon during the Early Bronze Age and the increasing violence and social stratification of the Middle Bronze Age as the two components that set the stage for the "political machine" by which formalized institutions of power and social complexity manifested in the Late Bronze Age, Iron Age and Urartian periods. In contrast, archaeological and ethnographic evidence documents considerable variation in culture and subsistence patterns in the South Caucasus and Highland Anatolia. In particular, complex, constantly shifting interactions between agricultural sedentism and pastoral nomadism defined life in this region in all time periods, regardless of broader political organization (Sagona 2004; Sevin 2003; Yakar 2011). Even during times of increasing centralization and imperial control, substantial cultural variation and autonomy among local groups was present. While archaeologists traditionally interpreted this lack of unification in the South Caucasus and Highland Anatolia as evidence that the region was not as worthy of study as places such as Mesopotamia, this diversity and flexibility is what makes archaeology in this region so valuable and interesting. In particular, this dissertation will focus on how the rise of complexity among largely mobile and dispersed populations serves as a counterpoint to the better-studied development of complex, sedentary societies in Mesopotamia.

As outlined here, the archaeology of the South Caucasus and Highland Anatolia has made and will continue to make several important contributions to Near Eastern archaeology. The South Caucasus and Highland Anatolia are important because of the connections they form between Near East and Eurasian steppe, allowing archaeologists to study patterns of cultural connection and exchange. This region's different trajectory from Mesopotamia also serves as an important point of contrast to better studied kingdoms, creating a more complex picture of the emergence of social complexity in this region (Badalyan et. al. 2003). Additionally, while the "borderland" designation is often used dismissively, it is valuable as "a critique of the assumed homogeneity of cultural spaces" (Rubinson and Smith 2003:2); that is, it forces archaeologists to confront the fact that "centers" and "peripheries" were the product of constantly shifting social trends rather than hard boundaries, and that all cultures are heterogeneous and complex. Because they changed hands many times, the South Caucasus and Highland Anatolia are also good locations to study the nature of imperialism, cultural exchange, and the agency of indigenous populations (Ristvet et. al. 2012). However, for a true understanding of the archaeology of this region, it is important to study the polities of South Caucasus and Highland Anatolia as complex centers in their own right, rather than merely as reflections or peripheries of Mesopotamia and Iran (Badalyan et. al. 2003).

A Return to the Research Questions

As we have seen above, when the Urartians arrived in the South Caucasus, they would have faced three interrelated factors that worked against centralization: mountainous terrain, a long history of pastoralism, and entrenched patterns of fortifications. That the Urartians physically established their presence in the South Caucasus is indisputable, which demonstrates that they had the military might both to conquer the territory and to defend it against enemies such as the Assyrians. To what extent they were willing or able to resist long-standing traditions of local autonomy and exert control over the people living in that territory, however, is the focus of this dissertation.

This dissertation is designed to address three questions: What was the Urartian "imperial project", particularly in regards to engagement with and construction of landscapes? How does the Urartian imperial project compare to earlier strategies of political control in the region? And what sorts of relationships did this project create between the Urartians and the people they conquered? The Urartian imperial project would have needed to address different problems than the projects of contemporary Near Eastern empires, which had the benefit of settled populations and long traditions of state-level centralization. In particular, Urartian leaders would have had to devise a project that addressed the centrifugal forces of rugged terrain, pastoralism, and fortification. At the same time, the Urartian imperial project could have taken advantage of centripetal forces present in the region, including a shared concept of "civilization", physical and social technologies of warfare, and patterns of social complexity and hierarchy that emerged from the MBA through the EIA.

This chapter and Chapter 2 have demonstrated how both the centrifugal and the centripetal forces of the South Caucasus can best be understood through a landscape perspective. Chapter 2 has demonstrated the utility of phenomenology to understanding embodied experiences of landscapes, while Chapter 3 has shown the advantages of using GIS both to complement qualitative approaches and to answer questions that qualitative approaches cannot address. Thus, we are now ready to turn to evidence from the three regions of interest: Lake Van, Lake Sevan, and the Ararat Plain.

CHAPTER 5: QUANTITATIVE AND QUALITATIVE ANALYSIS OF THE LAKE VAN REGION

Overview of the Van Region

The Lake Van region of modern-day eastern Turkey was the heart of the Urartian Empire, and the capital of Tushpa was located on the eastern shore of the lake. This was the first area to be controlled by the empire, and remained its core throughout the empire's rise and fall. Because of its prominent role as the origin of Urartian culture, consideration of the Lake Van region provides information on how Urartian rulers built sites and used the landscape in their homeland. This information can then be compared with information from more peripheral regions of the empire to analyze how Urartian landscape use did or did not change as the empire expanded.

Geography and Economy

Lake Van is a large inland sea in eastern Turkey, near the borders with Iran and Naxçivan, Azerbaijan. Lake Van lies at 1,680 meters above sea level, and is surrounded by mountainous terrain, particularly on the southern and western sides. Van is a saline lake, and thus is "virtually useless from an economic standpoint" (Zimansky 1985:13). Unlike the Kars-Ezurum region and the Aras valley, the Van region in general is extremely arid, and thus more suitable to stockbreeding than agriculture, except for those areas on the eastern and northeastern sides of the lake, where intensive agriculture is possible. Even in these areas, little rain falls during the growing season, and long winters and a short growing season limited agricultural potential; thus irrigation has generally been necessary for agriculture throughout the region's history (Kroll et. al. 2012). The lake water cannot be used for agricultural purposes, but it is fed by a number of small streams from the eastern mountains that meant that the region around the modern-day city of Van was known for its gardens and high agricultural yields (Zimansky 1985). Alluvial deposits from rivers flowing into the lake also contribute to the high quality of the land immediately around the lake (Çifçi 2017). In particular, Mt. Erek, located to the east of Van, was one of the main water sources for the plain, and Urartians used a system of canals, dams and reservoirs to exploit these water resources. The proximity of Mt. Erek and the waters that originate there was one of the qualities that made the Van region favorable for the establishment of the Urartian capital (Belli 1999). Constructions of water features are frequently described in Urartian inscriptions, along with other agricultural activities such as the establishment of orchards and vineyards (Çifçi 2017). In Urartian times, the main crops grown were barley and wheat, as well as rye and millet, and storehouses indicate that these crops were produced in large quantities (Kroll et. al. 2012). Vineyards, orchards and gardens were also supplemental components of the economy, and ones in which Urartian kings took special pride (Burney 2012). In general, most settlements in the region during the Bronze and Iron Ages were closely associated with contemporary agricultural plains (Zimansky 1985). Two of the sites considered in this survey, Kef Kalesi and Çavustepe, are not currently associated with modern-day agricultural centers. It is unclear whether this was the case in the past, or whether the Urartians cultivated these areas more extensively than people do today.

Immediately outside of the regions of fertile land, however, the landscape rapidly becomes arid and poorly suited for agriculture. Today and in Urartian times, summers are hot and dry, while winters can be extremely cold, with heavy snowfall serving as a significant barrier to travel (Zimansky 1985). Van is largely cut off from the rest of the world, as it is not on any major routes between Anatolia and Iran, nor is it on any major routes going southward, though there are more minor roads traveling to Mesopotamia and Iran (Zimansky 1985). This isolation may have worked to Urartu's advantage, allowing the empire to develop without interference from other powers in the region.

History of the Region's Incorporation into Urartu

The Van region is the heartland of the Urartian Empire and the location where its power solidified. Salvini (2011) postulates that the empire arose here out of the unification of local tribes. The region is actually mentioned by Assyrian sources as early as the thirteenth century BCE, but at this time, and up until the rise of the empire in the ninth century BCE, the lands around Lake Van were occupied by a conglomeration of small, weak polities with various rulers, none of whom had great power (Kroll et al. 2012). Mentions of Urartian kings appear in Assyrian texts in the mid ninth century. By the end of the ninth century, the Urartian king Sarduri I founded Van Kalesi, the region's most prominent fortress, at the capital of Tushpa on the eastern shore of the lake (Kroll e al. 2012). Exactly what role Tushpa played in the empire is unclear; "it could have been the capital of the entire kingdom or simply the seat of the king and his royal court" (Çifçi 2017:195). Regardless, it was clearly a city with strong associations with the king and that played an important role in the empire. Sarduri left his own inscriptions at the site, the first Urartian king to do so. As the empire expanded outward, kings continued to build fortresses, temples and other sites throughout the Van region, and also undertook landscape projects such as the establishment of canals, gardens and vineyards (Çilingiroğlu, 2004; Kroll et al. 2012; Zimansky 1995). The reorganization of the empire under Rusa II led to the foundation of the site of Ayanis (Stone 2012; Stone and Zimansky 2003).

History of Archaeology in the Region

The earliest research into Urartu was conducted at Van Kalesi. Friedrich Eduard Schulz visited the area in 1826 and made copies of the Urartian inscriptions at the site (Kroll et. al. 2012). Van Kalesi was later occupied and used as a citadel by the Ottoman Empire, and thus the first excavations of Urartian material were instead conducted at the nearby site of Toprakkale in the later nineteenth century. Throughout the early twentieth century, research in the region was sporadic, and focused mainly on luxury items and inscriptions recovered from Van Kalesi and Toprakkale. In the 1950s, Charles Burney's survey of Urartian sites in eastern Turkey (Burney 1957) sparked a resurgence of interest, and spurred investigations into sites such as Cavuştepe and Kef Kalesi. In the 1990's, further excavations were opened at sites such as Anzaf and Ayanis, and new work was done at Van Kalesi (Kroll et. al. 2012). This research has provided a rich body of Urartian inscriptions (Salvini 2008), but new projects have also expanded the focus of archaeological research into Urartu to focus on the lives of commoners at sites such as Ayanis (Stone 2012; Stone and Zimansky 2003) and Yoncatepe (Belli and Konyar 2001). Similarly, survey projects (e.g. Özfirat 2009) have also expanded the number and variety of known sites from the Late Bronze Age, Early Iron Age and Urartian periods. The history of excavation and study at each site is discussed in greater detail below. This chapter begins with an analysis of the phenomenological aspects of the eleven sites surveyed. It then discusses GIS analyses of visibility and physical accessibility, followed by a comparison of the results from these two types of analyses.

Qualitative Analysis of The Sites

I surveyed eleven sites in August 2016 (Figure 5-1). Two of these sites had upper and lower towns, which were considered separately for a total of thirteen locations. These locations were chosen based on their extensive documentation in previous survey and excavation (Çilingiroğlu 2004; Özfirat 2009; Stone and Zimansky 2003; Tarhan 1994), as well as their accessibility. Due to political unrest (in particular the failed coup attempt of July 2016 and the bombing of a police station in the city of Van during the time I was), certain areas of the Van region were not safe to travel to, and thus several important sites that had been planned for inclusion in this project could not be studied. Nonetheless, these sites represent a sample of the variety of sites found in the Van region dating to the Urartian period. Because of limited accessibility, only one site, Karagunduz, contained solely pre-Urartian material. Thus, the focus will be on using these sites to gain an understanding of Urartian settlement patterns, to which pre-Urartian and Urartian settlements in the Aragats and Lake Sevan regions will be compared.

As the main sources for these sites were excavations, most of these sites are those that are well known to the academic community and to the public. This does indicate a bias toward large sites with impressive architecture, artwork and inscriptions, and a shortage of sites that lack these features. More systematic surveys (e.g. Özfirat 2009) likely reveal a greater variety of sites, including smaller sites that provide valuable archaeological information other than that which is generally appealing to the public or to

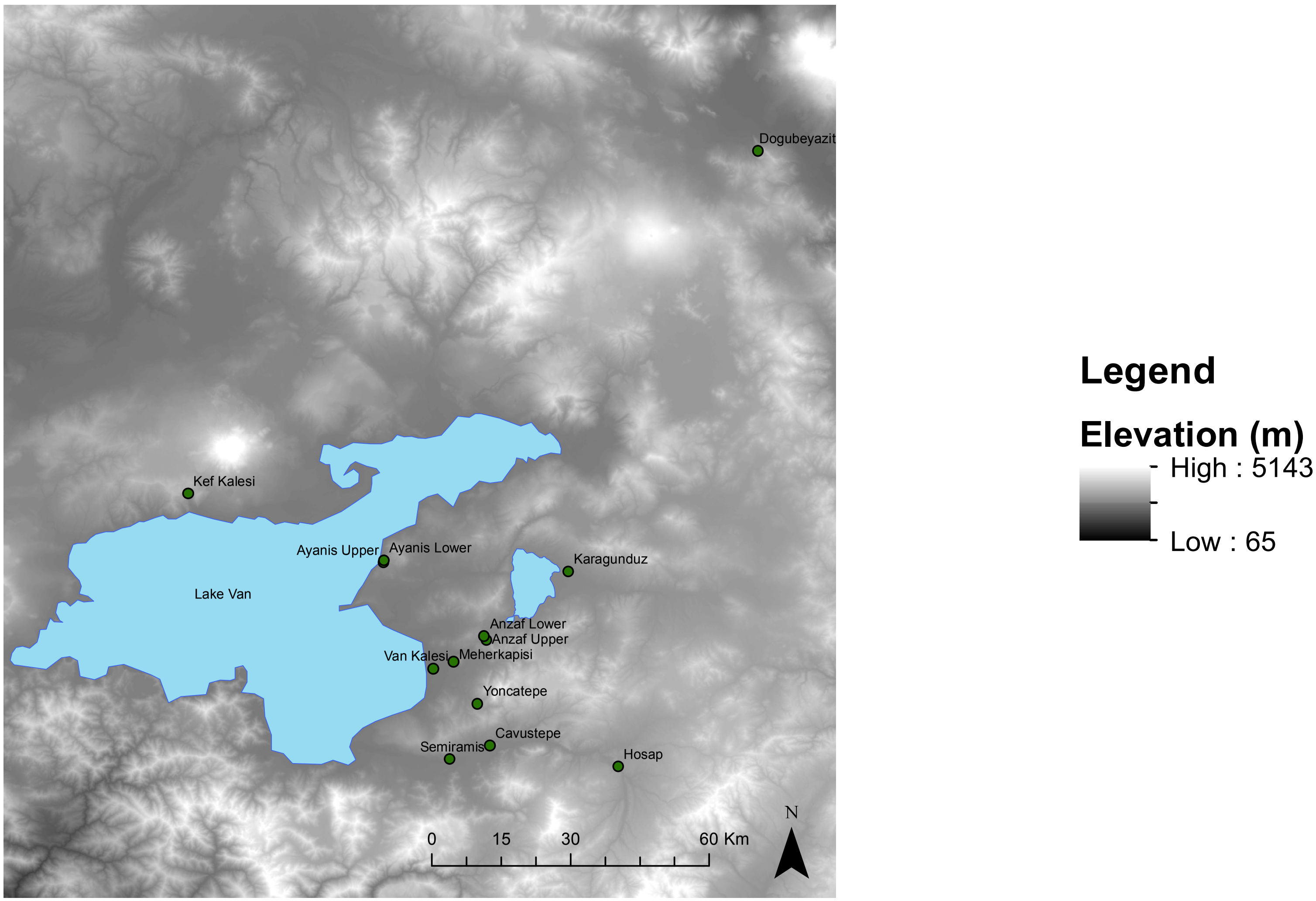


Figure 5-1: Location of the sites surveyed in the Van Region

culture historians. Including these sites would make the analysis more varied and would also provide information on a broader range of sites, including less prominent sites. However, because of the political situation in the Van region at the time, I decided that it would be safest to focus on well-known sites that tourists are encouraged to visit.

Footage taken at the sites, accompanied by narration of the researcher's experiences and reactions, focused on the physical and visual accessibility of constructions and the emotional impact of natural and cultural features. In particular, this footage sought to capture experiences such as approaching, climbing, engaging with, changing views of, arrival at, and departure from significant natural and cultural features. GPS points were also taken using GPSKit, which records the location of observations and photographs. Data was analyzed in Google Earth, where the limits and characteristics of each built feature are generally clearly visible. Finally, surveys of each location were accompanied by extensive notes on aspects of that location that capture the crucial components of a phenomenological study. Locations were ranked from 1 to 5 (1 being the lowest and 5 being the highest) on eleven phenomenological characteristics (Table 5-1): visual accessibility of the feature; visibility of topographic features; visibility within the feature; physical accessibility of the feature; physical accessibility within the feature; skill and technology of cultural features; emotional impact of cultural features; emotional impact of natural features immediately associated with the location; extent to which the location incorporates natural features; acoustic impact; and tactile impact.

Notes and rankings also focused on how the above characteristics continuously changed as one moved through the location, as the dynamic component of movement is a fundamental aspect of phenomenological research. The use of video footage aided in

Criteria	Description
Visual accessibility of the site	Measures the degree to which the site is visible from outside locations, including both from how far away the site can be seen, and from which directions. It also includes characteristics such as unusual colors or textures that enhance visibility
Visibility of topographic features	This reflects the degree to which natural landscape features are visible from the site. In particular, this category focuses on features that are assumed to have been of particular interest to the Urartians, including sacred mountains, water sources, and agricultural lands.
Visibility within the site	This reflects the degree to which different parts of the site are visible to each other. At sites with a high degree of intrasite visibility, people in one part of the site are able to observe those in other parts of the site, allowing for both oversight and a sense of unity.
Physical accessibility of the site	This reflects the degree of effort (e.g. walking, climbing) required to access a site. Less accessible sites would have been more defensible and more imposing in past times, but also would have allowed for less interaction between elites and subject populations.
Physical accessibility within the site	This reflects the degree of effort required to get from one part of the site to the other. Sites with a high degree of intrasite accessibility are more united; those with less intrasite accessibility may be more likely to have independent functional units.
Skill and technology of manmade features	This reflects the amount of effort, planning and resources that went into construction of manmade features, such as the presence of cut stones, inscriptions, and monumental features such as entryways or staircases. It also includes ashlar masonry (finely cut rectangular blocks with smooth edges) and cyclopean masonry (walls constructed of unusually large stones). Larger or more skillfully designed features are more imposing to viewers and in past times would have demonstrated the might of the ruler.
Emotional impact of manmade features	This includes feelings of awe or anxiety that may arise from a feature's treacherousness (e.g. steep stairs), height, size, position in regards to the viewer (e.g. towering above the viewer) and position in the surrounding architecture (e.g. in a tunnel or under an overhang)
Emotional impact of natural features immediately associated with the site	This includes feelings of awe or anxiety relating to natural features that are part of the site experience, such as a steep cliff side that must be ascended to reach the site, or striking natural features visible from the site.
Extent to which the site incorporates natural features	This includes architecture cut directly into bedrock, the use of natural topography to reinforce walls or other defensive structures, the use of natural topography to channel movement through the site, or the use of natural topography to distinguish more important parts of the site (e.g. elite buildings being placed on the highest part of the site)
Acoustic impact	This reflects the extent to which natural or manmade features created an unusual auditory experience, such as through echoes or by blocking sound from other parts of the site
Tactile impact	This reflects the extent to which natural or manmade features created an unusual tactile experience, for example, stones that were uncommonly rough or smooth, or surfaces that were hot or cold.

Table 5-1: Description of phenomenological criteria

understanding the dynamic nature of experience at each location. The sites are summarized below; more extensive phenomenological recording can be found in Appendix 1, and photos can be found in Appendix 2.

Anzaf Upper Town

Time Period: Urartian

Type of Site: Fortress, settlement

Location: 38°33'35.84"N, 43°28'14.09"E

Elevation: 1,964 meters

Background: Anzaf is one of the major Urartian excavations of the late twentieth century (Belli 1999b, 2001; Kroll et. al. 2012). The site consists of Upper Anzaf, a fortress on a high hill with a temple and storage rooms; and Lower Anzaf, a fortified settlement on a lower hill within a short walk of the upper town (Figures 5-2—5-7). The fortress and the lower town were built at the same time by the Urartian king Menua (Belli et al. 2005).

Phenomenological Overview: The upper and lower site have good visibility and are visible from far away to the east, north and south, while low mountains to the southwest block visibility from that direction. Lake Ercek is visible nearby, and the mountains to the southwest of the upper site create a striking backdrop, dwarfing and towering over the human-made features. The upper and lower parts of the site are highly intervisible. The site is up a steep hill, and accessing it from the lower site was strenuous. In past times the fortress was accessed via a steep, carved bedrock passageway. The stone blocks of the fortress are fairly crude and stacked haphazardly atop each other, with

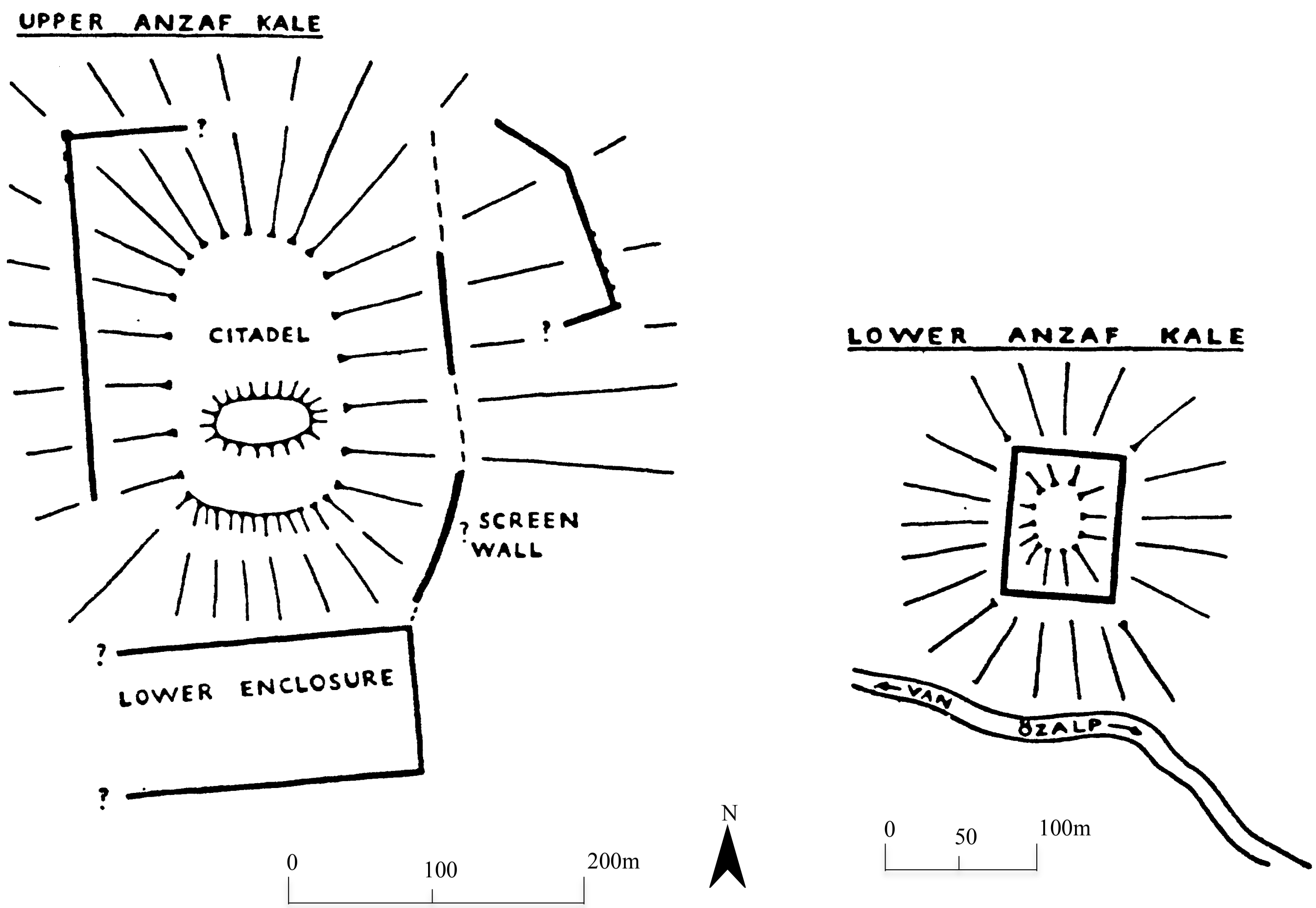


Figure 5-2: Plan of Upper and Lower Anzaf (adapted from Burney 1957:Figures 2a and 2b)

Figure 5-3: Satellite image of Lower Anzaf (Map data: Google, DigitalGlobe)

Figure 5-4: Satellite image of Lower Anzaf showing architecture (Map data: Google, DigitalGlobe)

Figure 5-5: Satellite image of Upper Anzaf (Map data: Google, DigitalGlobe)

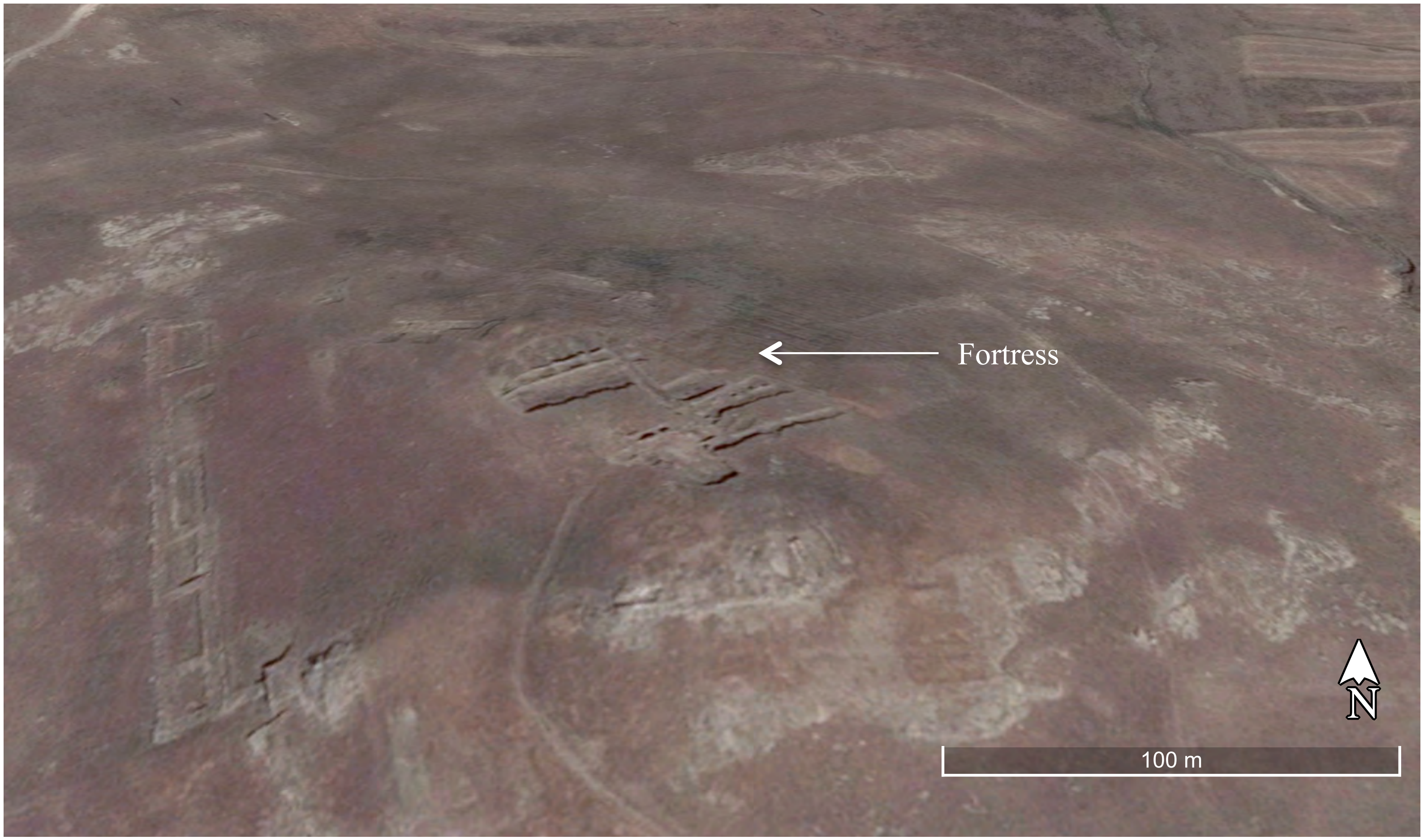


Figure 5-6: Satellite image of Upper Anzaf showing architecture (Map data: Google, DigitalGlobe)

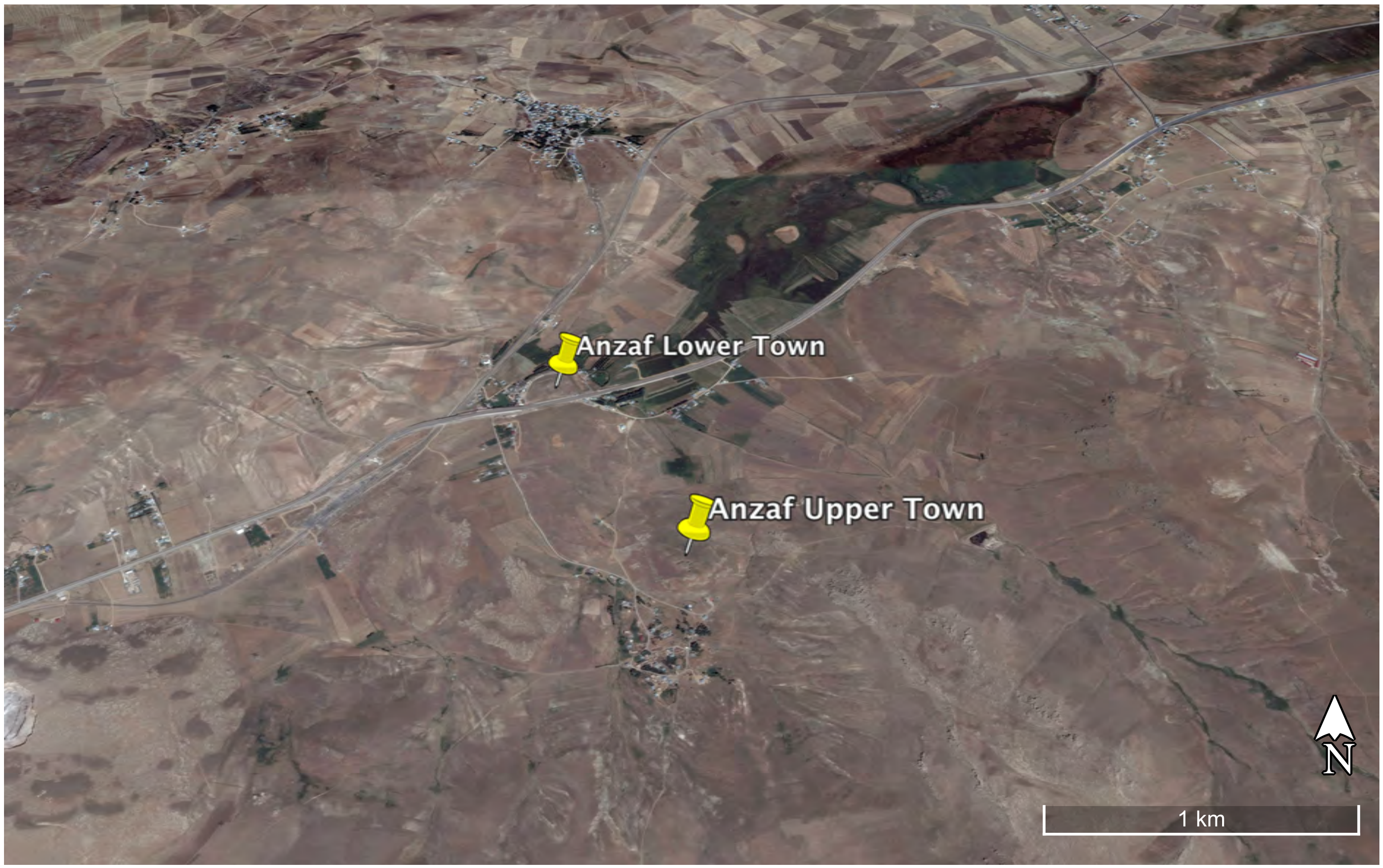


Figure 5-7: Satellite image of Upper and Lower Anzaf and surrounding landscape (Map data: Google, DigitalGlobe)

the exception of a more finely carved rectangular inscribed stone block in the wall of the temple. Though much of it is degraded today, the carved bedrock entrance likely would have been intimidating and also would have made access more difficult. In general, however, the architecture here is not as skilled or as impressive as at some of the other sites. Nonetheless, it is located in a striking rugged landscape where the two hills of the site are shadowed by much larger mountains nearby, and Lake Ercek is clearly visible in the distance.

Anzaf Lower Town

Time Period: Urartian

Type of Site: Fortress, settlement

Location: 38°34'3.45"N, 43°27'47.35"E

Elevation: 1,872 meters

Phenomenological Overview: The lower town is located on a substantially smaller hill than the upper town, though this hill is still quite steep and would have provided a moderate barrier to access. The lower town is also smaller than the upper town in terms of area covered. The experience of this site is similar to that of the upper town, with similar views of the surrounding landscape. However, the hill and the views of the landscape are less impressive and emotionally impactful than those from the upper town. The architecture is also simpler, with small buildings of uncut stones. However, the site is surrounded by a wall that moderately impeded accessibility. The top of the site is flat and easily navigable.

Ayanis Upper Town

Time Period: Urartian

Type of Site: Fortress, settlement

Location: 38°42'29.35"N, 43°12'42.48"E

Elevation: 1,846

Background: One of the major excavations of Urartian material in Turkey in the late twentieth and early twenty-first centuries, Ayanis was founded in the seventh century BCE during the reorganization period instituted by Rusa, near the empire's end (Çilingiroğlu and Salvini 2001; Stone and Zimansky 2001; Figures 5-8—5-13). It is one of only a handful of Urartian residential settlements excavated, and thus provides valuable insight into the lives of ordinary people under the Urartian Empire. Evidence from domestic excavations (Stone 2012; Stone and Zimansky 2003) suggests that many of the inhabitants of Ayanis were foreigners who were forcibly resettled, but that they enjoyed a fair amount of economic and cultural independence.

Phenomenological Overview: A particularly picturesque site, Ayanis has stunning views across Lake Van to the east. It was hazy when I was there, but I was told that on clear days, Mt. Suphan, a sacred mountain to the Urartians, is visible on the other side of the lake, and indeed the Urartian name for Ayanis means "in front of Mt. Suphan." To the west, it overlooks a fertile valley, and beyond that, low mountains block the view to the west, south and north, except right along the shore of the lake. The site sits atop a grassy hill that is smooth but steep; climbing the hill off the path is possible but difficult. The site looks out over agricultural land and hillsides to the west. This is a site where human-made features made more of an impact than natural ones. The site was

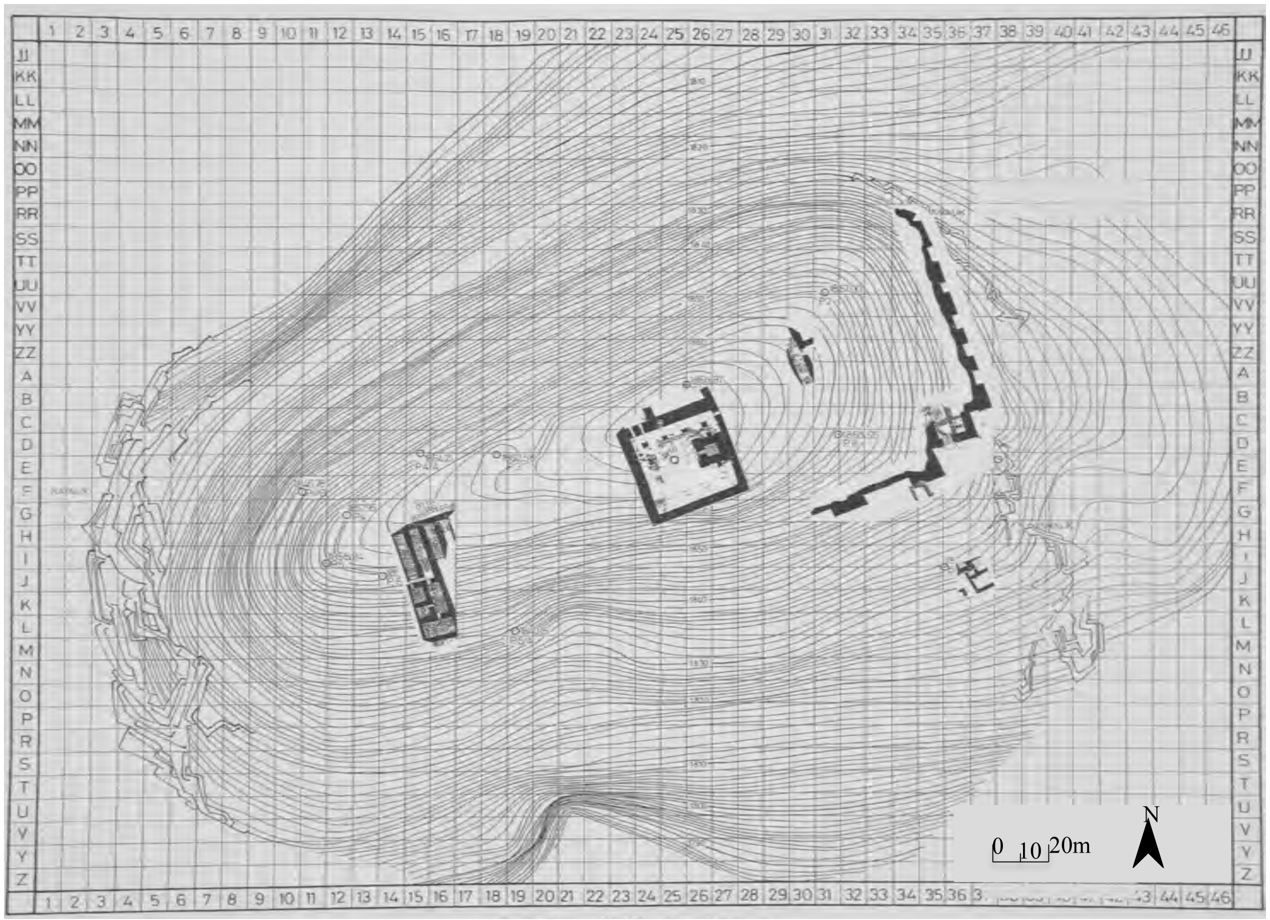


Figure 5-8: Topographical plan of Ayanis Upper Town (adapted from Çilingiroğlu and Salvini 2001:Figure 4)

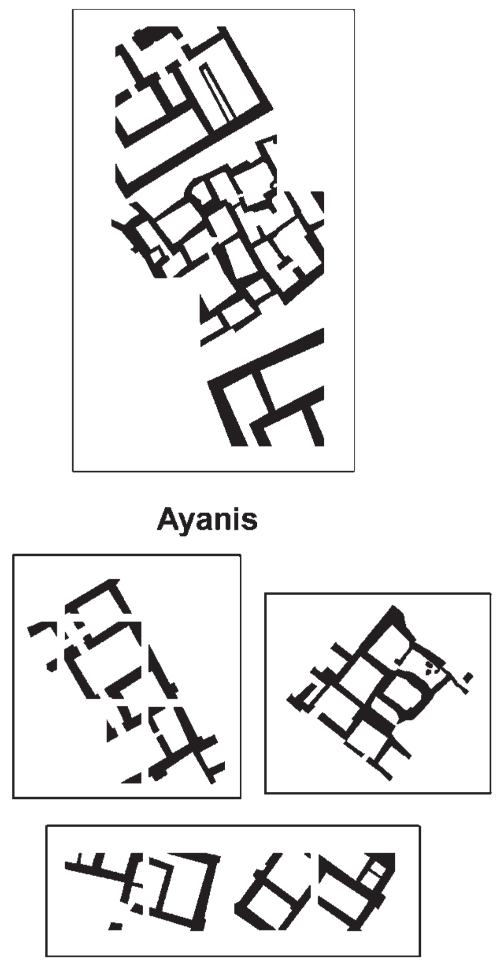


Figure 5-9: Domestic architecture at Ayanis Lower Town (adapted from Stone 2012:Figure 06.01)

Figure 5-10: Satellite image of Ayanis Upper Town and Lower Town (Map data: Google, DigitalGlobe)

Figure 5-11: Satellite image of Ayanis Upper Town showing architecture (Map data: Google, DigitalGlobe)

Figure 5-12: Satellite image of Ayanis Lower Town showing architecture (Map data: Google, DigitalGlobe)

Figure 5-13: Satellite image of Ayanis Upper Town and Lower Town and surrounding landscape (Map data: Google, DigitalGlobe)

surrounded by tall walls of finely cut stone blocks, some of local stone and others of black basalt. A number of buildings on top of the hill were also made of stone blocks, and the elaborate carvings suggest that these were grand buildings of ritual and political significance. This site has little in the way of natural stone, but built stone is everywhere. The views of the lake and the surrounding valley are lovely and peaceful, and again, natural features are not particularly intimidating. Instead, human activity, and particularly high-quality stonework, is on display here and created the main emotional impact. However, views across the lake, and particularly of Mt. Suphan, also inspired wonder and admiration.

Ayanis Lower Town

Time Period: Urartian

Type of Site: Fortress, settlement

Location: 38°42'38.95"N, 43°12'46.52"E

Elevation: 1,825

Phenomenological Overview: The Lower Town of Ayanis, located between the lake and the hill, is visually isolated, as the hill of the upper site blocks the lower town's views to and from the valley and surrounding landscape. Visibility is good between the upper and lower towns, and the lower town has excellent visibility across the lake. The Lower Town is smaller, and its architecture much simpler and less impressive, than that of the Upper Town. Nothing particularly impressive or noteworthy about the cultural features is found here. The site is located on flat ground, and the main barrier to access is the hill of the Upper Town itself. The atmosphere is peaceful, and like the Upper Town, the Lower Town has picturesque views of the lake and the shore.

Cavuştepe

Time Period: Urartian

Type of Site: Fortress

Location: 38°21'12.17"N, 43°27'42.33"E

Elevation: 1,823 meters

Background: Located on a rocky spur, this site, also known as Sardurihinili, was built by Sarduri II in the mid-eighthth century and was an administrative, economic and religious center (Erzen 1978; Tarhan 2005). It housed a fortress complex including temples, storerooms and a palace complex (Figures 5-14—5-16). Though it is not as heavily fortified as some of the other sites, a moat would have surrounded the site to protect against attack (Çilingiroğlu, 2004).

Phenomenological Overview: Located on a grassy spur, this site is not as steep or imposing as some of other fortresses that are located on cliffs. It lacks the striking rock formations of these sites, and thus is not as visually impressive. This spur is one of several in the area, though it does stand out in its immediate vicinity and does have impressive views of the surrounding landscape. The site is strongly oriented east-west and is narrow north-south, to the point where there was probably only one building on either side of the single street. Most buildings at the site are constructed of local stone, and the contours of the buildings and main street follow the spur's topography, making the majority of the site seem to blend naturally with the landscape. The exception to this

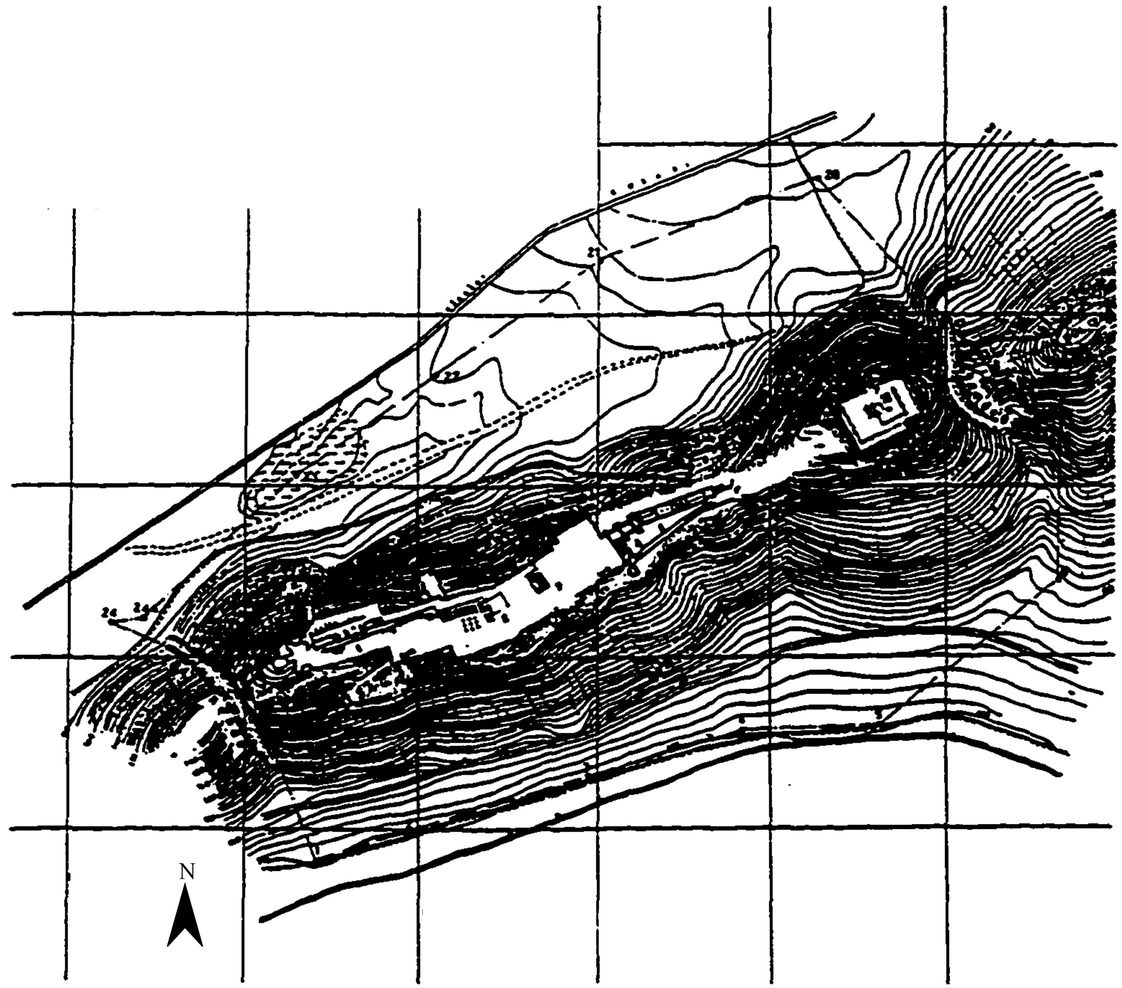


Figure 5-14: Plan of Cavuştepe (adapted from Smith 1996:Figure5.10)

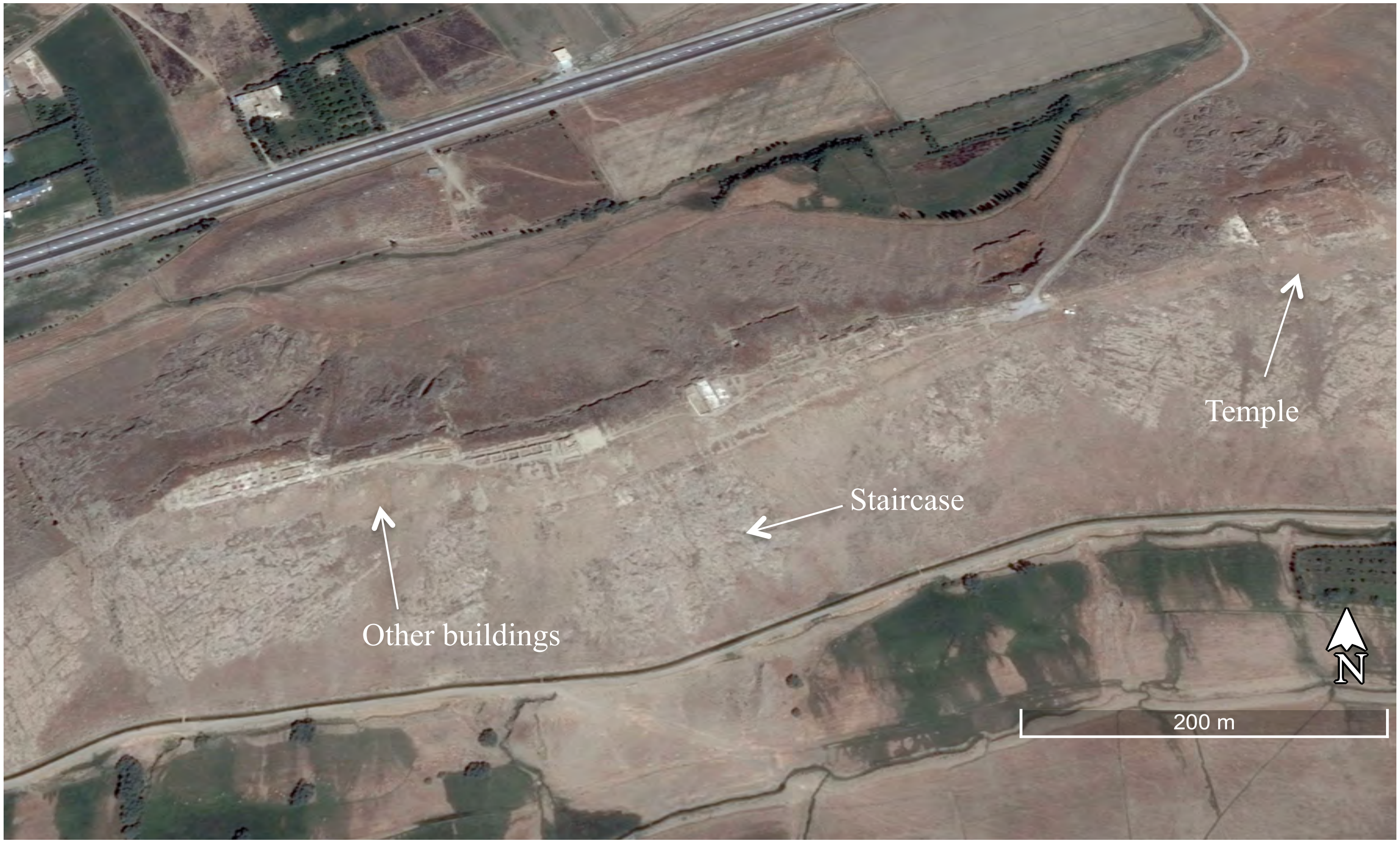


Figure 5-15: Satellite image of Cavustepe (Map data: Google, DigitalGlobe)

Figure 5-16: Satellite image of Cavustepe and surrounding landscape (Map data: Google, DigitalGlobe)

is the Temple of Haldi, which consists of a terrace built up with finely carved stone blocks. This terrace starkly cuts into the natural hillside and is somewhat jarring in contrast with the rest of the site. A staircase leading up to the site is also flaked by rectangular blocks, and there are also darker basalt blocks with an inscription associated with a temple. The landscape and the site itself feel quite peaceful and approachable. The hillside is somewhat steep, but not as much as defensive sites, and reasonably easy to walk up. The top of the site is fairly flat, and it is generally easy to move and see throughout the site. There are no feelings of anxiety related to height, uneven terrain or precarious climbs. Instead, the main emotional impact is quieter, and comes from admiration for the skill associated with the built stone walls. That said, these walls were probably originally much higher, and may have indeed been quite imposing, especially to someone ascending the staircase. Nonetheless, this site has little in the way of natural features to inspire strong emotion or impact visibility or mobility.

Doğubeyazıt

Time Period: Urartian

Type of Site: Fortress

Location: 39°31'17.67"N, 44° 7'58.61"E

Elevation: 1,989 meters

Background: This site, carved into a cliff side just southwest of Mt. Ararat, was originally the location of an Urartian fortress, but has been reused by many subsequent generations (Jakubiak 2008)(Figures 5-17, 5-18). As a result, of the remaining architecture, it is difficult to determine what is Urartian and what belongs to other groups.

Figure 5-17: Satellite image of Dogubeyazit (Map data: Google, DigitalGlobe)

Figure 5-18: Satellite image of Dogubeyazit and surrounding landscape (Map data: Google, DigitalGlobe)

However, a rock-cut tomb from the site has been definitively identified as Urartian (Huff 1968, 1990). Carved reliefs at the tomb's entrance depict a figure with outstretched hands, possibly a king, as well as a goat, and another figure wearing a helmet (Kroll et. al. 2012). On the other hand, Jakubiak (2008) suggests that based on its structure and artistic composition, this feature was not a tomb at all, but rather a sanctuary where religious rituals were performed.

Phenomenological overview: The tomb and the remains of the castle are located on a steep, imposing cliff. The tomb and the fortress look out over a valley to the west, while visibility is blocked by mountains to the east, northeast and southeast. These intervening mountains also block the view of Mt. Ararat, though Ararat can be seen from places near the site. The entrance to the tomb is above head height and no clear way to access it is present, though there might have once been stairs. The fortress is located up a steep hill and requires quite a bit of climbing, and the cliff is also located up a steep road high above the valley. Sound travels well across the valley, and I could hear shouting and gunfire from a military exercise taking place several miles away. The cliff on which the castle was built is extremely imposing and inaccessible, and the views over the valley are impressive. The tomb appears nondescript today, but reconstructions of the relief (e.g. Kroll et. al. 2012) suggest that this was highly skilled artwork. The rock of the cliff is striking, with many undulations, ridges, and variation in texture. For example, the rock is rough and craggy in many places, but has been worn smooth in others. The site appears to have a strong vertical component, with occupation at several different levels, and climbing is necessary to move among these levels, bringing visitors into physical contact with the rock and its different shapes and textures.

Hoşap Castle

Time Period: Urartian

Type of Site: Fortress

Location: 38°19'1.75"N, 43°48'6.02"E

Elevation: 1,995 meters

Background: This fortress is located about 60 kilometers east of Van (Figures 5-19—5-21). It originally had several Urartian architectural characteristics, including arched gateways, towers, buttresses, and blind niches (Kroll et. al. 2012). The site was later occupied and built over in the medieval period, and with the exception of an Urartian stone tunnel, little Urartian architecture remains at the site.

Phenomenological Overview: Perched on a towering cliff, this site is highly visible from miles away, and stands out starkly on the landscape when approaching from higher ground along the modern road. Up close, the cliff is quite steep, towering above the viewer, and is extremely imposing and intimidating. The medieval castle that currently stands on the site is entered via a large, steeply sloping, Urartian stone tunnel, and the weight of the rock is clearly noticeable above and to the sides. From the top of the cliff, the surrounding landscape is clearly visible, including the remains of Urartian walls. These walls follow the rise and fall and of the land, and look similar in shape and color to the natural ridges and mountain ranges that are visible across the surrounding the landscape. This is clearly a site designed for surveillance, and the main experience is that of having an excellent view of the surrounding landscape, which is rugged and also quite colorful, with vegetation, rocks and soil all contributing different shades.

Figure 5-19: Satellite image of Hosap (Map data: Google, DigitalGlobe)

Figure 5-20: Satellite image of Hosap showing architecture (Map data: Google, DigitalGlobe)

Figure 5-21: Satellite image of Hosap and surrounding landscape (Map data: Google, DigitalGlobe)

Karagunduz

Time Period: Iron Age

Type of Site: Cemetery

Location: 38°41'47.42"N, 43°40'14.81"E

Elevation: 1,832

Background: Karagunduz is an Iron Age cemetery located on an alluvial plain on the eastern shore of Lake Ercek (Figures 5-22—5-24). The site was located near a temporary settlement, and the people buried in this cemetery in the Early Iron Age were most likely mobile pastoralists (Sevin 1999, 2003). Grave form and grave goods show continuity between the Early Iron Age and the beginning of Urartu in the Middle Iron Age, which indicates that this region was part of a distinct, united culture prior to the rise of Urartu (Sevin 1999).

Phenomenological Overview: Located on utterly flat ground in the middle of a modern day field, this site is something of an anomaly. It has no associated natural stone features, and no natural features at all immediately in the vicinity. Low mountains are visible in the distance in all directions, and Lake Ercek is also barely visible, but in general nothing marks this location or makes it stand out from the landscape. This contributes to a feeling of isolation and peacefulness at the site that is similar to a modern cemetery, though the nearby settlement may have taken away from this experience in the past. This site generally does not evoke strong emotion, nor does it have unique sensory experiences, beyond its unusual quiet and stillness. Visibility and accessibility are quite good across the flat land surrounding the site.

Figure 5-22: Satellite image of Karagunduz (Map data: Google, DigitalGlobe)

Figure 5-23: Satellite image of Karagunduz showing location of the graves (Map data: Google, DigitalGlobe)

Figure 5-24: Satellite image of Karagunduz and surrounding landscape (Map data: Google, DigitalGlobe)

Kef Kalesi

Time Period: Urartian

Type of Site: Fortress

Location: 38°50'3.01"N, 42°43'16.97"E

Elevation: 2,191 meters

Background: Located on the northern shore of Lake Van, on the slopes of the volcanic Mt. Suphan, Kef Kalesi is an Urartian fortress founded by the king Rusa and initially excavated during the 1960s (Bilgiç and Ögün 1967). The site was the location of a palace complex that included storage rooms and columned halls, which were likely lavishly decorated (Kroll et. al. 2012; Tanyeri-Erdemir 2005; Figures 5-25—5-28). Along with Ayanis, Karmir Blur and Bastam, Kef Kalesi is one of the largest and most complex Urartian sites, and was founded as part of Rusa's reorganization and centralization of the empire (Zimansky 2012). Found at the site were carved stone blocks with one of the best known examples of an Urartian fortress relief (Smith 2003).

Phenomenological Overview: High up in the hills above Lake Van, this site is surrounded by higher mountains to the east, west and north, with striking views out over Lake Van to the south. This was the least accessible site in the Van region, and it took a 20-30 minute drive up a steep, winding path to reach the site from the main road below. The high hills and mountains that surround the site mean that visibility is poor from most directions, though the site does provide striking views of the lake to the south and Mt. Suphan to the north. The ruggedness of the surrounding landscape means that accessibility is poor, and unlike the other sites, which had impressive vistas over most of

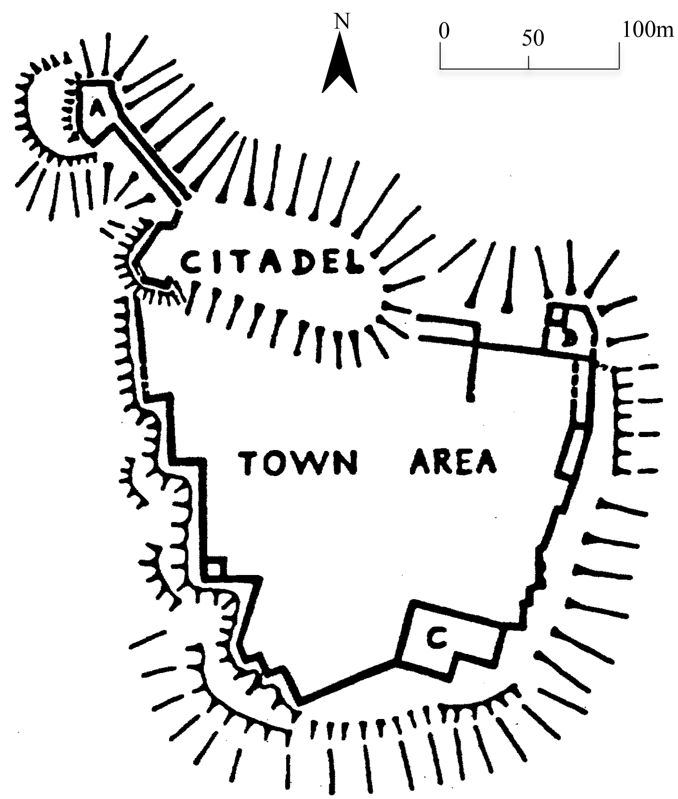


Figure 5-25: Plan of Kef Kalesi (adapted from Burney 1957:Figure 12)

Figure 5-26: Satellite image of Kef Kalesi (Map data: Google, DigitalGlobe)

Figure 5-27: Satellite image of Kef Kalesi showing architecture (Map data: Google, DigitalGlobe)

Figure 5-28: Satellite image of Kef Kalesi and surrounding landscape (Map data: Google, DigitalGlobe)

the surrounding landscape, this site feels visually cut off and isolated. What is most striking about this site, however, are the finely carved black basalt blocks. Unlike other sites, where most of the stonework was done with bedrock or local stone and stones of other colors were used sparingly, almost all of the buildings at Kef Kalesi are made of black basalt. While architecture seemed to blend into the surrounding landscape at most other sites, the dark coloring of the stones at Kef Kalesi stood out starkly. This would have increased the visibility of the buildings, though most of the structures were probably made of mud brick or other perishable material. Nonetheless, the basalt is clearly not local, which indicates that the builders of the site made the effort to procure it and move it great distances. The contrast between the structures and the surrounding landscape, the fine skill clearly involved in the carving of the blocks, and the fact that the material came from far away, made this one of the most impressive of the sites in terms of human-made features. While large bedrock fortifications at other sites might have been largely practical, this site appears designed to be visually striking beyond the limits of simple defense.

Meherkapisi

Time Period: Urartian

Type of Site: Inscription

Location: 38°31'1.65"N, 43°23'20.36"E

Elevation: 1,743

Background: Meherkapisi is one of several Urartian religious inscriptions found in isolation, not associated with a fortress. The site features a three-tiered niche carved into the base of a rock outcropping not far from Van Kalesi (Figures 5-29—5-31), with a flattened, prepared stone surface onto which the inscription is carved. The shape of the three-tiered niche resembles the shape of Urartian temple doors, suggesting that Meherkapisi and similar niches may have been viewed as doors in the stone from which gods, particularly the Urartian state god Haldi, emerged during rituals (Tarhan and Sevin 1975). Indeed, the inscription at Meher Kapisi refers to the site as a "gate of Haldi" (Salvini 1994, 2008). Sites like these were likely locations where kings performed religious activities that included animal sacrifices (Tanyeri-Erdemir 2007). The inscription contains a long list of sacrifices and a hierarchical ordering of the gods. Many god names have geographical associations, giving a sense of Urartu's territory at the time, and "geographical entities such as 'lands', 'lakes' and 'mountain passes' are also the object of separate sacrifices" (Salvini 1994:207), suggesting an intimate connection between deities and landscape features. The inscription also credits its authors, Ispuini and his son Menua, with planting vineyards and trees (Salvini 2008).

Phenomenological overview: This site creates a powerful sense of being immersed in rock. The niche is first viewed from level ground at the base of the outcropping, though no text is visible from here. The niche and the rock outcropping tower high above the viewer, and the rectangular shape and even edges of the niche cause it to stand out starkly from the rock, marking it as human-made. If there were stairs leading up to the niche, as there were at the similar site of Yeşilalıç, they are now eroded beyond recognition. The climb is steep, requiring use of the hands, and involves climbing over jagged rock surfaces. Once at the niche, a small platform is present, but little room to stand, creating a sense of claustrophobia. This is augmented by the fact that

Figure 5-29: Satellite image of Meherkapisi (Map data: Google, DigitalGlobe)

Figure 5-30: Satellite image of Meherkapisi showing location of the inscription (Map data: Google, DigitalGlobe)

Figure 5-31: Satellite image of Meherkapisi and surrounding landscape (Map data: Google, DigitalGlobe)

the niche is set into a natural concavity in the rock, meaning that when standing in the niche, one is surrounded on three sides by rock. Most people who wished to watch rituals taking place there likely would have been forced to stand at the base of the outcropping. Even when looking away from the outcropping out over the landscape, it is impossible to escape awareness of the weight of rock behind and to either side. Additionally, the inscription begins far above the height of the viewer, and it is necessary to look up to read most of it, which further emphasizes the presence of stone above and to the side. The flat land to the south of the niche is highly visible, but visibility is blocked in all other directions by the rock face, creating a sense of visual isolation. Similarly, while the base of the outcropping is highly approachable from the south, it is much less accessible from all other directions. The inscription itself is intimidating and imposing, towering high above the viewer. The presence of writing evokes a sense of awe and wonder today, and likely would have even had a stronger effect for visitors in Urartian times, when writing was much less common.

Semiramis Canal Inscription

Time Period: Urartian

Type of Site: Inscription

Location: 38°19'35.15"N, 43°23'4.37"E

Elevation: 1,756

Background: Built by Menua, the Semiramis Canal spanned more than fifty kilometers and was used to bring water for irrigation on the plain south of Van (Figures 5-32—5-34). The canal was part of Menua's military expansion of the empire, and is

Figure 5-32: Satellite image of the Semiramis inscription (Map data: Google, DigitalGlobe)

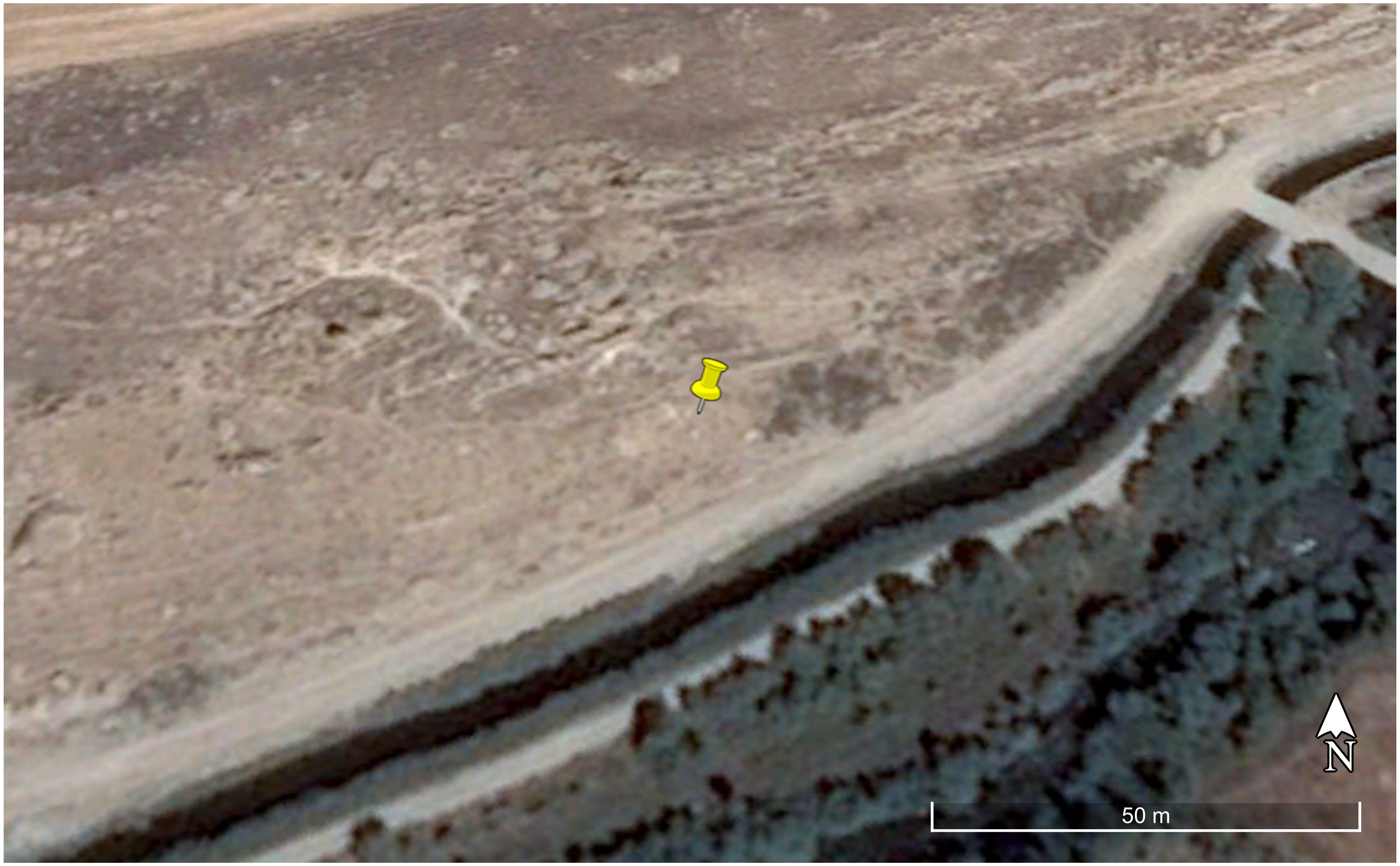


Figure 5-33: Satellite image of the Semiramis inscription showing the location of the inscription (Map data: Google, DigitalGlobe)

Figure 5-34: Satellite image of the Semiramis inscription and surrounding landscape (Map data: Google, DigitalGlobe)

still functional today. The construction of canals was not merely a practical endeavor to improve agriculture, but also a symbolic demonstration of the king's ability to control and manipulate landscapes and natural features (Kroll et. al. 2012). An unusual number of building inscriptions were associated with the canal, either on the support walls or nearby (Belli 1999).

Phenomenological Overview: It was not feasible to do a phenomenological study of the entire canal. Instead, I surveyed one of the few preserved and accessible canal inscriptions, located south of the city of Van. The inscription was located at the base of a rocky hill, at a location where more rugged territory transitions into a narrow agricultural valley. The inscription itself was small and unadorned, and blended into the rocks around it. The site of the inscription looked out over the valley, of which it had good visibility, and on mountains on the other side of the valley. The hill itself was fairly tall, though not as imposing as the cliffs at locations such as Van Kalesi, and had many interesting rock formations. Though the site and the inscription themselves are not particularly remarkable, the engineering associated with the canal would likely have been impressive and probably widely known in the past, and this location would have served as a reminder of the power of Urartian kings to "tame" the landscape. The contents of most the inscriptions, including this one, are the same: they declare that this is Menua's Canal, and threaten anyone who might vandalize it with punishment from the gods (Belli 1999), wording that is common in Urartian inscriptions (Salvini 2008).

Van Kalesi

Time Period: Urartian

Type of Site: Fortress

Location: 38°30'10.77"N, 43°20'22.44"E

Elevation: 1,706 meters

Background: Van Kalesi, as the fortress at the heart of the Urartian capital, is one of the largest and best researched Urartian sites (Burney 1957; Erzen 1959, 1974, 1975; Marr and Orbeli 1922; Tarhan and Sevin 1990, 1991, 1992). Located on the southeastern shore of Lake Van, in modern-day Turkey, Van Kalesi, or the Citadel of Van, is a massive natural rock outcropping that served as the center of Urartian kingly power and of the Urartian capital of Tushpa (Tarhan 1994)(Figures 5-35—5-41). Though the lake is now some distance away, it may have been higher in Urartian times than it is today; if that was the case, Van Kalesi would have been a peninsula (Salvini 2005). The rock also contains many natural springs (Tarhan 1994). A number of Urartian carved structures are present, including "the palace, the rock-cut royal tombs, sacred areas, fortification walls, and two rock-cut moats on either side of the Inner Citadel" (Tarhan 1994:23). The earliest writing at the site comes from the oldest building at Van Kalesi, the Sardursburg, which had six cuneiform inscriptions in Assyrian carved into blocks on the east and west walls. All six are duplicates of a text describing the construction of the wall by Sarduri I, the founder of Tushpa. The Sardursburg also provided access to higher levels of the rock via a carved staircase, and there are more copies of the inscription on other parts of the structure. Later kings carved inscriptions onto other buildings as construction expanded over time. In addition to stone constructions on the surface of the rock, there are a number of stone chambers on the south face of the rock, some of which have been interpreted as royal tombs (Tarhan 1994), though Salvini (2005) argues that their

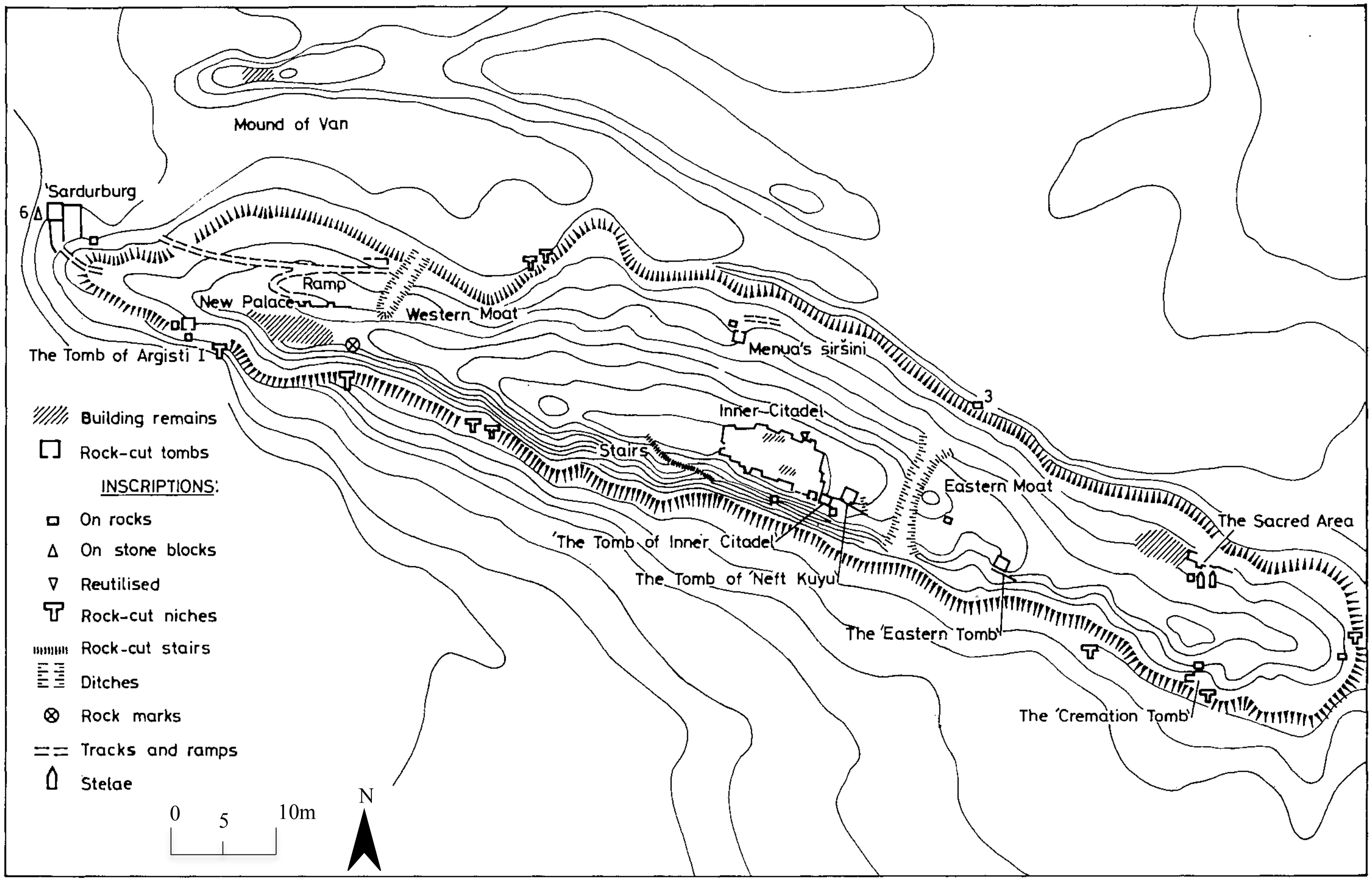


Figure 5-35: Plan of Van Kalesi showing the location of rock-cut features (adapted from Tarhan 1994:Figure 3)

Figure 5-36: Satellite image of Van Kalesi (Map data: Google, DigitalGlobe)

Figure 5-37: Satellite image of Van Kalesi showing the entire outcropping (Map data: Google, DigitalGlobe)

Figure 5-38: Satellite image of the western portion of Van Kalesi (Map data: Google, DigitalGlobe)

Figure 5-39: Satellite image of the central portion of Van Kalesi (Map data: Google, DigitalGlobe)

Figure 5-40: Satellite image of the eastern portion of Van Kalesi (Map data: Google, DigitalGlobe)

Figure 5-41: Satellite image of Van Kalesi and surrounding landscape (Map data: Google, DigitalGlobe)

dimensions are not consistent with tombs. An inscription on one chamber on the north slope suggests it was a stable that housed animals intended for ritual purposes. The surface and interior of Van Rock are linked through the inscriptions of kings, each of whom carried out constructions in different parts of the rock (Salvini 2005).

Phenomenological overview: Van Kalesi is one of the most impressive of the sites surveyed. The castle, and the rock outcropping on which it sits, are a major landmark in the modern city of Van. This site is highly visible from all directions. Unlike several of the other cliff top sites which are surrounded by similar outcroppings and rock features, Van Rock lies on otherwise flat ground, making it a striking and singular feature on the landscape. One of the most noticeable things about Van Rock is the rich texture of the rock itself. The limestone is extremely jagged, and is rough to the touch, yet can be slippery to walk on, particularly because in many places the rock is polished from centuries of foot traffic. Throughout the rock, there are many undulations, natural niches, and smaller outcroppings. The rock is similar in color to the surrounding landscape, a light grayish-brown. While most Urartian features were built over in medieval times, those that remain are made of earth and bedrock, and often look as though they have grown naturally from the rock. The south face is the most imposing, with steep, rocky cliffs. Ascent is extremely difficult on most parts of the south face, though a bedrock-cut Urartian staircase is present. From a distance, the cliffs bear some resemblance to human-made fortification walls, with relative flat tops and smaller outcroppings that almost resemble towers. Ascent is easier along the north face, where a modern day path winds up the face of the rock. However, in certain places it is still necessary to use one's hands to climb, which in turn brings one into contact with the extremely rough texture of the rock. The ground is uneven, Urartian staircases are steep and often have sharp drops directly beside them, and many ledges provide dizzying views of the ground far below, which provoked feelings of fear and anxiety. On the other hand, the site has stunning views of Lake Van and the surrounding area, which provoke feelings of wonder and admiration, for the landscape, and for the people who built their site at such an impressive location.

Van Kalesi also has the most varied experience throughout the site, compared to the other locations surveyed in the Van region. Different parts of the site are physically, visually and acoustically isolated from each other. While the top of the rock provides views of the surrounding landscape and a sense of surveillance and engagement, parts of the site closer to ground level, including several niches and carved inscriptions, feel isolated, quiet and peaceful. Inscriptions, in general, tend to be located in areas with limited physical and visual accessibility from the rest of the site and from other features. These inscriptions, which detail the construction and religious activities of kings, feel set apart from the bustle of more mundane parts of the site.

In general, the most notable aspect of Van Kalesi is that it feels very much entwined with the living rock. Natural and human-made features resemble each other, extensive climbing requires tactile engagement with the rock, and the presence of stone-cut staircases, tunnels and overhangs further contributes to the feeling that a visitor is being immersed in the rock. The most emotionally evocative aspects of this site—the dark, echoing, “spooky” tombs, the towering inscribed niches, the precarious staircases, and the sheer height and weight of the rock—are all aspects that are highlighted through engagement with the natural rock.

Yonçatepe

Time Period: Early Iron Age, Urartian

Type of Site: Settlement

Location: 38°26'10.31"N, 43°27'1.91"E

Elevation: 2,037

Background: Located near the city of Van, Yoncatepe is home to a building with storerooms dating to the Early Iron Age, a cemetery, and a residential settlement (Belli and Konyar 2001; Oybak Donmez and Belli 2007; Figure 5-42—5-46). Inscriptions found in the nearby village indicate that the Urartian king Menua also carried out building activities here(Belli and Konyar 2001). However, the site's small size and other atypical architectural characteristics, such as the lack of citadel walls or a temple, suggest that it may have been built by a local ruler instead (Çifçi 2017). A dam is present nearby, and the site is located with good access to water supplies coming down from Mts. Varak and Erek, as well as to fertile pasture land. The walls of the structure, made of stacked sandstone slabs, are still standing, sometimes above head height. The tombs were underground chambers covered with stone slabs (Belli and Konyar 2001).

Phenomenological overview: The settlement is located on a fairly unremarkable grassy hill that is not particularly steep. To the west, the site looks out on a fertile agricultural valley and Lake Van, while mountains can be seen to the east, northeast and southeast. A small river is also visible running along the southeast side of the hill. Though this site does not have the impressive rock formations or steep cliffs of some of the other sites, it has good visibility of the lake and of rugged mountains nearby, as well

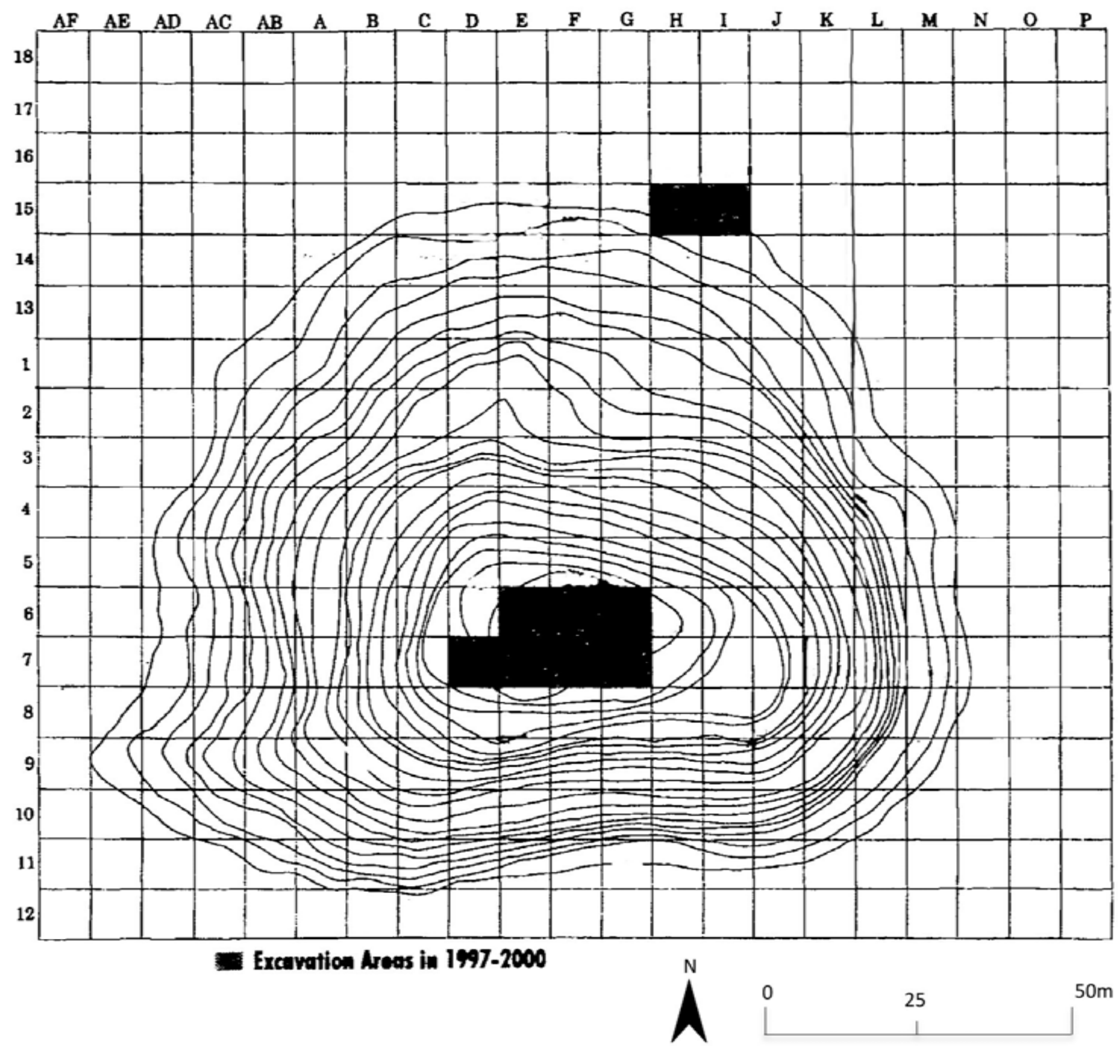


Figure 5-42: Plan of Yonçatepe (adapted from Belli and Konyar 2001:Figure 9)

Figure: 5-43 Satellite image of Yoncatepe (Map data: Google, DigitalGlobe)

Figure 5-44: Satellite image of Yoncatepe showing architecture (Map data: Google, DigitalGlobe)

Figure 5-45: Satellite image of Yoncatepe and surrounding landscape (Map data: Google, DigitalGlobe)

as of the valley in all directions. The buildings themselves are also impressive in their size and the sheer number of sandstone slabs used to construct the walls, as well as the fact that these walls are still standing today. However, these structures are not as intimidating or monumental as the walls at sites such as Ayanis. Yoncatepe is accessible from all directions, is not particularly imposing, and the atmosphere is generally peaceful.

Summary of Phenomenological Results

The Urartian sites surveyed provided a variety of bodily experiences (Table 5-2). Much of the variation likely had to do with function. For example, it would have been important for a fortress such as Van Kalesi to be impressive and intimidating in order to discourage attack and instill awe and fear in Urartian subjects. On the other hand, an agricultural site such as Ayanis might have favored accessibility and the free movement of goods and people over the use of imposing natural features. Despite differences in function and type, however, some general patterns emerge.

One of the most significant and noticeable patterns is the importance of visibility. All of the sites have a high degree of visibility in at least one direction, often due to their location on hills or cliffs. However, these sites do not necessarily have high visibility of the surrounding landscape in all directions, as would be ideal for surveillance and defense. What these sites do tend to have, however, is visibility of natural features that were regarded as important or sacred, including Lake Van, Mt. Erek and Mt. Suphan. The Urartian name for Ayanis, which translates to "Rusahinili in front of Mt. Eiduru"—which in turn appears to refer to Mt. Suphan (Cilingiroglu and Salvini 1995)—clearly demonstrates that Urartian rulers saw sight lines to natural features as significant. Mt.

Site	Visual accessibility	Visibility of topographic features	Physical accessibility	Skill and technology of cultural features	Emotional Impact of cultural features	Emotional impact of natural features immediately associated with the site	Visual accessibility	Visibility of topographic features	Physical accessibility	Skill and technology of cultural features	Emotional Impact of cultural features	Emotional impact of natural features immediately associated with the site
Cavustepe	4	3	3	5	4	3	4	3	3	5	4	3
Ayanis Upper Town	3	5	2	5	5	5	3	5	2	5	5	5
Ayanis Lower Town	2	4	4	1	1	4	2	4	4	1	1	4
Anzaf Upper Town	4	4	2	3	3	4	4	4	2	3	3	4
Anzaf Lower Town	3	4	3	2	1	3	3	4	3	2	1	3
Kef Kalesi	3	5	1	5	4	5	3	5	1	5	4	5
Yoncatepe	4	4	3	2	2	2	4	4	3	2	2	2
Meherkapisi	2	2	1	4	3	3	2	2	1	4	3	3
Semiramis	2	2	3	5	3	2	2	2	3	5	3	2
Karagunduz	2	4	5	2	2	2	2	4	5	2	2	2
Van Kalesi	5	5	5	5	5	5	5	5	5	5	5	5
Dogubeyazit	3	2	2	5	5	5	3	2	2	5	5	5
Hosap	5	3	1	3	3	5	5	3	1	3	3	5
Average	3.23	3.62	2.69	3.62	3.15	3.69	3.23	3.62	2.69	3.62	3.15	3.69
Range	3	3	4	4	4	3	3	3	4	4	4	3

Table 5-2: Phenomenological characteristics of Van sites

Suphan is across the lake from Ayanis and barely visible on a hazy day, yet the site's visibility to the mountain was what gave it its name. This is not to say that defense and surveillance were not important in site location. Indeed, many of the sites are not visible in certain directions because hills or mountains in those directions block visual and physical access. Thus, these sites may have relied on visibility to protect them from enemies coming from certain directions, and physical barriers to protect them in other directions. However, the visibility of natural features far in the distance might have been just as significant as the visibility of the territory in the site's immediate vicinity. Based on the inscription at Meherkapisi, we know that important natural features were often deified (Cilingiroglu and Salvini 1995; Salvini 1994). We also know that deities were depicted in front of fortress gates in artwork, and that fortresses were depicted as sites of divine blessing. That is, deities associated with natural landscapes granted Urartian kings the right to tame and build on those landscapes (Smith 2000). Therefore, sight lines between important sites and natural features might have been a manifestation of this blessing.

The phenomenological approach is particularly valuable here because it demonstrates the way in which distant natural features dominate the visual experience in a way that would not be necessarily captured by a viewshed operation. Not all visible features are created equal, and a striking natural feature might make a powerful contribution to the visual experience of a site even if it makes up only a small portion of a site's viewshed. Because I was not intimately familiar with the geography of the region, I did not always notice these visual connections until they were pointed out to me. However, these features likely would have loomed "larger than life"—and larger than their viewsheds would suggest—in the minds of Urartians who understood their significance. Many of these features are quite beautiful, and their visibility inspires feelings of awe and wonder. At the same time, if these features were associated with deities in the past, their visibility may have generated apprehension in visitors who were aware that the gods were watching them. And if these deities were depicted as granting Urartian rulers the right to build fortresses and other constructions, this knowledge may have been just as intimidating and imposing as steep cliffs or towering human-made structures.

Most of the sites also encourage, and at times force, close sensory engagement with natural and built features. Most of the sites require a good deal of climbing on, over and stone, including slopes, stairs, tunnels, outcroppings, and entranceways. In certain places, it is necessary to use the hands to climb, forcing visitors to experience the roughness of the stone. At the same time, the stones can be slick and slippery in places. Many of the slopes and stairs are precarious, and in order to avoid falling, visitors are forced to pay careful attention to the lay of the land and the texture of the stone. An awareness of heights and drops also creates feelings of anxiety. At Van Kalesi and Meherkapisi, inscriptions are located above the viewer but at the base of larger walls or natural stone features, which then tower above the viewer when he or she looks up to read the inscription. Similarly, many of the sites have steep drops, or tall natural or human-made features rising above the individual. Doğubeyazıt, Van Kalesi, Anzaf and Ayanis have constructions at several different levels, forcing visitors to engage bodily with the topography of the sites. Tunnels and enclosed entryways are cool, dark and full of echoes, which facilitates further sensory engagement with the stone. When I was there, it was generally quiet at most of the sites, there were few other people around. However, my experience at Doğubeyazıt demonstrates that sound can carry quite far in the valleys where many of these sites are situated. Within the sites, however, sound can be blocked by intervening natural and human-made stone features.

Another pattern that emerges is the contrast between natural and built features. Many of these sites facilitate an intimate engagement with natural features of stone. For example, stairs and entryways are often carved directly into bedrock (Van Kalesi, Anzaf, Cavuştepe), as are tunnels, tombs, and niches (Van Kalesi, Doğubeyazıt, Meherkapisi). Interacting with these features means going in, under or through the living rock. Other built features are constructed from quarried bedrock. At Ayanis, these quarries are visible in the hillside right beside the walls built from that bedrock. Similarly, certain built features look similar to natural features; walls resemble the mountain ridges on the surrounding landscape and spurs of rock in other parts of the site (Van Kalesi, Doğubeyazıt, Hoşap), and the use of local bedrock for construction often makes built features blend with the natural landscape. Whether this was intentional or purely practical is impossible to say, but the effect is present nonetheless. The arrangement of built features also often follows and takes advantage of the site's natural topography (Van Kalesi, Cavuştepe, Doğubeyazıt). In this way, human-made constructions are closely intertwined with the natural features on which they are built. At the same time, certain aspects of sites create clear distinctions between human-made and natural features. The basalt used at Kef Kalesi is clearly not local and makes the site stand out starkly from the surrounding landscape. Terracing at the Temple of Haldi at Cavuştepe cuts sharply into the hillside, and stands out from the rest of the site, where the layout of buildings follows the lay of the land. The smooth, carved lines of stone blocks and niches at Van Kalesi, Ayanis, Meherkapisi, Anzaf, Kef Kalesi and Cavuştepe are clearly not natural, but rather the result of skilled human modification. These feats of engineering inspire feelings of awe, and an acute awareness of the technology and planning required to construct them. Indeed, Harmansah (2009) argues that sites such as Ayanis were important arenas for the display and circulation of stone-working technologies. Thus, the Urartian sites in the Lake Van region demonstrate a close engagement with untouched natural features, and bombastic displays of humans' ability to modify those features.

This tension between natural and human-made features likely ties into the Urartian construction ideology. As discussed in the previous chapter, Urartian rulers usually either founded settlements on virgin soil or destroyed all traces of previous civilizations, and Urartian texts demonstrate that an important aspect of kingship was the taming of pristine natural landscapes. Urartian rulers' fondness for planting orchards and vineyards also demonstrates a sense of pride in the ability to harness and modify the natural world. Smith (2012) believes that the desire to avoid or erase previous constructions is based in insecurity; namely, Urartian kings, who were somewhat buried within an institutionalized bureaucracy, felt threatened by the singular, charismatic nature of Middle Bronze Age leadership, which ultimately became the basis for social complexity in the region. However, I am not fully convinced by this claim, in part because Smith himself (2000) points out that Urartian kings *were* singular, charismatic leaders, at least as depicted in text and art (see also Zimansky 2005). Additionally, Urartian leaders did not seem to have been focused solely on erasing traces of the Middle Bronze Age; they also appeared to avoid the constructions of previous kings. This is particularly evident when examining inscriptions. While it was common throughout the Near East for kings to add to the inscriptions of previous rulers (Canepa 2014; Harmansah 2015), Urartian kings appear never to have done so. Of the nine *in situ* inscriptions at Van Kalesi, all are associated with a single ruler and none show signs of later modification. The only text created by multiple rulers is Meher Kapisi, written by Ispuini and Menua, but this is likely only because they ruled at the same time. In general, Urartian kings appear to have shown no interest in the inscriptions of their predecessors, and inscribing was a one-time event. Additionally, with two exceptions, Urartian rulers never mention their fathers or other ancestors in inscriptions, as was the tradition for Assyrian and Hittite inscriptions. While several of the texts include a curse on anyone who destroys the text, no evidence that this ever happened exists. Additionally, none of the inscriptions are close to or associated with the inscriptions or architecture of another king, and those which are built into natural features are not immediately associated with any construction other than those which the text commemorates. It appears, therefore, that Urartian kings consistently chose to inscribe texts in locations that were untouched by their predecessors. Indeed, a map of rock cut features such as niches and tombs shows that they do not tend to cluster in particular locations, but rather are fairly evenly distributed across the entirety of the rock (Tarhan 1994).

It would seem, then, that compared to other Near Eastern cultures, Urartian rulers attached a disproportionate amount of significance to untouched natural features and to interactions between rulers and the natural world, as opposed to interactions between rulers and either contemporary elites or their predecessors. While kings in other parts of the Near East, including neighboring Anatolian cultures, derived their legitimacy by associating themselves with the construction activities of individuals who had come before them—either their own ancestors, or individuals from a different culture entirely–Urartian kings derived their legitimacy by associating themselves with the modification of untouched natural landscapes (Smith 2000). The act of modifying these landscapes would have taken away their power for later generations; adding to a previous ruler's modifications likely did not have the same effect as modifying an entirely unaltered landscape. At the same time, feats of construction, particularly stone carving, would have been important tools for the display of political authority. The sites in the Van region reflect this tension between natural and human-made features, but they also emphasize the combination of natural and cultural elements in the experience of sites and in construction strategies. Built features of stone allowed visitors to be immersed in the natural rock of the sites and in human modifications of that rock through sight, sound and touch. High visibility would have allowed for the surveillance of people in the surrounding territory and would have served as constant reminders of the presence of Urartian authorities. That visibility also would have made these sites important points of reference to people living nearby. At the same time, sight lines to significant natural features further in the distance, which may have been the homes of deities, would have connected these sites and their inhabitants to the broader landscape and to the supernatural world.

Fortresses, Kurgans and Inscriptions

This study was originally designed to investigate fortresses, kurgans and rock inscriptions in the Van region. However, sudden changes in the political situation in eastern Turkey at the time this research was conducted meant that several planned sites were inaccessible. Thus, the dataset of sites that could be studied was skewed, with nine fortresses, two inscriptions, one cemetery, and one fortress and settlement. It is worth noting that several of the fortresses had inscriptions, while other locations may have had inscriptions that were later removed. While the nature of the sample means that comparisons among these three features are somewhat difficult, it is still worth examining (Table 5-3).

The locations of fortresses were more visible and more emotionally impactful than either the two inscriptions or the cemetery, and the fortresses themselves also scored higher on emotional impact of cultural features and skill and technology of cultural features. In general, the larger size and complexity of the fortresses meant that they carried a stronger phenomenological impact overall. On the other hand, the presence of writing had a strong impact as an impressive technological skill, and as a source of wonder and awe; this impact would have been particularly pronounced for the majority of the population who were unfamiliar with writing. The cemetery, on the other hand, generally lacked impressive cultural features.

The fortresses and the inscriptions were situated atop or partway up large hills or cliffs, and this positioning contributed to strong emotional reactions, including feelings of awe and wonder, and also fear and anxiety associated with climbing and falling. Many of these sites were intimidating to look at and difficult to access, and they also frequently incorporated natural features of stone. On the other hand, the cemetery was on flat ground, with few impactful natural or cultural features associated with it. Unlike the fortresses and inscriptions that evoked strong emotion, both positive and negative, the

Type of Site		Visual accessibility	Visibility of topographic features	Physical accessibility	Skill and technology of cultural features	Emotional Impact of cultural features	Emotional impact of natural features immediately associated with the site	Visibility within the site	Physical accessibility within the site	Extent to which the site incorporates natural features	Acoustic Impact	Tactiile Impact
Fortresses	Average	3.56	3.83	2.17	3.5	3.17	4.5	3.78	3.11	2.89	2.44	2.44
	Range	3	3	4	4	4	2	3	4	4	3	3
Cemetery		2	4	5	2	2	2	5	5	1	1	1
Inscriptions	Average	2	2	2	4.5	3	2.5	N/A	N/A	4.5	3.5	4
	Range	0	0	2	1	0	1	N/A	N/A	1	1	2
Settlement		4	4	3	2	2	2	4	3	3	2	1

Table 5-3: Phenomenological characteristics of sites in the Van region broken down by type of site

atmosphere at the cemetery was calm and peaceful. While the cemetery did not have the towering cliffs or difficult climbs associated with the fortresses and inscriptions, the fact that it was a cemetery likely would have carried a significant emotional impact, particularly for those familiar with the individuals buried there.

Finally, Yoncatepe, a rural settlement, is an example of a rare non-elite site, and a window into the experience of common people. Surprisingly, it was ranked as more visible than either fortresses or inscriptions, and as visible as the cemetery. However, it ranked lower than the fortresses and inscriptions for the skill and emotional impact of cultural features, and the emotional impact of natural features; in these criteria it had the same ranking as the cemetery, and indeed a cemetery is also present at the site of Yoncatepe. It is interesting to note that these two sites, which one would expect to be less impactful than either the fortresses or the cemetery, were ranked as more visually accessible. However, as expected, they were less impressive in their cultural and natural features.

Quantitative Analysis of the Sites

Two forms of GIS analysis—visibility and least cost paths—were conducted on the sites in the Van region (Appendix 3). This analysis often reached different conclusions about the visibility and accessibility of individual sites from those found by the phenomenological analysis. However, the two analyses generally agreed on broad patterns across types of sites and for the region as a whole. Both the visibility and least cost paths analysis for all three regions used the ASTER Global DEM (digital elevation model), which was obtained from the United States Geological Survey and which had a resolution of twenty-seven meters for this particular area.

Visibility analysis

GIS analysis was conducted to quantify visibility of archaeological sites in the Van region (Table 5-4). First, site polygons were created by tracing the outline of the features in Google Earth. The boundaries of the site were defined liberally and were based on topography rather than excavated area. For example, only the western portion of the ridge on which the site of Cavuştepe sits is occupied; however, it seems reasonable that someone who wanted to get a good view of the surrounding landscape would have walked beyond the occupied area onto the eastern part of the ridge. Thus, the entire ridge was included in the polygon. For small features such as individual inscriptions, a single point was used to represent the site; for larger features, a set of ten to one hundred points within the site polygon, evenly spaced at twenty-five to two hundred meters depending on the size and shape of the site, was used to represent the site. Viewshed analyses, using the Viewshed tool, were conducted at ten kilometers and fifty kilometers around the site; beyond fifty kilometers, visibility was generally negligible, as confirmed by GIS analysis and phenomenological observation. For each site, the percentage of pixels visible to any of the site points was calculated, as was the percentage visible to the average point (calculated by taking the weighted average of the viewshed). These points within the site polygon were then compared to randomly generated points within one kilometer of the site in order to determine whether sites were more visible than nearby points on the

Site	10k Viewshed			50k Viewshed			
	% visible to at least 1 polygon point	% visible to average polygon point	% visible to average random point	% visible to at least 1 polygon point	% visible to average polygon point	% visible to average random point	Number of other sites visible
Cavustepe	34.79	7.88	6.7	3.05	0.8	0.79	1
Ayanis Upper Town	36.33	18.55	25.32	20.74	11.01	10.62	1
Ayanis Lower Town	35.52	35.08	27.44	18.96	18.62	14.14	1
Anzaf Upper Town	10.62	4.75	4.27	1.95	0.57	0.71	2
Anzaf Lower Town	6.27	4.33	3.76	1.08	0.69	0.72	2
Kef Kalesi	20.25	8.47	6.45	20.47	10.07	8	0
Yoncatepe	10.77	3.83	3.93	9.18	4.47	6.42	2
Meherkapisi	9.68	9.68	7.24	1.11	1.11	4.37	1
Semiramis	8.83	8.83	8.82	1.05	1.05	1.07	1
Karagunduz	21.36	16.02	11.29	1.8	1.4	1.4	2
Van Kalesi	54.5	23	11.7	18.77	8.58	6.68	1
Dogubeyazit	20.19	9.96	8.59	3.88	1.76	2.37	1
Hosap	3.13	1.6	1.34	0.5	0.26	0.28	0
Average	20.94	11.69	9.76	7.89	4.65	4.43	1.15
Range	51.37	33.48	26.1	20.24	18.36	13.86	2

Table 5-4: GIS analysis of visibility of Van sites

landscape, which would indicate that sites were intentionally placed to maximize visibility.

The sites with the largest viewsheds were those that were in sight of Lake Van, since the lake is flat and therefore has nothing to impede vision. This makes it somewhat difficult to compare the sites to each other in terms of visibility. The site with the largest viewshed was Van Kalesi, followed by Ayanis Upper Town and Ayanis Lower Town; for all three of these sites, the lake is a significant portion of the viewshed. Partially for this reason, little correlation between site size and visibility exists, though this also applies to sites that are not in view of the lake. For a ten kilometer viewshed, ten of the sites had greater visibility compared to random points within one kilometer, two of the sites showed little difference between site points and random points, and one of the sites had lower visibility compared to random points.

For a fifty kilometer viewshed, these differences diminished and sometimes reversed; only four sites had greater visibility than random points, five sites showed little difference, and four sites were less visible than random points. This is likely because the ruggedness of the terrain in the Van region means that within a few kilometers of any location, ridges, outcroppings or mountains will block visibility, with the exception of Lake Van. All four of the sites that were more visible than random points at fifty kilometers were those whose viewshed included the lake. In general, then, sites in the Lake Van region were more visible than random points to their immediate surroundings, but not to more distant locations. This is likely a simple fact of topography; even if the builders of sites wanted to found them on visually impressive and prominent locations, the ruggedness of the landscape means that the amount of area that is visible to any one site is limited. Within these restrictions, however, Urartians did appear to generally found their sites on more visible locations. On the other hand, intervisibility did not appear to be a high priority. Cumulative viewsheds were calculated in a similar manner to the methodology used by Wheatley (1995), in which viewsheds of each site were first reclassified so that visible points were marked as 1 and non-visible points as 0, and then these viewsheds were added together. The result was a grid of the number of sites visible to each point (Figure 5-47). The average site in the Van region was visible to 1.15 sites other than itself; Anzaf Lower Town, Anzaf Upper Town, and Yoncatepe were visible to 2 other sites, while Kef Kalesi and Hoşap were not visible to any other sites. Considering the documented importance of intersite visibility in other parts of the empire (Earley-Spadoni 2015) and for societies throughout the world (see Chapter 2), this relatively low degree of intersite visibility in the Van region was surprising. Why this might be the case is discussed further in Chapters 6 and 7.

Travel Time and Least Cost Paths Analysis

To explore the role of movement around Urartian sites, travel time was computed from the centroid of each site. This analysis used Tobler's hiking function, which calculates travel time based on slope for the average person on foot, assuming a speed of 5 km/hour on flat terrain. Tobler's hiking function takes into account anisotropic costs of slope, meaning that it calculates walking speed differently depending on whether the slope is uphill or downhill.

Using Tobler's function, a polygon was created around each site representing the total area within one hour's walk. The size of this area could range quite dramatically,

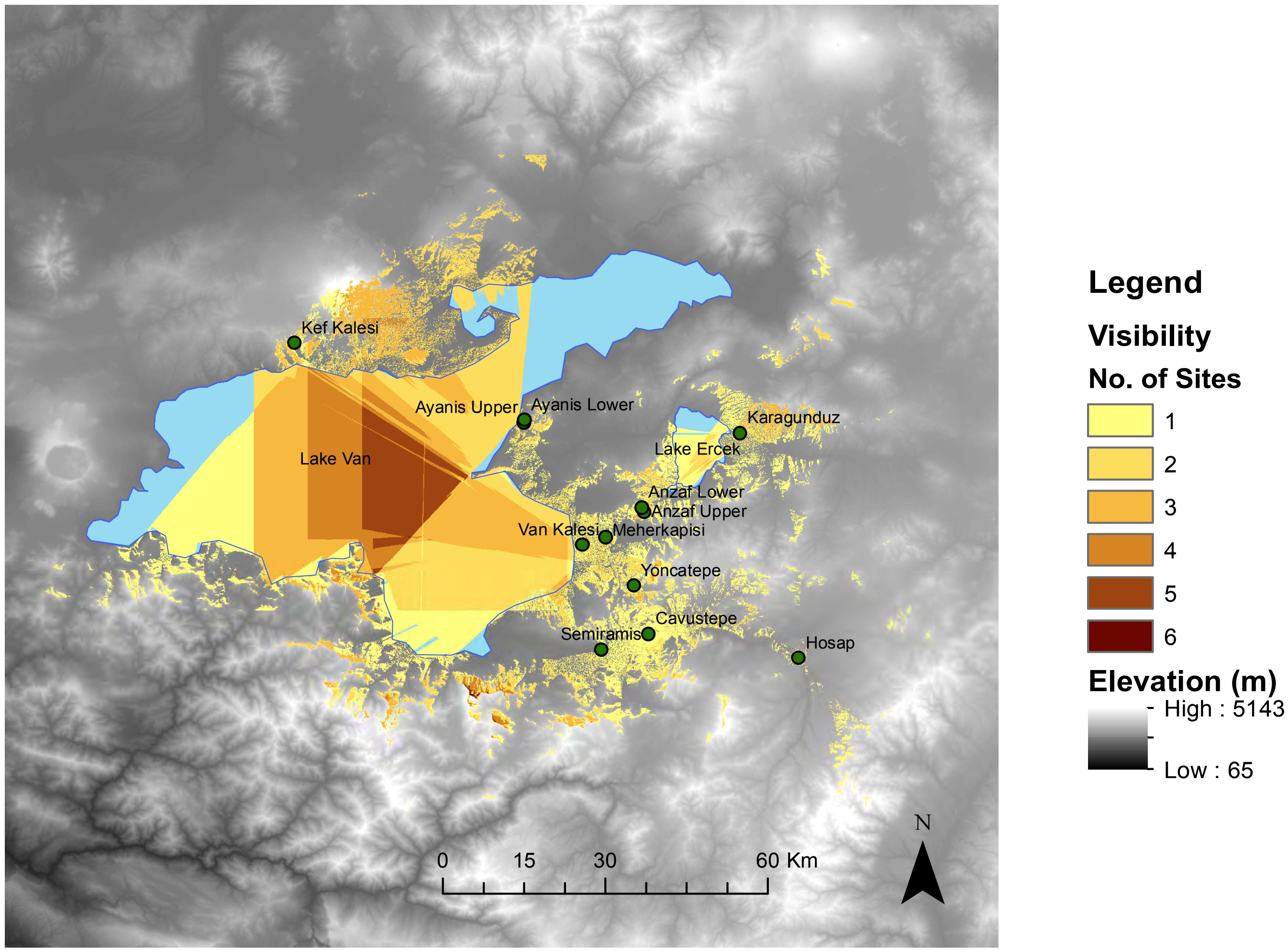


Figure 5-46: Cumulative viewshed of sites in the Van region

from nearly 60 km^2 for sites on relatively flat terrain to 27.44 km^2 for sites on rugged terrain. The average area within one hour's walk was 43.02 km^2. The average Euclidean distance was also calculated to points one hour's travel time away (which was usually three to four kilometers) and also to points ten kilometers away, in order to provide a sense of physical accessibility at two different scales (Table 5-5). In general, sites that had a larger territory within one hour's walk also had a shorter travel time to points ten kilometers away, indicating that they were more physically accessible overall.

In order to combine visibility and movement, least cost paths were calculated from 18-31 randomly generally points at the one hour mark (the number of points depended on the size and shape of the one hour polygon; points that fell in Lake Van were not included). Intersecting these paths with the site viewsheds indicated how much of each path was visible to the site. These values quantify not just the visibility of the site, but the visual experience moving toward and away from it, an important component that is often missing from visibility analyses.

Fortresses, Kurgans and Inscriptions

The GIS analysis supported the phenomenological analysis in most regards when it came to comparisons between fortresses, kurgans and inscriptions (Tables 5-6, 5-7). The fortresses were more visible than the inscriptions at the ten kilometer level and at the fifty kilometer level. At the ten kilometer level, eight out of nine fortresses were significantly more visible than random points within one kilometer, while only one of the two inscriptions was. At fifty kilometers, four out of nine fortresses were more visible than random points, while neither of the inscriptions was. On the other hand, while the

Site	Average travel time for points 10k away (hours)	Area within 1 hour's travel time (km2)	Average distance for 1 hour pts (km)	Average percent visibility of 1 hour points	Average slope (degrees)
Cavustepe	2.85	43.44	3.75	39.44	16.02
Ayanis Upper Town	2.29	32.97	3.36	32.74	20.96
Ayanis Lower Town	2.26	32.42	3.41	14.55	10.86
Anzaf Upper Town	2.58	48.31	3.88	51.16	15.91
Anzaf Lower Town	2.5	49.78	3.94	37.3	7.23
Kef Kalesi	2.73	27.44	2.96	40.24	12.39
Yoncatepe	2.67	37.26	3.47	51.92	18.82
Meherkapisi	2.42	58.13	4.31	8.34	N/A
Semiramis	2.54	53.06	4.1	12.14	N/A
Karagunduz	2.4	56.17	4.15	10.43	2.34
Van Kalesi	2.28	45.94	3.97	60.52	12.5
Dogubeyazit	2.67	27.73	2.99	51.71	29.05
Hosap	2.51	46.55	3.86	28.75	18.32
Average	2.52	43.02	3.7	33.79	14.94
Range	0.59	30.69	1.35	52.18	26.71

Table 5-5: GIS analysis of physical accessibility of Van sites

Type of Site		10k Viewshed			50k Viewshed			
		% visible to at least 1 polygon point	% visible to average polygon point	% visible to average random point	% visible to at least 1 polygon point	% visible to average polygon point	% visible to average random point	Number of other sites visible
Fortresses	**Average**	24.62	12.62	10.62	9.93	5.82	4.92	1
	Range	51.37	33.48	26.1	20.24	18.36	13.86	2
Cemetery		21.36	16.02	11.29	1.8	1.4	1.4	2
Inscriptions	**Average**	9.26	9.26	8.03	1.08	1.08	2.72	1
	Range	0.85	0.85	1.58	0.06	0.06	3.3	0
Settlement		10.77	3.83	3.93	9.18	4.47	6.42	2

Table 5-6: GIS analysis of visibility of Van sites broken down by site type

Type of Site		Average travel time for points 10k away (hours)	Area within 1 hour's travel time (km2)	Average distance for 1 hour pts (km)	Average percent visibility of 1 hour points	Average slope (degrees)
Fortresses	**Average**	2.52	39.4	3.57	39.6	15.92
	Range	0.59	22.34	1.01	45.97	21.82
Cemetery		2.4	56.17	4.15	10.43	2.34
Inscriptions	**Average**	2.48	55.6	4.21	10.24	N/A
	Range	0.12	5.07	0.21	3.8	N/A
Settlement		2.67	37.26	3.47	51.92	18.82

Table 5-7: GIS analysis of physical accessibility of Van sites broken down by site type

cemetery generally scored low on most rankings of phenomenological impact, it had one of the larger viewsheds and was substantially more visible than random points within one kilometer. Though it is commonly assumed that sites in this region were located on hills to enhance their visibility, the site of Karagunduz demonstrates that a site on flat ground can also have high visibility.

In terms of physical accessibility, fortresses were less accessible than inscriptions over longer and shorter distances. Thus, it appears that in this case Steinsapir's (2005) theory about the inverse relationship between visual and physical accessibility holds true, in that fortresses were more visually accessible but less physically accessible, while inscriptions were less visually accessible but more physically accessible. On the other hand, Karagunduz, which was highly visually accessible, was also highly physically accessible. These characteristics make sense for its role as a cemetery; high physical accessibility would have made it easy for people to visit the graves or pass by them by chance, thus evoking the memories of the deceased and their claim to the land, while high visual accessibility would have allowed people to view the site even without visiting it. As a cemetery, defense, a motivating factor for the location of fortresses, also would not have been as significant of a concern. Finally, Yoncatepe, the settlement, was found to be less visible than fortresses or inscriptions at the ten kilometer level and the fifty kilometer level, though it was more visible than the cemetery. It also had visibility to two other sites, which was more than the majority of either fortresses or inscriptions. Physically it was less accessible than the other sites at the ten kilometer level, and was also less accessible than many of the other sites at the one hour level.

Combining GIS and Phenomenological Analyses

After GIS analyses were conducted and phenomenological rankings were assigned, GIS and phenomenological characteristics were compared. Although GIS and phenomenological analyses agreed when it came to broad patterns across types of sites (fortresses, kurgans and inscriptions), they did not necessarily agree when comparing individual sites; that is, the physical and emotional experiences of surveying a site in person had little relationship to the characteristics of the site as quantified by GIS, even when it would seem likely that this would be the case. For example, there was little relationship between the size of a site's viewshed—based either on all polygon points or on visibility to the average polygon point—and its visual accessibility ranking, or between viewshed and visibility of topographic features. Similarly, there was little relationship between physical accessibility and area within one hour's walk.

While these results may initially seem surprising, they are in fact expected by scholars who have noted the stark differences in the approaches of phenomenology and GIS (see Chapters 2 and 3). These differences justify the combination of qualitative and quantitative methodologies. The physical experiences that people perceive at a site are different from the Viewsheds and least cost paths generated by a computer analysis (Hamilton et. al. 2006; Frieman and Gillings 2007; Llobera 2000; Ogburn 2006). Visual impact, for example, is not based solely on total area seen, but on what is seen. Hoşap had the smallest viewshed, but because of the imposing nature of the rock on which it was built, its great height and size compared to the immediately surrounding landscape, and its contrast to background features, it was rated 5 for visual accessibility. In general, visual accessibility involved a smaller area than that measured by the viewsheds—the area within comfortable walking distance of the site, rather than ten or fifty kilometers. This was the distance at which most people likely experienced the site in their day-to-day lives. For future work, combining viewsheds with travel time polygons could be a way to resolve this difference. Additionally, visual accessibility took into account movement, and the site's overall visibility as one moves across the landscape, something that was missing from simple viewshed analyses. Indeed, there was a stronger correlation between visual prominence and mean percentage of one-hour visibility points, than between visual prominence and viewshed size. Similarly, views of significant topographical features can be an important contributor to visual experience that is ignored by a viewshed operation. For example, the site of Yonçatepe has a small viewshed, but its views of Lake Van contribute to its visual prominence in a way that is not measured by a simple analysis of how many pixels are visible. Little correlation exists between technological skill or emotional impact of human-made features, and visual or physical accessibility. Thus, sites designed to be visually imposing to visitors, and visually prominent to those in the immediate vicinity, were not necessarily those with the greatest visibility over greater distances. The same was true in terms of physical accessibility, as perceived physical accessibility based on personal experience did not necessarily correspond to physical accessibility across larger distances.

It appears, then, that there were two levels of interaction on the Urartian landscape. On the larger-range military and political level, viewsheds across large distances would have been important for surveillance and communication, and physical accessibility would have been important for trade and travel. At the smaller-scale, more personal level of day-to-day routines and interactions, however, people would have experienced vision and movement in a more holistic way, one that also took into account the context of factors such as significant natural features and the technological skill associated with human-made constructions.

In order to be successful rulers, Urartian leaders would have needed to engage with their subjects on both of these levels. The above analysis has demonstrated that the qualitative and quantitative components of this study each provide something unique that the other cannot fully capture. It has also allowed for a characterization of Urartian sites in the Van region on both of these levels. The next two chapters will detail similar analyses carried out on sites in the Lake Sevan and Ararat Plain regions of Armenia in order to elucidate how Urartian rulers did or did not change their strategies of site location and design once they expanded outside their homeland.

CHAPTER 6: QUALITATIVE AND QUANTITATIVE ANALYSIS OF THE MOUNT ARAGATS REGION

Overview of the Aragats Region

Geography and Economy

Mt. Aragats and the Ararat Plain are located in the central western portion of the Republic of Armenia. This region is generally mountainous, though much of the Ararat plain is at an elevation of less than 1,000 meters. Mt. Aragats, Armenia's highest mountain, has an elevation of 4,095 meters at its summit. Mt. Aragats and Mt. Ararat, located in present-day Turkey near the border of Armenia, form the boundaries of the Ararat Plain along with the Kotaik foothills to the south (Smith 1996; Smith et. al. 2009). This mountainous landscape means that travel in and out of the plain and the surrounding regions has traditionally been constrained to a few major routes (Smith 1996). Important rivers include the Kasakh River, which flows south from the Pambak range to the north of Aragats, along the western flank of Aragats, and into the Aparan Valley; the Razdan River, the only outlet from Lake Sevan; and the Azam River. These three rivers ultimately feed into the largest river on the plain, the Araxes River, which flows south from tributaries to the northwest of Aragats and which forms Armenia's western border with Turkey (Greene 2013; Smith 1996). Like most rivers in the region, they are located at the bottom of gorges, making them difficult to use for irrigation (Greene 2013; Smith 1996). Like the Van region, summers in the Aragats region are hot and dry, while winters are short and cold, with moderate precipitation. Because of the arid climate, irrigation has been necessary to make agriculture possible; irrigation methods have traditionally used water from snow-melt, and farmers in the Mt. Aragats region also rely on rainfall to water crops (Greene 2013).

The landscape is rocky and barren, with few trees and many boulders and rocky outcroppings on the sides of hills and mountains. As a result, visibility is generally unimpeded by vegetation (Smith et. al. 2009). However, this modern-day landscape appears to have been created as a result of deforestation that occurred just before or during the Urartian occupation of the region (Smith 1996). The growing season is short, but cereal crops are grown in the summer, while hay is grown in the winter. As is common throughout the South Caucasus, husbandry of sheep, goats and cattle is also a significant part of the economy (Greene 2013).

History of the Region's Incorporation into Urartu

The Ararat Plain was initially incorporated into the Urartian Empire in the beginning of the eighth century BCE under the king Argishti I. In addition to conquering the people who lived there, Argishti undertook numerous building projects that transformed the landscape, including fortresses, canals, vineyards and orchards (Smith 2000). Among these fortresses was Erebuni, founded as the highland capital (Piotrovsky 1969). This transformation was an important part of the Urartian ideology and of the imposition of the Urartian imperial project. Urartian kings were also likely particularly interested in the riches of the Ararat Plain, and their landscape program appears to have been oriented around exploiting the plain's resources and in particular around moving goods out of the plain. Fortresses were frequently located on trade and travel routes

(Smith 1999, 2012) and Smith (1999:57) argues that "Argishtihinili acted as the primary regional redistributive center for the collection of
goods from the Ararat plain." Argishti's son Sarduri also planted vineyards and orchards and built granaries and temples in the region, which continued to be an integrated part of the empire until its end (Kroll et al. 2012). Near the end of the empire, the king Rusa II enacted large-scale reorganizations, which included moving the highland capital from Erebuni to the newly founded site of Karmir Blur (Smith 1999, 2000).

History of Archaeology in the Region

The Aragats region and Ararat Plain regions have hosted Russian, Soviet and Armenian excavations and surveys for up to 150 years, with a particular focus on the Late Bronze Age, the Early Iron Age, and the Urartian presence (Avetisjan 1997; Kafadarian 1984; Martirosjan 1974; Piotrovskii 1950, 1952, 1955, 1960, 1970; Oganesjan 1961, 1980; Ter-Martirosov 2005a, 2005b, 2007; Smith 1999). Though the earliest archaeological work in Highland Armenia was conducted by Italians, major archaeological research in the region was first carried out by Russians in the mid to late 1800's. These expeditions were originally motivated by an interest in antiquities, but archaeologists soon attempted to formalize methodologies and develop chronologies of sites and technologies (Smith 1999). The twentieth century saw an increasing focus on fortress sites as well as burials, an interest in landscape and irrigation, and a more complex understanding of settlement patterns, chronology, and the South Caucasus's connection to the broader Near East (Smith 1999). The twentieth century also saw disruptions to archaeology and the persecution of individual archaeologists as a result of events such as the World Wars, the Armenian Genocide, and the rise of the Soviet Union (Smith et. al. 2009). Despite this extensive history of research, however, even into the late twentieth century, there was no systematic mapping or recording of archaeological sites (Badalyan and Avetisyan 2007). Recent surveys (Badalyan and Avetisyan 2007; Smith et. al. 2009) have slowly begun to remedy this, particularly in the area immediately around Mt. Aragats. Activities such as dam construction, agricultural activity and other forms of development in the past few decades have dramatically increased the amount of information available in the region, and this has also led to a revision of systems of chronology for the Bronze and Iron Ages that were initially established in the 1960s (Badalyan and Avetisyan 2007).

Qualitative Analysis of the Sites

Seventeen sites in the region around Mt. Aragats and on the northern Ararat Plain just south of Mt. Aragats (henceforth referred to as the Aragats region) were surveyed in the summer of 2017 (Figure 6-1). The sites were chosen based on their extensive documentation in surveys and earlier analyses (Badalyan and Avetisyan 2007; Smith 1999; Smith 2003), their accessibility, and their broad representation of pre-Urartian and Urartian sites and of different types of sites (fortresses, kurgans, and/or inscriptions).

Data from multiple surveys was combined for this analysis, particularly the Project ArAGATS survey (Smith et al. 2009) and another survey conducted by Ruben Badalyan and Pavel Avetisyan (2007). These two surveys are quite different in their methodologies. Project ArAGATS was an intensive walking survey, with transects 25 meters apart, which covered a total of nearly one hundred square kilometers on the

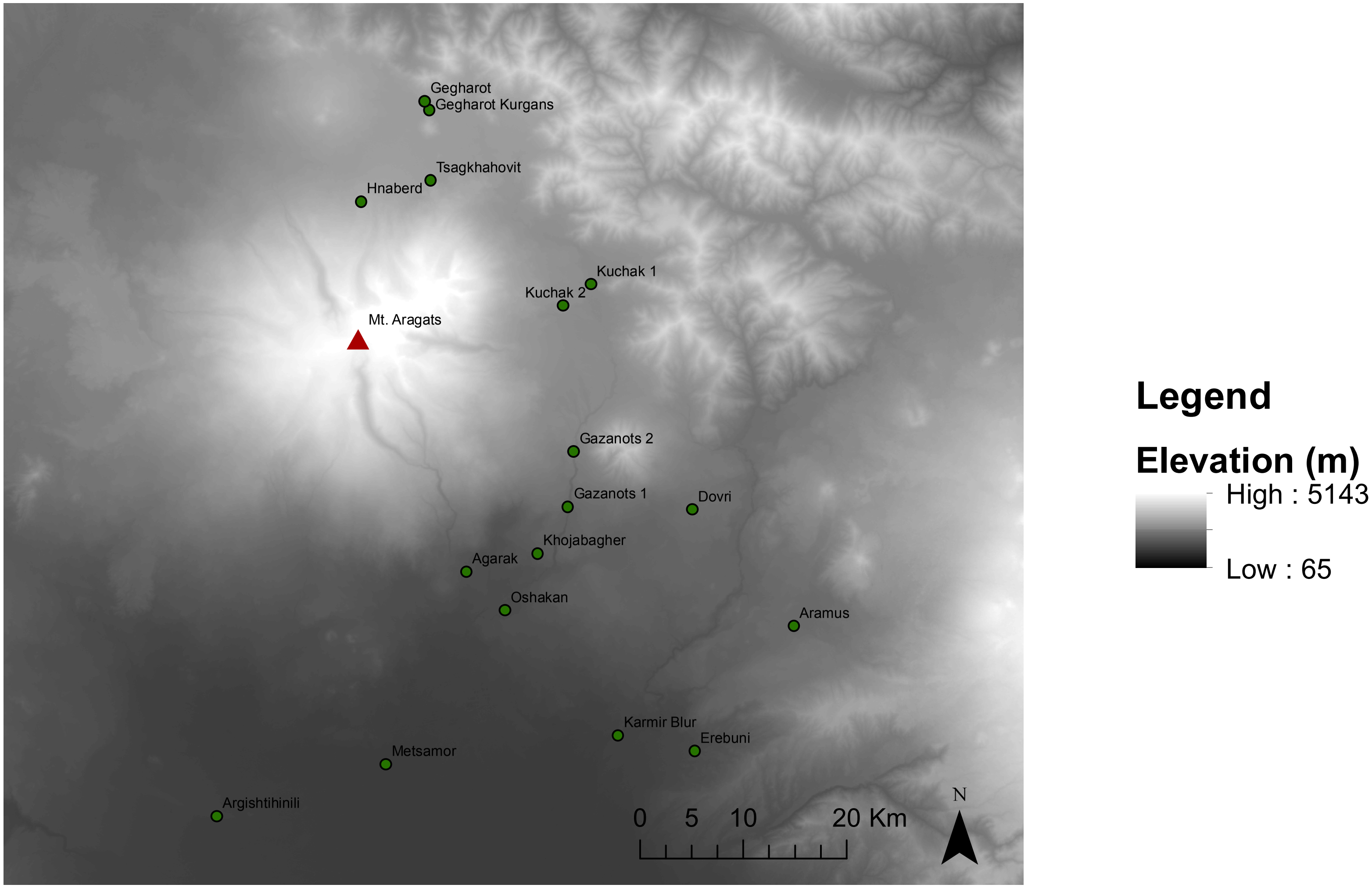


Figure 6-1: Map of sites surveyed in the Aragats region

Tsaghkahovit Plain over the course of six years. This survey thus was able to detect a variety of archaeological features, including artifact scatters and remains of canals, as well as more typical sites such as fortresses and kurgans. By contrast, Badalyan and Avetisyan’s survey was more extensive and less intensive and systematic, focusing largely on surveying sites documented by previous surveys, excavations and museum collections. Thus, it is more likely to be geared toward large, elite sites and to have overlooked smaller sites, whereas the Project ArAGATs survey was more comprehensive. Badalyan and Avetisyan’s survey provided the locations for sites from a broader geographic area, while the Project ArAGATS survey provided detailed information on sites on the Tsaghkahovit Plain.

The sites were recorded and analyzed in the same way as the Van sites, and rated using the same eleven phenomenological characteristics. The sites are summarized below; more extensive phenomenological recording can be found in Appendix 4, and photos can be found in Appendix 5.

Agarak

Time Period: Early Bronze – Urartian

Type of Site: Settlement, cemetery

Location: 40º17’42.43” N, 44º16’37.89”

Elevation: 1,087 m

Background: Located atop a rocky promontory of tuff, the site is also close to the Amberd River (Figures 6-2—6-4). The site consists of a settlement that was occupied beginning in the Early Bronze Age, and material was also found from the Middle Bronze,

Figure 6-2: Satellite image of Agarak (Map data: Google, DigitalGlobe)

Figure 6-3: Satellite image of Agarak showing architecture (Map data: Google, DigitalGlobe)

Figure 6-4: Satellite image of Agarak and surrounding landscape (Map data: Google, DigitalGlobe)

Late Bronze, and Early Iron Ages. Additionally, a rock-cut tomb here dates to Urartian times. The site is most notable for the many features carved directly into the rock, including basins, channels, and “altars”, which have traditionally been assigned a religious purpose (Avetisyan 2003; Badalyan and Avetisyan 2007).

Phenomenological overview: The site is located on a rocky plateau in mostly flat agricultural land, with low hills to the west. The plateau itself is made of reddish rock that stands out somewhat from the surrounding landscape, and the east face, in particular, has rather unusual and distinctive formations, with many curving undulations and ridges. The unusual color and shape of the stone, as well as the outcropping’s position on relatively flat land, enhances its visibility, despite the fact that the location is not particularly dramatic as compared to large hilltop fortress sites. The site is most visible looking down from the surrounding hills, rather than up from the relatively flat surrounding land. Inhabitants of the site interacted with the stone outcropping frequently, as is evidenced by the many features carved into the stone. The site has clear views of Mt. Ararat, Mt. Aragats and Mt. Ara, as well as surrounding mountains, and is fairly physical accessible, being located on a gentle grassy slope. Little of note is present here in terms of striking cultural features; the most notable aspect of the site is the color and interesting shape of the rock outcropping.

Aramus

Time Period: Urartian

Type of Site: Fortress

Location: 40º14’56.68” N, 44º39’03.00” E

Elevation: 1472 m

Background: Located in the Hrazden river valley, the Urartian citadel of Aramus was one of the three major fortresses on the Ararat Plain (along with Argishtihinili and Artashat), and, like the other two, was located on one of the major travel and trade in and out of the plain (Avetisjan 1997; Smith 2012; Figures 6-5—6-8). Smith (1999) connects the locations of these fortresses to an intense desire on the part of the Urartians to exploit and redistribute the plain's resources.

Phenomenological overview: The site is located on a long, thin hill in the midst of otherwise flat agricultural land. It stands out strikingly from the surrounding landscape, and is highly visible from every direction. The hillside is quite steep and imposing. In general, the construction of the fortress is relatively unimpressive, with walls made of crudely cut, moderately sized stones. Some architectural elements are present which seem to be more finely made; however, these are out of context, and thus it is not clear exactly what kind of impact they might have had. The most notable aspect of the fortress is its size, as it takes up much of the ridge, as well as its distinctiveness in the landscape. The site has limited visibility to Mt. Aragats, but has good views of Mt. Ararat on a clear day according to our guide, though it could not be seen when I was there due to haze.

Argishtihinili

Time Period: Urartian

Type of site: Fortress

Location: 40º04'45.66" N, 43º59'44.95" E

Elevation: 903 meters

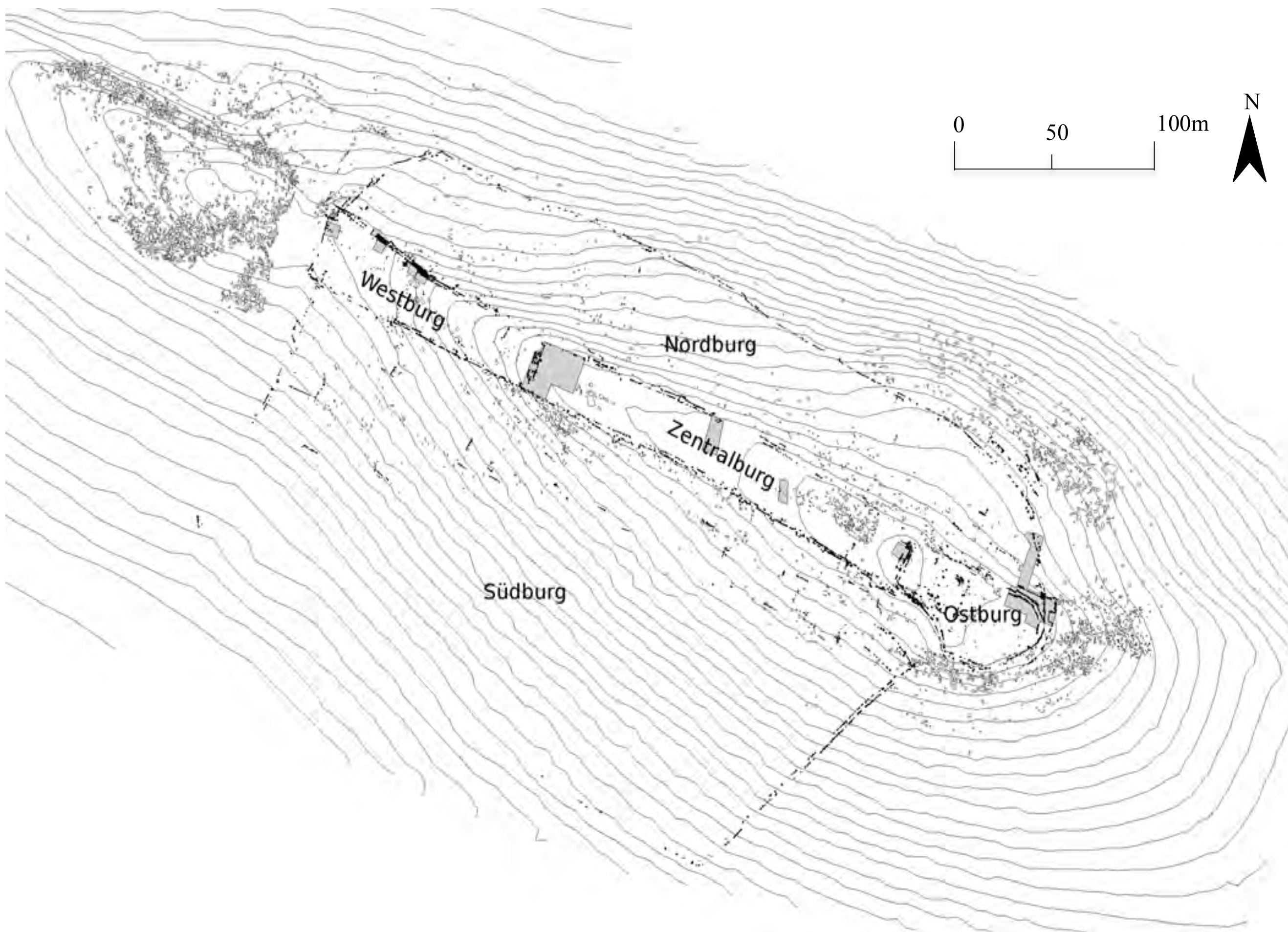


Figure 6-5: Topographical plan of Aramus fortress (adapted from Heinsch and Kuntner 2010:Figure 1)

Figure 6-6: Satellite image of Aramus (Map data: Google, DigitalGlobe)

Figure 6-7: Satellite image of Aramus showing architecture (Map data: Google, DigitalGlobe)

Figure 6-8: Satellite image of Aramus and surrounding landscape (Map data: Google, DigitalGlobe)

Background: The large fortress site of Argishtihinili, like Erebuni, was founded by Argishti I after his conquest of the Ararat Plain (Figures 6-9—6-13). While Erebuni is considered the political center of the plain, Argishtihinili was likely the economic center, as suggested by its size (Smith 2003). The fortress is located at the intersection of several trade routes, suggesting that Urartian rulers were interested in using fortresses to control movement and trade. The site is also not far from the Araxes River. The site continued to be occupied into the reconstruction period under Rusa II, and, also like Erebuni, has been home to several long-running and extensive excavations (Kafadarian 1984; Martirosjan 1974; Smith 2003).

Phenomenological overview: The fortress is located on a moderately steep, moderately high grassy slope on otherwise flat land. The fortress itself is large, with walls of bedrock stones piled on top of each other. Most of the stones are coarsely cut, with no evidence of ashlar masonry or any ornamentation. The top of the hill has commanding views of the surrounding agricultural land, as well as views of Mt. Ararat and Mt. Aragats; in the middle of the day in the heat, these mountains are barely visible through haze, but I was told that at other times the view is much clearer. In general, this site has little to distinguish it from other sites. While the hill is prominent as the highest point in the immediate vicinity, the relatively gentle grassy slope makes it not as visible or eye-catching from a distance as sites that are built atop more striking features. Additionally, as most of the fortress appears to have been constructed from bedrock and the stones are not finely shaped, the fortress walls have the impression of blending into the landscape. The fortress's location atop a hill means that sound carries easily from the surrounding villages.

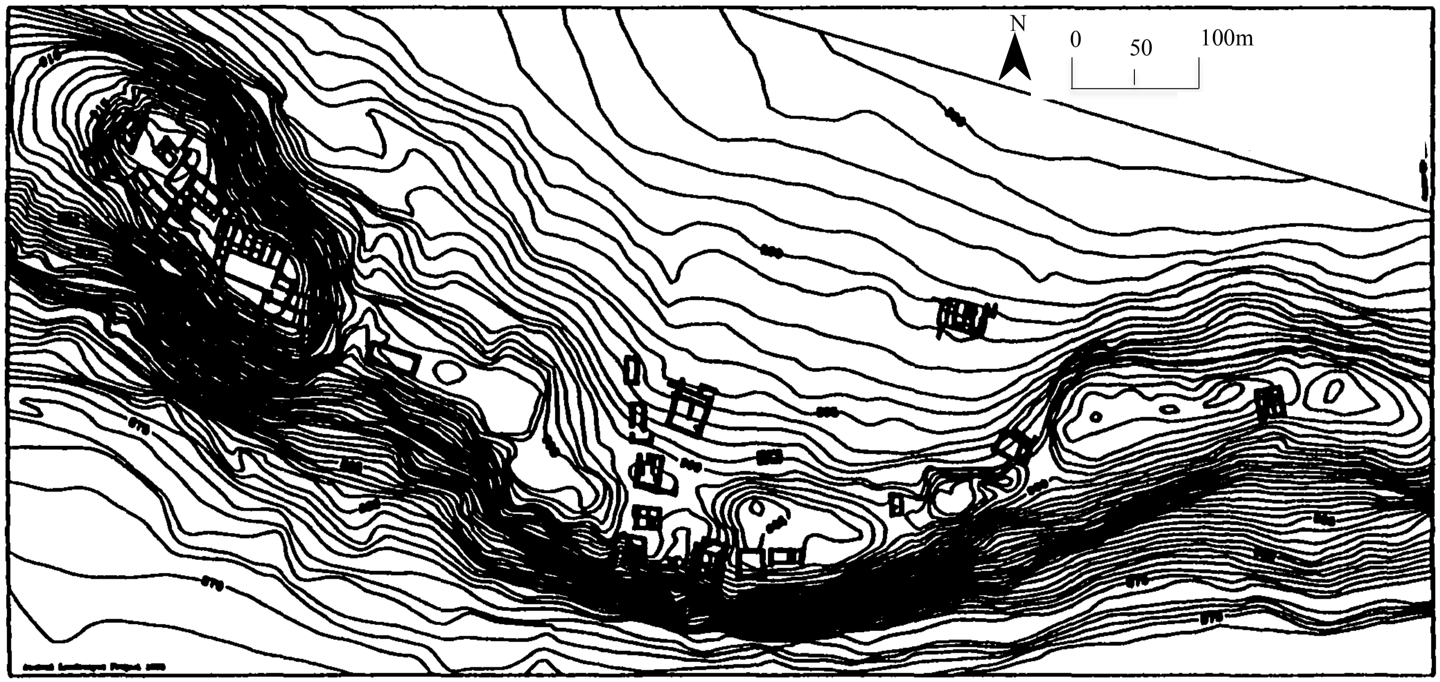


Figure 6-9: Topographical plan of Argishtihinili (adapted from Smith 1995:Figure 5.12)

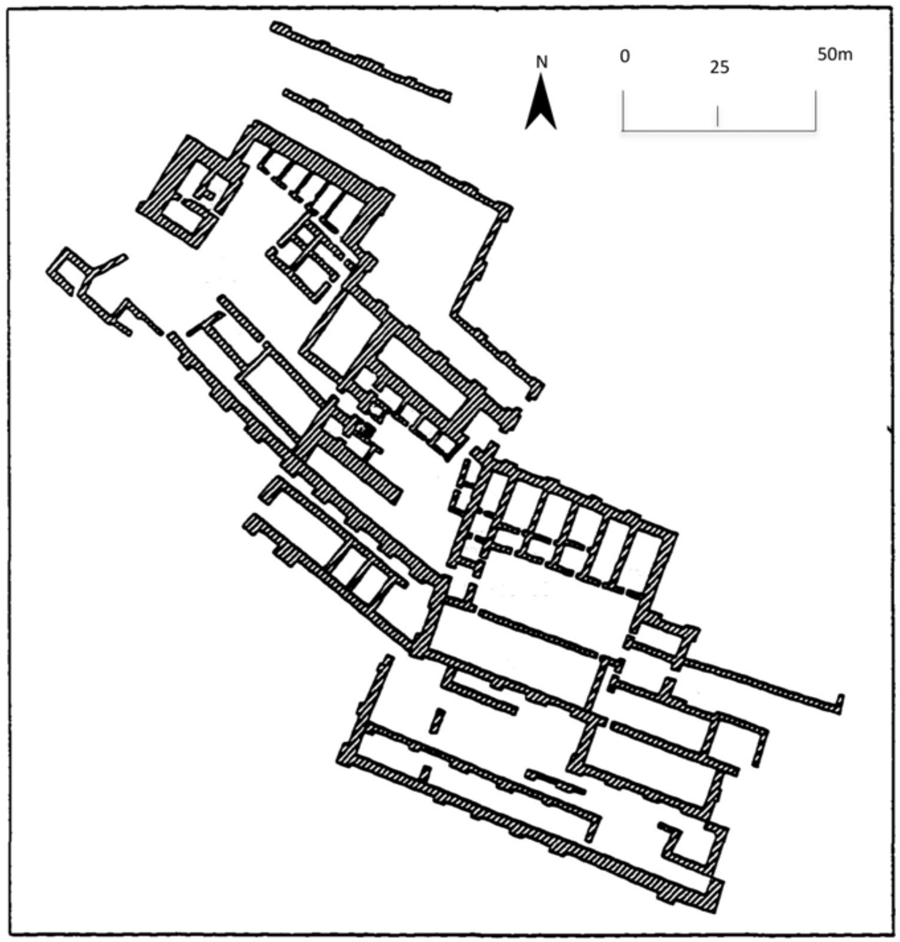


Figure 6-10: Site plan of western portion of Argishtihinili (adapted from Smith 1995:Figure 5.15)

Figure 6-11: Satellite image of Argishtihinili (Map data: Google, DigitalGlobe)

Figure 6-12: Satellite image of Argishtihinili showing architecture (Map data: Google, DigitalGlobe)

Figure 6-13: Satellite image of Argishtihinili and surrounding landscape (Map data: Google, DigitalGlobe)

Dovri

Time Period: Urartian

Type of site: Fortress

Location: 40º21’02.90” N, 44º32’05.12” E

Elevation: 1,488 meters

Background: Located at the base of Mt. Arelier, Dovri Fortress was one of the fortresses built during the Urartian expansion into the Ararat Plain in the eighth century B.C.E. Limited excavations at the end of the twentieth century uncovered fortification walls and several rooms (Smith 1996; Figure 6-14—6-17). Smith (1996) suggests that as it has no clear strategic significance based on topography, its location may have been chosen for its proximity to other fortresses.

Phenomenological overview: The site is located on a low hill that has decent views of flat agricultural land to the north and west, but which is blocked from view by hills to the south and east. The hill on which it sits is moderately high, steep and imposing, but in general it has little to provoke a strong emotional response, and is not as intimidating as many of the other fortress sites in the region. The most notable features of this site are the fortification walls, which are constructed of medium to large-sized rectangular basalt blocks. Though these walls are not as finely carved as ashlar masonry, they were done more skillfully than those of many of the Late Bronze/Early Iron Age fortresses nearby, and can be classified as semi-ashlar (Smith 1996). Additionally, their color is striking and causes them to stand out from the surrounding landscape, which

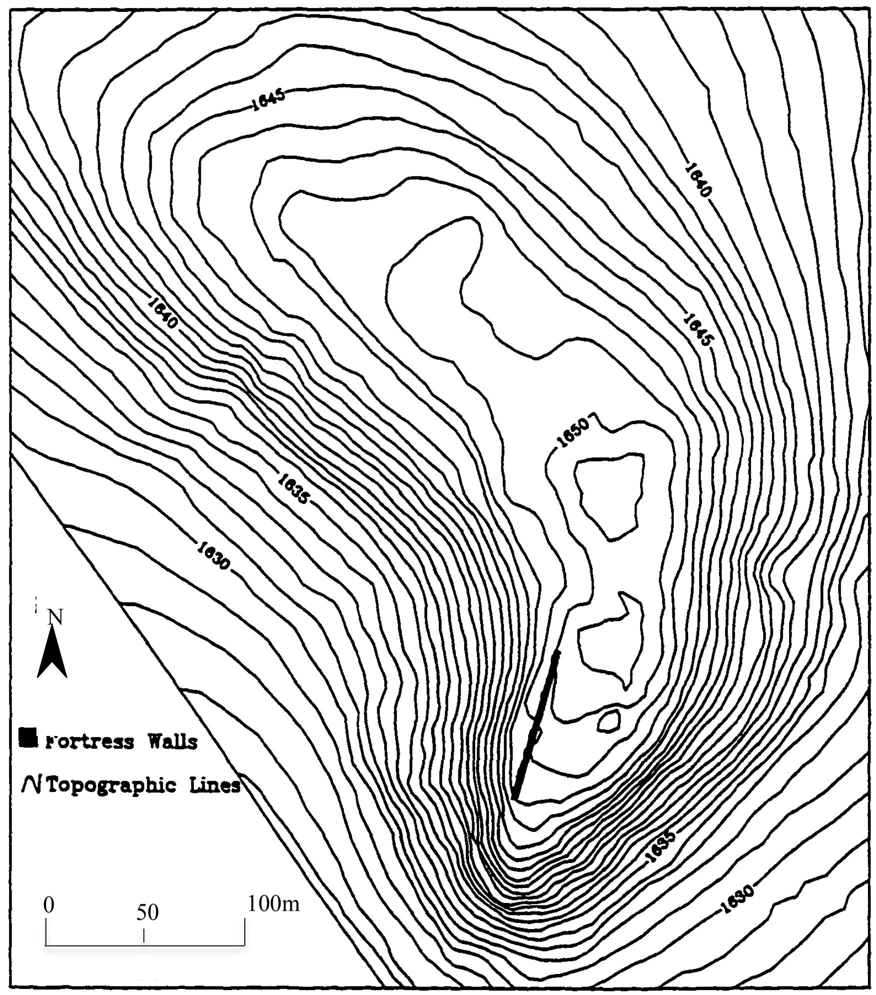


Figure 6-14: Site plan of Dovri (adapted from Smith 1995:Figure 5.12)

Figure 6-15: Satellite image of Dovri (Map data: Google, DigitalGlobe)

Figure 6-16: Satellite image of Dovri showing architecture (Map data: Google, DigitalGlobe)

Figure 6-17: Satellite image of Dovri and surrounding landscape (Map data: Google, DigitalGlobe)

enhances the site's visibility and also its emotional impact. The site also has clear views of Mt. Arelier, at whose base it is located.

Erebuni (Arin Berd)

Time Period: Urartian

Type of Site: Fortress

Location: 40º08"23.54" N, 44º32'17.10" E

Elevation: 1,053 meters

Background: Located in modern-day Yerevan, the site of Erebuni (Arin Berd) was founded by Argishti I as the Urartian capital on the Ararat Plain, immediately after Urartu incorporated the region into the empire in the early 8th century CE. Extensive excavations have been carried out at the site, revealing a significant amount of its architecture (Oganesjan 1961, 1980; Ter-Martirosov 2005a, 2005b, 2007; Figures 6-18—6-22). Evidence suggests that large numbers of people from conquered territories were forcibly resettled in the area around Erebuni (Smith 2003). Erebuni has remained an important landmark into modern times; the Soviet Union undertook and later abandoned a refurbishment project at the site, evidence of which can still be seen in Urartian walls that were reconstructed using cement.

Phenomenological overview: This impressive site sits atop a large mound with a commanding view of the surrounding landscape; from the top of the site, essentially all of modern-day Yerevan is visible, as are the surrounding mountains. Much of the fortress complex is still standing today, either naturally or due to Soviet restoration efforts. In addition to its massive size, one of the site's most striking features are its thick walls,

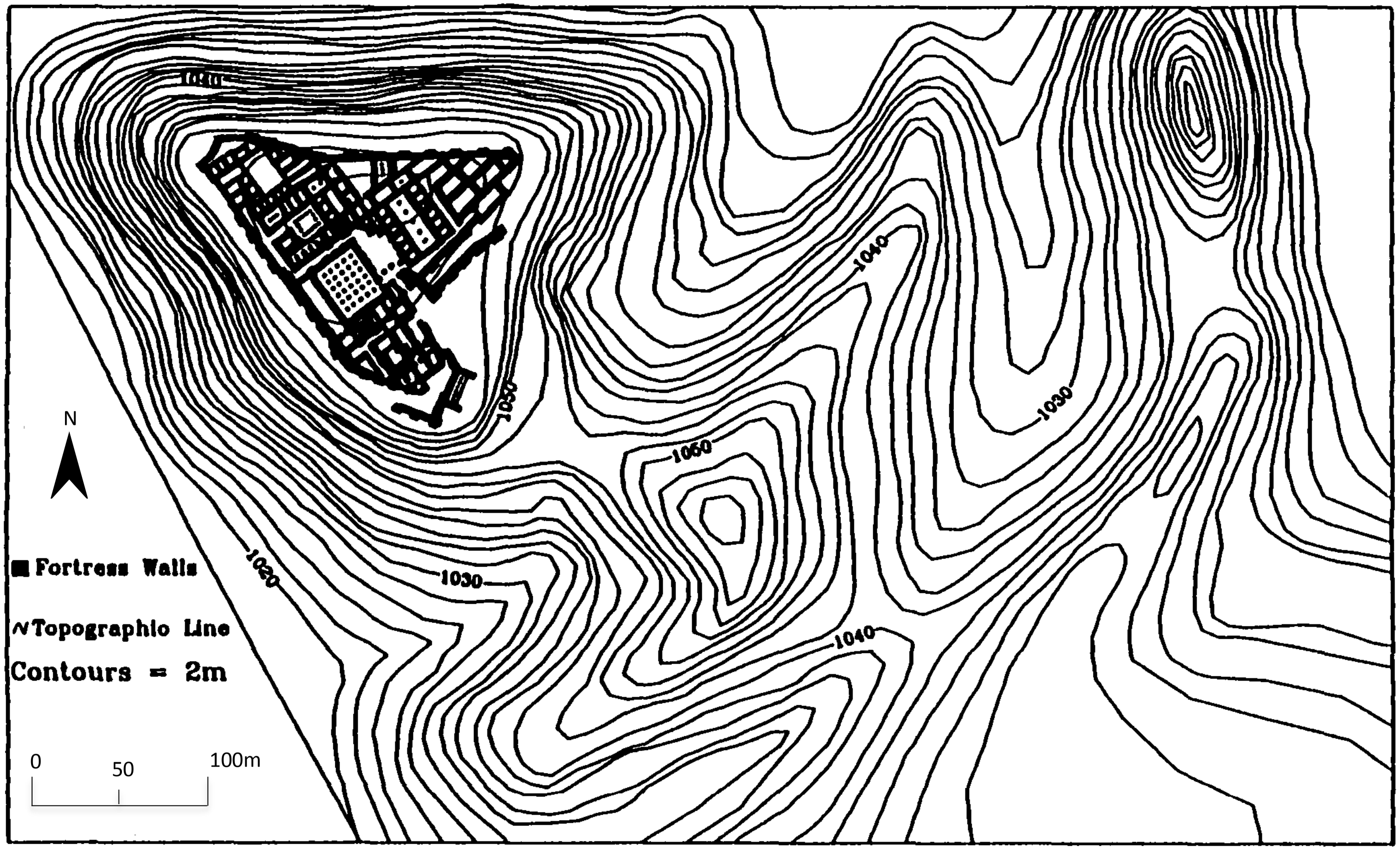


Figure 6-18: Site plan of Erebuni (adapted from Smith 1995:Figure 5.17)

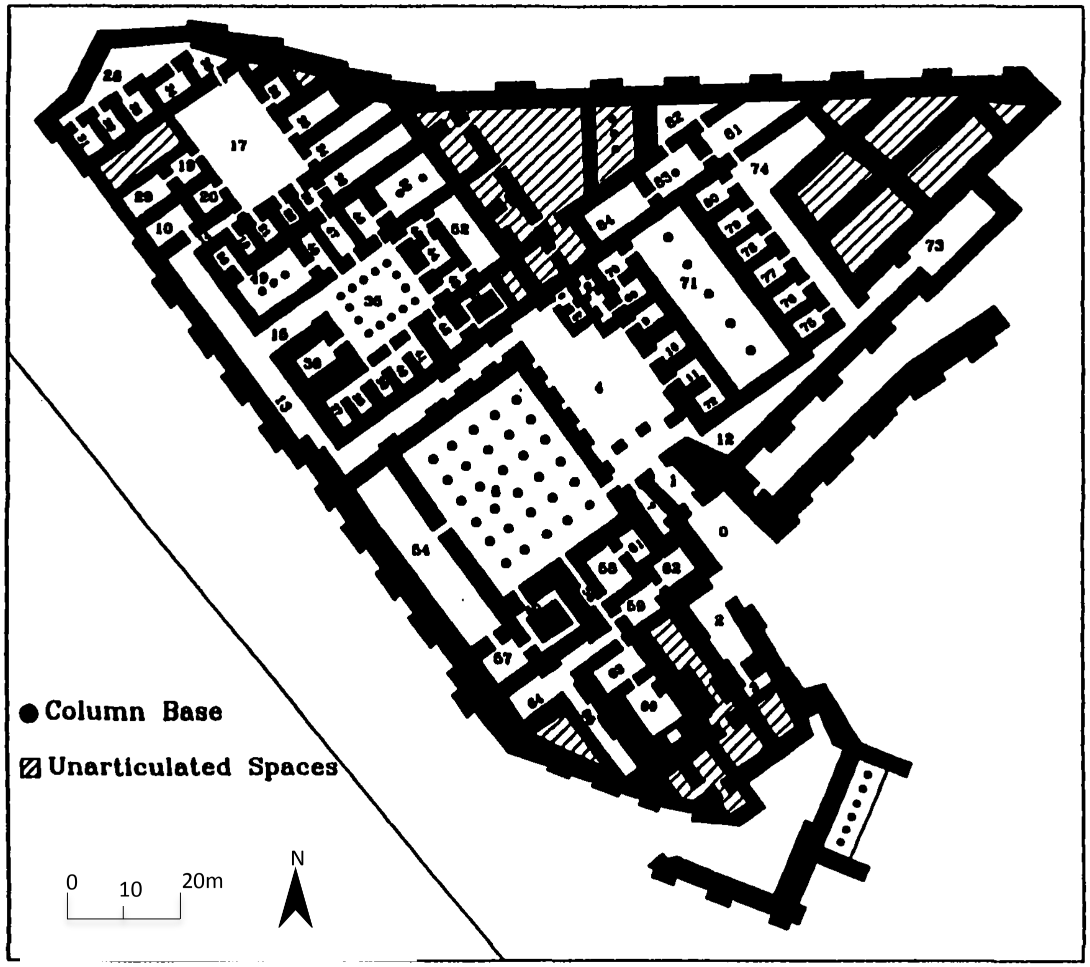


Figure 6-19: Architecture at Erebuni (adapted from Smith 1995:Figure 5.18)

Figure 6-20: Satellite image of Erebuni (Map data: Google, DigitalGlobe)

Figure 6-21: Satellite image of Erebuni showing architecture (Map data: Google, DigitalGlobe)

Figure 6-22: Satellite image of Erebuni and surrounding landscape (Map data: Google, DigitalGlobe)

which are made of rocks in a variety of shades of red, black and gray. These not only create a striking and beautiful visual impact, they also make the fortress highly visible from a distance and distinguish it from the surrounding landscape as something clearly humanmade. The sight of these walls, and the steep slope on which they stand, is intimidating and awe-inspiring. The thick walls, some of which are made of ashlar masonry and some of which are simply uncut rocks balanced on top of each other, attest to the high degree of technological skill that went into the fortress construction. Cuneiform inscriptions and a temple fresco also inspire awe and wonder and contribute to the fortress's extremely impressive impact.

Gazanots 1

Time Period: Early Bronze-Middle Iron

Type of site: Fortress

Location: 40º21'09.20" N, 44º23'30.84" E

Elevation: 1,380 meters

Background: Located on the west bank of the Kasakh River (Figures 6-23—6-25), this site was initially a settlement in the Early Bronze Age, with a large fortress dating to the Late Bronze Age. A small amount of pottery is associated with the Early Iron Age, but no construction (Areshyan 1978; Areshyan et al. 1977; Badalyan and Avetisyan 2007).

Phenomenological overview: Though it is not located on a hill, this site has one of the most impressive and distinctive locations, due to its position overlooking a river gorge. The site's main fortress, built of large, evenly sized rectangular blocks, is perched

Figure 6-23: Satellite image of Gazanots 1 (Map data: Google, DigitalGlobe)

Figure 6-24: Satellite image of Gazanots 1 showing architecture (Map data: Google, DigitalGlobe)

Figure 6-25: Satellite image of Gazanots 1 and surrounding landscape (Map data: Google, DigitalGlobe)

on a cliff over a straight vertical drop down to the bottom of the gorge. The Kasakh River runs through the gorge, and the sound of rushing water can clearly be heard from the fortress. While there is good visibility across the gorge, the site is largely blocked from view from all but its most immediate surroundings, as it is located on flat ground and surrounded by low hills. This creates a sense of peacefulness and isolation that is not found at most of the other sites. The natural beauty of the gorge is awe-inspiring, while the steep drop and the fortress's large walls are intimidating.

Gazanots 2

Time Period: Early Bronze-Middle Iron

Type of site: Settlement, cemetery

Location: 40º24'02.86" N, 44º23'53.63" E

Elevation: 1,683 meters

Background: This area is considered part of the same site as Gazanots 1 (Badalyan and Avetisyan 2007), and includes the settlement and cemetery associated with the fortress (Figures 6-26—6-28). However, the two parts of the site are several kilometers apart, and this location is included separately here because of its unique phenomenological experience. Various tombs are found from the Middle Bronze, Late Bronze, Early Iron, and Urartian periods (Badalyan and Avetisyan 2007).

Phenomenological overview: Like Gazanots 1, this site is located beside the gorge, with all of the associated emotional and sensory experiences described above. However, Gazanots 2 is more visually open than Gazanots 1. While Gazanots 1 feels enclosed and isolated by the low hills that block it from the rest of the landscape to the

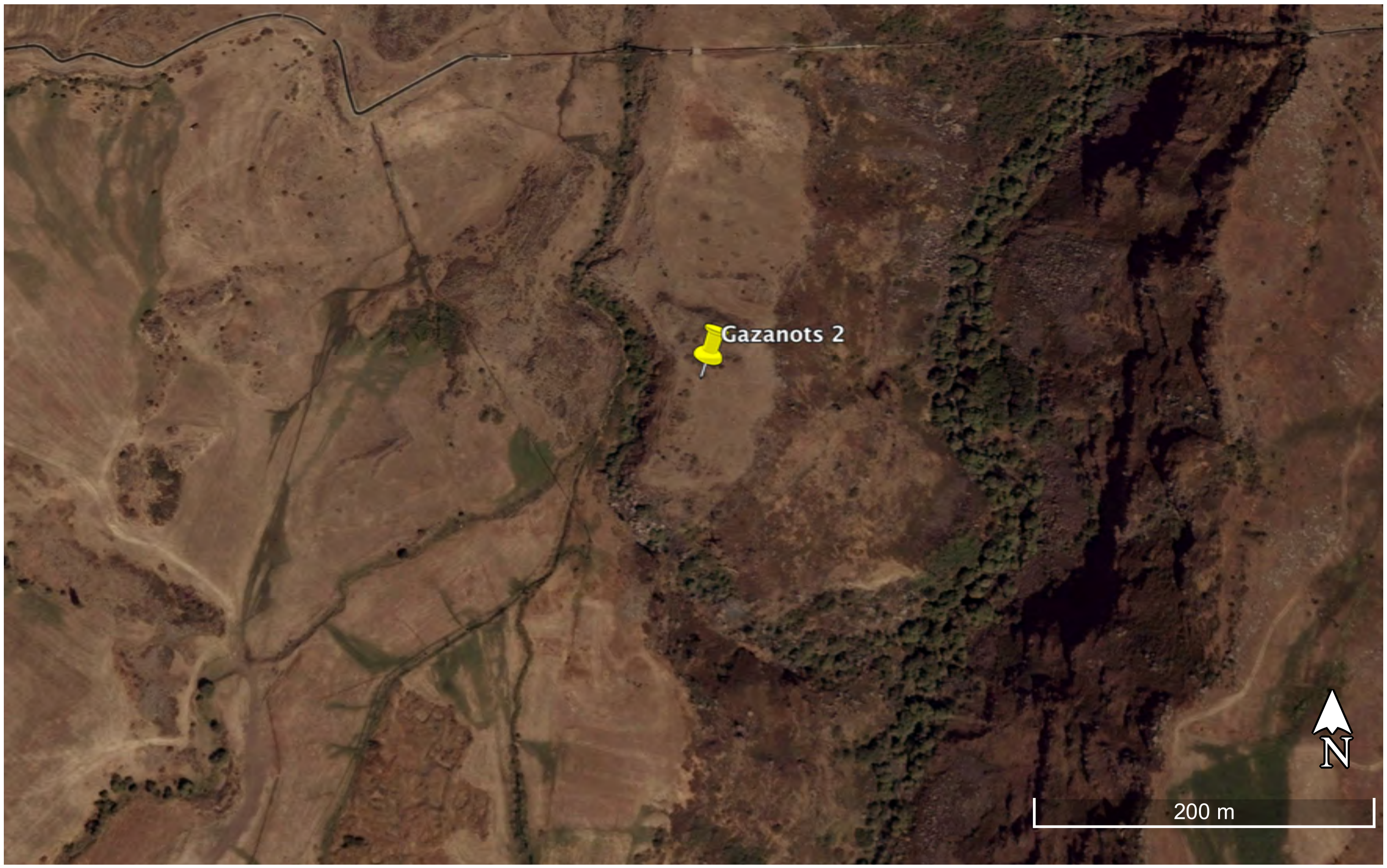


Figure 6-26: Satellite image of Gazanots 2 (Map data: Google, DigitalGlobe)

Figure 6-27: Satellite image of Gazanots 2 (Map data: Google, DigitalGlobe)

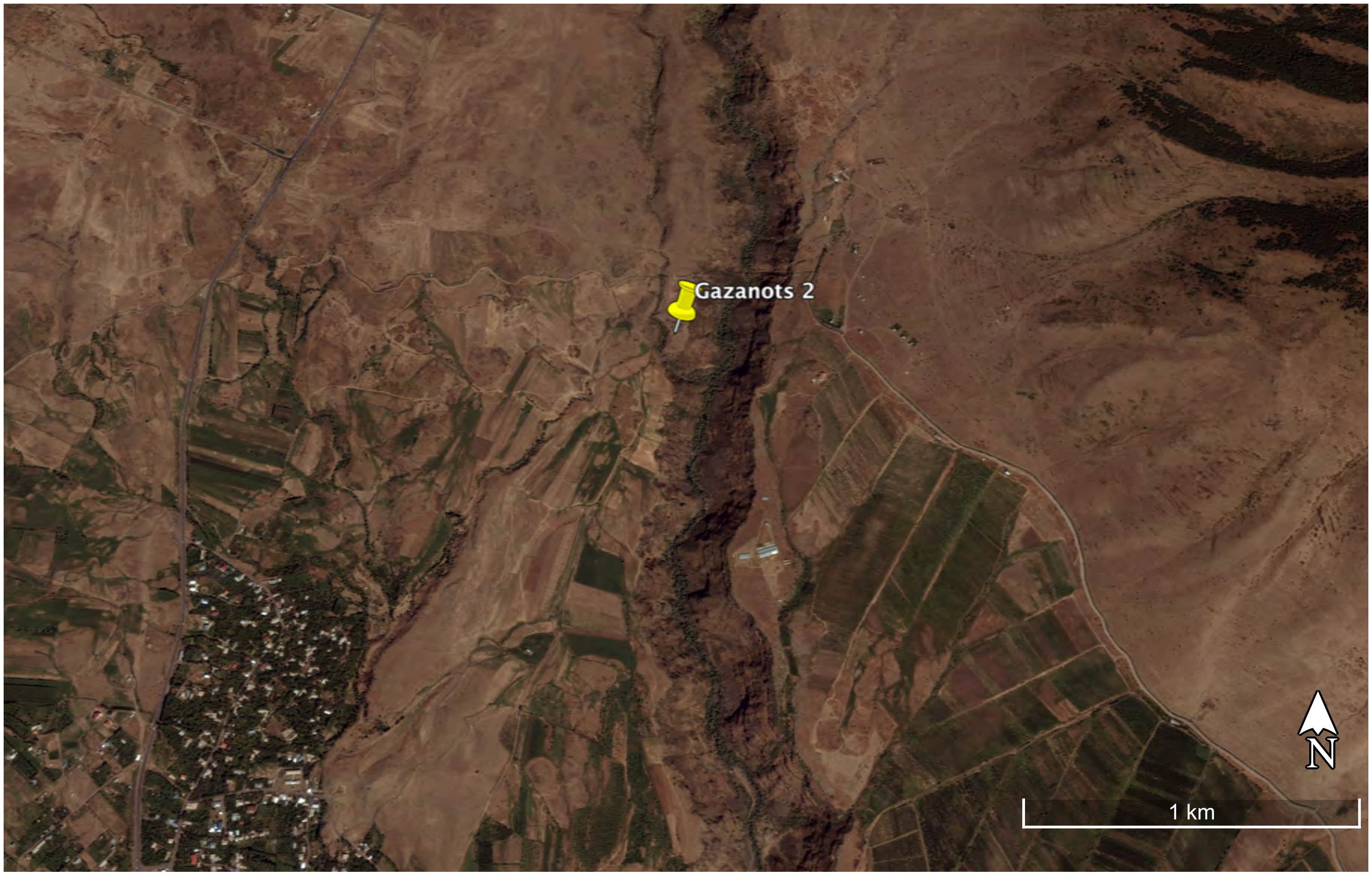


Figure 6-28: Satellite image of Gazanots 2 and surrounding landscape (Map data: Google, DigitalGlobe)

west, Gazanots 2 is located on the highest point in the immediate vicinity and has good visibility over the landscape in all directions. It also has clear views to Mt. Aragats and lower mountains to the southwest, and, like Gazanots 1, has excellent visibility of Mt. Ara on the other side of the gorge. This contributes to the sense of a site that is much more open, accessible and connected to the wider landscape—though, in fact, Gazanots 2 is slightly less physically accessible than Gazanots 1, as a small ravine lying directly to the west must be crossed to get to the site. The skill and impact of cultural features is not as strong as at Gazanots 1, as the structures are smaller and built of smaller stones. However, burials are present here, which in the past likely inspired emotions of fear, awe, and reverence, as well as a sense of the place's enduring importance on the landscape.

Gegharot Fortress

Time Period: Early Bronze, Late Bronze, Middle Iron

Type of Site: Fortress

Location: 40º42'19.84"N, 44º13"28.80E

Elevation: 2,142 meters

Background: Built atop an outcropping on the Tsaghkahovit Plain, Gegharot was occupied beginning in the Early Bronze Age. It was abandoned and then subsequently reoccupied in the Late Bronze Age, which saw the construction of a large fortress and fortification walls (Figures 6-29—6-34). An associated Late Bronze Age cemetery is located nearby (described below) (Smith et. al. 2009). The site was extensively excavated by Project ArAGATS in the early twenty-first century (Smith et. al. 2009; Figure 6-8).

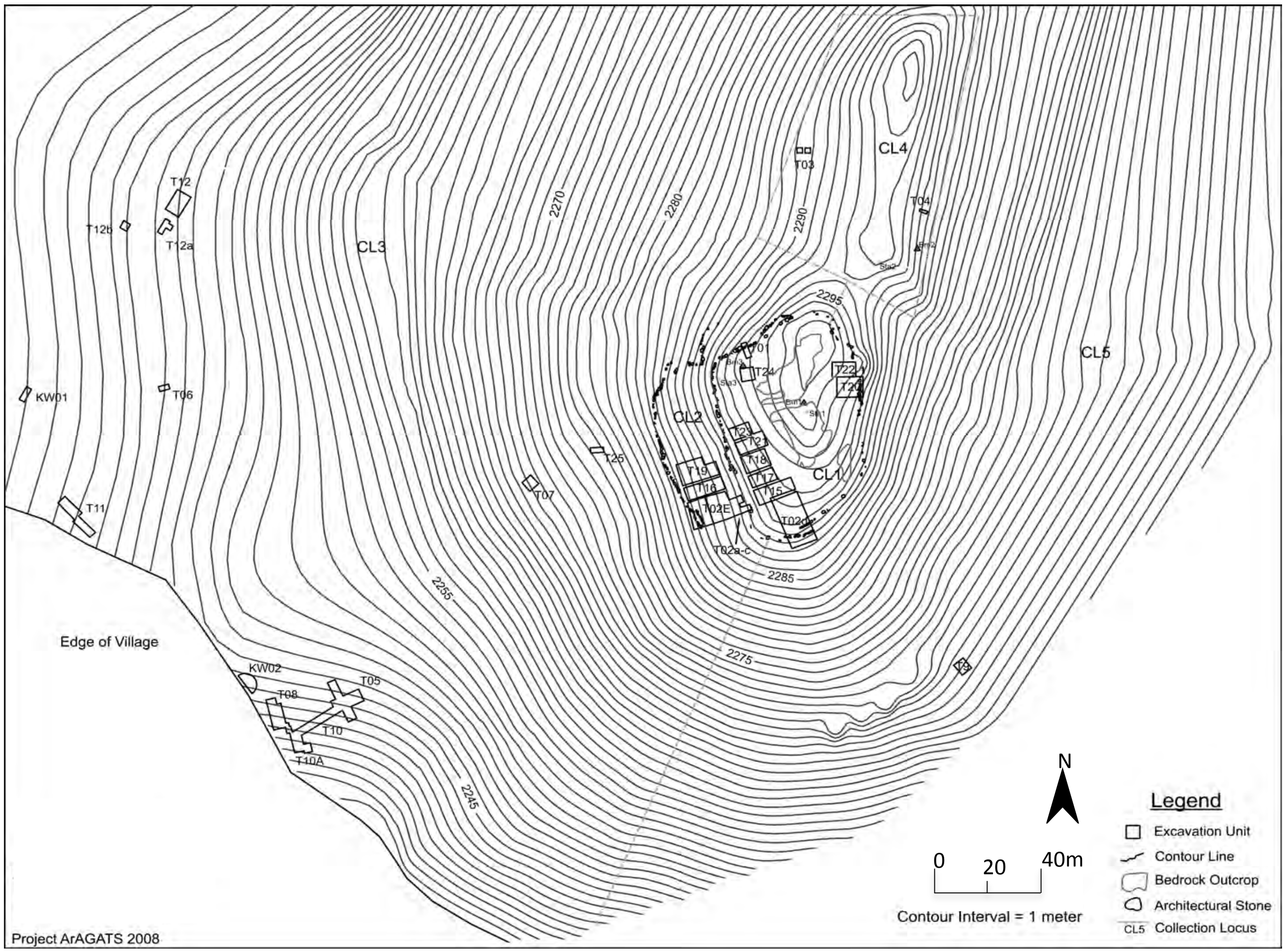


Figure 6-29: Site plan of Gegharot Fortress (adapted from Smith et al. 2009:Plate 27)

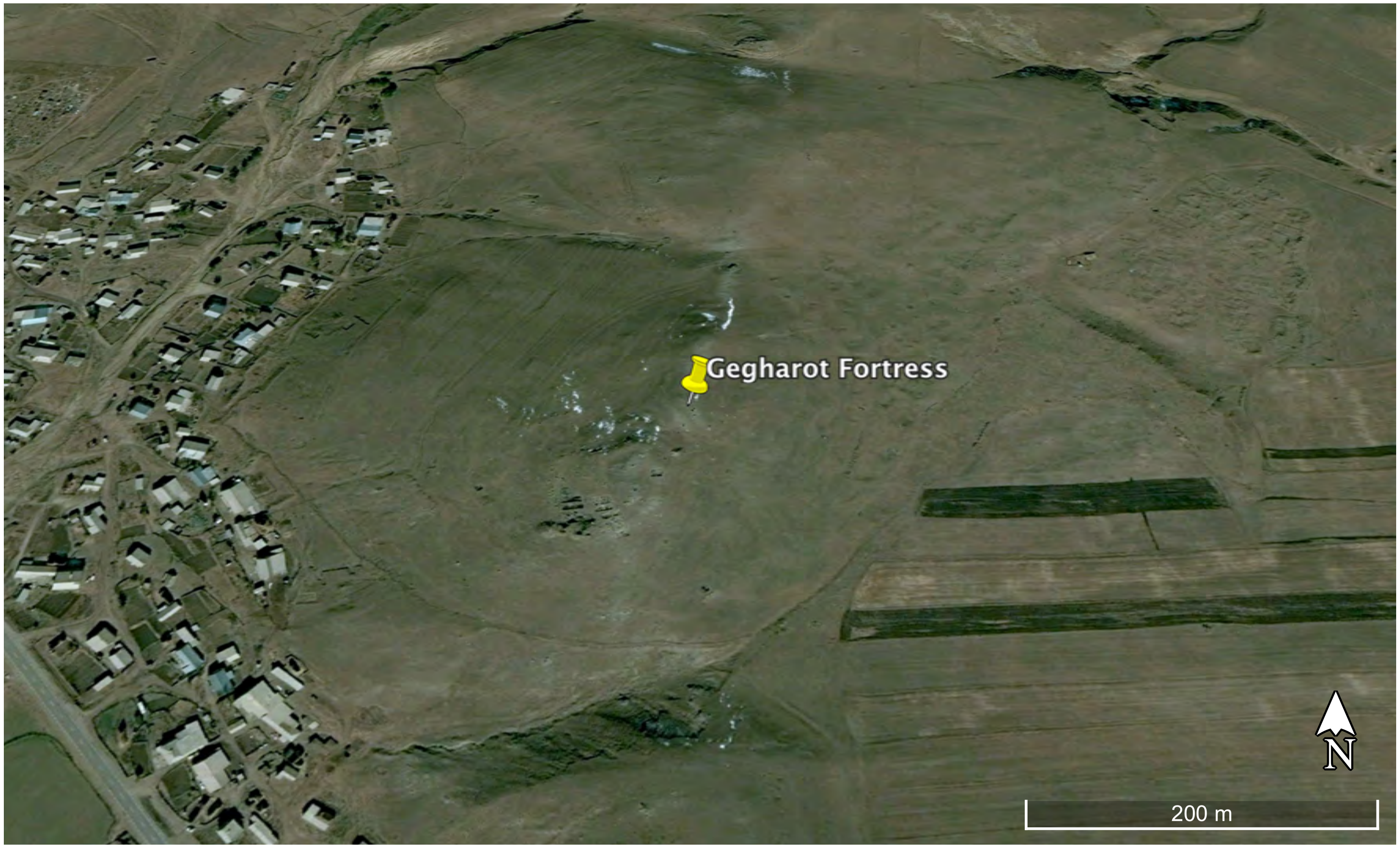


Figure 6-30: Satellite image of Gegharot Fortress (Map data: Google, DigitalGlobe)

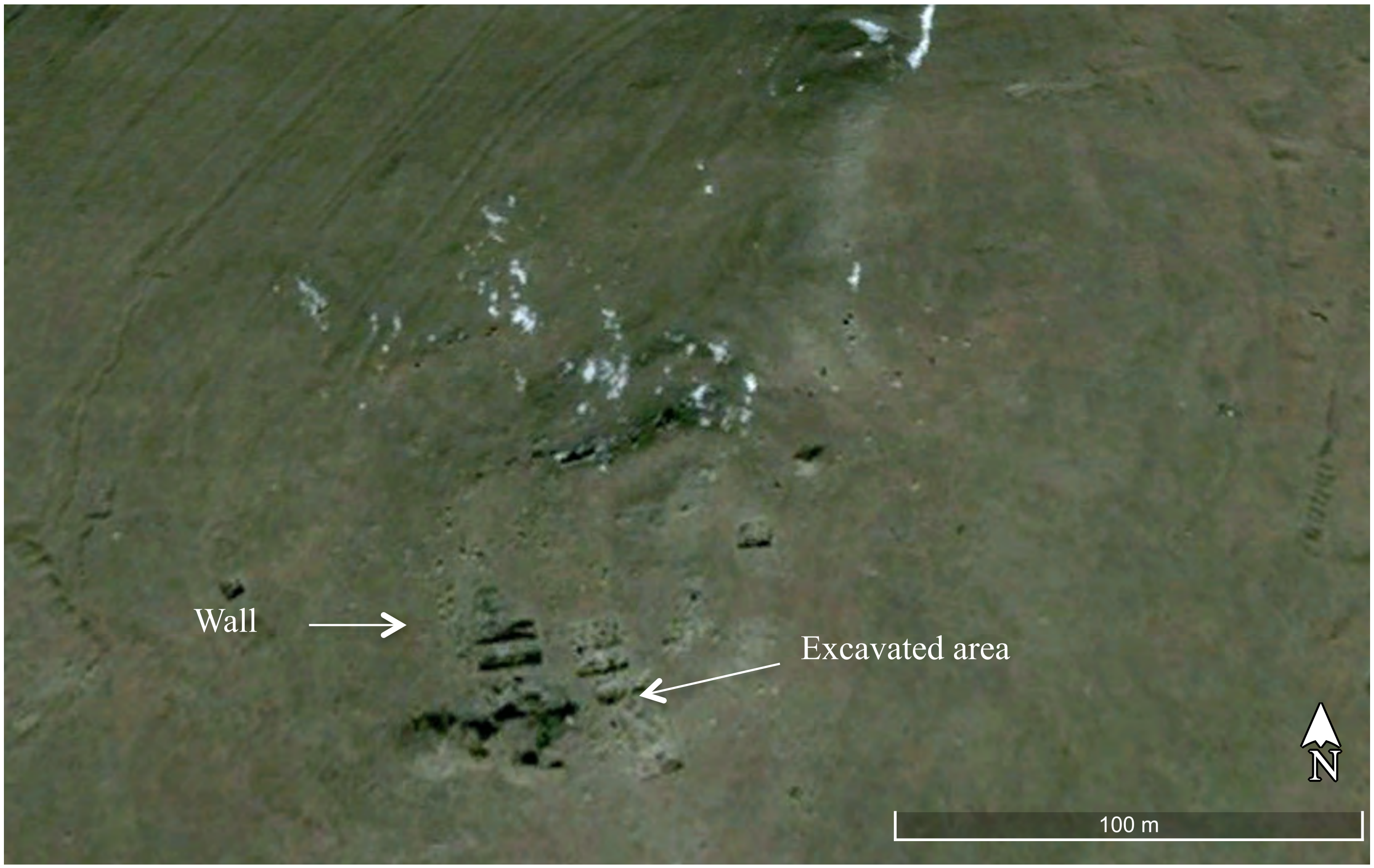


Figure 6-31: Satellite image of Gegharot Fortress showing architecture (Map data: Google, DigitalGlobe)

Figure 6-32: Satellite image of the Gegharot kurgans (Map data: Google, DigitalGlobe)

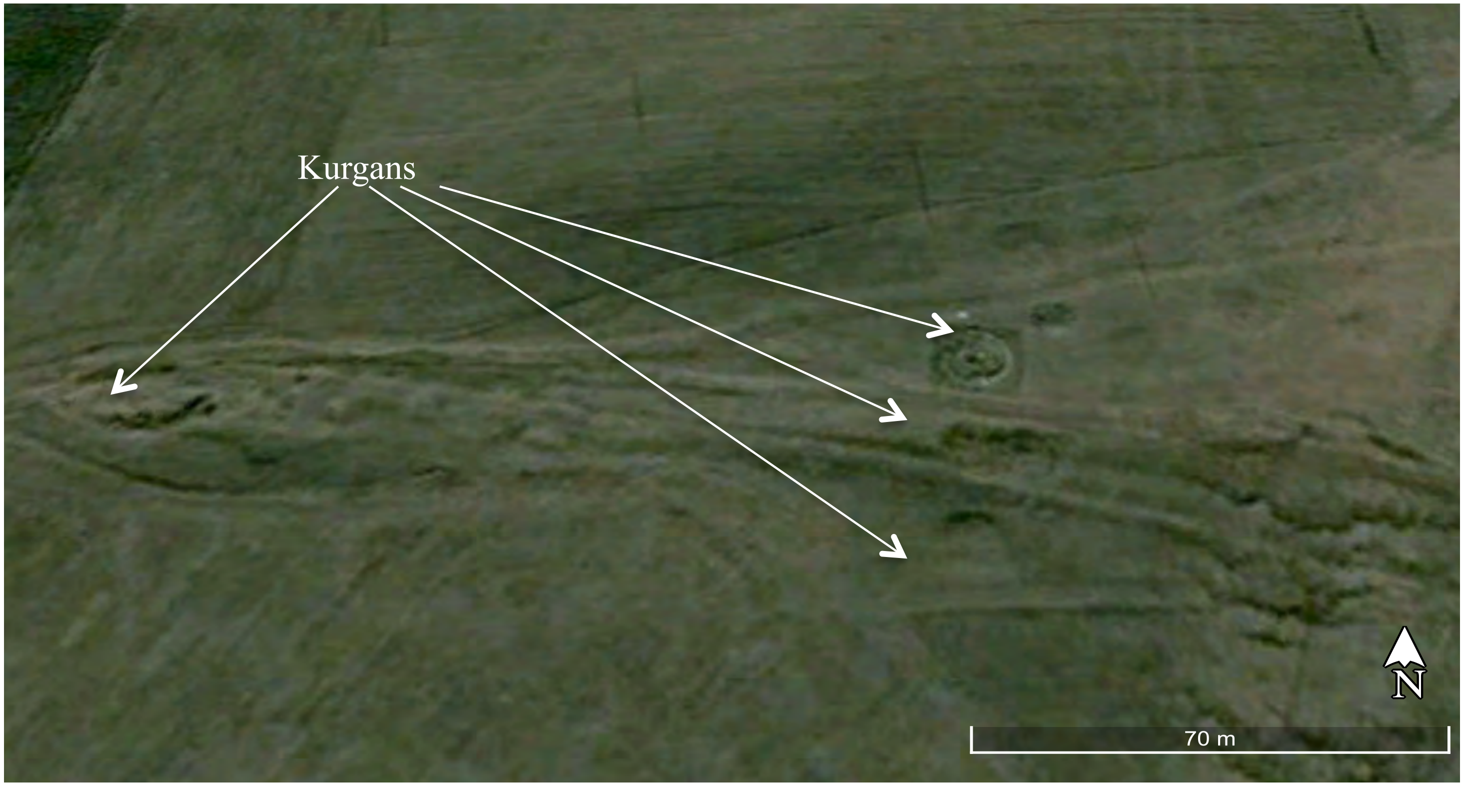


Figure 6-33: Satellite image of the Gegharot kurgans showing the kurgans (Map data: Google, DigitalGlobe)

Figure 6-34: Satellite image of Gegharot fortress and kurgans and surrounding landscape (Map data: Google, DigitalGlobe)

Phenomenological overview: The fortress is located on an imposing, steep grassy slope with a commanding view of the surrounding landscape, as well as limited visibility of Mt. Aragats. The site is visible from far away on the flat land to the west, east, and south, while foothills north limit its visibility in that direction. The steep hillside makes accessibility difficult. The fortress here is built of large, uncut stones stacked haphazardly atop each other, with no evidence of ashlar masonry or adornment as at later sites. However, the fortress's large size and its position atop an imposing hillside are intimidating and impressive. From the fortress, the Gegharot Kurgans (below) are clearly visible.

Gegharot Kurgans

Time Period: Late Bronze, Middle Iron

Type of Site: Cemetery

Location: 40º41'53.67" N, 44º13'49.95" E

Elevation: 2,065 meters

Phenomenological overview: Located on flat ground not far from Gegharot Fortress, the kurgans are also located at the base of a hill. This, along with their lack of elevation relative to their surroundings, significantly limits their visibility. Mt. Aragats is blocked from view by the hill directly to the south. However, the kurgans have good visibility of mountains to the northeast. It is important to note that as the kurgans have been excavated (Smith et al. 2009), the mounds themselves have been removed, leaving behind only some of the stones used to build them. Thus, while some of the kurgans are impressively large in diameter, it is difficult to draw any conclusions about their technological skill or emotional impact.

Hnaberd Fortress

Type of Site: Fortress, settlement, cemetery

Time Period: Late Bronze, Middle Iron

Location: 40º37’00.33” N, 44º09’12.87” E

Elevation: 2,324 meters

Background: Hnaberd Fortress is located on a steep promontory at the base of Mt. Aragats. Originally occupied in the Late Bronze Age and continuing into the Early Iron Age, the site contains extensive fortifications, a single terrace on the east and west slopes, and a small town to the south, down a gentle slope from the fortress. The fortress has been excavated in the past (Adelyan and Kafadaryan 1996; Adzhan et al. 1932; Khachatrian 1974) and was surveyed as part of Project ArAGATS (Smith et. al. 2009; Figure 6-35—6-38).

Phenomenological overview: This site is one of the largest and most impressive of all of those surveyed. The site is located on the slopes and on top of an enormous and steep grassy hill at the base of the Mt. Aragats foothills. Due to the size and steepness of the hill, accessibility is difficult. When viewed from the north, northeast or northwest, the most likely directions of approach, Mt. Aragats appears to loom over the site’s comparatively smaller hill. The site itself is large, stretching across the hilltop and also onto the slopes of the higher foothills, and includes both a fortress complex and burials. Throughout the site, striking views of the surrounding landscape and of Mt. Aragats are

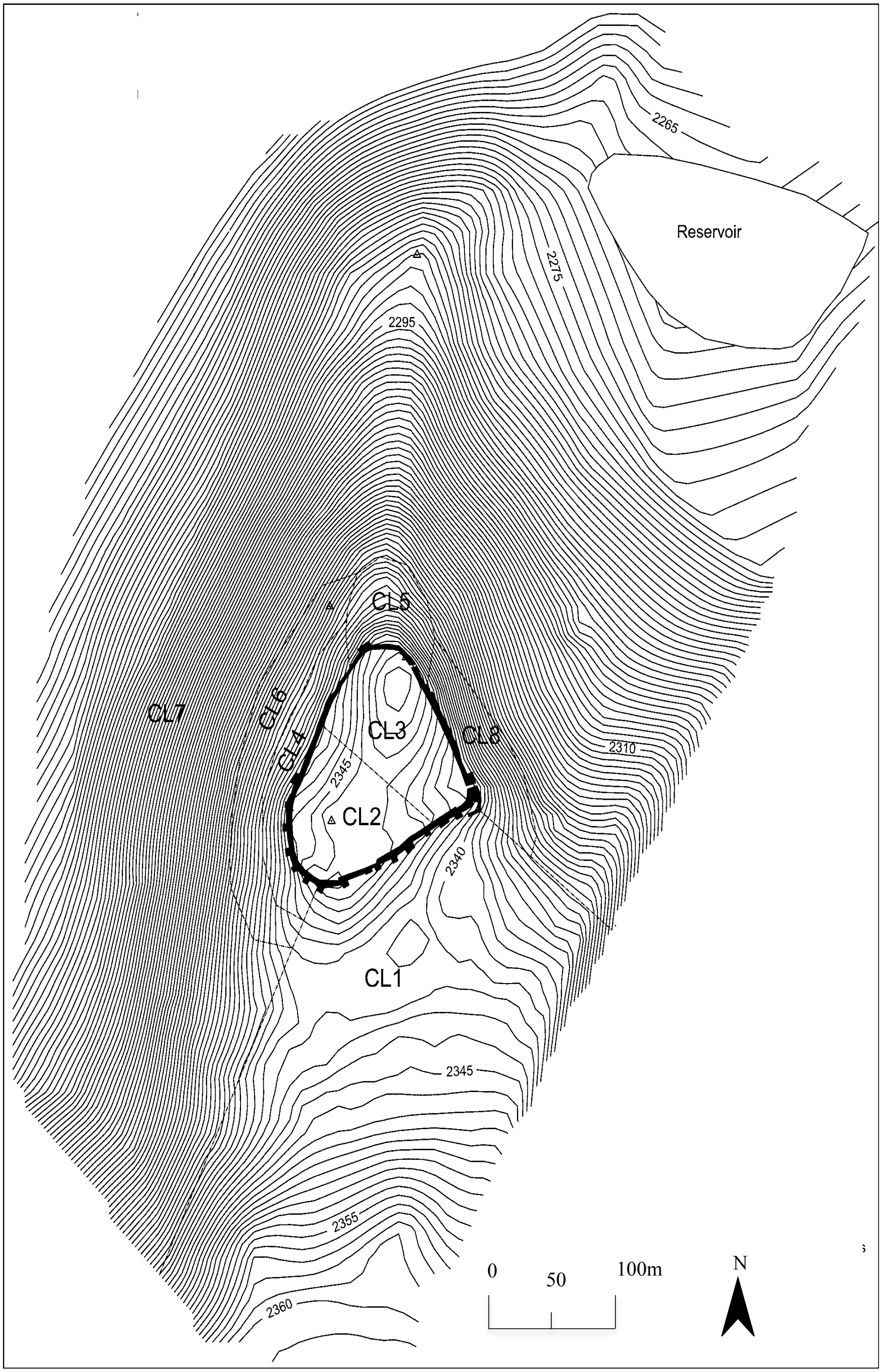


Figure 6-35: Site plan of Hnaberd Fortress (adapted from Smith et al. 2009:Plate 28)

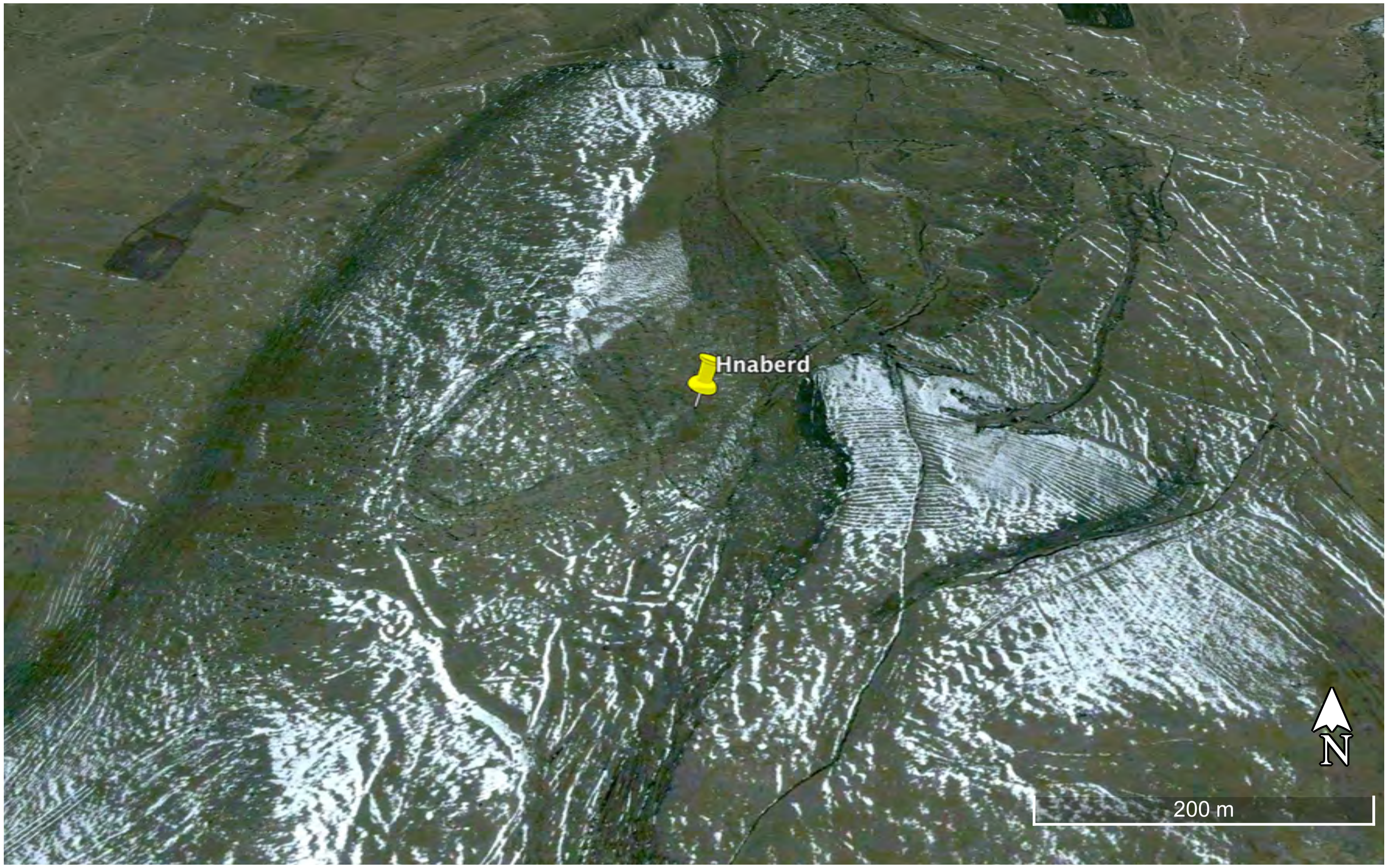


Figure 6-36: Satellite image of Hnaberd (Map data: Google, DigitalGlobe)

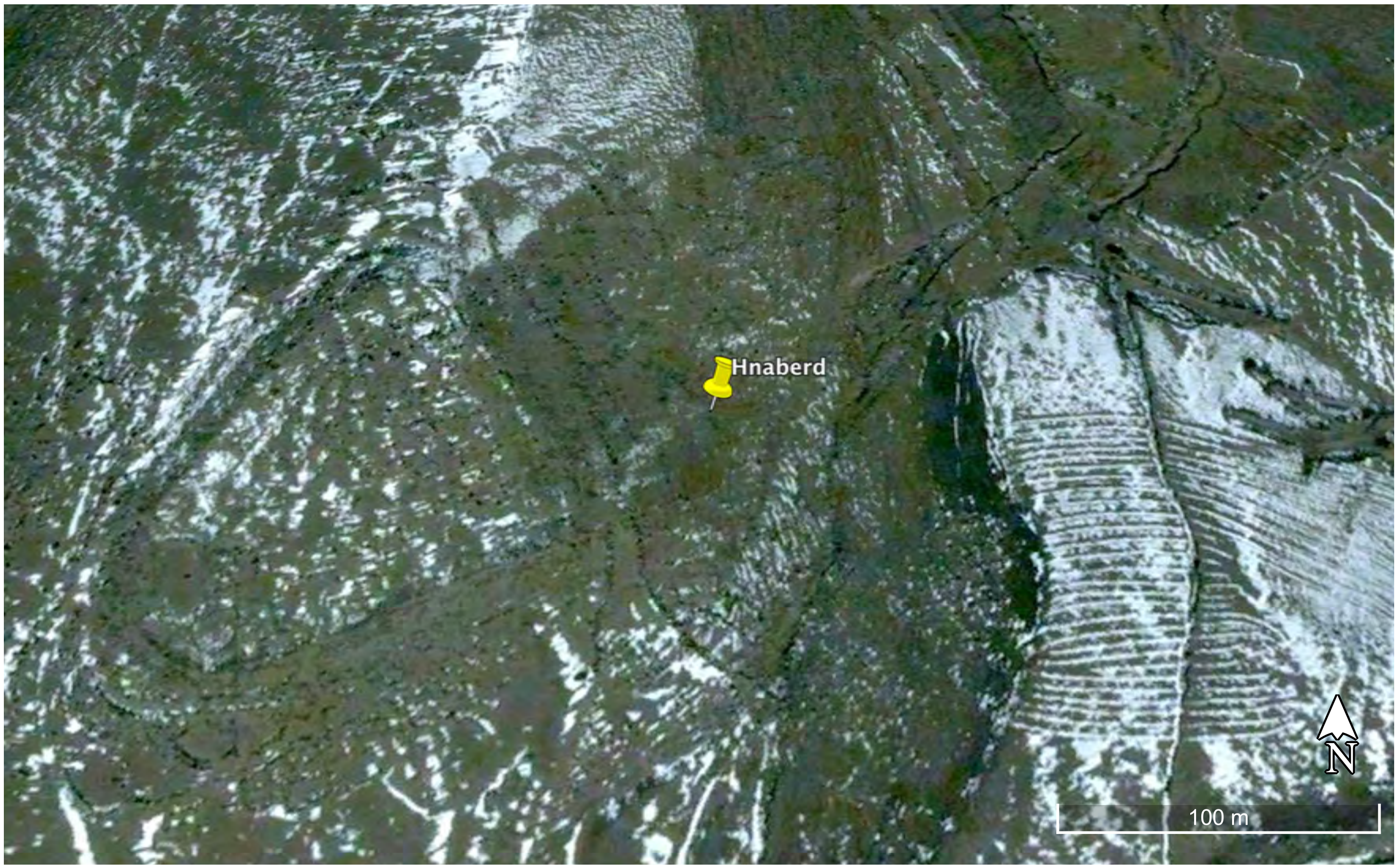


Figure 6-37: Satellite image of Hnaberd showing architecture (Map data: Google, DigitalGlobe)

Figure 6-38: Satellite image Hnaberd and surrounding landscape (Map data: Google, DigitalGlobe)

present. In the past, the spatial association between the burials and the fortress, and the visual association between the hill and Mt. Aragats, would have likely reinforced this site's role as a place of significance on the landscape. Additionally, the size of the hill and the fortress are intimidating, but also evoke a sense of awe and wonder.

Karmir Blur

Time Period: Urartian

Type of Site: Fortress

Location: 40º09'09.40" N, 44º27'04.46" E

Elevation: 907 meters

Background: Also known as Teishebai URU, the fortress site of Karmir Blur was founded by Rusa II during the reestablishment period (Figures 6-39—6-42). Indeed, its foundation marked one of the most significant developments of Rusa's reestablishment, moving the empire's Armenian capital from Erebuni, which was abandoned, to this new location. This is evidenced by the fact that many artifacts originally from Erebuni were found here (Smith 2003). The site combined the functions of the previous political center (Erebuni) with the previous economic center (Argishtihinili). Karmir Blur is also the first Urartian site at which systematic excavations were carried out, by Boris B. Piotrovskii's Russian team in the mid-twentieth century (Piotrovskii 1950, 1952, 1955, 1960, 1970), and remains one of only a few fortresses where domestic contexts have been excavated (Martirosjan 1961; Stone 2012).

Figure 6-39: Site plan of Karmir Blur (adapted from Smith 2003:Figure 27)

Figure 6-40: Satellite image of Karmir Blur (Map data: Google, DigitalGlobe)

Figure 6-41: Satellite image of Karmir Blur showing architecture (Map data: Google, DigitalGlobe)

Figure 6-42: Satellite image of Karmir Blur and surrounding landscape (Map data: Google, DigitalGlobe)

Phenomenological Overview: Located on a relatively steep grassy mound, Karmir Blur consists of a hilltop fortress and a lower town directly at the base of the mound. The slope is gentle in the direction of the lower town, to the north, and accessibility between the lower town and the upper town is fairly easy. The west and southwest sides of the mound have relatively steep slopes, while to the east, the mound ends at a cliff that drops down into a ravine, through which the Razdan River runs. This serves as an effective barrier to access from the eastern side. The site also has large walls with basalt cyclopean masonry, on par with other Urartian sites, and has an impressive view of Mt. Ararat to the west.

Khojabagher

Time Period: Late Bronze Age

Type of site: Cemetery

Location: 40º18’40.56” N, 44º21’29.61” E

Elevation: 1,212 meters

Background: Khojabagher consists of Late Bronze Age tombs with stone tumuli surrounded by cromlechs, stone circles used to mark burials (Figures 6-43—6-45). Six total tombs were found (Tumanyan 1989, 1991, 1997). These tombs are rather difficult to distinguish in the present day (Badalyan and Avetisyan 2007).

Phenomenological overview: This was one of the sites with the least emotional impact. Located on a gentle slope and surrounded by otherwise flat land, the site consists of a number of mound burials. No striking views or noteworthy natural features are present nearby. The burials themselves are largely unimpressive today, and would be

Figure 6-43: Satellite image of Khojabagher (Map data: Google, DigitalGlobe)

Figure 6-44: Satellite image of Khojabagher showing the location of the kurgans (Map data: Google, DigitalGlobe)

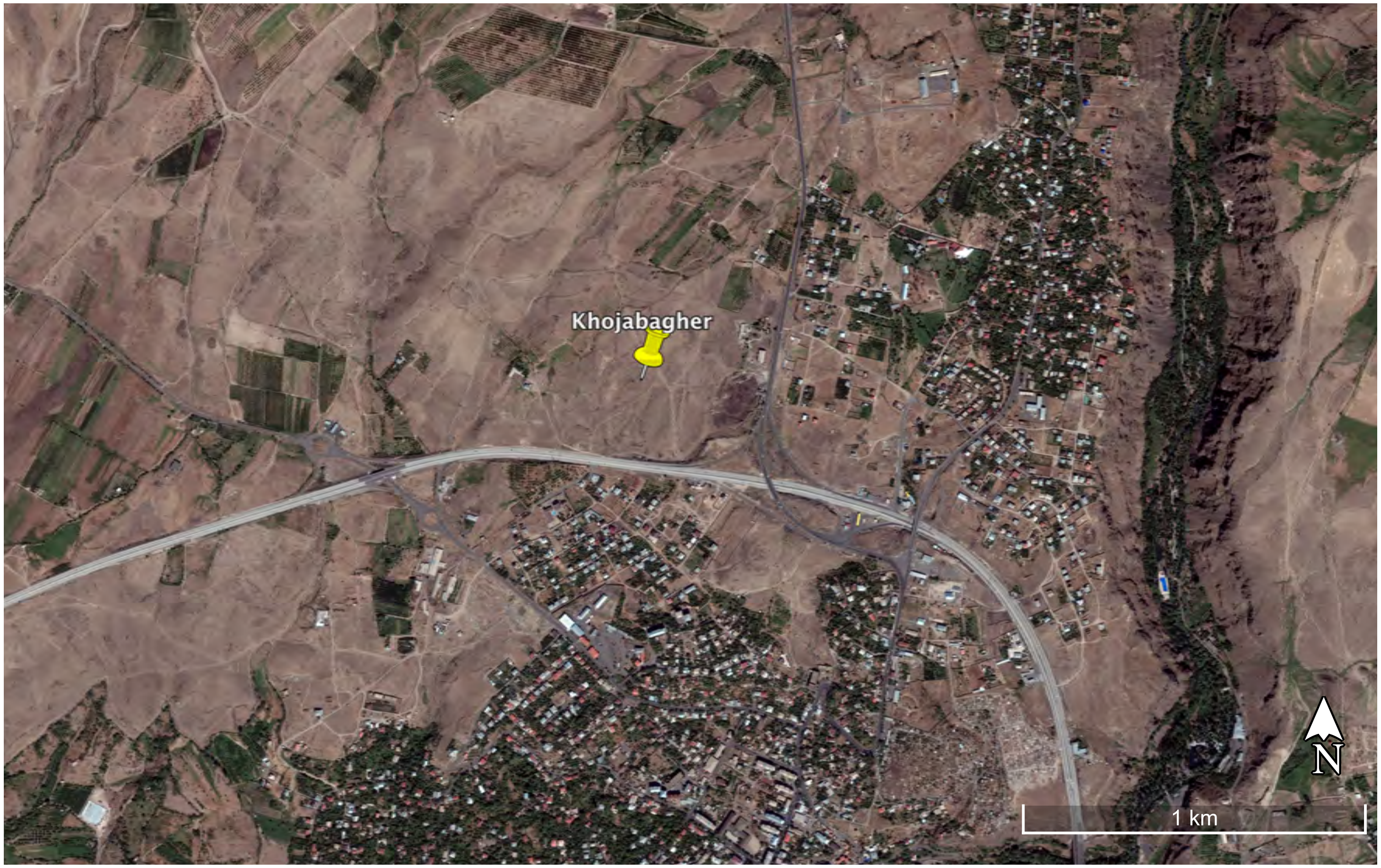


Figure 6-45: Satellite image of Khojabagher and surrounding landscape (Map data: Google, DigitalGlobe)

difficult to find for anyone who was not already aware they were there and knew what to look for. However, time and human activity has likely degraded them, and their appearance may well have been quite different and more distinctive in the past. This makes it difficult to envision their emotional impact or the technical skill that went into their construction. Some of them have large stones and likely required the movement of a great deal of earth to build, which would have been impressive and imposing in the past. In addition, the mere fact that they were burials likely would have evoked strong emotions, particularly awe and, perhaps, fear. If, like today, only those who were familiar with them could find them in the past, this would have created a sense of intimacy for visitors, linking them to their knowledge of the landscape and the past.

Kuchak I

Time Period: Early Bronze Age, Late Bronze Age, Early Iron Age

Type of site: Cemetery (LBA, EIA), Fortress (EIA)

Location: 40º32'47.26" N, 44º25'03.94" E

Elevation: 1,869 meters

Background: Located on a terrace and promontory on the western bank of the Kasakh River (Figures 6-46, 6-47), this site includes an Early Bronze Age settlement, Late Bronze Age burials, an Early Iron Age cyclopean fortress, and Early Iron Age burials (Martirosjan 1969; Petrosyan 1985, 1992). The burials are large earthen mounds (Badalyan and Avetisyan 2007).

Phenomenological overview: Situated on a hill with Mt. Aragats to the west, a high ridge directly to the east, and the Kasakh River flowing nearby, this site is at a

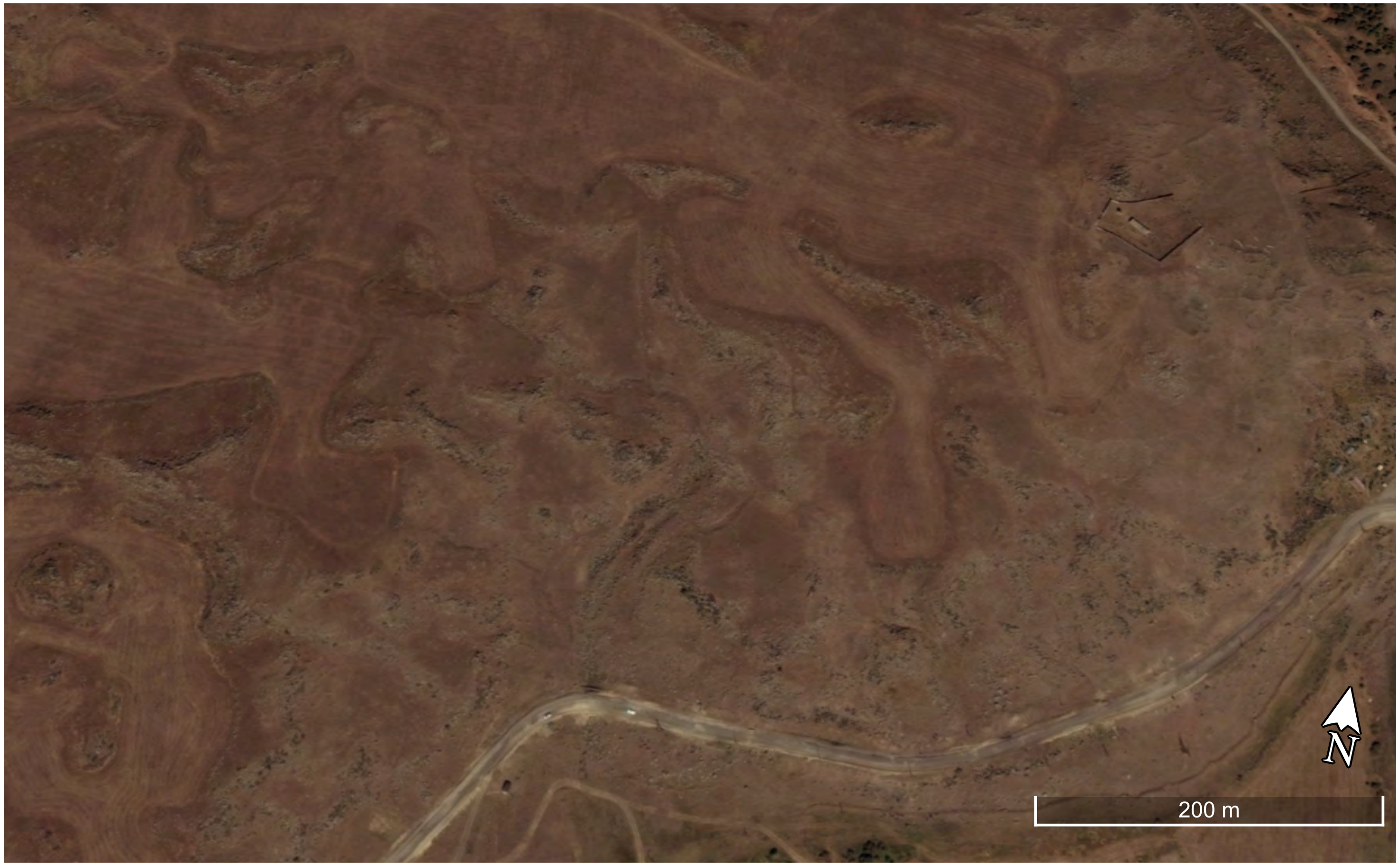


Figure 6-46: Satellite image of Kuchak 1 (Map data: Google, DigitalGlobe)

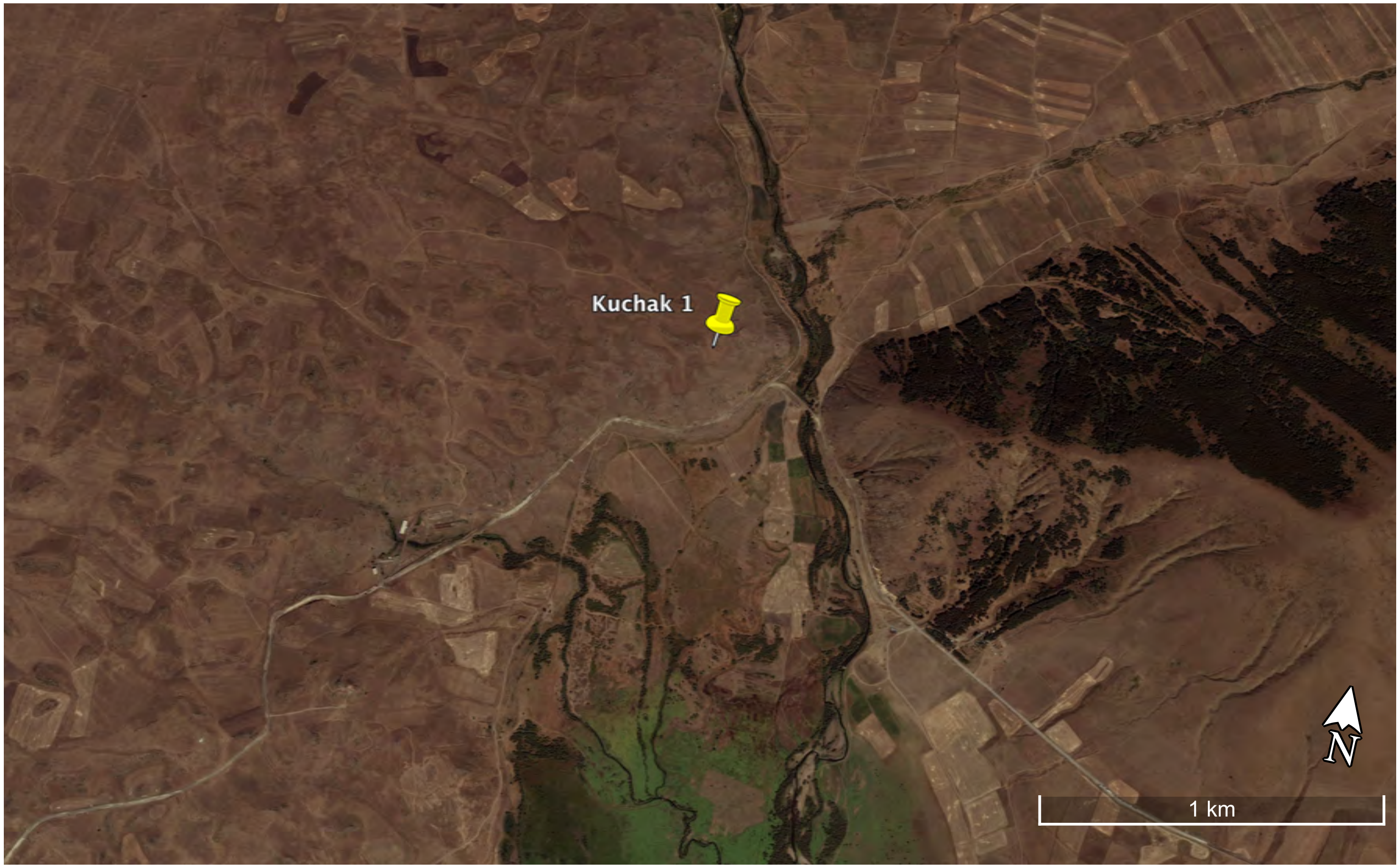


Figure 6-47: Satellite image of Kuchak 1 and surrounding landscape (Map data: Google, DigitalGlobe)

particularly scenic location, with clear views of many natural features in the vicinity. The hill itself is typical of the region, moderately high and moderately steep, but the site is particularly noteworthy for the large uncut stones used to construct the walls of the fortress, which are impressive and awe-inspiring. The site is also quite large, with burials, the fortress, and various other structures. The burials are located on the relatively gentle southern slope of the hill, while the fortress is located above the steep eastern slope. Mt. Aragats comes into and out of view while walking around the site. In generally the site is quite visible and accessible over short to medium distance, with the exception of the eastern direction, where it is immediately blocked by several large ridges.

Kuchak 2

Time Period: Early Bronze Age, Late Bronze Age-Early Iron Age, *Middle Iron Age*

Type of site: Cemetery (LBA-EIA, *MIA*), Fortress (LBA-EIA)

Location: 40° 31'37.6", 44° 23' 06.0"

Elevation: 1,972 meters

<u>Background:</u> The site occupies a small hill on the eastern flank of Mt. Aragats (Figures 6-48—6-50). It consists of an Early Bronze Age settlement, a cyclopean fortress and cemetery from the Late Bronze to Early Iron Ages, and possibly a Middle Iron Age cemetery as well (Badalyan and Avetisyan 2007; Martirosjan 1969; Petrosyan 1985, 1992).).

Figure 6-48: Satellite image of Kuchak 2 (Map data: Google, DigitalGlobe)

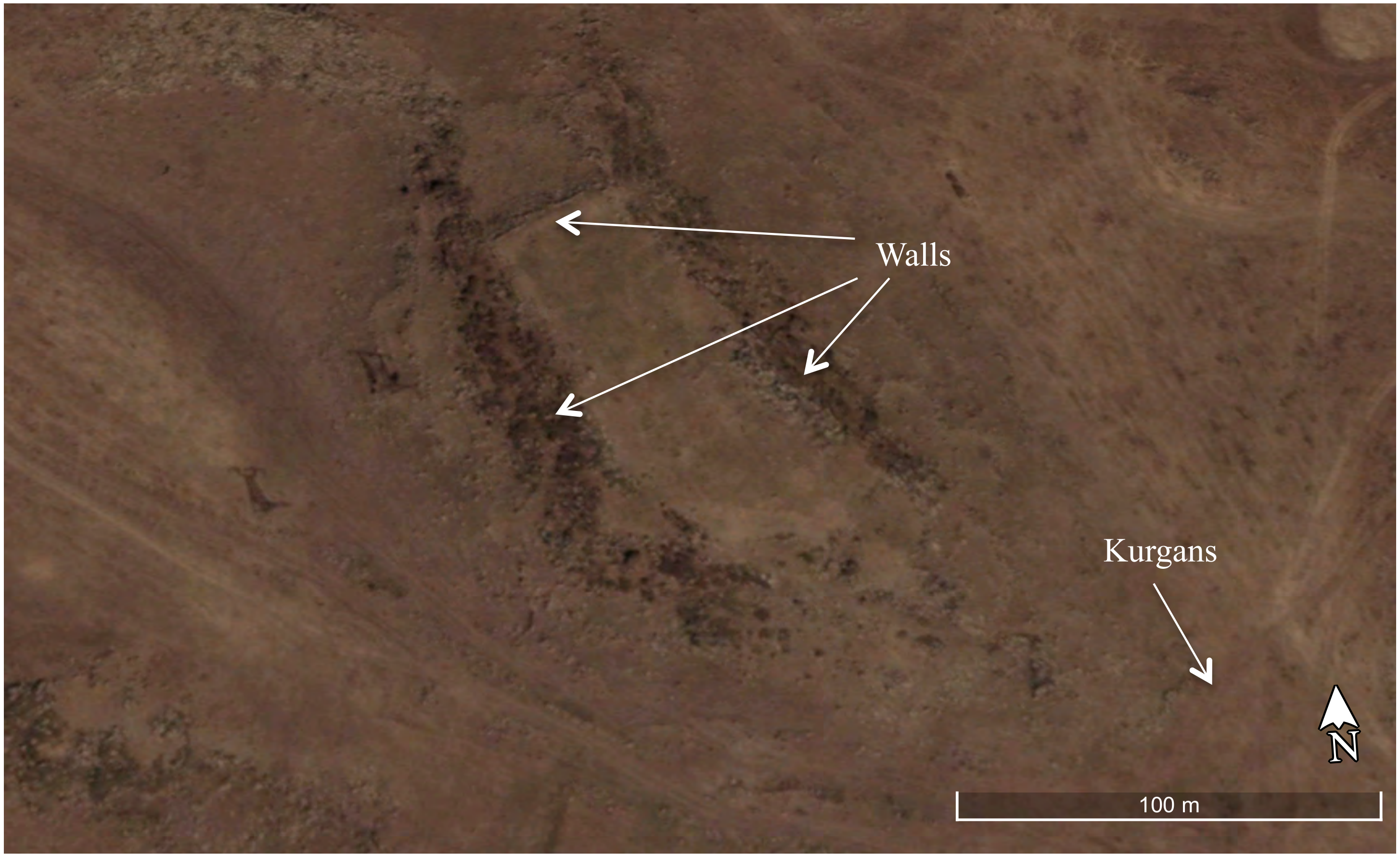


Figure 6-49: Satellite image of Kuchak 2 showing architecture (Map data: Google, DigitalGlobe)

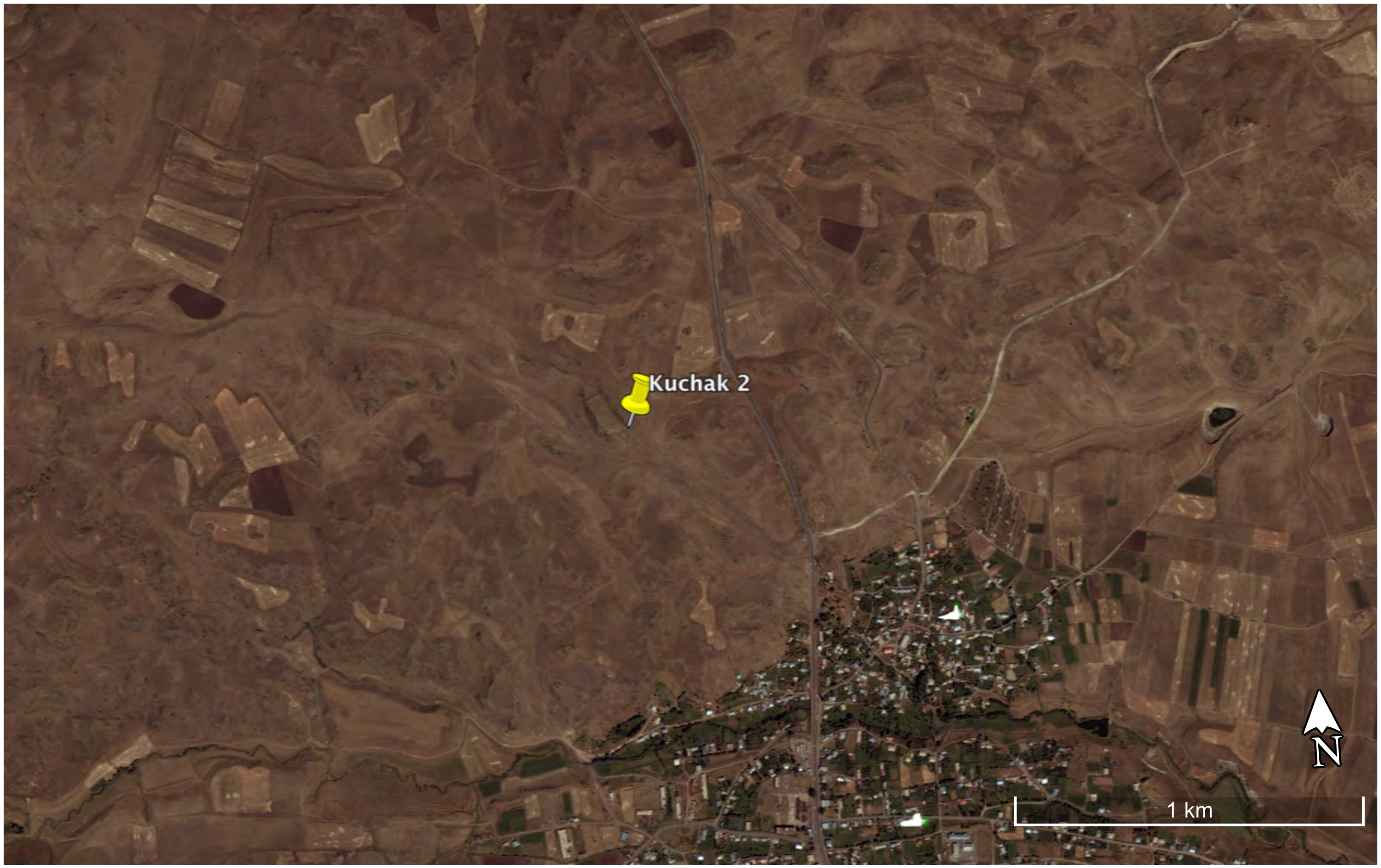


Figure 6-50: Satellite image of Kuchak 2 and surrounding landscape (Map data: Google, DigitalGlobe)

Phenomenological overview: Like Kuchak 1, this is a hilltop fortress site that employs cyclopean masonry and that also has associated burials. However, this site is much smaller than Kuchak 1, and the hill is less steep and imposing. Located directly at the base of Mt. Aragats, all parts of the site have clear and striking views of the mountain. The mountain looms over the site and feels immediate and noticeable. Beyond that, little about the hill inspires strong emotion. The burials are quite small and in general involved little technical skill. The site is visible and accessible over short to medium distances in all directions; over longer distances, it is blocked from visual and physical access by hills and by Mt. Aragats.

Metsamor

Time Period: Middle Bronze Age – Middle Iron Age

Type of Site: Settlement, fortress

Location: 40º07’34.45” N, 44º11’13.37” E

Elevation: 860 meters

Background: Metsamor was initially occupied as a small settlement or “camp” in the Middle Bronze Age (Greene 2013), though Kohl (2007) postulates that the site may also have had Early Bronze Age occupation that is currently buried beneath later layers. The fortress at Metsamor was founded in the Late Bronze Age as part of a wider trend across Armenia, including on the Tsaghkahovit Plain and the Lake Sevan region, of locating settlements in fortified hilltop settlements (Badalyan et. al. 2003). Extensive excavations have been carried out (Khanzadian 1995; Khanzadian et al. 1973). Unlike most of these fortresses, however, it was located on the plain on a relatively low hill, rather than on the slopes immediately adjacent to the plain (Smith 2003; Figure 6-51—6-54). The site was later occupied by the Urartians, who destroyed the previously existing fortress and built their own (Smith 2003). A small tributary of the Kasakh River runs nearby.

Phenomenological overview: Located on a low hill on otherwise fairly flat ground, Metsamor is quite visible from the surrounding landscape as a result of being the highest point in the immediate vicinity. However, the slope is gentle, and the terrain is generally easily navigable. The site has the remains of fortification walls, which were made of uncut stone blocks piled atop each other. While its architecture is not particularly noteworthy, a number of stone carved statues in the image of phalluses and, in one case, a dragon were found at this location. In the past, these statues likely would have been intimidating and awe-inspiring, particularly if they carried ritual significance. Other than this, however, the site lacks much of the dramatic natural or built features associated with many of the other sites.

Oshakan

Time Period: Urartian

Type of Site: Fortress, settlement, cemetery

Location: 40º15’40.40” N, 44º19’15.71” E

Elevation: 1,067 meters

Background: Oshakan Fortress was founded by the Urartians as a minor outpost on the Ararat Plain, and served to expand their influence into the plain (Esajan &

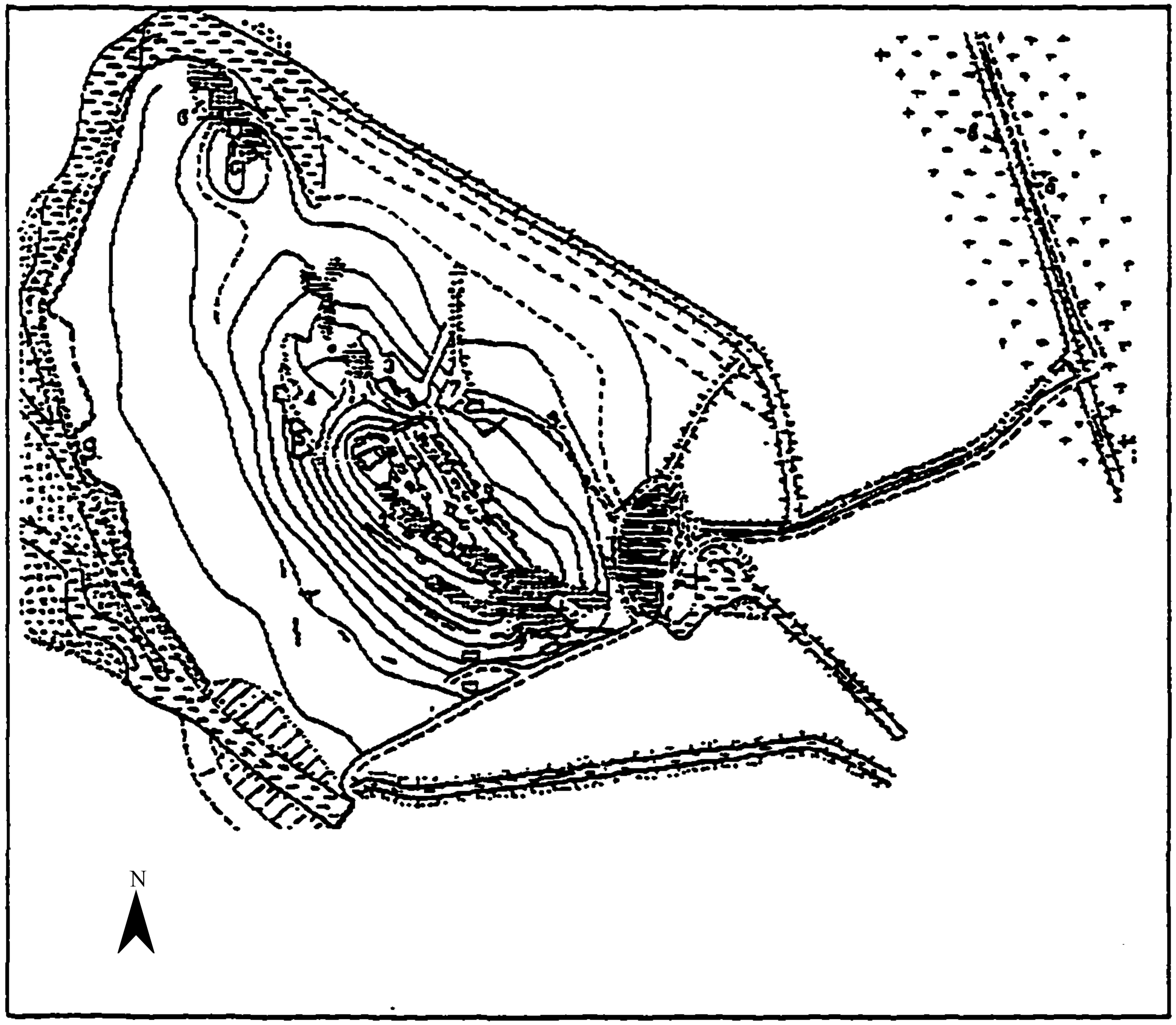


Figure 6-51: Site plan of Metsamor (adapted from Smith 1996:Figure 5.22)

Figure 6-52: Satellite image of Metsmaor (Map data: Google, DigitalGlobe)

Figure 6-53: Satellite image of Metsamor showing architecture (Map data: Google, DigitalGlobe)

Figure 6-54: Satellite image of Metsamor and surrounding landscape (Map data: Google, DigitalGlobe)

Kalantarjan 1988; Kalantarjan et al. 2003; Smith 2012; Figures 6-55—6-58). The site also contains a lower settlement and a cemetery with kurgan burials.

Phenomenological overview: The site is located at the top of a steep, grassy hill, which is difficult to climb and imposing. This slope limits accessibility between the lower town, which is on flatter ground, and the fortress at the top of the hill. The top of the hills also has striking views of the surrounding landscape, including Mt. Aragats, Mt. Ararat, Mt. Ara, and other mountains. The site has impressive walls with rectangular cut blocks; while there was no sign of ashlar masonry, these blocks are more finely cut and fit better together than those at pre-Urartian sites in the same region, indicating a greater degree of technical skill. The masonry, and the fortress's location atop such an imposing slope, are impressive and awe-inspiring. The hill itself is also intimidating, while the views of the surrounding landscape evoke a sense of wonder and admiration.

Tsaghkahovit

Time Period: Early Bronze Age, Late Bronze Age, Late Urartian

Type of Site: Fortress, settlement, cemetery

Location: 40º38'10.16" N, 44º13'55.26" E

Elevation: 2,151 meters

Background: The site of Tsaghkahovit is located on a hill in the northern foothills of Mt. Aragats, and has been recorded by excavation and survey in the twentieth century (Adelyan and Kafadaryan 1996; Adzhan et al. 1932; Khachatrian 1974). Originally occupied during the Early Bronze Age, it was abandoned and then reoccupied in the Late Bronze Age as part of a broader trend on the Tsaghkahovit Plain and throughout Armenia

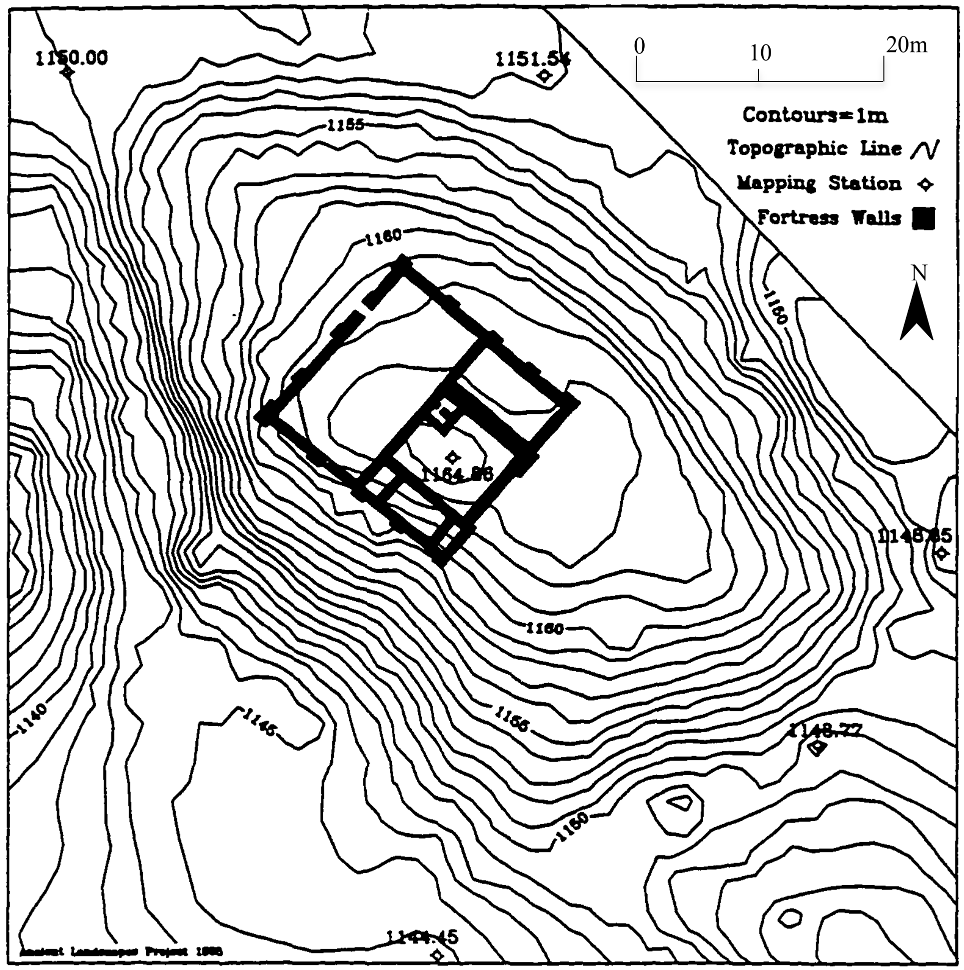


Figure 6-55: Site plan of Oshakan (adapted from Smith 1996:Figure 6.10)

Figure 6-56: Satellite image of Oshakan (Map data: Google, DigitalGlobe)

Figure 6-57: Satellite image of Oshakan showing architecture (Map data: Google, DigitalGlobe)

Figure 6-58: Satellite image of Oshakan and surrounding landscape (Map data: Google, DigitalGlobe)

of locating settlements in hilltop fortress complexes. The development of these fortresses is associated with the emergence of complex polities on the Tsaghkahovit Plain (Khatchadourian 2014). The site also has a cemetery and lower town (Badalyan and Avetisyan 2007; Smith et. al. 2009; Figure 6-59-6-62).

Phenomenological overview: The fortress is located on a moderately high hill, though not as large as comparable sites in the area, and the fortress itself is also not as large. Thus, the site is not as intimidating or impressive as other nearby locations (Gegharot, Hnaberd, Oshakan). While the steep slope makes access difficult, the hilltop is relatively accessible, compared to other hilltop fortresses, particularly from the south. The site has good visibility looking north and is somewhat prominent when viewed from the flat land in that direction, but it also blends in with the foothills of Mt. Aragats directly to the south. Mt. Aragats itself is barely visible from some locations, but most of it is blocked by the foothills. However, several burials are located at the base of the hill, which in the past likely would have had an emotional impact on visitors, reminding them that this is a significant, long-term place on the landscape.

Summary of Phenomenological Results

While the phenomenological experience of sites in the Aragats region has some similarities to the Van region, many differences gave this portion of Urartu's territory a unique character (Table 6-1).

Similar sites in the Van region, sites here are generally located in high places. Unlike in Van, however, these high places almost universally take the form of grassy hills rather than rocky cliff sides. This may in part be due to the fact that such rocky

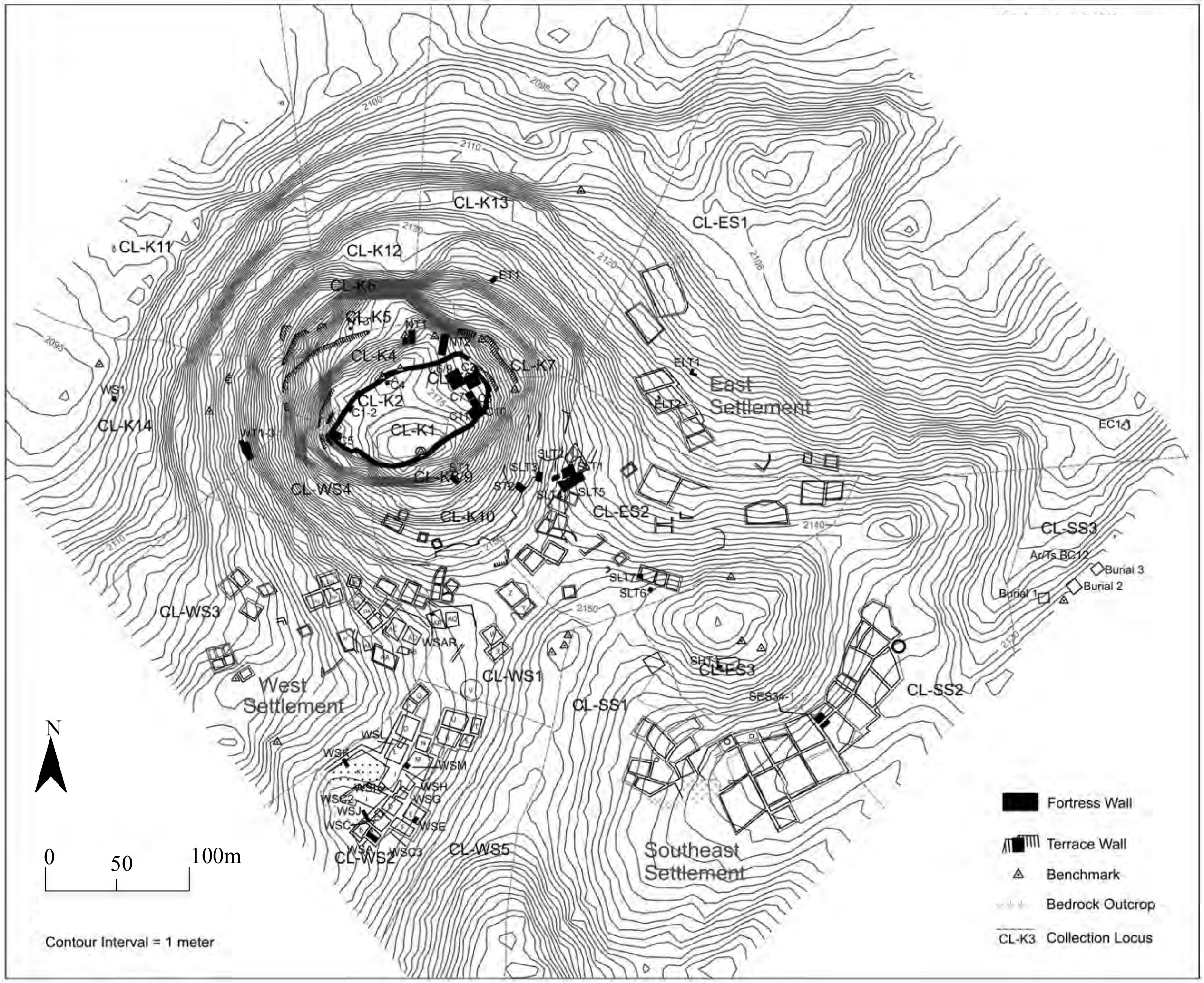


Figure 6-59: Site plan of Tsaghkahovit Fortress (adapted from Smith et al. 2009:Plate 32)

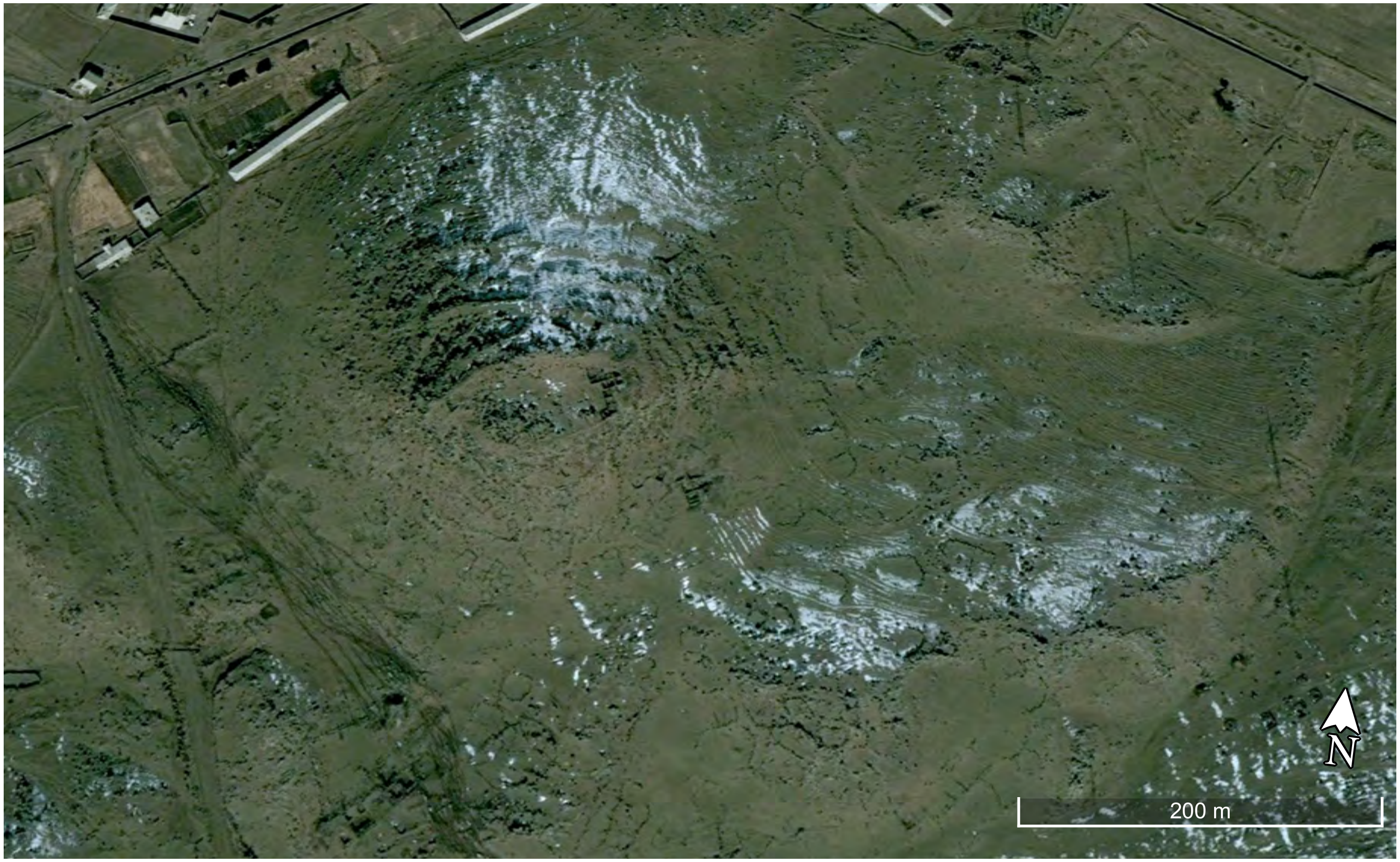


Figure 6-60: Satellite image of Tsaghkahovit (Map data: Google, DigitalGlobe)

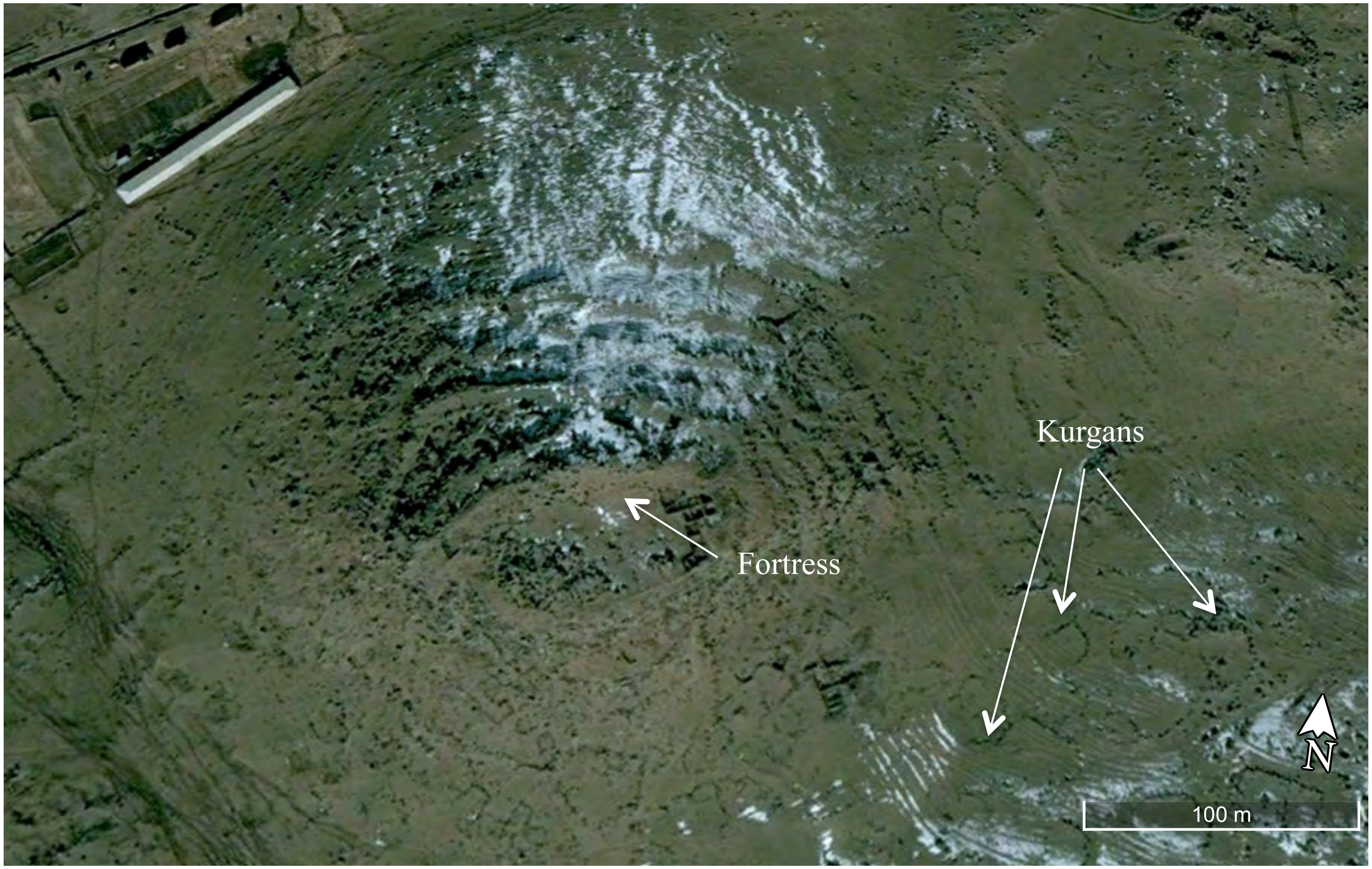


Figure 6-61: Satellite image of Tsaghkahovit showing architecture (Map data: Google, DigitalGlobe)

Figure 6-62: Satellite image of Tsaghkahovit and surrounding landscape (Map data: Google, DigitalGlobe)

Site	Visual accessibility	Visibility of topographic features	Physical accessibility	Skill and technology of cultural features	Emotional Impact of cultural features	Emotional impact of natural features immediately associated with the site	Visibility within the site	Physical accessibility within the site	Extent to which the site incorporates natural features	Acoustic Impact	Tactiile Impact'
Agarak	3	5	4	2	1	3	5	4	5	1	1
Aramus	5	5	3	3	3	3	3	3	5	1	1
Argishtihinili	4	5	3	3	3	3	4	4	3	3	1
Dovri Berd	3	3	2	3	3	2	1	3	5	1	2
Erebuni	5	5	2	5	5	5	2	4	5	3	1
Gazanots 1	2	3	4	3	3	5	5	5	3	4	5
Gazanots 2	3	5	3	2	2	5	3	5	4	4	1
Gegharot Fortress	4	3	2	3	3	3	4	4	5	1	1
Gegharot Kurgans	3	2	5	N/A	N/A	1	5	5	1	1	1
Hnaberd	4	5	1	3	4	4	3	2	5	1	1
Karmir Blur	4	5	3	4	3	3	3	4	3	1	2
Khojabagher	2	2	5	2	2	1	5	5	1	1	1
Kuchak 1	4	4	3	3	3	4	3	3	5	1	1
Kuchak 2	4	4	3	3	3	3	4	3	5	1	1
Metsamor	3	5	3	3	4	2	3	4	3	1	1
Oshakan	5	5	4	3	3	4	2	2	4	1	1
Tsagkhahovit	4	3	2	3	4	3	3	3	5	1	1
Average	3.65	4.06	3.06	3	3.06	3.18	3.41	3.71	3.94	1.59	1.35
Range	3	3	4	3	4	4	4	3	4	3	4

Table 6-1: Phenomenological characteristics of sites in the Aragats region

outcroppings are less common in this landscape than in the Van region, though this is difficult to measure objectively; however, Smith and colleagues (2009), who are deeply acquainted with the region, note the presence of many rocky landscape features. Thus, this pattern may reflect a combination of environmental differences and deliberate human choice. The only site in this region with a significant rocky component is Agarak, which is located on a small rock outcropping. The rock of this outcropping provides a striking visual texture that makes the site more visible and causes it to stand out from the surrounding landscape. However, it does not present a significant barrier to physical access or make the site more imposing. At Agarak, features carved into the stone, including those from the Early Bronze Age, clearly indicate an engagement with the living rock. However, this engagement is generally not present at the other sites, again likely due to a combination of environmental factors (fewer rocky sites available) but also human choice (when there were rocky areas nearby, people still chose grassy locations instead). With the exception of Agarak, which has a rock-cut tomb, none of the sites in the Aragats region have emotionally impactful stone features such as tunnels, rock-cut stairs or tombs, or overhangs. The hills here usually have smooth sides with relatively gentle slopes, compared to the sheer vertical faces found at the cliff-top sites in Van. Some of these hills are intimidating in their height, the time it takes to climb them

Feelings of fear and anxiety are relatively uncommon at sites in the Aragats region. These sites generally do not have dramatic edges or long drops, and thus it is fairly comfortable to walk around them. While it certainly could be dangerous to fall down some of these hills, in general they do not evoke the same visceral fear as a straight drop. The sites also tend to be fairly bland in their visual experience. The tops of these hills are fairly flat and smooth, with few or no natural rock formations, and with the exception of Agarak, little in the way of unusual colors or textures is present. The emotional experience of these sites is thus generally calm, peaceful and uncomplicated. That said, many of these sites are in striking, beautiful locations with views of the surrounding landscape, and these views evoke feelings of wonder and awe. Additionally, first impressions could sometimes be misleading. Though the sites in the Aragats region often seem from a distance to be located on relatively gentle slopes, rather than sheer cliffsides, many of these hills are quite high and take a lot of time and effort to ascend. Indeed, many of these sites seem fairly accessible from a distance, but I was often surprised by how long it took to reach them and how exhausting the climb was.

These sites' locations in high places means they are highly visible in at least one direction, and in fact they often have a high degree of visibility in all or most directions. Sites such as Hnaberd, Tsagkhahovit, and Oshakan are located atop hills that are among the highest places in their vicinity, and thus have views over long distances in all directions. Not all sites, however, are located in high places or are visually prominent. Gazanots 1 and 2, the Gegharot Kurgans, and Khojabagher and are all located on essentially flat ground, while Agarak and Metsamor are located on low hills or outcroppings. Even these sites, however, have a high degree of visibility of surrounding natural features—namely Mt. Ararat and Mt. Aragats. From many sites, on a clear day, Mt. Ararat would appear to take up almost the entire horizon. The immediacy of mountains is one of the most emotionally impactful aspects of sites in the Aragats region. The high visibility of natural features, combined with the relatively neutral visual experience of the sites themselves, means that the primary sensory experience of these sights is primarily visual and directed outward, at the landscape, rather than inward toward the site. This pattern may well be at least partly the result of patterns in the broader landscape and in the types of site locations available, rather than decisions on the part of builders. However, even sensory patterns that are unintentional can have a strong impact on the experience of visitors and inhabitants of a site.

Sites in the Aragats region generally demonstrate a low degree of architectural skill. This is in part due to the high prevalence of pre-Urartian sites in the Aragats region; these sites exclusively used uncut masonry. However, even Urartian sites such as Aramus, Argishtihinili, Dovri and Oshakan used mainly uncut or semi-ashlar masonry. Ashlar masonry and other high quality stonework and sophisticated built features are present only at Erebuni and Karmir Blur, but in general construction is less skilled than that in the Van Region.

Fortresses, Kurgans and Inscriptions

Fortresses, kurgans and inscriptions were also compared in this region (Table 6-2), as in Van. Of the six sites with kurgans, two are sites containing only kurgans, while four are sites where kurgans were found in association with other features, either a fortress or a settlement. These six sites are grouped together for comparison with nine sites that are purely fortresses. For phenomenological rankings, the fortresses scored higher on the majority of measures; in particular they are more visible, have greater skill and technology of cultural features, as well as greater emotional impact of cultural features. They also have greater visibility of topographic features and greater emotional impact of natural features immediately associated with the site. Even at sites with both

Type of Site		Visual accessibility	Visibility of topographic features	Physical accessibility	Skill and technology of cultural features	Emotional Impact of cultural features	Emotional impact of natural features immediately associated with the site	Visibility within the site	Physical accessibility within the site	Extent to which the site incorporates natural features	Acoustic Impact	Tactiile Impact
Fortresses	**Average**	3.78	4.33	2.78	3.11	3.22	3.22	3.22	3.56	4	1.78	1.56
	Range	3	2	3	1	1	3	3	3	2	3	4
Kurgans	**Average**	3.33	3.33	3.5	2.6	2.8	2.83	3.83	4	3.5	1.5	1
	Range	2	3	3	1	2	4	2	2	4	3	0
Inscription		5	5	2	5	5	5	1	3	5	1	2
Settlement		3	5	4	2	1	3	5	4	5	1	1

Table 6-2: Phenomenological characteristics of sites in the Aragats region by type of site

fortresses and kurgans, the fortresses tend to be more visible and more impressive. The one area in which kurgans ranked higher than fortresses was physical accessibility. In general, kurgans tend to be located on relatively flat ground, with few associated impressive natural features. This was in line with the cemetery in the Van region, but a surprising contrast to the general trend with kurgans throughout western Asia, which are typically located on the tops of ridges and hills, presumably to enhance visibility (Frachetti 2008, Reinhold and Korobov 2007). Unlike fortresses, which are imposing, intimidating, and difficult to climb, the kurgans are generally approachable and do not inspire strong emotion. The atmosphere at kurgan sites or kurgan parts of sites is generally calm and peaceful, which in the past may have encouraged visitors to contemplate those who were buried there. On the other hand, the presence of burials likely would have made the sites more emotionally charged than they appear today, particularly for those familiar with the individuals buried there.

Erebuni, the fortress with an inscription, is highly visible both in terms of accessibility and visibility of topographic features, though less accessible than the other sites. Not surprisingly, it scored 5 on both factors related to cultural features, due in part to the impressiveness of the inscription, as well as 5 for emotional impact of natural features associated with the site. Agarak, the settlement, scored lower than the other sites on visual accessibility, but higher on visibility of topographic features and physical accessibility. It scored lower on the skill and technology of cultural features and emotional impact of cultural features, and in the middle for emotional impact of natural features associated with the site. It is not surprising that Erebuni, one of the most important sites, is also one of the most impactful sites, nor is it surprising that a non-fortified settlement makes less of an impact, particularly in regards to cultural features. Its lack of fortification, however, makes it easily accessible.

Urartian vs. Pre-Urartian Sites

Pre-Urartian sites were also compared to Urartian sites (Table 6-3). Of the sites surveyed, nine were founded before Urartian times, while eight were founded by Urartians. Of the nine pre-Urartian sites, six have some traces of later Urartian occupation, but this was usually only in the form of small quantities of surface pottery fragments, rather than fortresses or burials; an exception is Agarak, which was founded in the Early Bronze Age and was later the site of an Urartian tomb. Surface pottery is not by itself strong evidence of occupation, as individual sherds can easily be transported from off-site by natural processes such as erosion, or by the movements of people and animals (Dunnell 1992; Fotiadis 1992). As a result, sites whose only evidence of Urartian occupation was a small number of pottery sherds, were still considered pre-Urartian. Agarak was also considered pre-Urartian as the tomb appears to have been an isolated, one-time usage of the site in Urartian times. Two sites—Gegharot Fortress and Hnaberd Fortress— were classified as Urartian, but it should be noted that some controversy exists here. Badalyan and Avetisyan (2007) consider Gegharot to have been a settlement and cemetery and Hnaberd to have been a fortress during the Middle Iron Age, the time period that corresponds to Urartu. Badalyan and Avetisyan do not elaborate on what they mean by “cemetery”, and Smith and colleagues describe only Iron II (Middle Iron Age/Urartian period) ceramics. Since many Urartian tombs are rock-cut tombs, not kurgans, and no kurgans were explicitly mentioned in the survey reports,

Time Period		Visual accessibility	Visibility of topographic features	Physical accessibility	Skill and technology of cultural features	Emotional Impact of cultural features	Emotional impact of natural features immediately associated with the site	Visual accessibility	Visibility of topographic features	Physical accessibility	Skill and technology of cultural features	Emotional Impact of cultural features	Emotional impact of natural features immediately associated with the site
Pre-Urartian	**Average**	3.11	3.67	3.56	2.63	2.75	3	3.11	3.67	3.56	2.63	2.75	3
	Range	2	3	3	1	3	4	2	3	3	1	3	4
Urartian	**Average**	4.25	4.5	2.5	3.38	3.38	3.38	4.25	4.5	2.5	3.38	3.38	3.38
	Range	2	2	3	2	2	3	2	2	3	2	2	3

Table 6-3: Phenomenological characteristics of sites in the Aragats region by time period

Gegharot was classified as an Urartian fortress for this analysis. Smith and colleagues (2009) are slightly skeptical about Gegharot and Hnaberd as Urartian sites but acknowledge that Iron II material is present at both sites. For purposes of this analysis they are considered Urartian.

Urartian sites in the Aragats region generally had a greater degree of emotional and sensory impact than pre-Urartian sites. They had greater visibility to the surrounding landscape and to significant natural features, more skilled cultural features, and more emotionally invocative natural and cultural features associated with the site. All of this is in line with the documented patterns of Urartian tendencies to build their sites in prominent locations and to use bombastic architectural styles. The increased skill of cultural features also points to improved technology during Urartian times compared to previous periods. The increased visibility of topographic features, however, is not something that has generally received a lot of focus in previous research, and is particularly interesting to note. Without further analysis, it is difficult to tell whether this is intentional or if it is simply the result of increased visibility overall. However, again, sensory patterns do not need to be intentional to be meaningful; people still would have noticed the increased visibility of natural features even if this was not the goal of the site's builders. Intentional or not, a high degree of visibility to natural features ties into what has previously been demonstrated about the Urartian imperial program, namely, its ideological foundations on the act of taming untouched natural landscapes. It also relates to the known tendency of Urartians to deify natural features. As in the Van region, views of significant mountains and bodies of water associated with deities may have created the sense that those deities were looking over the site or blessing it. Visibility of natural features also would have reminded visitors and inhabitants alike of the ruggedness and natural beauty of the landscape, and of the skill and determination necessary for Urartian rulers to tame and control this landscape.

One thing that was surprising was that Urartian sites were ranked as less physically accessible than pre-Urartian sites. This is unexpected because Smith (1999) found that using GIS, Urartian sites in this region were more physically accessible than earlier sites. This difference likely relates to differences between human perception and computer analysis. Smith's analysis used slope, but slope does not generally take into account the height of the hill; a tall but gently sloping hill would register as accessible to a GIS analysis, but less accessible to a person who had to take the time and energy to climb all the way to the top. Smith's analysis was also focused on broader landscape patterns—the presence of pre-Urartian sites in the foothills and Urartian sites on the plain—whereas the phenomenological measure of physical accessibility focused on the area immediately around the site. In general, however, differences between pre-Urartian and Urartian sites support previous scholars' observations about Urartian landscape use, site location, and construction techniques.

Quantitative Analysis of the Sites

The sites in the Aragats region were analyzed using GIS in the same manner as those in the Van region (Appendix 6). As with the Van region, sites were generally found to be more visible than their surroundings, and sites in this region were often visible to multiple other sites. Variations in slope and travel time also revealed differing degrees of physical accessibility.

Visibility Analysis

On average, sites in the Aragats region could see 7.84% of the total surrounding area at ten kilometers, and 3.46% of the total surrounding area at fifty kilometers (Table 6-4). At the ten-kilometer level, a slight majority of sites (9 of 17) were more visible than random points within one kilometer. At the fifty-kilometer level, slightly less than half (8 of 17) sites were more visible than their immediate surroundings. This suggests that at near and far distances, sites were intentionally located in more visible locations than their surroundings about half of the time. Additionally, across all sites, at the ten-kilometer and fifty-kilometer levels, the average visibility of site points was higher than the average visibility of random points, suggesting that as a whole, site points had larger viewsheds than non-site points. Thus, in the Aragats region, sites tended to be located in places that were more visible than average, though these differences were modest.

All sites in the Aragats region were visible to at least one other site, and the average number of other sites visible was 3.12 (Figure 6-63). In the past, this level of intersite visibility would have been favorable for communication between sites in case of an attack or other emergency, and it may also have facilitated a sense of social cohesion. Additionally, the visibility of pre-Urartian sites from Urartian sites would have been an important tool of social memory, reminding Urartians of the people who had come before them—something that may or may not have been desirable. Finally, the average visibility of paths from one-hour points was 40.91%, suggesting that on average, when walking to and from the site, the site was visible two-fifths of the time. Sites likely

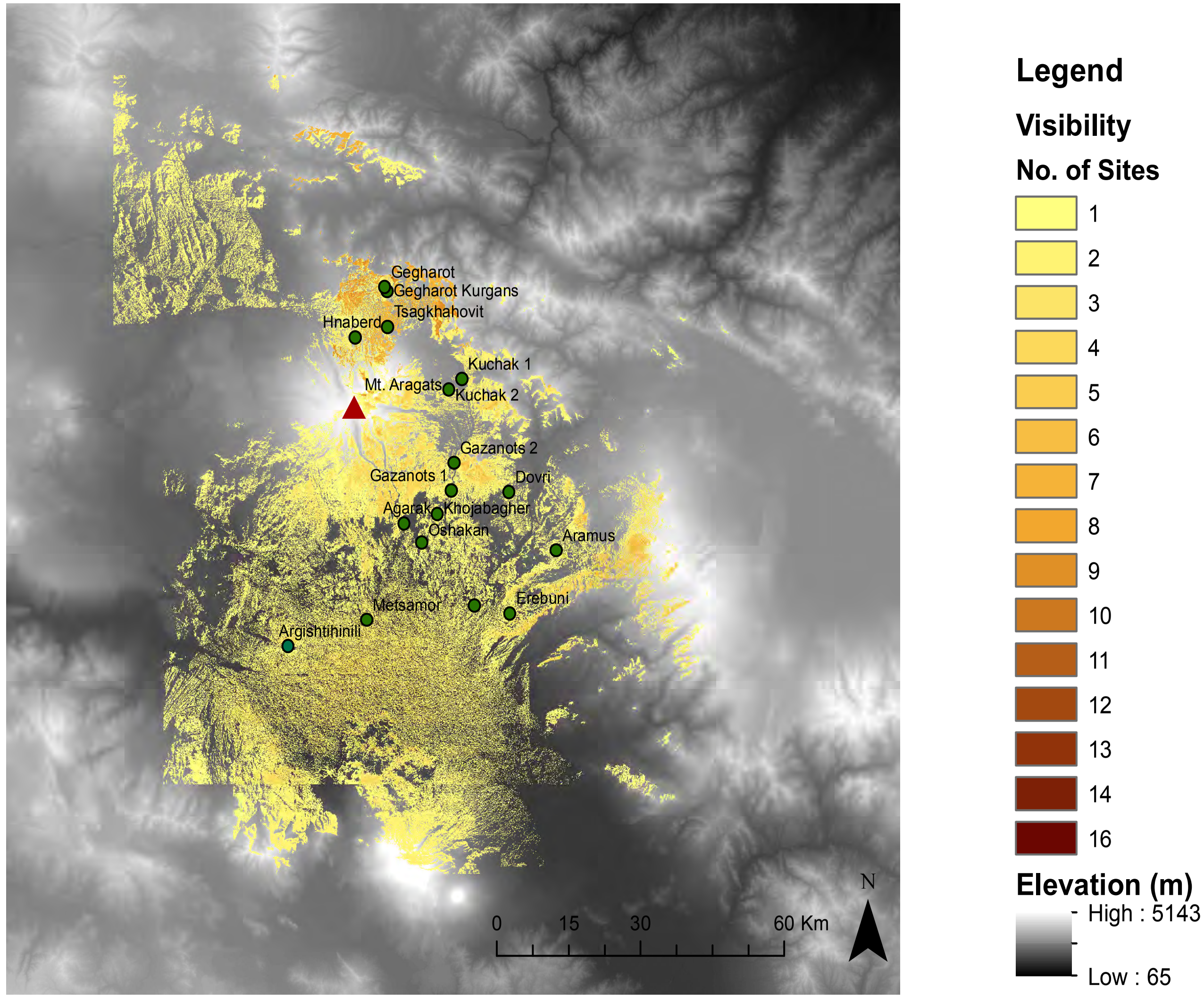


Figure 6-63: Cumulative viewshed for sites in the Aragats region

	10k Viewshed			50k Viewshed			
Site	% visible to at least 1 polygon point	% visible to average polygon point	% visible to average random point	% visible to at least 1 polygon point	% visible to average polygon point	% visible to average random point	Number of other sites visible
Agarak	16.47	8.96	10.22	6.21	3.85	3.78	2
Aramus	21.39	7.06	7.29	6.86	2.61	1.86	2
Argishtinihili	29.59	9.98	2.02	19	9.47	8.28	6
Dovri	16.32	5.71	4.27	6.65	2.64	2.22	2
Erebuni	16.57	5.71	3.18	10.71	5.46	2.8	5
Gazanots 1	4.18	2.54	3.41	4.67	2.04	4.05	1
Gazanots 2	7.07	4.12	4.37	6.42	2.3	3.35	3
Gegharot Fort	20.02	9.19	7.3	1.68	0.86	0.75	2
Gegharot Kurgans	8.67	4.15	4.41	0.68	0.27	0.53	1
Hnaberd	29.5	11.22	9.95	6.65	2.93	2.77	4
Karmir Blur	18.15	4.47	4.58	11.81	4.84	4.81	3
Khojabagher	18.3	10.03	7.88	7.81	5.73	5.1	3
Kuchak 1	22.19	10.38	10.89	1.36	0.7	0.65	1
Kuchak 2	31.13	15.53	13.23	2.31	1.26	0.87	1
Metsamor	13.46	6.06	1.19	14.89	8.98	6.72	8
Oshakan	30.53	8.69	8.36	13.26	4.19	1.97	6
Tsaghkahovit	27.67	9.45	7.25	1.67	0.64	0.57	3
Average	19.48	7.84	6.46	7.21	3.46	3	3.12
Range	26.95	12.99	12.04	18.32	9.2	7.75	7

Table 6-4: GIS analysis of visibility of sites in the Aragats region

would have come in and out of view as people approached, creating a varied visual experience.

Travel Time and Least Cost Paths Analysis

Unlike in the Van region, where Lake Van limited the total walkable area around the site, the Aragats region did not have a similar feature, and thus measurements of walkable area were more accurate and comparable across sites. The average area within one hour's walk for sites in the Aragats region was 58.86 km^2 (Table 6-5). Not surprisingly, sites with relatively flat surrounding territory, such as Metsamor and Argishtihinili, had the greatest areas within one hour's walk, while sites in hillier territory such as Gegharot Fortress, or with nearby landscape features that limited movement such as Kuchak 2, had much smaller areas within one hour's walk. These differences reflect not only the site's accessibility across the landscape, but also how much of its surrounding area could have been easily exploited. However, a small one-hour walking area does not appear to have been a significant impediment; Gegharot Fortress was one of the most important sites in the region and also had the second-smallest area within one hour's walk. Thus, a site's prominence was not necessarily related to its accessibility. There was also little correlation between slope and one-hour walking area; a site could be on a steep slope, yet be located in relatively accessible terrain, and vice versa. This suggests that physical accessibility operated at multiple scales that could have been weighed differently for different purposes when determining site location.

Fortresses, Kurgans and Inscriptions

Site	Average travel time for points 10k away (hours)	Area within 1 hour's travel time (km2)	Average distance for 1 hour pts (km)	Average percent visibility of 1 hour paths	Average slope (degrees)
Agarak	2.44	60.81	4.44	32	4.72
Aramus	2.51	60.13	4.41	51.42	11.59
Argishtinihili	2.12	70.05	4.73	62.68	11.65
Dovri	2.42	63.86	4.52	28.03	7.07
Erebuni	2.43	55.38	4.19	44.49	13.44
Gazanots 1	2.46	54.58	4.21	23.41	11.84
Gazanots 2	2.43	45.28	3.79	24.58	5.75
Gegharot Fort	2.52	51.92	4.07	62.11	11.75
Gegharot Kurgans	2.51	54.94	4.17	24.69	3.75
Hnaberd	2.5	57.49	4.29	59	9.51
Karmir Blur	2.27	63.54	4.53	29.89	7.75
Khojabagher	2.43	56.72	4.25	24.77	5.37
Kuchak 1	2.72	56.13	4.16	47.27	8.14
Kuchak 2	2.6	62.07	4.45	36.38	5.68
Metsamor	2.16	68.53	4.68	28.01	6.66
Oshakan	2.28	63.7	4.52	54.2	9.94
Tsaghkahovit	2.5	55.42	4.23	62.61	11.58
Average	2.43	58.86	4.33	40.91	**8.6**
Range	0.6	24.77	0.94	39.27	9.69

Table 6-5: GIS physical accessibility analysis of sites in the Aragats region

Fortresses, kurgans and inscriptions were compared for GIS measurements of visibility and accessibility (Tables 6-6 and 6-7). Surprisingly, over short distances, sites with kurgans were more visible at the ten-kilometer level than fortresses. This is in contrast to the phenomenological analysis, which found that fortresses were substantially more visible than kurgans. Fortresses were more visible at the fifty-kilometer level, however. Fortresses were also more likely to be more visible than their surroundings at the ten-kilometer and ten-kilometer levels. At ten kilometers, fortresses and kurgans were more visible than random points within one kilometer, but this difference was more pronounced for fortresses than for kurgans. At fifty kilometers, the fortresses were still more visible than random points, while kurgans were actually slightly less visible. Fortresses also tended to be located on steeper slopes than kurgans. Overall, then, it appears that fortresses were more visible than kurgans, which would make sense considering the defensive and surveillance needs of fortresses.

In contrast to the phenomenological analysis, kurgan sites, despite often being on flat ground, were found to be less physically accessible than fortresses as measured by GIS. Kurgan sites had a longer travel time to points ten kilometers away, a smaller area within one hour's walk, and a shorter distance to one-hour points. The flatness of the land surrounding the kurgans, and the accessibility of the area immediately around them, led to their being ranked as more accessible by the phenomenological rankings. However, over longer distances, when paths were calculated mathematically, fortresses were actually more accessible. This makes sense considering that Urartian fortresses were often situated along trade and travel routes (Smith 2003). On the other hand, throughout central and western Asia kurgans are often located along trade and travel

		10k Viewshed			50k Viewshed			
Type of Site		**% visible to at least 1 polygon point**	**% visible to average polygon point**	**% visible to average random point**	**% visible to at least 1 polygon point**	**% visible to average polygon point**	**% visible to average random point**	**Number of Other Sites Visible**
Fortresses	**Average**	20.35	7.21	5.37	9.5	4.28	3.71	3.78
	Range	26.35	8.68	8.76	17.32	8.61	7.53	7
Kurgans	**Average**	19.17	8.94	8.01	3.38	1.82	1.85	2
	Range	24.06	11.41	8.86	7.13	5.46	4.57	2
Inscription		16.57	5.71	3.18	10.71	5.46	2.8	5
Settlement		16.47	8.96	10.22	6.21	3.85	3.78	2

Table 6-6: GIS analysis of visibility of sites in the Aragats region, broken down by type of site

Type of Site		Average travel time for points 10k away (hours)	Area within 1 hour's travel time (km2)	Average distance for 1 hour pts (km)	Average percent visibility of 1 hour paths	Average slope (degrees)
Fortresses	**Average**	2.36	61.53	4.44	44.31	9.75
	Range	0.4	18.13	0.66	39.27	5.19
Kurgans	**Average**	2.53	55.09	4.18	36.72	7.73
	Range	0.29	16.79	0.66	38.03	8.1
Inscription		2.43	55.38	4.19	44.49	13.44
Settlement		2.44	60.81	4.44	32	4.72

Table 6-7: GIS analysis of physical accessibility of sites in the Aragats region, broken down by type of site

routes as well (Frachetti 2008). As already discussed above, the cemetery in the Van region and the kurgans in the Aragats region are unusual in that they are on flat, low ground rather than on ridges or hills; in this regard as well, then, they break with traditions of kurgans in other parts of the world.

Erebuni, a fortress with an inscription, was less visible than either pure fortresses or sites with kurgans at the ten-kilometer level but more visible than either at the fifty-kilometer level. Agarak, the settlement, was more visible than the other sites at the ten-kilometer level, but less visible than fortress and Erebuni, though more visible than sites with kurgans, at the fifty kilometer level. Erebuni was in between pure fortresses and sites with kurgans for average travel time to points ten kilometers away, area within one hour's travel time, and average distance for one-hour points. It had a higher visibility of one-hour paths than either pure fortresses or sites with kurgans, and a steep slope than either. Agarak, the settlement, was also between fortresses and kurgan sites for average travel time for points ten kilometers away and area within one hour's walk but had the same average distance for one-hour points, and a much lower visibility of one hour paths and slope than other types of sites. In general, then, it does not appear that either the settlement or the inscription were particularly distinguished from other types of sites.

Urartian vs. Pre-Urartian Sites

Comparisons in visibility and physical accessibility reveal slightly different location strategies for pre-Urartian and Urartian sites, but also demonstrate many similarities (Tables 6-8, 6-9). At the ten kilometer level, pre-Urartian sites were slightly more visible than Urartian sites. This difference was reversed at fifty kilometers, where

		10k Viewshed			50k Viewshed			
Time Period		**% visible to at least 1 polygon point**	**% visible to average polygon point**	**% visible to average random point**	**% visible to at least 1 polygon point**	**% visible to average polygon point**	**% visible to average random point**	**Number of other sites visible**
Pre-Urartian	**Average**	16.57	7.91	6.98	5.11	2.86	2.85	2.56
	Range	26.95	12.99	12.04	14.21	8.71	6.19	7
Urartian	**Average**	22.76	7.75	5.87	9.58	4.13	3.18	3.75
	Range	14.21	6.75	7.93	17.32	8.61	7.53	4

Table 6-8: GIS analysis of visibility of sites in the Aragats region, broken down by time period

Time Period		Average travel time for points 10k away (hours)	Area within 1 hour's travel time (km2)	Average distance for 1 hour pts (km)	Average percent visibility of 1 hour paths	Average slope (degrees)
Pre-Urartian	**Average**	2.47	57.16	4.26	33.75	7.05
	Range	0.56	23.25	0.89	39.2	8.09
Urartian	**Average**	2.38	60.76	4.41	48.98	10.34
	Range	0.4	18.13	0.66	34.65	6.37

Table 6-9: GIS analysis of physical accessibility of sites in the Aragats region, broken down by time period

Urartian sites were more visible; in fact, at fifty kilometers, the viewsheds of Urartian sites were on average over twice the size of those of pre-Urartian sites, though both numbers were quite small. At the ten kilometer level, five out of eleven (45%) of pre-Urartian sites were more visible to their surroundings that random points nearby, versus five out of six Urartian sites (80%). At the fifty kilometer level these values were eight out of eleven (73%) and 6 out of 6 (100%). In other words, Urartian sites were more likely than pre-Urartian sites to be more visible than their surroundings, suggesting that visibility was a greater priority in Urartian site location. Average travel time for points ten hours away was greater for pre-Urartian sites than for Urartian sites, and Urartian sites also had larger areas within one hour's walk, both values that suggest that Urartian sites were more accessible. On the other hand, Urartian sites had steeper slopes than pre-Urartian sites, which indicates that while Urartian sites were more accessible over the broader landscape, the sites themselves were harder to navigate. This is a reasonable strategy; while it's been documented that Urartians liked to place their sites in physically accessible locations for trade and surveillance (Smith 1999, 2003), steep slopes would have made these sites more defensible. Urartian sites were more visible while moving toward and away from them, which would similarly fit with a desire for surveillance and control over access. Finally, Urartian sites were more intervisible, which would have allowed for communication between them, for purposes of defense and social cohesion. Thus, it appears that with the exception of slope, Urartian sites were, in general, more visually accessible and more physically accessible than pre-Urartian sites. This is line with Smith's (1999) conclusion that Urartians in the Aragats region located their sites in more accessible locations on the Ararat Plain, rather than in the less accessible, rugged landscape closer to Mt. Aragats.

Additional Analysis

There were many other sites in the region that could not be surveyed due to time constraints. The ones that were surveyed were chosen because they had substantial archaeological remains and background research and because they represented a good variety of time periods and types of features. However, this meant that the analysis left many sites out that could have impacted the results. In addition to GIS analysis of the sites surveyed, further analysis was conducted on a subset of sites over a small area, including some sites not surveyed, in order to have a more systematic and rigorous sample. This type of analysis could not be conducted in the Van region because of the lack of systematic survey there. However, the intensive survey of Project ArAGATS is likely to have recorded essentially all the sites in its range, and therefore additional analysis is possible and useful for the Aragats region. The subset chosen was all fortresses and kurgans within fifteen kilometers of Gegharot Fortress. This area was chosen because of the importance of Gegharot Fortress (Smith et al. 2009), as well as because it contained a large number of sites, including three—Gegharot Fortress, Hnaberd Fortress, and Gekhadzor Fortress—that have been dated to the Urartian period. Gekhadzor was not included in Badalyan and Avetisyan's survey, while Smith and colleagues note the Iron II material but are also tentative in their designation of this site as Urartian period. However, considering the shortage of Urartian sites in this area (Smith et al. 2009), these three were considered Urartian for the purpose of this analysis.

In total, the intensive analysis included twenty-nine sites—eleven fortresses and eighteen kurgans.

Because of the larger number of sites and the processing time involved, the visibility analysis conducted on these sites was slightly less intensive (Table 6-10, Figure 6-64). Fortresses or kurgan clusters were represented as single points (the points recorded by Smith and colleagues) rather than as polygons with many points. Fifteen-kilometer viewsheds were generated from these single points. It should be noticed that the use of multiple points versus single points did make a difference; for those sites that were covered by both analyses—Gegharot Fortress, Hnaberd Fortress and Tsaghkahovit Fortress—the viewshed visible to any point at ten kilometers was around twice the viewshed visible to a single point at fifteen kilometers. While some of this difference may have been due to increased distance, it also demonstrates how much visibility can vary from point to point, and how important it is to consider the entire site when measuring visibility. Physical accessibility was calculated from the individual site points the same way it was calculated previously from polygon centroids, and for Gegharot Fortress, Hnaberd Fortress and Tsaghkahovit Fortress, the same values were used in this analysis as previously (Table 6-11).

Unlike in the previous analysis, where pre-Urartian sites were found to be slightly more accessible at the closer (ten-kilometer) level, the three Urartian sites in this sample were approximately 50% more visible than the pre-Urartian sites (Table 6-12). The three Urartian sites were more visible than random points within one kilometer, while seventeen out of twenty-six (6%) of pre-Urartian sites were. Fortresses were also more visible than kurgans, a contrast to the previous analysis (Table 6-13). Like in the

Site	Type of Site	Time Period	% Visible to Site Point	% visible to Average Random Point	No. of Other Sites Visible
Aparan Burial Cluster 2	Kurgans	Pre-Urartian	2.66	4.46	0
Aragatsi Berd	Fortress	Pre-Urartian	12.45	9.82	14
Ashot-Yerkat	Fortress	Pre-Urartian	0.51	8.90	0
Berdi Dosh	Fortress	Pre-Urartian	10.56	3.62	17
Gegharot Fortress	Fortress	Pre-Urartian	13.94	6.15	13
Gegharot Burial Cluster 1	Kurgans	Pre-Urartian	3.34	4.08	1
Gegharot Burial Cluster 2	Kurgans	Pre-Urartian	4.79	5.13	0
Gekhadzor	Fortress	Urartian	11.78	6.96	13
Hnaberd Fortress	Fortress	Urartian	12.39	7.25	7
Hnaberd Burial Cluster 4	Kurgans	Pre-Urartian	9.45	8.10	7
Hnaberd Burial Cluster 9	Kurgans	Pre-Urartian	11.96	7.76	6
Hnaberd Burial Cluster 14	Kurgans	Pre-Urartian	9.21	7.62	5
Hnaberd Burial Cluster 20	Kurgans	Pre-Urartian	1.84	6.13	0
Hnaberd Burial Cluster 23	Kurgans	Pre-Urartian	10.18	7.57	8
Hnaberd Burial Cluster 24	Kurgans	Pre-Urartian	6.63	6.19	5
Lernapar	Fortress	Pre-Urartian	0.33	1.50	0
Mantash Burial Cluster 12	Kurgans	Pre-Urartian	6.35	6.57	5
Mantash Burial Cluster 13	Kurgans	Pre-Urartian	5.04	7.23	5
Polozsar	Fortress	Pre-Urartian	13.75	4.42	10
Sahakaberd	Fortress	Pre-Urartian	10.58	8.08	6
Sahakaberd Burial Cluster22	Kurgans	Pre-Urartian	13.37	7.87	6
Tsaghkahovit Burial Cluster 9	Kurgans	Pre-Urartian	10.90	5.78	5
Tsaghkahovit Burial Cluster 10	Kurgans	Pre-Urartian	9.30	5.68	7
Tsaghkahovit Burial Cluster 21	Kurgans	Pre-Urartian	6.34	11.52	2
Tsaghkahovit Burial Cluster 41	Kurgans	Pre-Urartian	2.87	4.61	0
Tsaghkahovit Burial Cluster 54	Kurgans	Pre-Urartian	15.40	6.96	3
Tsaghkahovit Burial Cluster 85	Kurgans	Pre-Urartian	10.61	6.14	4
Tsaghkahovit Fortress	Fortress	Pre-Urartian	12.17	5.14	5
Tsilkar Fortress	Fortress	Pre-Urartian	13.01	12.66	9
Average			8.68	6.69	5.62
Range			15.07	11.16	17.00

Table 6-10: GIS analysis of visibility of additional sites in the Aragats region

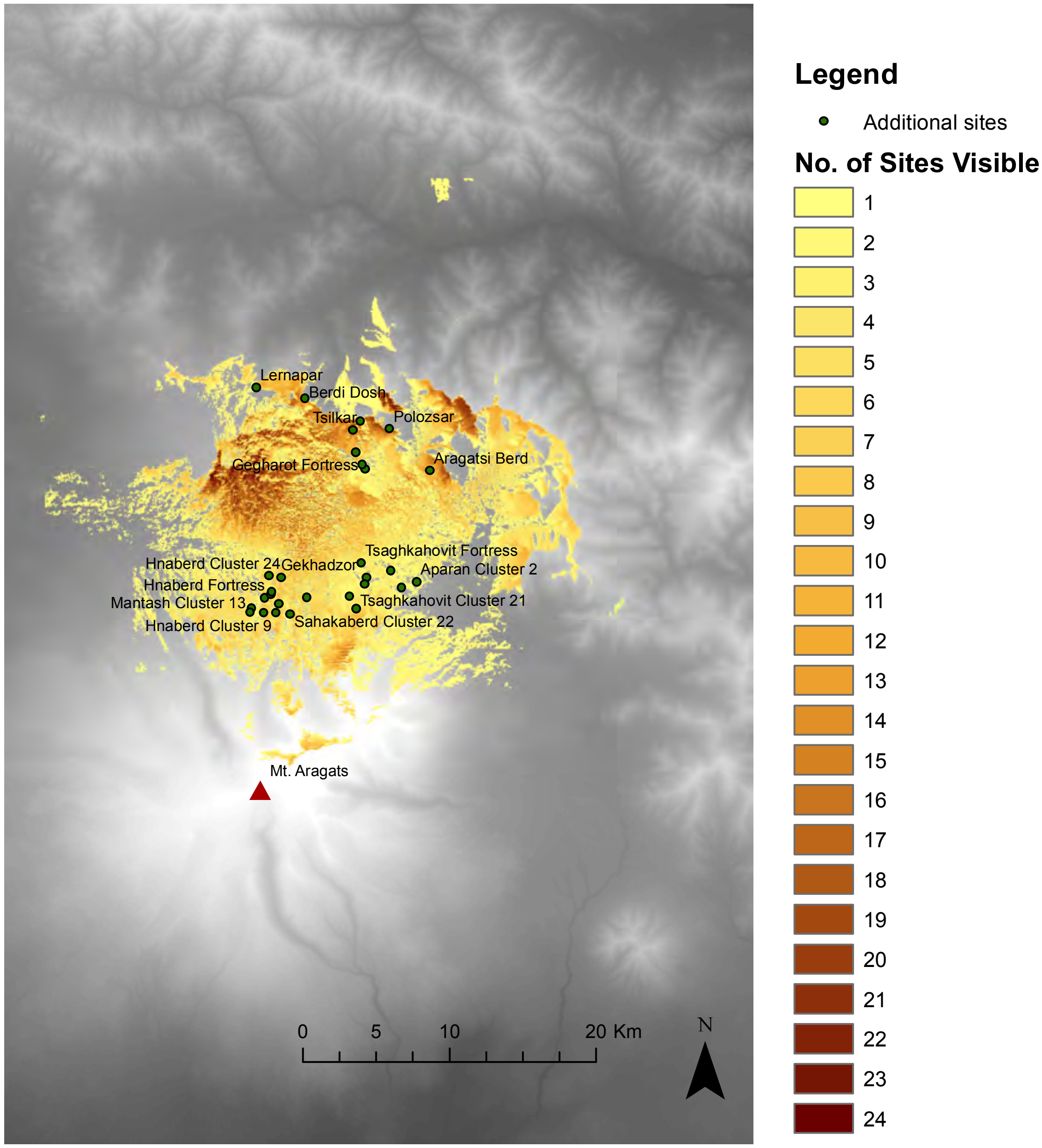


Figure 6-64: Cumulative viewshed analysis of additional sites in the Aragats region

Site	Type of Site	Time Period	Travel time for points 10k away (hours)	Area within 1 hour's travel time (km2)	Average distance for 1 hour pts (km)	Percent visibility of 1 hour points
Aparan Burial Cluster 2	Kurgans	Pre-Urartian	2.52	57.21	4.29	7.17
Aragatsi Berd	Fortress	Pre-Urartian	2.71	52.78	4.08	27.06
Ashot-Yerkat	Fortress	Pre-Urartian	2.67	36.83	3.43	5.46
Berdi Dosh	Fortress	Pre-Urartian	2.54	47.92	3.89	27.70
Gegharot Fortress	Fortress	Urartian	2.52	51.99	4.07	29.28
Gegharot Burial Cluster 1	Kurgans	Pre-Urartian	2.52	55.13	4.17	23.22
Gegharot Burial Cluster 2	Kurgans	Pre-Urartian	2.52	54.82	4.16	13.95
Gekhadzor	Fortress	Urartian	2.46	61.08	4.43	21.13
Hnaberd Fortress	Fortress	Urartian	2.50	57.49	4.29	59.00
Hnaberd Burial Cluster 4	Kurgans	Pre-Urartian	2.50	58.74	4.34	9.73
Hnaberd Burial Cluster 9	Kurgans	Pre-Urartian	2.58	54.84	4.21	7.24
Hnaberd Burial Cluster 14	Kurgans	Pre-Urartian	2.48	59.62	4.39	9.77
Hnaberd Burial Cluster 20	Kurgans	Pre-Urartian	2.63	53.02	4.11	2.98
Hnaberd Burial Cluster 23	Kurgans	Pre-Urartian	2.58	55.86	4.25	14.10
Hnaberd Burial Cluster 24	Kurgans	Pre-Urartian	2.46	61.14	4.43	3.26
Lernapar	Fortress	Pre-Urartian	2.42	53.13	4.11	4.92
Mantash Burial Cluster 12	Kurgans	Pre-Urartian	2.54	54.71	4.23	12.35
Mantash Burial Cluster 13	Kurgans	Pre-Urartian	2.55	53.90	4.18	7.40
Polozsar	Fortress	Pre-Urartian	2.67	39.02	3.50	5.81
Sahakaberd	Fortress	Pre-Urartian	2.55	54.37	4.20	12.48
Sahakaberd Burial Cluster22	Kurgans	Pre-Urartian	2.63	51.01	4.08	20.44
Tsaghkahovit Burial Cluster 9	Kurgans	Pre-Urartian	2.51	53.43	4.12	16.68
Tsaghkahovit Burial Cluster 10	Kurgans	Pre-Urartian	2.52	51.40	4.08	19.99
Tsaghkahovit Burial Cluster 21	Kurgans	Pre-Urartian	2.56	45.07	3.83	9.55
Tsaghkahovit Burial Cluster 41	Kurgans	Pre-Urartian	2.50	56.38	4.28	9.67
Tsaghkahovit Burial Cluster 54	Kurgans	Pre-Urartian	2.49	55.27	4.21	17.08
Tsaghkahovit Burial Cluster 85	Kurgans	Pre-Urartian	2.56	46.17	3.88	27.20
Tsaghkahovit Fortress	Fortress	Pre-Urartian	2.50	55.42	4.23	62.61
Tsilkar Fortress	Fortress	Pre-Urartian	2.58	44.43	3.80	23.02
Average			2.54	52.83	4.11	17.59
Range			0.29	24.31	1.00	59.63

Table 6-11: GIS analysis of physical accessibility of additional sites in the Aragats region

		15k Viewshed		
Time Period		**% Visible to Site Point**	**% visible to Average Random Point**	**Number of Other Sites Visible**
Pre-Urartian	**Average**	8.22	6.67	5
	Range	15.07	11.16	17
Urartian	**Average**	12.70	6.79	11
	Range	2.16	1.10	6

Table 6-12: GIS analysis of visibility of additional sites in the Aragats region, broken down by time period

Type of Site		% Visible to Site Point	% visible to Average Random Point	Number of Other Sites Visible
Fortresses	Average	10.13	6.77	8.55
	Range	13.61	11.16	17
Kurgans	Average	7.79	6.63	3.83
	Range	13.56	7.44	8

Table 6-13: GIS analysis of visibility of additional sites in the Aragats region, broken down by type of site

previous analysis, the majority of fortresses and kurgans were more visible than random points within one kilometer, but this difference was more pronounced for fortresses. Fortresses were also more than 50% more visible to other sites than kurgans were, in agreement with the previous analysis. This analysis confirms the importance of visibility for Urartian sites and for fortresses more clearly than in the previous analysis. On the Tsaghkahovit Plain, at least, fortresses were more visible than kurgans, and Urartian sites were more visible than pre-Urartian ones. It is interesting that the difference is greater here than in the previous analysis, which included the major Urartian fortresses on the Ararat Plain that one would expect to be highly visible. On the other hand, the difference between Urartian and pre-Urartian sites here is likely due in large part to the fact that most pre-Urartian sites in this sample were kurgans, while all three of the Urartian sites were fortresses. The fact that fortresses were highly visible is not surprising. However, the comparatively low visibility of the kurgans fits with the phenomenological pattern observed, wherein kurgans tend to be located on low, flat ground. As previously mentioned, this pattern contrasts with kurgans in other parts of the Caucasus, particularly the kurgans of pastoralists, which are often in elevated, highly visible locations.

This analysis agreed with the previous analysis that Urartian sites were more accessible than pre-Urartian sites, which is also in line with previous analyses (Smith 1999, 2000; Table 6-14). Paths from one hour points to Urartian sites were also more than twice as visible as similar paths to non-Urartian sites. Kurgans were found to be more accessible than fortresses by all measures (Table 6-15). This is in contrast to the previous analysis, which found that fortresses were more accessible than kurgans. The difference is likely because the previous analysis included fortresses on the Ararat Plain,

Time Period		Travel time for points 10k away (hours)	Area within 1 hour's travel time (km2)	Average distance for 1 hour pts (km)	Percent visibility of 1 hour points
Pre-Urartian	**Average**	2.55	52.37	4.1	15.42
	Range	0.29	24.31	1	59.63
Urartian	**Average**	2.49	56.85	4.26	36.47
	Range	0.06	9.09	0.36	37.87

Table 6-14: GIS analysis of physical accessibility of additional sites in the Aragats region, broken down by time period

Type of Site		Travel time for points 10k away (hours)	Area within 1 hour's travel time (km2)	Average distance for 1 hour pts (km)	Percent visibility of 1 hour points
Fortresses	**Average**	2.56	50.41	4	25.32
	Range	0.29	24.25	1	57.69
Kurgans	**Average**	2.54	54.32	4.18	12.88
	Range	0.17	16.07	0.6	24.22

Table 6-15: GIS analysis of physical accessibility of additional sites in the Aragats region, broken down by type of site

where the landscape in general is flatter; fortresses on the Ararat Plain were generally more accessible than those closer to Mt. Aragats, where the landscape is more rugged. The fact that kurgans were more accessible when compared to fortresses in the same area is not surprising considering that the kurgans surveyed were generally on flatter ground than the fortresses. However, again, it contradicts the general pattern of kurgans elsewhere in the South Caucasus, which tend to be located on the top of hills or ridges and are presumably therefore relatively inaccessible (none of the studies cited that describe the location of kurgans on ridges used GIS to measure their accessibility). All of the kurgans in the Aragats region were associated with fortresses, and it may have been the case that since the hilltop was occupied by the fortress, the only space for the kurgans near the fortress was at the hill's base. However, the kurgans at the site of Khojabagher, included in the previous analysis, were on low, flat ground but not associated with a fortress. The other possible explanation is that the ridge-top kurgans described by others (e.g. Frachetti 2008; Reinhold and Korobov 2011) were built by pastoralists. Since we know that the Late Bronze Age and Early Iron Age, the time of the Aragats kurgans, were a period of intensified settlement, these kurgans may have been built by sedentary people. Though it is outside the scope of this analysis, it would be interesting to compare the kurgans of this sample with those in the region from the Middle Bronze Age, when the population was almost exclusively pastoral. In their study of khirigsuur monuments in Mongolia, which are analogous to kurgans, Seitsonen and colleagues (2014) found that many of these monuments were located on flat ground at the base of hills, so as to be more accessible to communities. Settlement patterns in this region are described as "tethered mobility", in which pastoralists alternate between winter and summer camps that are relatively close together. This is similar to the pattern Zimansky (1985) suggests was common in the South Caucasus in the Bronze and Iron Ages, and thus these more accessible kurgans might have been used by pastoral groups that traveled shorter distances and whose seasonal camps were more permanent than those described by Frachetti (2008).

Combining GIS and Phenomenological Analysis

As with sites in the Van region, the combination of phenomenological and GIS approaches allowed for an examination of how qualitative experiences are similar to or different from quantitative measures of those same experiences. One interesting pattern that emerged was that sites that were located on steep slopes and that had a high degree of visual impact in the phenomenological ratings did not necessarily have the highest visibility as measured by Viewshed, particularly over greater distances. For example, Metsamor, one of the flattest sites with the lowest visual phenomenological ratings, actually had the second greatest average visibility over fifty kilometers. This is due to the fact that, while the site was on a low hill, the ground around it was completely flat, which afforded it excellent visibility. By contrast, visually impressive sites such as Tsaghkahovit often had low visibility over long distances. This is because while large hills made sites visually impressive, sites on high hills were often surrounded by similar hills that blocked the site from view. On flatter, less impressive landscapes, location on even a modest hill could substantially enhance a site's visibility.

Phenomenological and GIS measures of physical accessibility also did not necessarily match up. Gegharot and both Gazanots sites had the smallest areas within one hour's walk, but ranked in the middle for physical accessibility; by contrast the site perceived as least accessible in the phenomenological rankings, Hnaberd, had an area within one hour's walk that was only slightly below the average. This is likely because the phenomenological measure of physical accessibility tended to be biased toward the area immediately around the site, simply because it was closer, while the GIS analysis did not have this bias. This reflects an important difference between GIS and phenomenology; GIS treats everything within the area of analysis equally, whereas human perception can privilege certain features or locations over others due to factors such as proximity, contrast with surrounding features, or cultural associations. Including both of these perspectives in the analysis thus provides a better understanding of spatial phenomena than either would alone.

CHAPTER 7: QUALITATIVE AND QUANTITATIVE ANALYSIS OF THE LAKE SEVAN REGION

Overview of the Sevan Region

Geography and Economy

The Lake Sevan region includes the Sevan basin, which contains the lake, and the mountains surrounding the lake. The altitude of the lake itself is 1,893.61 meters, making it the largest lake in the South Caucasus (Biscione et. al. 2002). Three sets of mountains border the lake, forming a rough triangular shape: the Areguni and Sevan ranges, the Eastern Sevan and Vardenis ranges, and the Gegham range. Many rivers and streams flow into the lake from the surrounding mountains, but only a single river, the Hrazdan River, flows out of it. Because of the surrounding high mountains, the basin's climate is relatively dry, with cold winters and warm springs; however, rainfall is still high compared to other areas occupied by Urartu (Biscione et. al. 2002; Sayadyan 2002). There are few trees in the present day, though this was not necessarily the case in the past (Sayadyan 2002), and water levels have also fluctuated over time (Biscione et. al. 2002). Cereals are grown at lower altitudes throughout the basin, and non-cultivated areas are rich with vegetation for grazing livestock (Biscione et. al. 2002).

History of the Region's Incorporation into Urartu

The first Urartian expedition to the Sevan region took place in 782 BCE, under the Urartian king Argishti I, who apparently reached the northeast side of the lake. Inscriptions detail his conquests of local kingdoms (Biscione et al. 2002; Salvini 2002). Sarduri II led expeditions into the region on the southern shore of the lake, which are frequently considered as evidence of the region's incorporation into Urartu. Textual evidence from inscriptions indicates that Sarduri defeated the rulers of local kingdoms, who formed a federation referred to by the Urartians as Uduri-Etiuni. After Sarduri's death, Urartu may have temporarily lost control of this region, and later Rusa I conquered the area again and installed a local governor. Rusa appears to have been the last king to campaign in the area; his successor Argishti II turned his attention to other territories, while the last significant Urartian king, Rusa II, was more focused on art and architecture (Salvini 2002). The process of conquering this region appears to have been long and difficult, and the archaeological and textural record provides no evidence for what happened to the region directly after the fall of Urartu (Biscione et al. 2002).

History of Archaeology in the Region

The Lake Sevan region has been the subject of archaeological research since the beginnings of archaeology in Armenia, as early as the late nineteenth century. Early excavations focused on large fortresses, including Tsovinar, Tsovak and Nor-Bayazet, and after World War II many new projects began, including surveys and excavations (Biscione et. al. 2002). However, much of this work was not formally published, and at the end of the twentieth century, the Armenian-Italian Archaeological Expedition conducted a broad regional study of the area, with an interest in all material ranging from the Early Bronze Age to the Roman period (Biscione et. al. 2002). The sites in this chapter were selected and located based on this survey.

Qualitative Analysis of the Sites

Twelve sites in the Sevan region were surveyed in the summer of 2017 (Figure 7-1). The sites were chosen based on their extensive documentation in surveys and earlier analyses (Biscione et. al. 2002), their accessibility, and their broad representation of pre-Urartian and Urartian sites and of different types of sites (fortresses, kurgans, and/or inscriptions). The sites were taken from the publication of the Armenian-Italian Archaeological Expedition, who conducted a survey in the region from 1994 to 2000 (Biscione et al. 2002). Sites were found either based on previous surveys, or through interviews with local informants. Thus, this survey was more likely to focus on larger and better-known sites, and was not as systematic as the ArAGATS survey. The sites were recorded and analyzed in the same way as the Aragats and Van sites, and rated using the same eleven phenomenological characteristics (Table 7-1). The sites are summarized below; more extensive phenomenological recording can be found in Appendix 7 and photographs can be found in Appendix 8.

Joj Kogh 1

Time Period: Early Iron Age, Urartian

Type of Site: Cemetery, architectural complex

Location: 40º04’15” N, 45º18’42” E

Elevation: 2,244 meters

Background: The site consists of two cemeteries and a wall located atop a plateau, overlooking the Mtnadzor-Martuni River. The wall is around 2.8 kilometers long and at one point associated with a set of rooms. The wall is difficult to date, but may be from the same time period as Joj Kogh 2, making it Early Iron Age, or it might be Urartian.

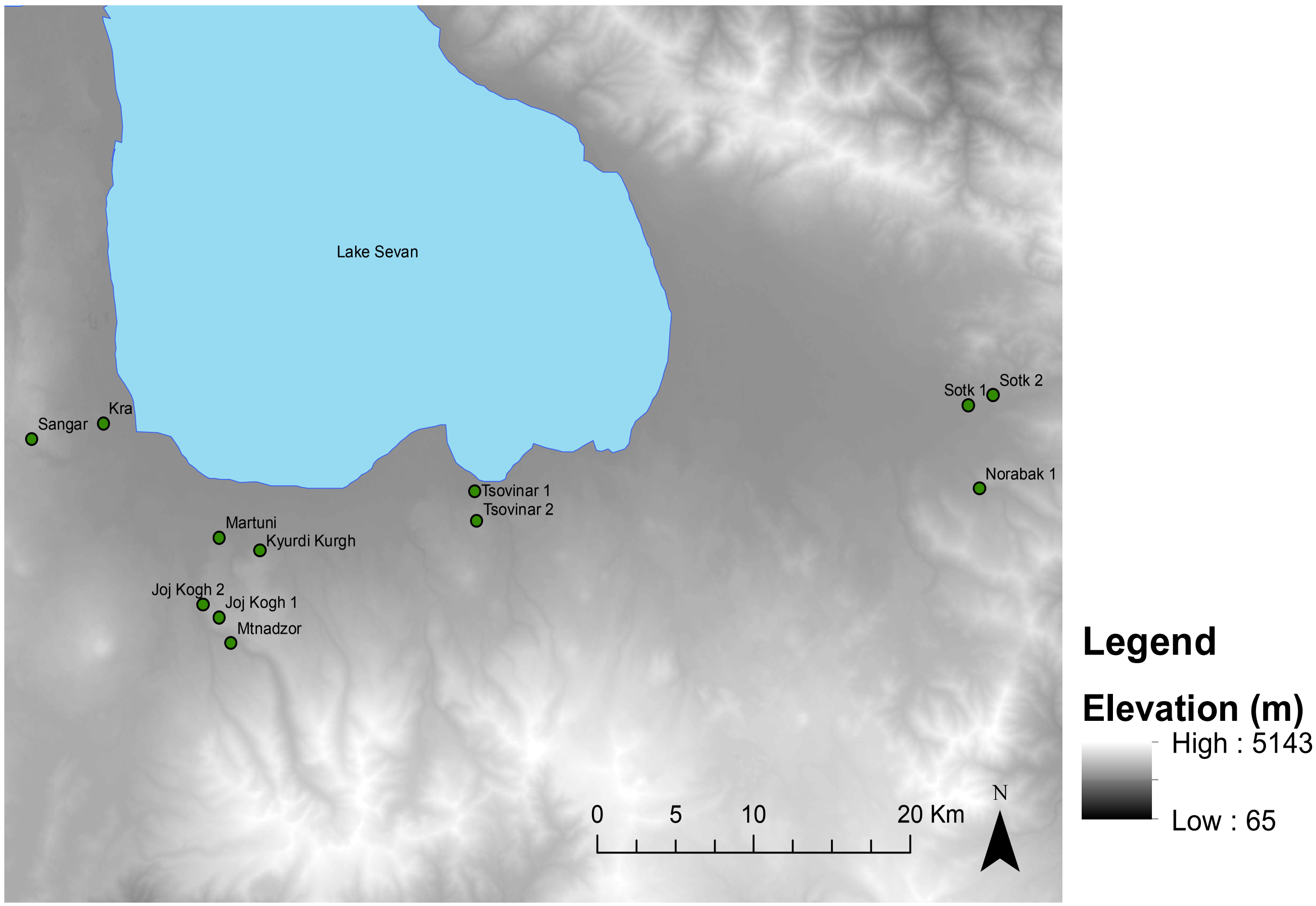


Figure 7-1: Map of sites surveyed in the Sevan region

Site	**Visual accessibility**	**Visibility of topographic features**	**Physical accessibility**	**Skill and technology of cultural features**	**Emotional Impact of cultural features**	**Emotional impact of natural features immediately associated with the site**	**Visibility within the site**	**Physical accessibility within the site**	**Extent to which the site incorporates natural features**	**Acoustic Impact**	**Tactiile Impact**
Joj Kogh 1	2	3	1	2	2	4	3	4	3	1	1
Joj Kogh 2	4	5	1	3	2	5	4	5	5	3	1
Kra	4	3	3	3	3	3	3	4	5	2	1
Kyurdi Kurgh	3	4	1	3	3	5	4	3	5	3	1
Martuni	3	3	3	3	3	3	4	3	3	2	1
Mtnadzor	2	2	1	3	4	4	3	3	5	2	1
Norabak	2	2	2	2	3	3	3	4	4	1	1
Sangar	2	2	1	N/A	N/A	2	5	5	3	1	1
Sotk 1	2	3	4	2	N/A	2	N/A	N/A	3	1	1
Sotk 2	3	3	3	N/A	N/A	3	N/A	N/A	5	1	1
Tsovinar	3	4	3	3	3	4	4	4	5	3	1
Tsovinar 2	2	3	1	N/A	N/A	3	4	5	3	1	1
Average	2.67	3.08	2	2.67	2.88	3.42	3.7	4	4.08	1.75	1
Range	2	3	3	1	2	3	2	2	2	2	0

Table 7-1: Phenomenological rankings for sites the Sevan region

The kurgans are earthen mounds sometimes surrounded by stone circles, and their dating ranges from Early Iron Age to Hellenistic (Figures 7-2, 7-3). All identifiable pottery was Early Iron Age (Biscione et. al. 2002). Because of the difficulty in dating the structures, I tentatively considered this site to have had both Urartian and Early Iron Age occupation.

Phenomenological overview: These kurgans are located on a ridge top, but they are not near the edge of the ridge, which means that they do not have the same visibility or visual impact that would come with being beside a steep drop-off. Additionally, the kurgans' location on relatively flat land means that visibility is limited. From the kurgans, the far side of the lake and the tops of surrounding mountains are visible, but most of the lake and much of the nearby flat agricultural land is not visible. The kurgans are difficult to access, being located atop a high, steep ridge, and then some distance from the edge of that ridge. The kurgans themselves are small and not particularly impressive in their construction, but in the past their role as burials likely would have evoked feelings of fear, awe, reverence, and a sense of this location's enduring importance on the landscape. The architectural complex, which is located on the edge of the ridge, has better views of the flat land and mountains to the west, but still limited views in other directions. However, both parts of the site still have a sense of great elevation and of being isolated from the surrounding landscape due to their height.

Joj Kogh 2

Time Period: Early Iron Age

Type of Site: Fortress and cemetery

Location: 40º05'33" N, 45º17'26"E

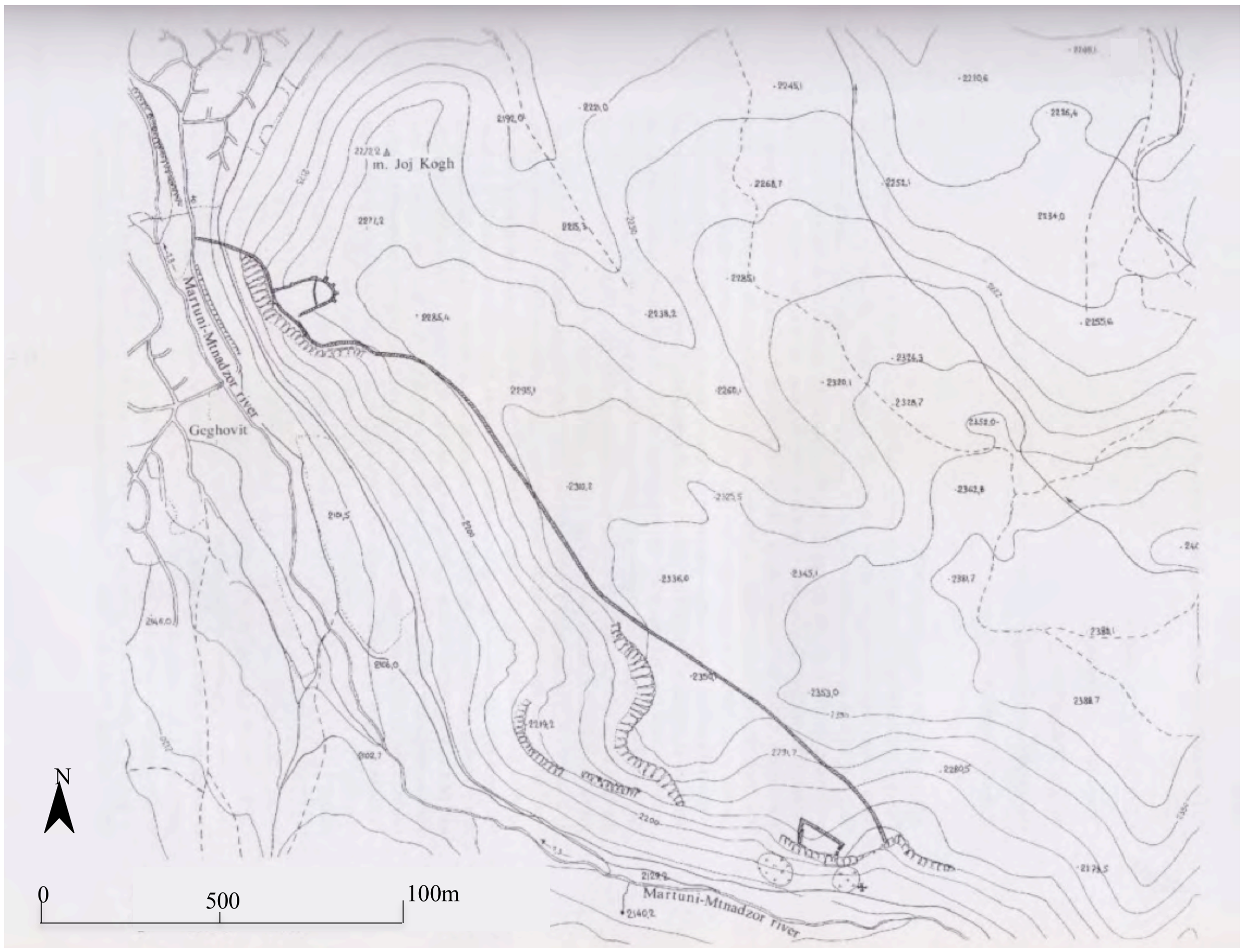


Figure 7-2: Site plan of Joj Kogh 1 (adapted from Biscione et al. 2002: page 179)

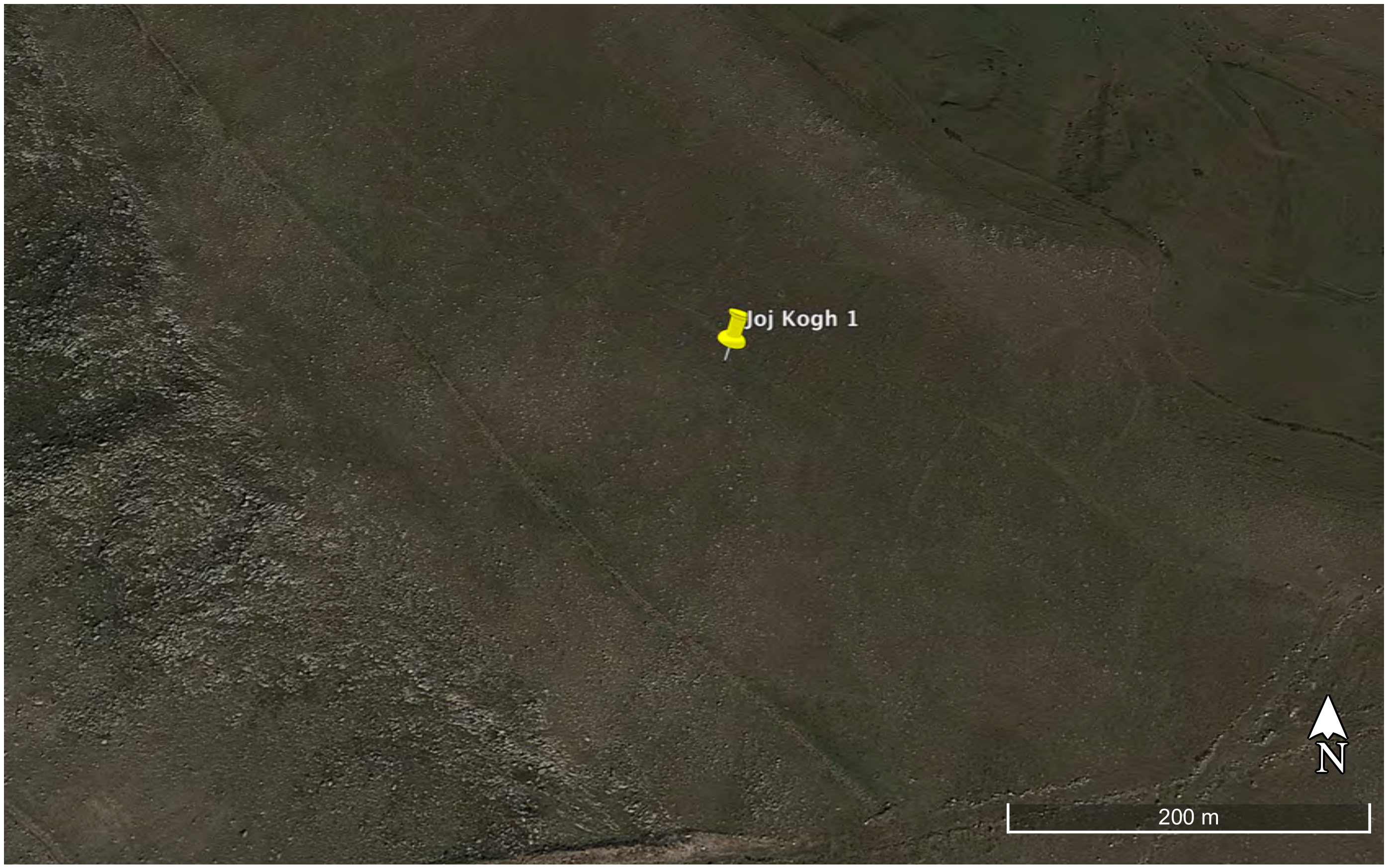


Figure 7-3: Satellite image of Joj Kogh 1 (Map data: Google, DigitalGlobe)

Elevation: 2,243 meters

Background: Joj Kogh 2 is located at the edge of the same plateau as Joj Kogh 1. Parts of the site are on the top of the hill, while other parts continue down the slope. The site consists of a fortress with extensive walls and several towers, as well as kurgans from the Hellenistic period (Figure 7-4—7-6). The structures are Early Iron Age. Pottery was not identifiable (Biscione et al. 2002).

Phenomenological overview: This fortress and associated kurgans are situated in a stunning location, on a high, steep ridge. This ridge is extremely imposing and difficult to climb, taking about half an hour from the easiest point of access to the north. The site itself has striking views of the lake and the surrounding mountains. While the construction is not particularly skillful, and the stones involved are small, the fortress's presence in such an inaccessible location is impressive and awe-inspiring. Similarly, the views of the surrounding landscape, including mountains and the lake, are awe-inspiring and create a sense of surveillance over that landscape. In addition, in the past, the presence of kurgans would have evoked feelings of fear, awe, reverence, and a sense of this location's enduring importance on the landscape. However, the site's long-distance visibility to the east is somewhat limited by higher mountains in that direction.

Kra

Time Period: Urartian

Type of site: Fortress

Location: 40º11'27.11" N, 45º12'57.76" E

Elevation: 1,939 meters

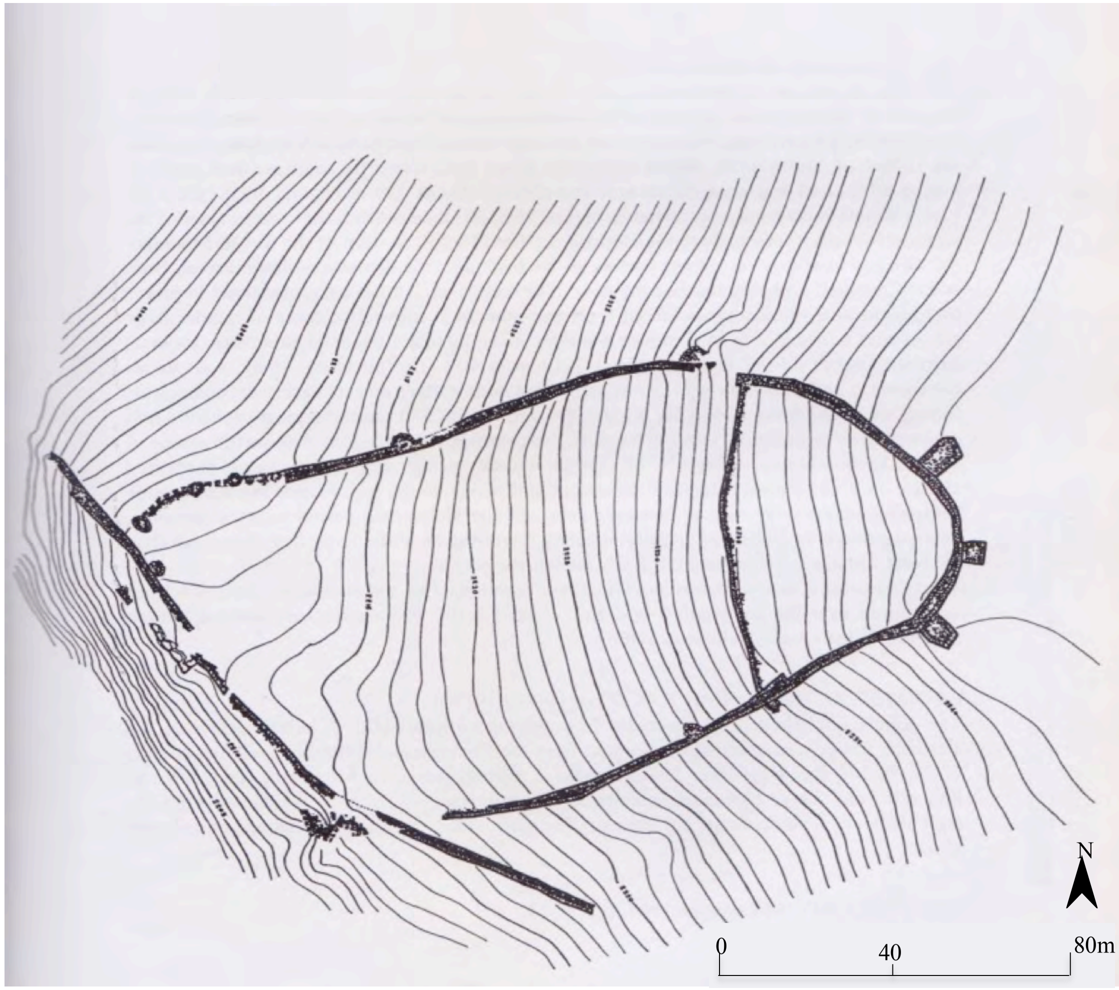


Figure 7-4: Site plan of Joj Kogh 2 (adapted from Biscione et al. 2002:Page 177)

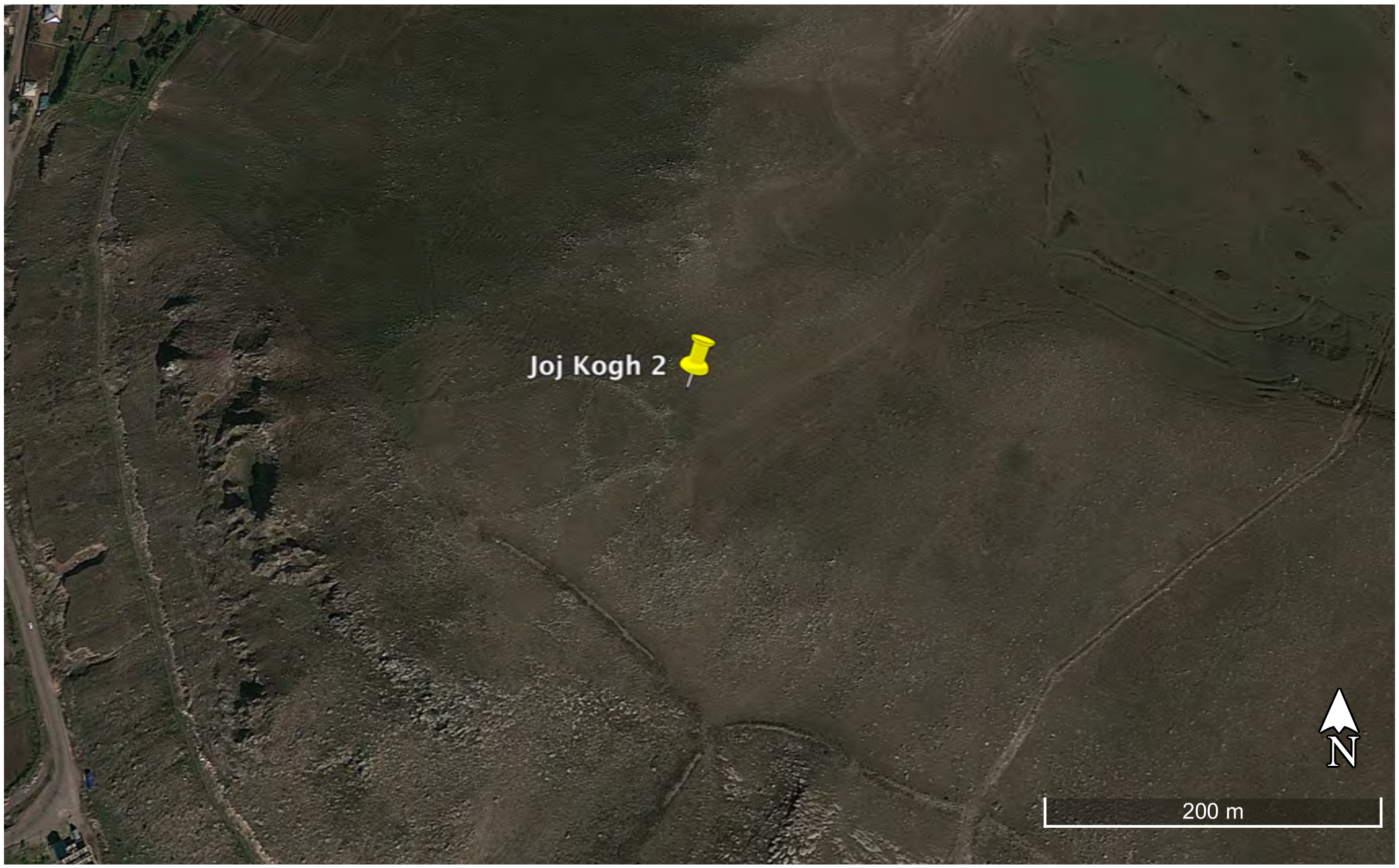


Figure 7-5: Satellite image of Joj Kogh 2 (Map data: Google, DigitalGlobe)

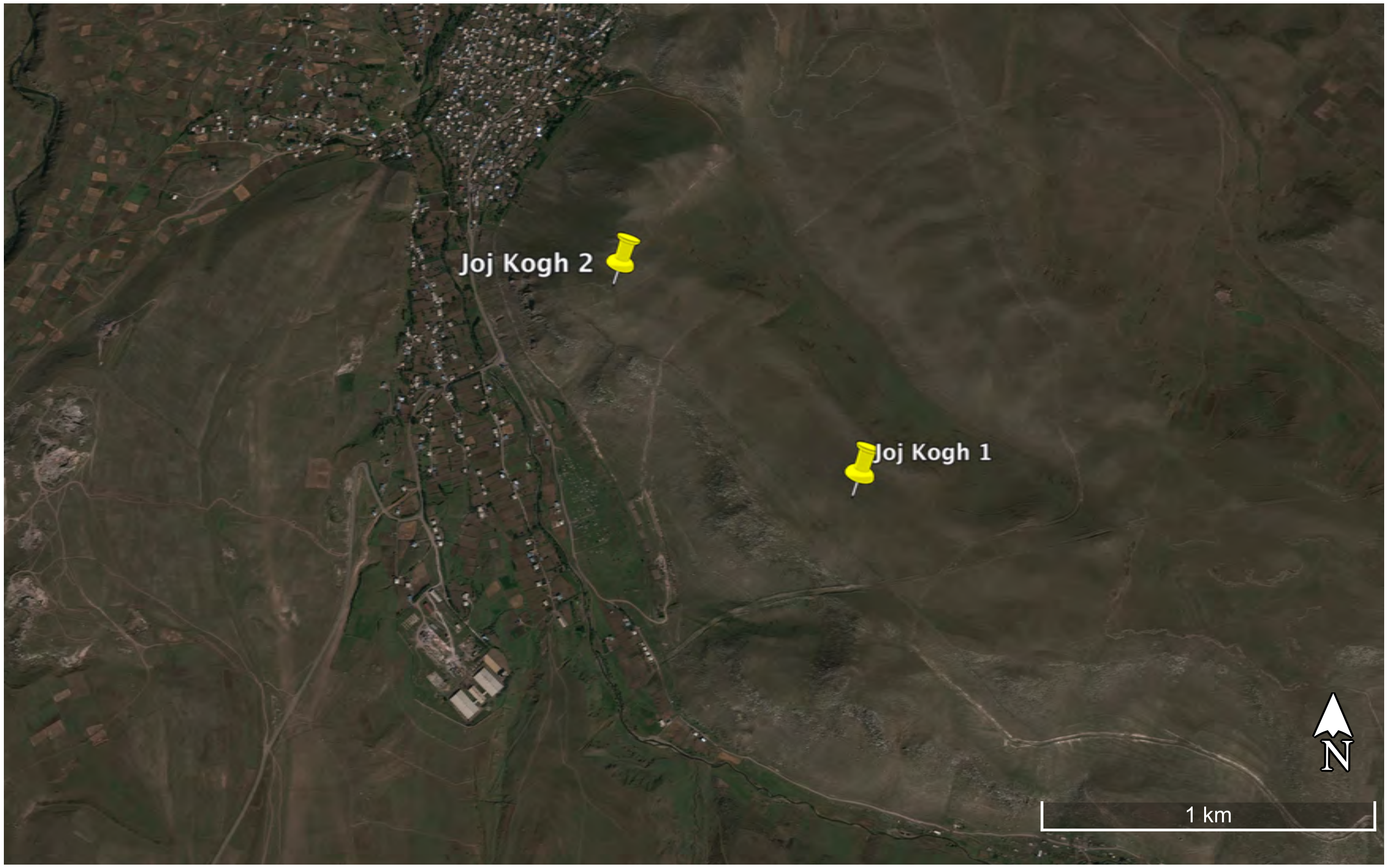


Figure 7-6: Satellite image of Joj Kogh 1 and 2 showing architecture (Map data: Google, DigitalGlobe)

Background: Located on a hillock, this site consists of a citadel and fortification wall at the top of the hill, with an outer wall lower down the hill (Figure 7-7—7-10). Evidence of terracing is present, as well as a basalt block that may have been a column, and many obsidian flakes. An Urartian inscription was found near this fortress, though it now resides in a museum and its original location is unknown. All pottery is Urartian, with no evidence of earlier occupation (Biscione et. al. 2002).

Phenomenological overview: This fortress has many of the standard features of fortresses in this region: it is located atop a moderately steep, moderately high hill, with good visibility of the surrounding landscape. While visually prominent on the landscape, the hill is not particularly imposing or intimidating, and it provides limited views of the lake. Architecture consists of small to medium sized uncut stones, and in general little effort or skill appears to have gone into the shaping or fitting of the rocks. The fortress itself, due to its large size, is imposing, and has a good view of the surrounding landscape, but in general little is remarkable about this site and little inspires strong emotion.

Kyurdi Kurgh

Time Period: Early Iron Age

Type of site: Fortress and cemetery

Location: 40º07'17.15" N, 45º19'58.20" E

Elevation: 2,075 meters

Background: The site is located on a steep spur at the base of higher hills. The site consists of a fortress with walls made of unusually large stones. Natural rock

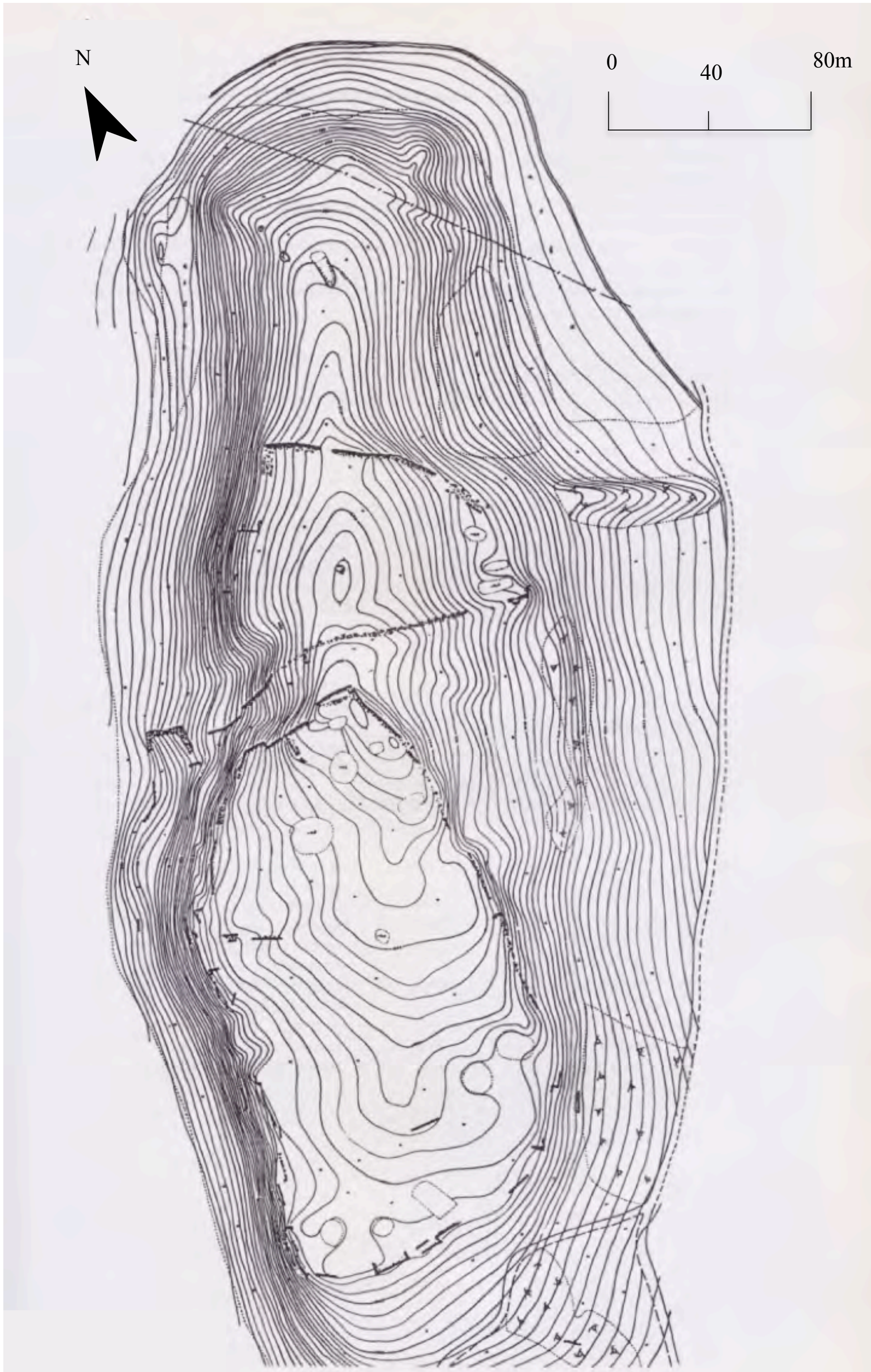


Figure 7-7: Site plan of Kra (adapted from Biscione et al. 2002:Page 215)

Figure 7-8: Satellite image of Kra (Map data: Google, DigitalGlobe)

Figure 7-9: Satellite image of Kra showing architecture (Map data: Google, DigitalGlobe)

Figure 7-10: Satellite image of Kra and surrounding landscape (Map data: Google, DigitalGlobe)

outcroppings are incorporated into the walls. Traces of an ancient canal are present earby. Other structures are also found outside the fortress (Figures 7-11—7-13). Architecture dates to the Early Iron Age (Biscione et. al. 2002).

Phenomenological overview: Kyurdi Kurgh by far the most impressive site in the Sevan or Aragats regions, and one of the most impressive sites overall. Located atop two adjacent hills that take twenty to thirty minutes to climb, the site has stunning views of the surrounding landscape to the north, east and west, as well as of the lake. The hills themselves are difficult to ascend and steep, towering above the visitor and seeming, at times, impossible to traverse. The location is visually prominent on the landscape and is visible from a great distance away from the north. From the south, higher hills and ridges block the site from view and also limit accessibility. Similar to other sites in the region, the stones of the fortress are of medium-to-large size, uncut, and poorly fitted, with no ornamentation. However, the fact that anyone was able to build anything at such a remote, inaccessible location is in and of itself impressive. The size of the kurgans and the skill with which they were constructed is difficult to determine, as they have largely been eroded and some of them may have been destroyed by modern-day activity. However many of these kurgans are intervisible with the fortress, which in the past likely would have generated feelings of fear and awe, and also would have reinforced the sense that this was an important and enduring place on the landscape.

Martuni

Time Period: Early Iron Age, Urartian

Type of site: Fortress

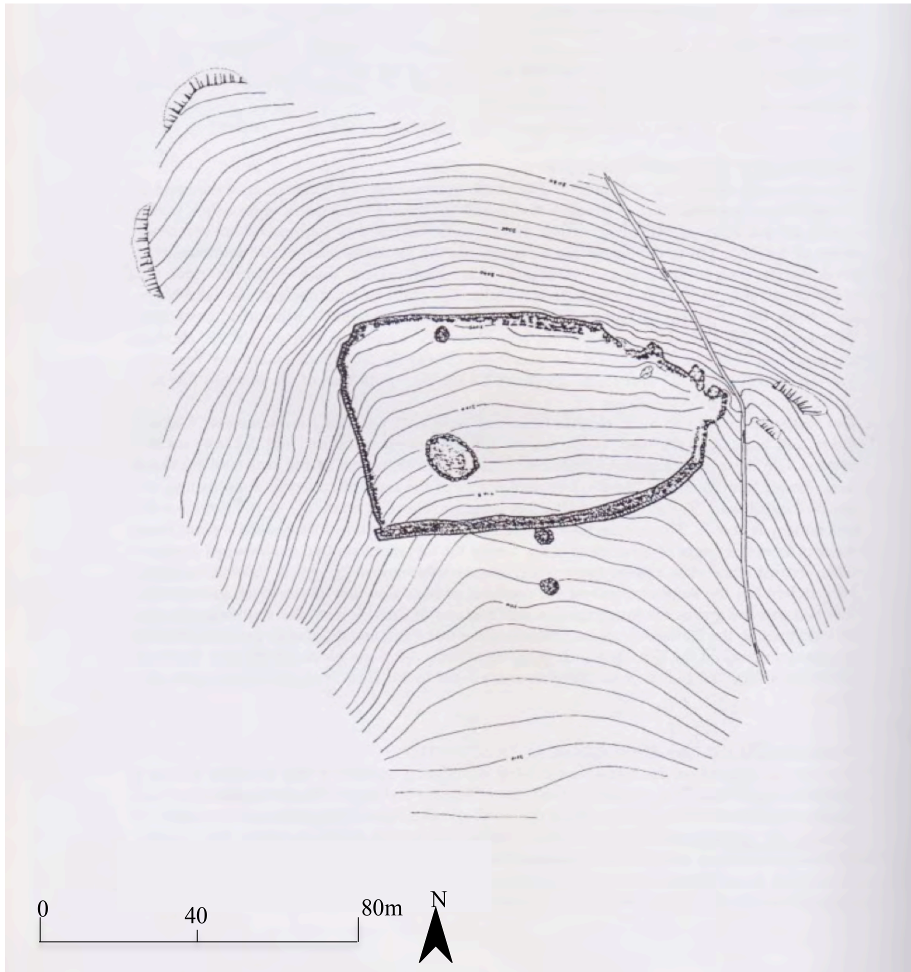


Figure 7-11: Site plan of Kyurdi Kurgh (adapted from Biscione et al. 2002:Page 162)

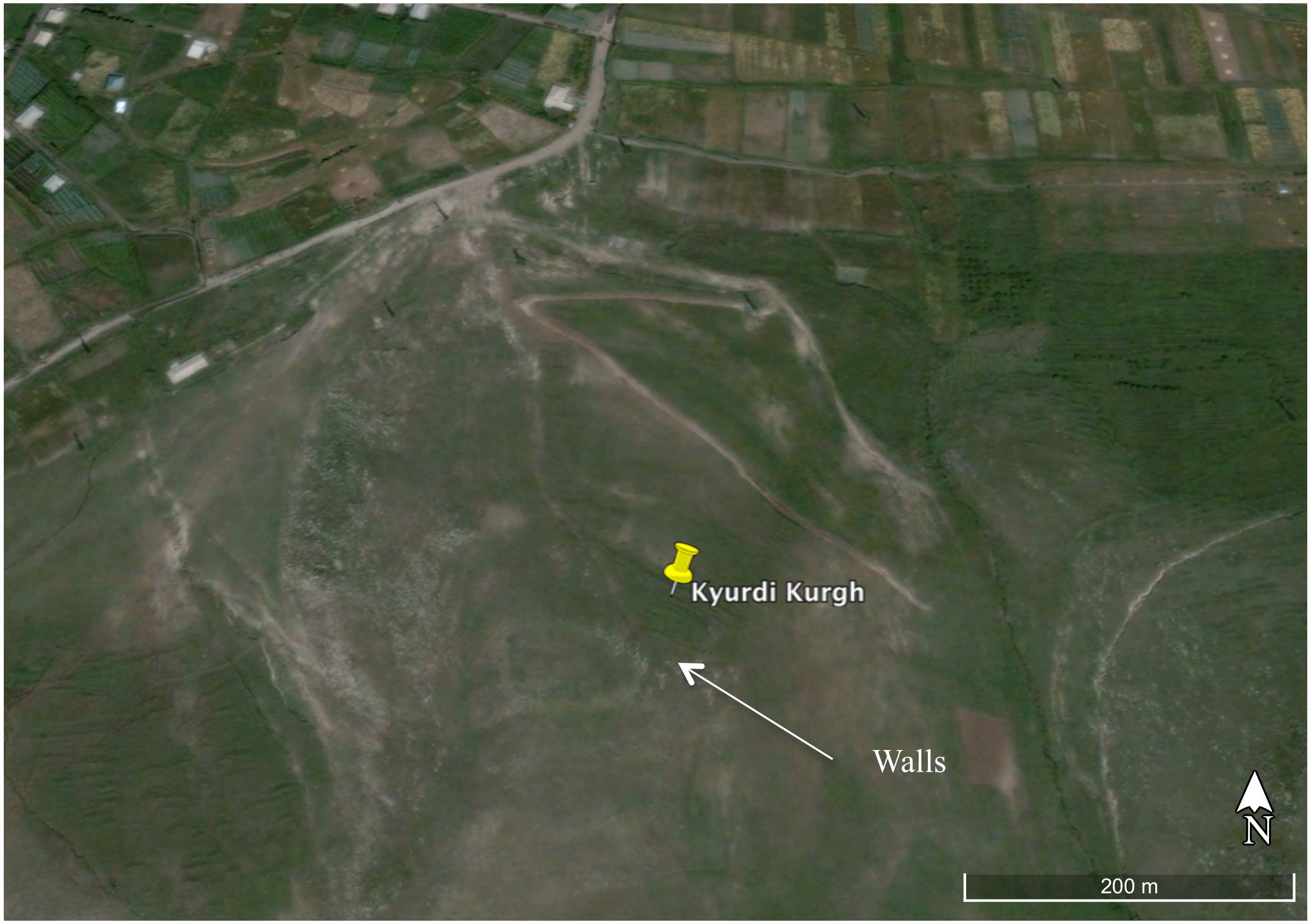


Figure 7-12: Satellite image of Kyurdi Kurgh (Map data: Google, DigitalGlobe)

Figure 7-13: Satellite image of Kyurdi Kurgh showing architecture (Map data: Google, DigitalGlobe)

Location: 40º07’44.79” N, 45º18’10.81” E

Elevation: 1,988 meters

Background: The site is located at the beginning of a set of hills. According to Biscione and colleagues (2002:158), “the fort[ress] commands the Martuni plain and probably controlled the mouth of the Martuni-Mtnadzor river valley.” The fortress consists of an outer wall and a keep, and is not as heavily fortified in the direction of the hills to the south compared to the north (Figure 7-14—7-17). Possible evidence of a canal can be found nearby. Excavations were carried out in the mid-twentieth century (Mikayelyan 1968). Pottery is Early Iron Age and Urartian (Biscione et. al 2002). Neda Parmegiani and Mautizio Poscolieri (1999, 2003) consider it to have been a fortress in the Early Iron Age and Urartian periods.

Phenomenological overview: Like most Urartian fortresses, Martuni is located on a hill. However, its location only about halfway up the hill, with the fortress extending down the north slope, is unusual. This makes the fortress more accessible and less visible than it would be were it at the top of the hill, though the fortress still enjoys a commanding view of the surrounding agricultural land to the north, east and west, as well as views of the lake. It is easily accessible from the lake and from points along the lakeshore. The most notable thing about this fortress is the size of the stones used for the walls, which are much larger than at most of the other sites in this region. Thus, while the fortress’s location is only moderately imposing, the size of the walls and of the stones used to build them is awe-inspiring and intimidating. Additionally, the fortress’s location on a fairly steep slope poses its own set of technical difficulties that required a good deal of skill to overcome. Although the stones are uncut, as is the case for many of the other

Figure 7-14: Site plan of Martuni (adapted from Biscione et al. 2002:Page 159)

Figure 7-15: Satellite image of Martuni (Map data: Google, DigitalGlobe)

Figure 7-16: Satellite image of Martuni showing architecture (Map data: Google, DigitalGlobe)

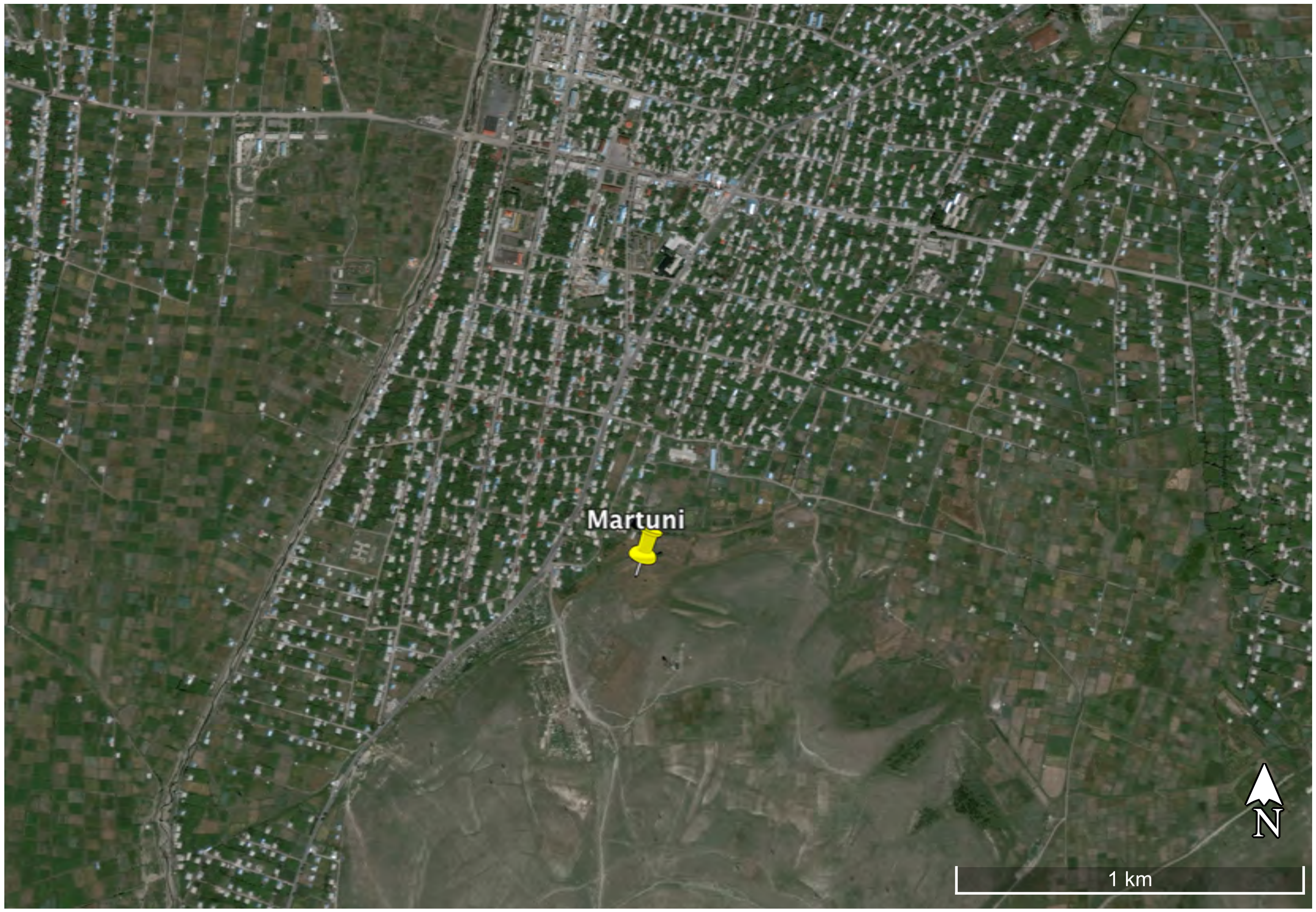


Figure 7-17: Satellite image of Martuni and surrounding landscape (Map data: Google, DigitalGlobe)

fortress in this area, this fortress is more impressive in its architecture than many similar fortresses. The fortress loses some of the emotional impact that would come with greater height and visibility, but the large stones and construction techniques are awe-inspiring and intimidating, and ensure that this fortress is still formidable.

Mtnadzor

Time Period: Early Iron Age

Type of site: Fortress and kurgans

Location: 40° 4'15.00"N, 45°18'42.00" E

Elevation: 2,251 meters

Background: The fortress is located on the promontory of a plateau above the Martuni-Mtnadzor River, not far from Joj Kogh 1 and 2. The fortress is large and fairly well preserved. The fortress has substantial walls and towers, and within those walls, evidence of terracing and craft production (Figure 7-18—7-21). Biscione and colleagues (2002) describe the fortress's style as inconsistent with Urartian architecture. Identifiable pottery is Late Bronze and Early Iron Age. Parmegiani and Poscolieri (2003) describe it as a main fortress in the Early Iron Age.

Phenomenological overview: This site is one of the more emotionally interesting and evocative sites. Located on a high ridge, this site has good visibility to the northwest, the direction of the modern village. This is also the direction from which it is most accessible. Beyond that, however, hills and mountains surround the site, which also overlooks the Martuni River and a pass leading to the mountains to the south. All of this contributes to an isolated and untamed feeling; while the site can see cultivated land, this

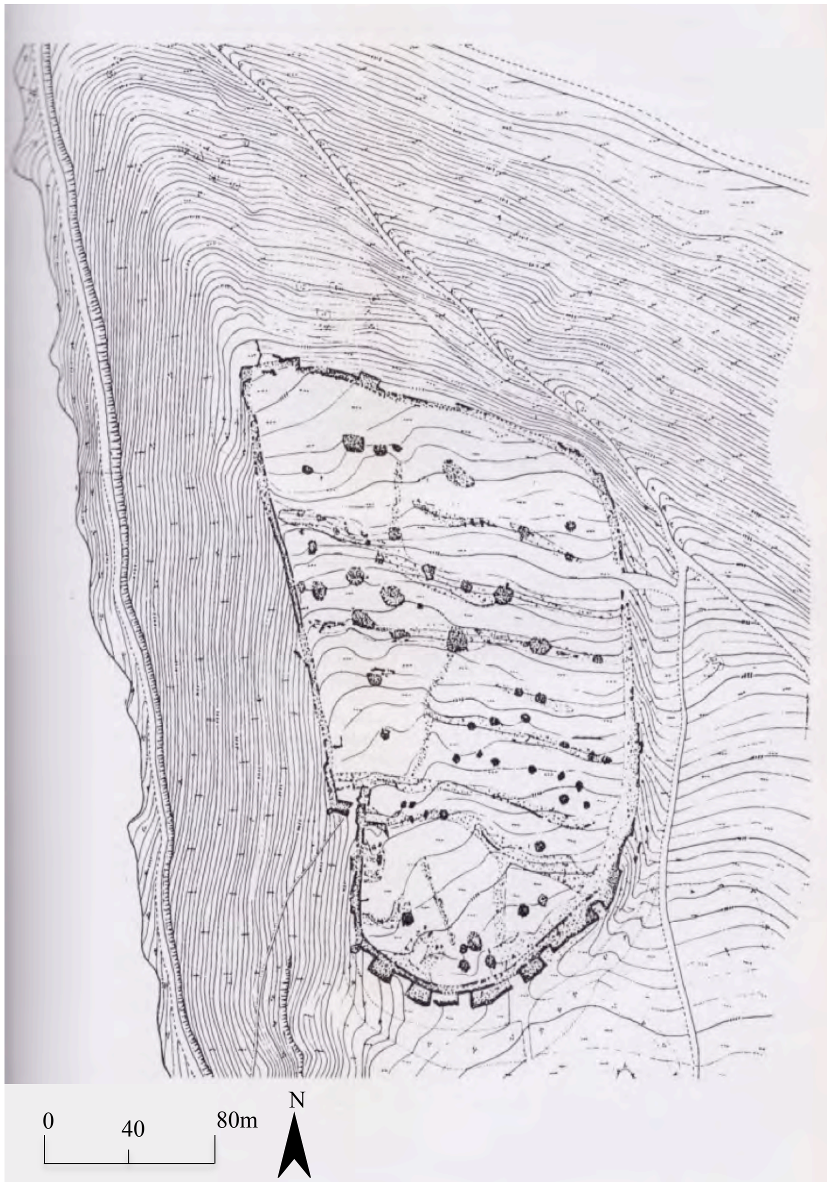


Figure 7-18: Site plan of Mtnadzor (adapted from Biscione et al. 2002:Page 181)

Figure 7-19: Satellite image of Mtnadzor (Map data: Google, DigitalGlobe)

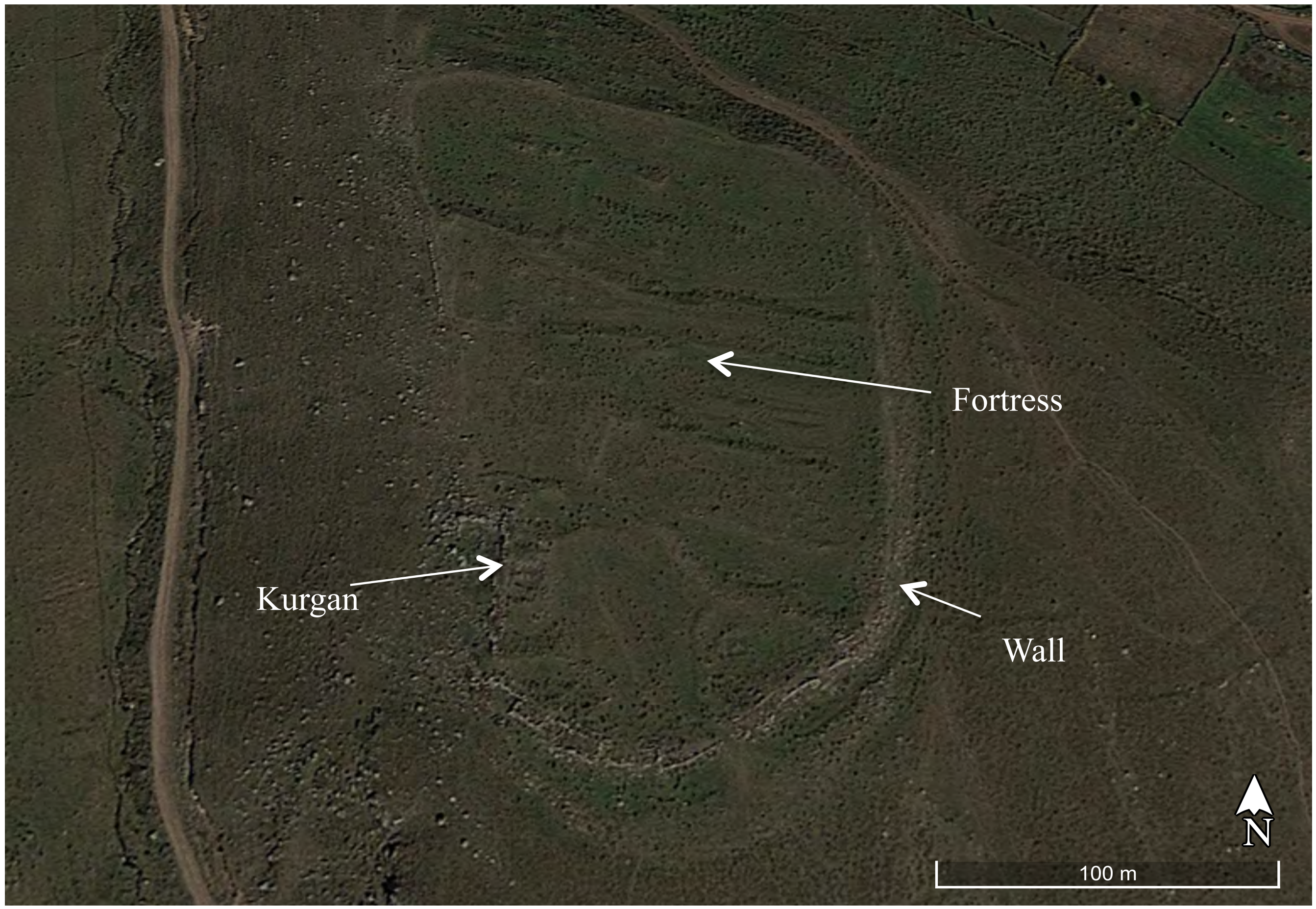


Figure 7-20: Satellite image of Mtnadzor showing architecture (Map data: Google, DigitalGlobe)

Figure 7-21: Satellite image of Mtnadzor and surrounding landscape (Map data: Google, DigitalGlobe)

land feels far away, and the site's immediate surroundings are rugged. This ruggedness means that the site is physically inaccessible; the best access is from the modern village to the northwest, but even this requires climbing the ridge. The site also has steep drop-offs to the north, east and west, which make the site's location imposing and intimidating. Architecture at this site consists of fortress walls of large, uncut stones, as well as unusually large kurgans with concentric rings of numerous stones of various shapes and sizes. The size of the stones used in the walls, as well as the fortress's presence in such a remote location, is intimidating and awe-inspiring. Similarly, the kurgans' large size evokes feelings of admiration and respect for their builders and, presumably, the individual interred within them. Additionally, in the past their role as burials would have evoked feelings of awe, fear, and reverence, as well as a sense of the place's enduring importance on the landscape.

Norabak 1

Time Period: Early Bronze – Early Iron

Type of site: Fortress and cemetery

Location: 40º09'10.53" N, 45º52'25.14" E

Elevation: 2,156 meters

Background: The site is located between two ravines, through which rivers run, on a terrace at the base of a much larger promontory. The site consists of a fortress with poorly preserved walls, and a number of kurgans (Figure 7-22—7-25). Much of the architecture is Early Bronze Age, but pottery included fragments from the Middle Bronze

Figure 7-22: Site plan of Norabak (adapted from Biscione et al. 2002:page 73)

Figure 7-23: Satellite image of Norabak 1 (Map data: Google, DigitalGlobe)

Figure 7-24: Satellite image of Norabak 1 showing architecture (Map data: Google, DigitalGlobe)

Figure 7-25: Satellite image of Norabak 1 and surrounding landscape (Map data: Google, DigitalGlobe)

through Early Iron Ages (Biscione et. al. 2002). Parmegiani and Poscolieri (2003) categorize it as a fortress during the Early Iron Age, without any Urartian presence.

Phenomenological overview: Located in a valley at the base of the mountains on Armenia's eastern border, this site has a distinct feeling of being enclosed and isolated. The fortress is located on a low ridge that gives it decent visibility over the immediate area and toward the modern-day village to the west, but in general visibility is highly limited by hills and mountains. This rugged landscape also limits the site's physical accessibility. The site is quite large; few cultural features are preserved, but the outlines of rooms and walls are visible, as well as numerous earthen mounds marking tombs. On either side of the ridge, rivers run through small ravines. Directly to the north, a much larger hill towers over the site, and in general the site is dwarfed by surrounding features. While these features are moderately impressive, the nearby hills are relatively low, and larger mountains and other natural features are blocked from view.

Sangar

Time Period: Early Iron Age

Type of site: Fortress and kurgans

Location: 40°11'00.38"N, 45° 09'39.99"E

Elevation: 2,256 meters

Background: Sangar is a large fortress located atop a high plateau (Barkhudaryan 1973). Biscione and colleagues (2002) describe extensive yet poorly preserved walls and buttresses. However, when I surveyed the site, a TV antenna or cell phone tower had recently been built in the middle, and determining the architectural layout was difficult due to disturbance of the area (Figure 7-26—7-28). Several kurgans are also present. The structures, kurgans and surface pottery all dated this site to the Early Iron Age (Biscione et. al. 2002), during which time Parmegiani and Poscolieri (2003) describe it as a main fortress in its region. Based on its size and location, the site is most likely the ancient city of Tulihu, which was conquered by Sarduri II (Biscione et. al. 2002).

Phenomenological overview: Located on a high ridge, this site nonetheless lacks many of the features associated with sites at high points on the landscape. Located far from the edge of the ridge, the site's elevation does not enhance its visibility to the surrounding landscape or its visibility of surrounding features. In fact, the visual experience at this site is fairly limited. Hills and mountains block the view in all directions and little of the flat agricultural land to the north can be seen. The site is also located in the middle of the ridge top, and thus has none of the imposing drop-offs or views of many of the other sites at high places. The ridge top is also quite flat, and generally has little that is interesting or emotionally evocative in the way of topography. Despite being surrounded by mountains and ridges, visibility of these features is limited. Except for a few fairly large kurgans and traces of walls, most cultural features are gone. There are a large number of stones that appear to have been moved recently, and most likely cultural features were destroyed by farming activity and/or the construction of the tower located at the site. In general, this site feels isolated, remote and rather peaceful.

Sotk 1

Time Period: Urartian

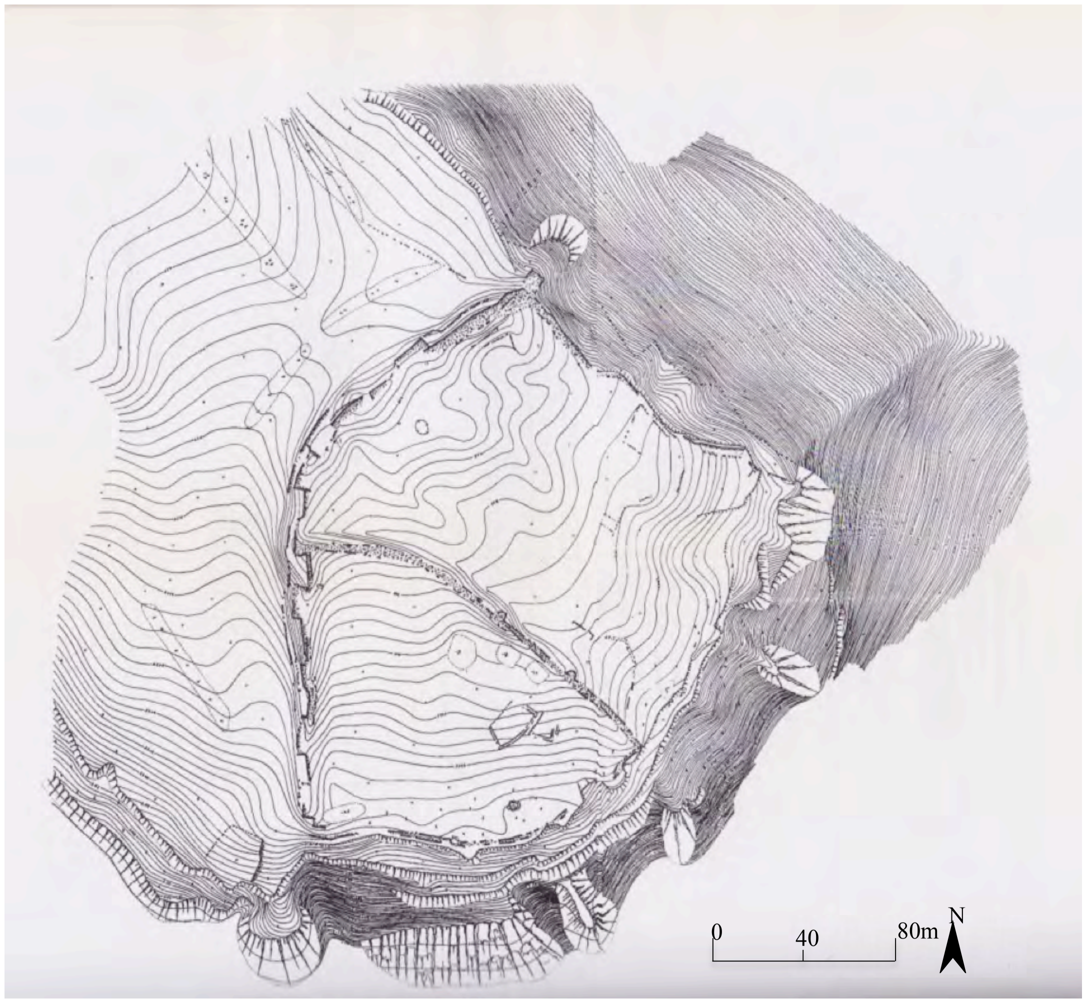


Figure 7-26: Site plan of Sangar (adapted from Biscione et al. 2002:Page 231)

Figure 7-27: Satellite image of Sangar (Map data: Google, DigitalGlobe)

Figure 7-28: Satellite image of Sangar showing architecture (Map data: Google, DigitalGlobe)

Type of site: Fortress

Location: 40º11’52.69” N, 45º51’59.45” E

Elevation: 2,021 meters

Background: This site is situated on a small hill beside the Sotk river, and is the location of a small fortress (Figure 7-29—7-31). Two lines of walls are present dating to Urartian times, as well as an Urartian grave and a later Hellenistic burial (Barkhudaryan 1973; Yesayan 1979). There was one Urartian pottery sherd (Biscione et. al. 2002).

Phenomenological overview: This site is quite small, and generally unimpressive. Located on a small hill overlooking a creek, the fortress here is only visible from a short distance away, and easily approached from the north and west. To the south and east the slope is steeper, but the small hill limits the imposing effect of the larger hilltop fortresses at places such as Kyurdi Kurgh or Joj Kogh 1 and 2. All that remains of cultural features is a single course of a wall of large, crudely shaped stones. In general this site has a peaceful atmosphere, with little to inspire strong emotion, other than striking views of the surrounding low mountains to the north and west.

Sotk 2

Time Period: Early Bronze – Early Iron (?)

Type of site: Fortress

Location: 40º12’12.06” N, 45º53’10.03” E

Elevation: 2,076 meters

Background: This site is located several kilometers from Sotk 1, and is larger. It is located on an isolated hill (Figures 7-32—7-34). Biscione and colleagues (2002) report

Figure 7-29: Site plan of Sotk 1 (adapted from Biscione et al. 2002:Page 68)

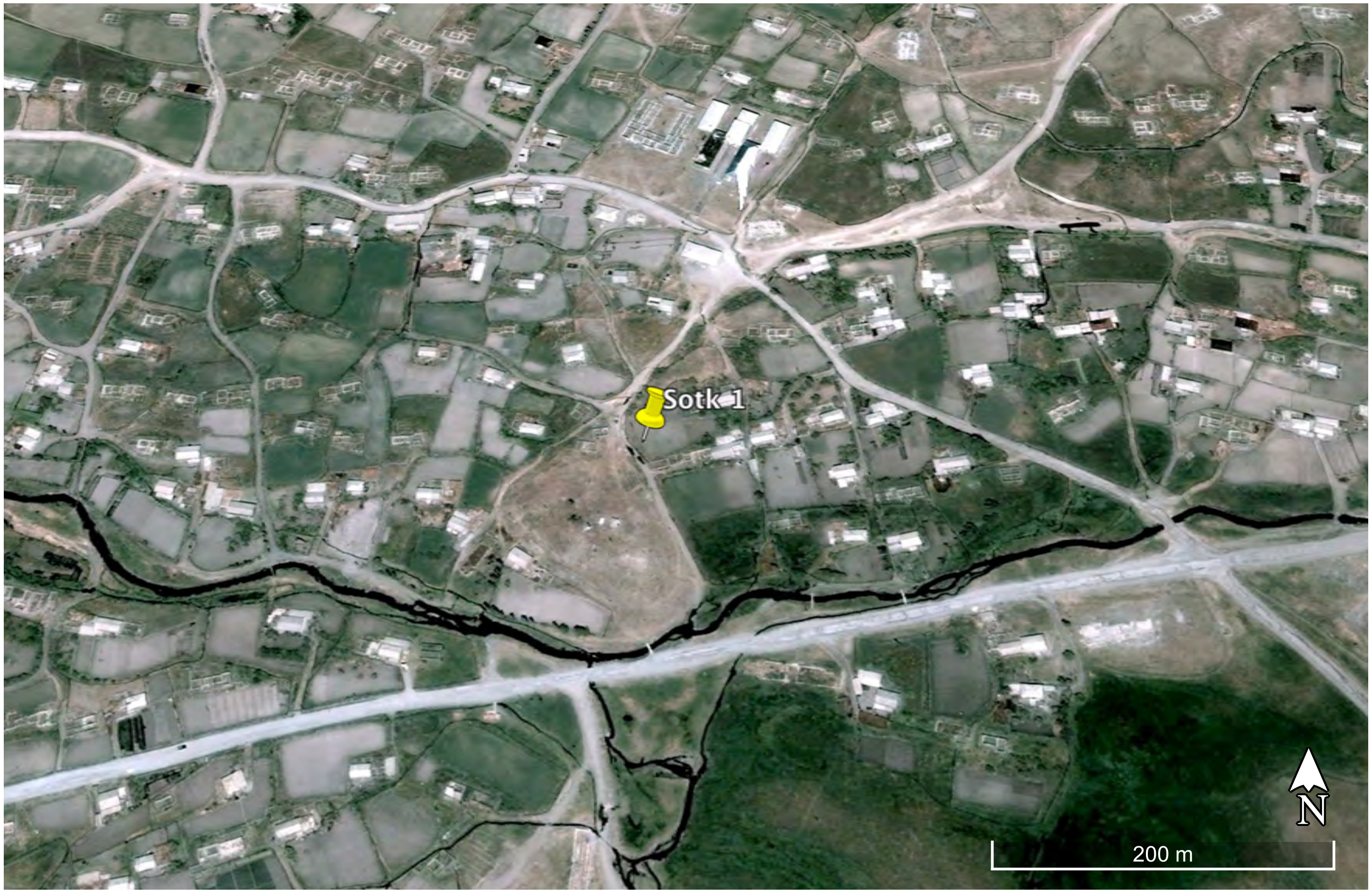


Figure 7-30: Satellite image of Sotk 1 (Map data: Google, DigitalGlobe)

Figure 7-31: Satellite image of Sotk 1 showing the location of the fort (Map data: Google, DigitalGlobe)

Figure 7-32: Satellite image of Sotk 2 (Map data: Google, DigitalGlobe)

Figure 7-33: Satellite image of Sotk 2 showing excavated area (Map data: Google, DigitalGlobe)

Figure 7-34: Satellite image of Sotk 1 and 2 and surrounding landscape (Map data: Google, DigitalGlobe)

alignments of stones that may have represented fortification walls, but these stones were not observed today. Pottery is present from the Early Bronze Age through the Early Iron Age. Biscione and colleagues (2002) do not provide any estimated dates for the structures.

Phenomenological overview: This fortress is located on a steep grassy hill, but unfortunately essentially nothing remains of its cultural features. The site overlooks flat ground in the form of a valley to the south, and from this direction it is highly visible. Visibility is limited from the slopes of the hills to the north, west and east and from the flat land in between, but those hills block visibility from points beyond them. The hill is one of several similar hills nearby, and in general it blends in with the surrounding landscape. The site is overshadowed by the mountains to the north, west and east, which decrease its emotional impact. The hill is moderately steep and moderately high, making accessibility somewhat difficult, but this hill is not as imposing as certain other sites in this region. The site is more accessible from the flat land and modern village to the east; to the north, east and south, foothills and low mountains make to the site more difficult. The most notable thing about this site is the way that mountains to north, east and south come slowly into view as one approaches from the west, the most accessible direction. As one climbs the hill or walks around it, these peaks slowly reveal themselves, making for striking views.

Tsovinar 1

Time period: Late Bronze - Urartian

Type of site: Fortress and inscription

Location: 40º09'09.79" N, 45º29'43.37" E

Elevation: 1,960 meters

Background: Also known as Odzaberd or Teishebaini, the site consists of a fortress, lower town and inscription. The fortress is located on a rocky spur, with the inscription at its base. The fortress is heavily fortified with buttresses, thick walls and towers, particularly on the western side above the inscription (Figure 7-35—7-37). Most of the architecture is Urartian, but some earlier architecture dates to the Early Iron Age. Pottery is Early Bronze Age and Late Bronze Age through Urartian (Biscione et. al. 2002).

Phenomenological overview: The fortress has a commanding view of the flat agricultural land to the north, east and west, and is also highly visible from the lake and from the shore of the lake. To the south, visibility is blocked almost immediately by higher hills. Accessing the fortress from the north, the most likely route of approach, involves climbing a moderately steep, moderately high hill. The hill on which the fortress is located, however, is on flat land and is easily accessible from the lake and from other points on the lakeshore. From the hills to the south, the site is significantly less accessible. The most notable aspect of this site is the inscription, which is at the base of the hill. While not as finely carved as those in the Van region, this inscription is impressive, awe-inspiring, and in the past likely would have been intimidating and mysterious especially to those who did not know how to read, which would have been most people. Like many Urartian inscriptions, this one is carved into the stone at the base of a much larger natural stone feature, in this case the sheer rock face of the promontory. This rock face, which is also present on a small part of the north side of the hill, is an

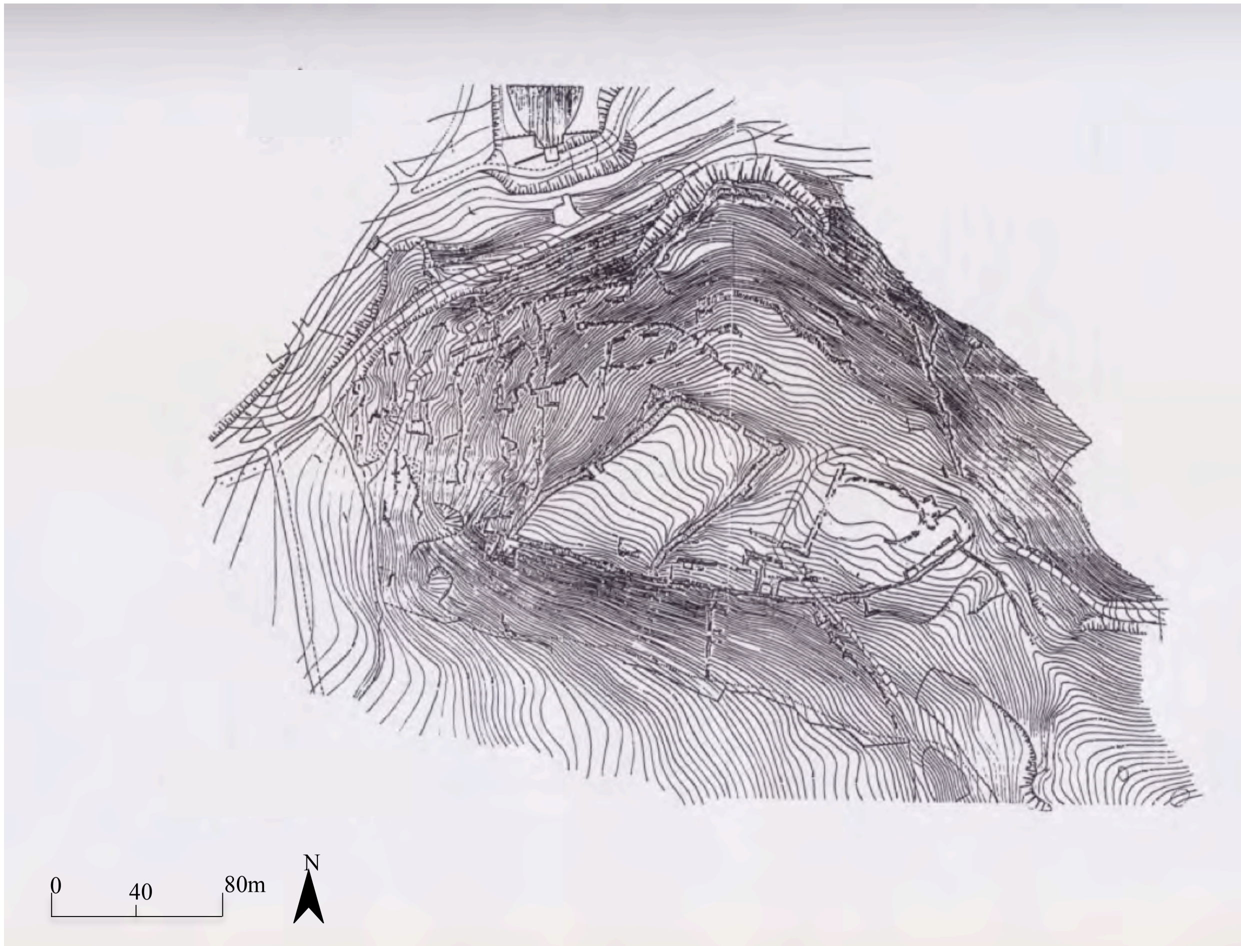


Figure 7-35: Site plan of Tsovinar 1 (adapted from Biscione et al. 2002:Page 131)

Figure 7-36: Satellite image of Tsovinar 1 (Map data: Google, DigitalGlobe)

Figure 7-37: Satellite image of Tsovinar showing architecture (Map data: Google, DigitalGlobe)

unusual and interesting feature that serves to distinguish this site from others. While the differences in color and texture are visually noteworthy, physical access is still relatively easy by climbing the grassy hill surrounding the rock face. Nonetheless, the rock face makes the hill itself appear more intimidating and striking than it otherwise would have.

Tsovinar 2

Time period: Early Iron Age

Type of site: Cemetery

Location: 40º08'13.41" N, 45º29'43.12" E

Elevation: 2,115 meters

Background: The site is located in the hills to the south of the fortress (Figures 7-38, 7-39). The kurgans are built of earth and stone, and some are as large as fifteen meters in diameter. They are dated to the Early Iron Age (Biscione et. al. 2002).

Phenomenological overview: These kurgans are difficult to access, being located on a ridge above the fortress. Climbing from the fortress to the kurgans is difficult and time-consuming and involves traversing steep, uneven ground. Despite their elevation, however, the kurgans themselves do not have good visibility; they are too far from the edge of the ridge to see the fortress or much of the surrounding land, and can barely see the lake. The top of the ridge is flat and grassy, with few interesting features near or in sight of the kurgans, although the kurgans are visually and physically accessible to each other. The atmosphere is peaceful and feels isolated from the surrounding landscape. Little of the kurgans remains except collections of rocks and raised mounds of earth. Several of them appear to have been quite large, which would have required large

Figure 7-38: Satellite image of Tsovinar 2 (Map data: Google, DigitalGlobe)

Figure 7-39: Satellite image of Tsovinar 1 and 2 and surrounding landscape (Map data: Google, DigitalGlobe)

amounts of earth, but their exact dimensions and appearance is difficult to reconstruct. However, in the past, their role as burials would have carried significant emotional weight, likely inspiring feelings of awe, fear and reverence.

Summary of Phenomenological Results

Sites in the Sevan region have phenomenological characteristics that are similar to the Aragats and the Van sites. Like the Aragats sites, they are universally located on grassy hills rather than steep cliffs, with the partial exception of Tsovinar 1, an outcropping bordered by a low rock face on one side, though the rest of the site is grassy. In many cases, these hills are large, and could take half an hour or more to climb. Joj Kogh 1 and 2, Kyurdi Kurgh, Sangar, and Tsovinar 2 are particularly noteworthy for their locations on high, steep grassy ridges. On the other hand, these ridge tops are generally large and quite flat, so most Sevan sites scored high on physical accessibility within the site. While it would be logical to expect that sites in such prominent locations would have high visibility, the opposite is true; sites on high hills are often less visible than those on lower hills. This pattern is due to the fact that sites located on high hills are often surrounded by even higher hills that block visibility in most directions. Indeed, like the sites in Van region, sites in the Sevan region often have excellent visibility in one or two directions but limited visibility in the others. This confirms the pattern observed in Chapter 6 that low hills in flat landscapes actually have greater visibility than large hills in rugged landscapes. This also means that the sites that inspire the strongest emotional impact, namely towering hilltop sites that loom imposingly above the viewer, are not actually the most visible. On the other hand, sites located on high hills provide striking views of the surrounding mountains and landscape below, even if they cannot see far, and their large size makes them impressive and intimidating. Like the Van sites, Sevan sites have striking views of a lake, which also enhances their visibility; however, Sevan sites themselves tend to be not visually prominent, and often blend into a landscape of larger, more imposing hills. In addition to views of the lake, the hills themselves also evoke significant emotional impact due to their large size and the amount of effort required to climb them. The presence of structures atop these hills is also awe-inspiring, as it is impressive to imagine anyone building in such inaccessible locations. Indeed, the bodily experience of climbing at these sites is significant, due not so much to steepness as to the length of time required to reach the site. While some of these sites appear not particularly intimidating or difficult to navigate from a distance, once I was engaged in the act of climbing, their true size and inaccessibility soon became evident.

Not all sites are on high hills. Several of the sites—Sotk 1, Sotk 2, Martuni, and Kra—are on medium-sized hills of moderate steepness, which are generally unremarkable to experience. However, unlike in the Aragats region, where a number of sites are on fairly flat ground, Norabak is the only site in the Sevan region that is not on a hill at all. On the other hand, several of the sites, despite being located on high ridges, are neither visually prominent nor emotionally impressive. These sites—Sangar, Tsovinar 2, and Joj Kogh 2—are located in the middle of large ridges, rather than at the edges. They do not have intimidating views of steep drop-offs or flat land far below, and they are often blocked from views of impressive landscape features by the ridge itself. Although located on high ridges, the land immediately surrounding the sites is quite flat. These sites feel physically isolated, by their elevation and remoteness, and visually isolated, by their limited visibility of their surroundings. Notably, all of these sites contain kurgans. In the past, this sense of isolation may have been important for their role as resting places for the dead. However, it contradicts the theory that the visibility of kurgans was a priority, as these kurgans are generally not highly visible from the surrounding landscape. On the other hand, the general locations of these kurgans are visually prominent, even if the mounds themselves are not, and people who knew where the kurgans were likely would have been able to see and recognize their general vicinity from a significant distance away. In modern times the locations of these kurgans are also grazing lands or farmland for the people of the surrounding villages; if this was the case in the past, people would have passed by them frequently, emphasizing their role in social memory.

The sense of isolation is strongest at these kurgan sites, but is a noteworthy feature of many of the Sevan sites. Even high sites with greater visibility, such as Kyurdi Kurgh or Joj Kogh 1, still have limited views of their surroundings, and their great height also contributes to a sense of remoteness. Sotk 1, Sotk 2, and Norabak are located on the relatively flat terrain just west of the Lesser Caucasus Mountains, a clear geographic boundary, and all have a feeling of being on the edge of civilization. Unlike the Aragats sites, these sites do not have significant natural features within view, and unlike the Van sites, they also do not have impressive cultural features that would draw a person's attention within the site itself. These sites, and the kurgan sites, have relatively little, either in the foreground or the background, to capture the eye or inspire the other senses, which also contributes to the feeling of isolation. Though these experiences are mainly the product of landscape rather than human intention, they still would have contributed to the sense of the Sevan region, particularly the southeastern shore of the lake and beyond, as a frontier.

Stone-cut features are absent from the Sevan sites. None of the sites have any significant tactile experiences, though several have auditory experiences of echoes from surrounding villages. Most sites also scored fairly low on skill and technology of cultural features and emotional impact of cultural features. Several of the sites lack enough cultural features to have ratings for these criteria. In general, cultural features consist of walls made of medium-sized uncut stones, or low kurgan mounds made of crude circles of stones. The exception to this is the site of Mtnadzor, where there are several large kurgans with neatly ordered circles of stones. Ashlar masonry and high-quality stonework of the types seen at sites such as Van Kalesi or Erebuni are completely absent here, a fact that is not surprising considering Sevan's position on the fringes of the Urartian Empire.

Fortresses, Kurgans and Inscriptions

Of the twelve sites surveyed in this region, six had kurgans and six did not. Of the six sites with kurgans, five had other forms of architecture, usually a fortress; for this analysis all six sites were compared to fortresses without kurgans. Of the six fortresses without kurgans, one, Tsovinar, had an inscription.

Like in the Aragats region, sites with kurgans generally scored lower on the phenomenological rankings than fortresses (Table 7-2). Kurgan sites are less visually accessible, much less physically accessible, and had lower skill and technology of cultural features. Kurgan sites did have higher emotional impact of cultural features, but

Type of Site		Visual accessibility	Visibility of topographic features	Physical accessibility	Skill and technology of cultural features	Emotional Impact of cultural features	Emotional impact of natural features immediately associated with the site	Visibility within the site	Physical accessibility within the site	Extent to which the site incorporates natural features	Acoustic Impact	Tactiile Impact
Fortresses	Average	3.20	3.40	2.80	2.75	2.67	3.20	3.67	4.00	4.20	1.80	1.00
	Range	2	2	3	1	1	3	1	2	2	2	0
Kurgans	Average	2.17	2.67	1.17	2.50	3.00	3.50	3.67	4.00	3.83	1.50	1.00
	Range	3	4	2	3	4	5	2	2	2	2	0
Inscription		3	4	3	3	3	4	4	4	5	3	1

Table 7-2: Results of phenomenology analysis for the Sevan region broken down by site type

in general this was due to the emotional impact of the associated architecture, not the kurgans themselves. However, the kurgans at Mtnadzor are impressive in their size and constructions. Sevan kurgans also scored higher than fortresses on emotional impact of natural features associated with the sites. This is because, like most other kurgans in central and western Asia, the Sevan kurgans tend to be located atop high ridges or hills (with the exception of Norabak). However, these kurgans have a similar atmosphere to those in the Aragats region: they generally have flat ground in their immediate vicinity, limited visibility, and a peaceful, quiet atmosphere. Unlike fortresses, which generate emotional impact by being located on the edge of steep hills and ridges, kurgans are generally located away from the edge in locations that feel relatively safe compared to the fortresses, but also isolated. Like with the Aragats kurgans, this may have been done intentionally, to encourage reflection and contemplation of those who were buried there. On the other hand, these memories of the dead likely would have inspired strong emotions, even if natural and culture features did not. By contrast, Tsovinar, the only site with an inscription, was more visually and physically accessible than the other sites, and also had a stronger emotional impact; this may relate to the importance of the site, which may have been why it had an inscription in the first place.

Urartian vs. Pre-Urartian Sites

Unlike in the Aragats region, where Urartian sites were often founded at distinct locations from major pre-Urartian settlements and fortresses, in the Sevan region, many Urartian sites were founded on the same location as pre-Urartian sites. In Aragats, most pre-Urartian sites had traces of Urartian pottery, but little in the way of Urartian architecture, and the major Urartian sites were not in the same locations as earlier major sites. In Sevan, by contrast, Urartians generally reused earlier fortresses (Hmayakyan 2002). Thus, it was difficult to find sites that were Urartian-founded and that therefore clearly reflected Urartian site choice rather than the convenience of pre-existing architecture and settlement. On the other hand, the fact that Urartians founded so many new sites in the Aragats region suggests that they were willing to "start over" at new locations if they did not find the locations of old sites suitable, or even that they actively sought to distance themselves from previous systems of settlement and authority, as has been suggested (Smith 2000, 2003, 2012). The fact that Urartians were willing to reuse old settlements in the Sevan region indicates that they found these locations adequate for their purposes and that they could accept being associated with the previous occupants. Earley-Spadoni (2015) suggests that Urartians intentionally expanded upon pre-existing communication networks in the Sevan region by reusing earlier sites. In the Aragats region, which was firmly incorporated into the empire, Urartian leaders may have been highly invested in distinguishing themselves from previous systems of governance, even if this required the inconvenience of founding new sites. By contrast, Urartian leaders may have valued convenience over bombastic displays of power when it came to their frontier.

As in the Aragats region, sites with both Urartian and pre-Urartian architecture were considered Urartian; sites with pre-Urartian architecture that had only a few fragments of Urartian surface pottery, but no Urartian architecture, were considered pre-Urartian. The exception to this is the site of Martuni, which had no Urartian architecture observed by Biscione and colleagues (2002) but was considered Urartian by a later survey (Parmegiani 2003). By these criteria, five sites (Joj Kogh 1, Kra, Martuni, Sotk 1 and Tsovinar) were Urartian, while seven (Joj Kogh 2, Kyurdi Kurgh, Mtnadzor, Norabak, Sangar, Sotk 2, and Tsovinar 2) were pre-Urartian.

In general, the pre-Urartian sites in the Sevan region (henceforth referred to as SPU sites) and the Urartian sites in the Sevan region (henceforth referred to as SU sites) were similar (Table 7-3). SPU and SU sites did differ in several ways: SU sites were more physically accessible than SPU sites and less likely to incorporate natural features. SU sites were also somewhat less physically accessible within the site. These three factors are probably related, as sites that incorporate natural features tend to be on large hills that decrease physical accessibility. Unlike in the Aragats region, pre-Urartian and Urartian sites showed little difference in either skill and technology or emotional impact of cultural features. While Urartians in the Aragats region used more sophisticated architectural styles than their predecessors, Urartians in the Sevan region appear to have used the same style as the local culture. This again likely reflects Sevan's role as a periphery rather than an integrated part of the empire. However, the similarities between SU and SPU sites may also reflect the fact that most SPU sites were predominantly Early Iron Age, while APU sites tended to be from the Bronze Age. Thus, changes in site location and architectural style in the Aragats region might have reflected broader changes that occurred throughout Armenia over time, rather than specifically Urartian innovations. In this model, Urartian cultural traditions reflect local trends instead of causing them, which supports the notion of Urartians as "hands off" rulers.

Quantitative Analysis of the Sites

Time Period		Visual accessibility	Visibility of topographic features	Physical accessibility	Skill and technology of cultural features	Emotional Impact of cultural features	Emotional impact of natural features immediately associated with the site	Visibility within the site	Physical accessibility within the site	Extent to which the site incorporates natural features	Acoustic Impact	Tactiile Impact
Pre-Urartian	Average	2.57	3.00	1.43	2.75	3.00	3.57	3.83	4.17	4.29	1.71	1.00
	Range	2	3	2	1	2	3	2	2	2	2	0
Urartian	Average	2.80	3.20	2.80	2.60	2.75	3.20	3.50	3.75	3.80	1.80	1.00
	Range	2	1	3	1	1	2	1	1	2	2	0

Table 7-3: Results of phenomenology analysis for the Sevan region broken down by time period

Sevan sites were analyzed using GIS in the same way as sites in the Van and Aragats region (Appendix 9).

Visibility Analysis

Sevan sites were analyzed for visibility using GIS (Table 7-4). On average across all sites, the average site point had visibility to 10.36% of the surrounding territory at the ten-kilometer level and 5.22% of the surrounding territory at the fifty-kilometer level. This was higher than the average visibility for random points; in both cases the average site point had a viewshed approximately 50% larger than the average random point. Ten out of twelve sites (83.33%) had a greater visibility than the surrounding points. Like in the Van region, sites in the Sevan region had relatively large viewsheds due to the presence of the lake, which provided a low, flat surface with no obstacles to impede vision.

Previous research has documented the importance of intervisibility among pre-Urartian and Urartian sites in the Sevan region (Earley-Spadoni 2015). Thus, it came as something of a surprise to learn that Sevan sites as a whole were visible to an average of only 1.08 other sites, less than the Van region and the Aragats region (Figure 7-40). Since all Urartian sites in the Sevan region had evidence of Early Iron Age occupation, visibility between Urartian and pre-Urartian sites is meaningful, though of course it would be difficult to prove that all of these sites were occupied at exactly the same time. On the other hand, Earley-Spadoni (2015) found that while visibility was important in the Sevan region, this visibility operated using a network system in which most sites could only see a few other sites, while a small number of sites acted as nodes that relayed

Site	10k Viewshed			50k Viewshed			
	% visible to at least 1 polygon point	% visible to average polygon point	% visible to average random point	% visible to at least 1 polygon point	% visible to average polygon point	% visible to average random point	Number of other sites visible
Joj Kogh 1	25.78	8.7	3.83	13.63	6.1	2.48	1
Joj Kogh 2	26.89	8.41	4.31	12.81	4.5	3.09	1
Kra	34.86	10.54	5.1	13.05	4.48	2.94	1
Kyurdi Kurgh	45.23	22.7	12.93	16.69	11.21	5.99	3
Martuni	30.65	20.32	11.84	13.55	10.47	7.15	1
Mtnadzor	5.87	2.98	3.41	0.86	0.61	0.45	0
Norabak	8.11	2.37	5.79	6.36	2.31	3.59	0
Sangar	13.65	6.29	5.87	4.83	0.93	2.01	2
Sotk 1	11.21	8.69	8.32	5.67	3.13	2.42	0
Sotk 2	13.12	7.68	6.92	2.97	0.95	2.42	1
Tsovinar	32.08	14.27	9.48	14.68	7.91	4.53	1
Tsovinar 2	34.72	11.39	9.38	17.28	10.05	6.6	2
Average	23.51	10.36	7.27	10.2	5.22	3.64	1.08
Range	39.36	20.33	9.52	16.42	10.6	6.7	3

Table 7-4: Results of GIS visibility analysis for the Sevan region

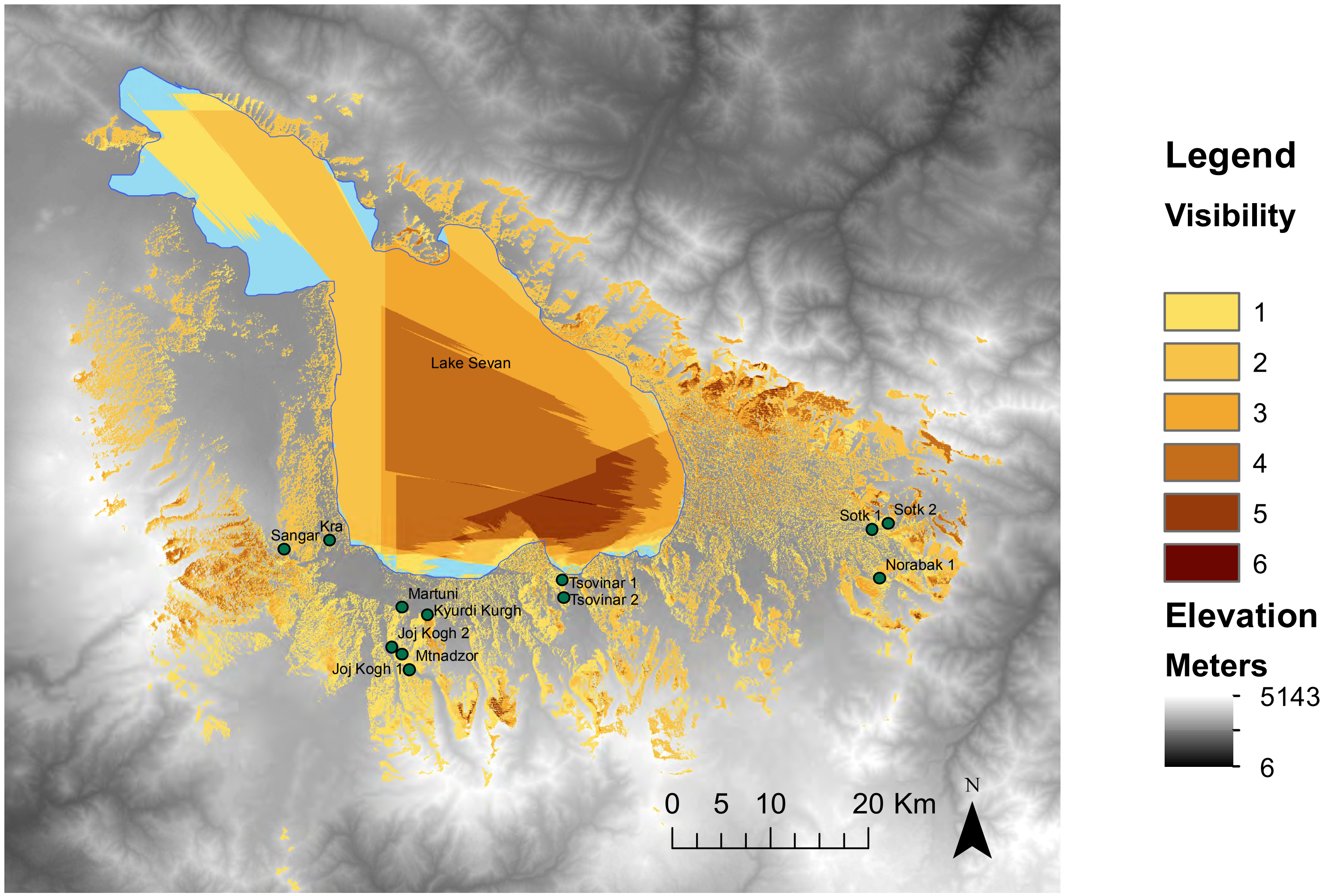


Figure 7-40: Cumulative viewshed analysis of sites in the Sevan region

signals between multiple outlying points. Thus, this analysis is actually in line with previous research.

Travel Time and Least Cost Paths Analysis

Sites in the Sevan region were analyzed using LCPs and Tobler's hiking function in the same manner as sites in the Van and Aragats regions (Table 7-5). Like in the Van region, accessible points and area that fell in the lake were excluded, though in fact accessibility across the lake could have been an important factor in a site's location. Despite this, the sites with the smallest area within one hour's walk were not those that were close to the lake, but those that were in rugged landscapes high in the hills. Sites on flatter ground, such as Sotk 1 and Sotk 2, had larger areas within one hour's walk. Due to this variation in site location, sites in the Sevan region also had substantial variability in slope. This difference was more pronounced than in the other two regions. Again, inaccessibility does not appear to have been a serious detriment; the site with the smallest area within one hour's walk was Mtnadzor, which was classified as a main fortress (Parmegiani and Poscolieri 2003). This fits with the phenomenological observations, which found that the area around the site was quite rugged and the site itself felt isolated. On the other hand, there was a road leading to the site, and with this and other sites, it may have been the case that the site was inaccessible in most directions, but highly accessible via one particular route. Inaccessibility may have also been a defensive advantage, and this would have been particularly true if rulers of the Early Iron Age and Urartian period took a "hands-off" approach to their subject populations and were more focused on protecting themselves from attack.

Site	Average travel time for points 10k away (hours)	Area within 1 hour's travel time (km2)	Average distance for 1 hour pts (km)	Average percent visibility of 1 hour points	Average slope (degrees)
Joj Kogh 1	2.64	41.92	3.71	44.21	8.52
Joj Kogh 2	2.6	41.46	3.67	52.16	18.4
Kra	2.44	56.1	4.24	30.78	6.45
Kyurdi Kurgh	2.51	50.35	4.03	57.6	18.53
Martuni	2.44	54.39	4.18	28.48	13.04
Mtnadzor	2.8	33.18	3.29	25.12	13.75
Norabak	2.77	42.78	3.7	37.41	10.32
Sangar	2.55	47.24	3.89	28.46	8.22
Sotk 1	2.65	54.91	4.16	12.83	2.71
Sotk 2	2.8	49.98	3.98	32.68	5.16
Tsovinar	2.4	54.42	4.14	36.13	13.32
Tsovinar 2	2.44	54.51	4.18	23.59	6.15
Average	2.59	48.44	3.93	34.12	10.38
Range	0.4	22.92	0.95	44.77	15.82

Table 7-5 Results of GIS physical accessibility analysis for the Sevan region

Fortresses, Kurgans and Inscriptions

Like the Aragats kurgans, the Sevan kurgans were less visible than the fortresses (Table 7-6) at the ten kilometer level but more visible at the fifty kilometer level, though still less visible than the inscription. This matches with the phenomenological observations, which found that kurgans were less visible in part due to their tendency to be located in the middle of ridges and hilltops, while fortresses tended to be located near the edge. All three types of sites were on average more visible than random points within one kilometer. The Sevan kurgans were less physically accessible than the nearby fortresses (Table 7-7); in this case, the GIS analysis of physical accessibility matches the phenomenological impression. Kurgan sites had a longer travel time to points ten kilometers away, a smaller area within one hour's walk, shorter distance to points one hour away, and a steeper slope than pure fortress, all indicating a lower degree of physical accessibility. Like in the Aragats region, visibility does not appear to have been as much of a priority for kurgan location, regardless of elevation or accessibility. Though previous scholars have assumed that kurgans were located in high places to enhance their visibility (Frachetti 2008; Reinhold and Korobov 2007), kurgans were still not as visible as fortresses. However, visibility was a priority in the sense that kurgans were more visible than their surroundings. The inaccessibility of kurgans would perhaps also contradict earlier conclusions that kurgans were located on trade routes in order to ensure that as many people as possible encountered them (Frachetti 2008). On the other hand, evidence of herds of sheep and cows, and on one occasion the herds themselves, were spotted near several kurgan sites, indicating that these are, at least in modern times,

		10k Viewshed			50k Viewshed			
Type of Site		**% visible to at least 1 polygon point**	**% visible to average polygon point**	**% visible to average random point**	**% visible to at least 1 polygon point**	**% visible to average polygon point**	**% visible to average random point**	**Number of other sites visible**
Fortresses	**Average**	23.35	11.13	7.30	9.61	4.71	3.60	0.80
	Range	23.65	12.64	7.53	10.58	9.52	4.73	1.00
Kurgans	**Average**	22.23	9.07	6.87	9.94	5.20	3.52	1.33
	Range	39.36	20.33	9.52	16.42	10.60	6.15	3.00
Inscription		32.08	14.27	9.48	14.68	7.91	4.53	1.00

Table 7-6: Results of GIS visibility analysis for the Sevan region broken down by type of site

		Average travel time for points 10k away (hours)	Area within 1 hour's travel time (km2)	Average distance for 1 hour pts (km)	Average percent visibility of 1 hour points	Average slope (degrees)
Type of Site						
Fortresses	**Average**	2.59	51.37	4.05	31.39	9.15
	Range	0.36	14.64	0.57	39.33	15.69
Kurgans	**Average**	2.62	45.00	3.80	36.07	10.91
	Range	0.36	21.33	0.89	34.01	12.38
Inscription		2.40	54.42	4.14	36.13	13.32

Table 7-7: Results of GIS accessibility analysis for the Sevan region broken down by type of site

popular locations for grazing animals. If kurgans were meant to draw the attention of either pastoral nomads or local shepherds, then, these locations may have been optimal.

Urartian vs. Pre-Urartian Sites

In all three measures of physical accessibility, Urartian sites were found to be more accessible than pre-Urartian sites (Table 7-8). This matches the pattern found in the Aragats region, where Urartian sites were also more physically accessible than earlier sites (Table 7-18). Urartian sites were also on gentler slopes, which confirms the results from the Aragats dataset and the work of Smith (1999); these analyses found that Urartian sites in the Aragats region were more physically accessible than pre-Urartian sites, a fact which Smith (1999) tied to a desire for greater oversight on the part of Urartian leaders. SU sites were more visible than SPU sites (Table 7-9), with a higher percentage of the surrounding area visible at the ten kilometer level and the fifty kilometer level. On the other hand, SPU sites had greater percent visibility of least cost paths than SU sites. SU sites were more likely than SPU sites to be more visible than their surroundings; at the ten kilometer and fifty kilometer levels, all SU sites were substantially more visible than random points nearby, whereas only five out of seven SPU sites at the ten kilometer level and four out of seven SPU sites at the fifty kilometer level were more visible than random points nearby. This is a similar pattern to that seen in Aragats, where Urartian sites were also more likely to be more visible to their surroundings than random points nearby.

Additional Analysis

Time Period		Average travel time for points 10k away (hours)	Area within 1 hour's travel time (km2)	Average distance for 1 hour pts (km)	Average percent visibility of 1 hour points	Average slope (degrees)
Pre-Urartian	Average	2.64	45.64	3.82	36.72	11.5
	Range	0.36	21.33	0.89	34.01	13.37
Urartian	Average	2.51	52.35	4.09	30.49	8.81
	Range	0.25	14.18	0.53	31.38	10.61

Table 7-8: Results of GIS least cost paths analysis for the Sevan region broken down by time period

		10k Viewshed			50k Viewshed			
Time Period		**% visible to at least 1 polygon point**	**% visible to average polygon point**	**% visible to average random point**	**% visible to at least 1 polygon point**	**% visible to average polygon point**	**% visible to average random point**	**Number of other sites visible**
Pre-Urartian	**Average**	21.08	8.83	6.94	8.83	4.37	3.45	1.29
	Range	39.36	20.33	9.52	16.42	10.60	6.15	3.00
Urartian	**Average**	26.92	12.50	7.71	12.12	6.42	3.90	0.80
	Range	23.65	11.63	8.01	9.01	7.34	4.73	1.00

Table 7-9: Results of GIS visibility analysis for the Sevan region broke down by time period

The same type of additional analysis that was conducted in the Aragats region, was also conducted here to bring in data from sites not studied by the phenomenological survey. Survey in this region was not as systematic as the Project ArAGATS survey. However, the survey of Biscione and colleagues (2002) was still quite intensive. The area selected for the additional analysis was all sites within fifteen kilometers of Joj Kogh 2. This area was chosen because it contained the largest number and variety of sites that could be securely dated to the Late Bronze, Early Iron and Middle Iron Ages. The additional analysis included seven sites included in the above analysis—Joj Kogh 1, Joj Kogh 2, Kra, Kyurdi Kurgh, Martuni, Mtnadzor, and Sangar—and nine more sites for a total of sixteen sites. Eight were fortresses without kurgans and eight were either kurgans or fortresses with kurgans; eleven were pre-Urartian and five were Urartian. Visibility and least cost paths analyses were carried out in the same way as in the Aragats region (Tables 7-10, 7-11).

Intervisibility was slightly higher in this analysis than in the previous analysis, reflecting the fact that sites were closer together (Figure 7-41). On the other hand, the use of a single point rather than many points decreased intervisibility; some sites described as intervisible by Biscione and colleagues (2002) and found to be intervisible by phenomenological observation, did not register as intervisible in this analysis. Further research could consider the intervisibility of all sites in the region by calculating viewsheds from samples of many points within the site polygon; however this analysis would be time-intensive, and would also require the establishment of clear site boundaries, something not always discussed by Biscione and colleagues. On the other hand, as both analyses agree that Sevan sites had relatively low intervisibility, this may

Site	**Type of Site**	**Time Period**	**% Visible to Site Point (15k)**	**% visible to Average Random Point (15k)**	**Number of Other Sites Visible**
Al Berd	Fortress	Urartian	5.79	5.86	0
Aloyi Kogh	Fortress. Kurgans	Pre-Urartian	14.50	15.58	0
Berdi Dosh	Fortress	Pre-Urartian	24.09	17.76	2
Bruti Berd	Fortress. Kurgans	Pre-Urartian	1.17	9.58	0
Heri Berd 1	Fortress	Pre-Urartian	2.72	3.36	1
Joj Kogh 1	Complex, kurgans	Urartian	14.73	6.01	3
Joj Kogh 2	Fortress	Pre-Urartian	20.31	5.11	3
Kare Dzi	Fortress	Pre-Urartian	4.79	4.77	0
Kra	Fortress	Urartian	22.60	5.78	5
Kyurdi Kurgh	Fortress. Kurgans	Pre-Urartian	31.44	18.09	2
Martuni	Fortress	Urartian	19.02	8.90	2
Mtnadzor	Fortress. Kurgans	Pre-Urartian	2.22	2.01	1
Nagharakhan	Fortress	Pre-Urartian	1.34	1.27	0
Nerkin Gtashen	Kurgans	Urartian	28.95	12.61	3
Sangar	Fortress. Kurgans	Pre-Urartian	2.82	6.43	0
Vanki Dur 2	Kurgans	Pre-Urartian	1.85	7.10	0
Average			12.40	8.14	1.38
Range			30.27	16.82	5.00

Table 7-10: GIS analysis of visibility of additional sites in the Sevan region

Site	Type of Site	Time Period	Travel time for points 10k away (hours)	Area within 1 hour's travel time (km2)	Average distance for 1 hour pts (km)	Percent visibility of 1 hour points
Al Berd	Fortress	Urartian	2.53	47.77	4.01	8.92
Aloyi Kogh	Fortress. Kurgans	Pre-Urartian	2.51	55.02	4.36	6.07
Berdi Dosh	Fortress	Pre-Urartian	2.54	45.52	3.98	18.40
Bruti Berd	Fortress. Kurgans	Pre-Urartian	2.47	55.14	4.35	3.06
Heri Berd 1	Fortress	Pre-Urartian	2.72	36.95	3.58	19.60
Joj Kogh 1	Complex, kurgans	Urartian	2.64	41.92	3.71	44.21
Joj Kogh 2	Fortress	Pre-Urartian	2.60	41.46	3.67	52.16
Kare Dzi	Fortress	Pre-Urartian	2.50	53.78	4.30	7.89
Kra	Fortress	Urartian	2.44	56.10	4.24	30.78
Kyurdi Kurgh	Fortress. Kurgans	Pre-Urartian	2.51	50.35	4.03	57.60
Martuni	Fortress	Urartian	2.44	54.39	4.18	28.48
Mtnadzor	Fortress. Kurgans	Pre-Urartian	2.80	33.18	3.29	25.12
Nagharakhan	Fortress	Pre-Urartian	2.58	45.90	3.98	6.79
Nerkin Gtashen	Kurgans	Urartian	2.40	60.86	4.58	10.38
Sangar	Fortress. Kurgans	Pre-Urartian	2.55	47.24	3.89	28.46
Vanki Dur 2	Kurgans	Pre-Urartian	2.76	41.89	3.78	6.86
Average			2.56	47.97	4.00	22.17
Range			0.40	27.68	1.29	54.54

Table 7-11: GIS analysis of physical accessibility of additional sites in the Sevan region

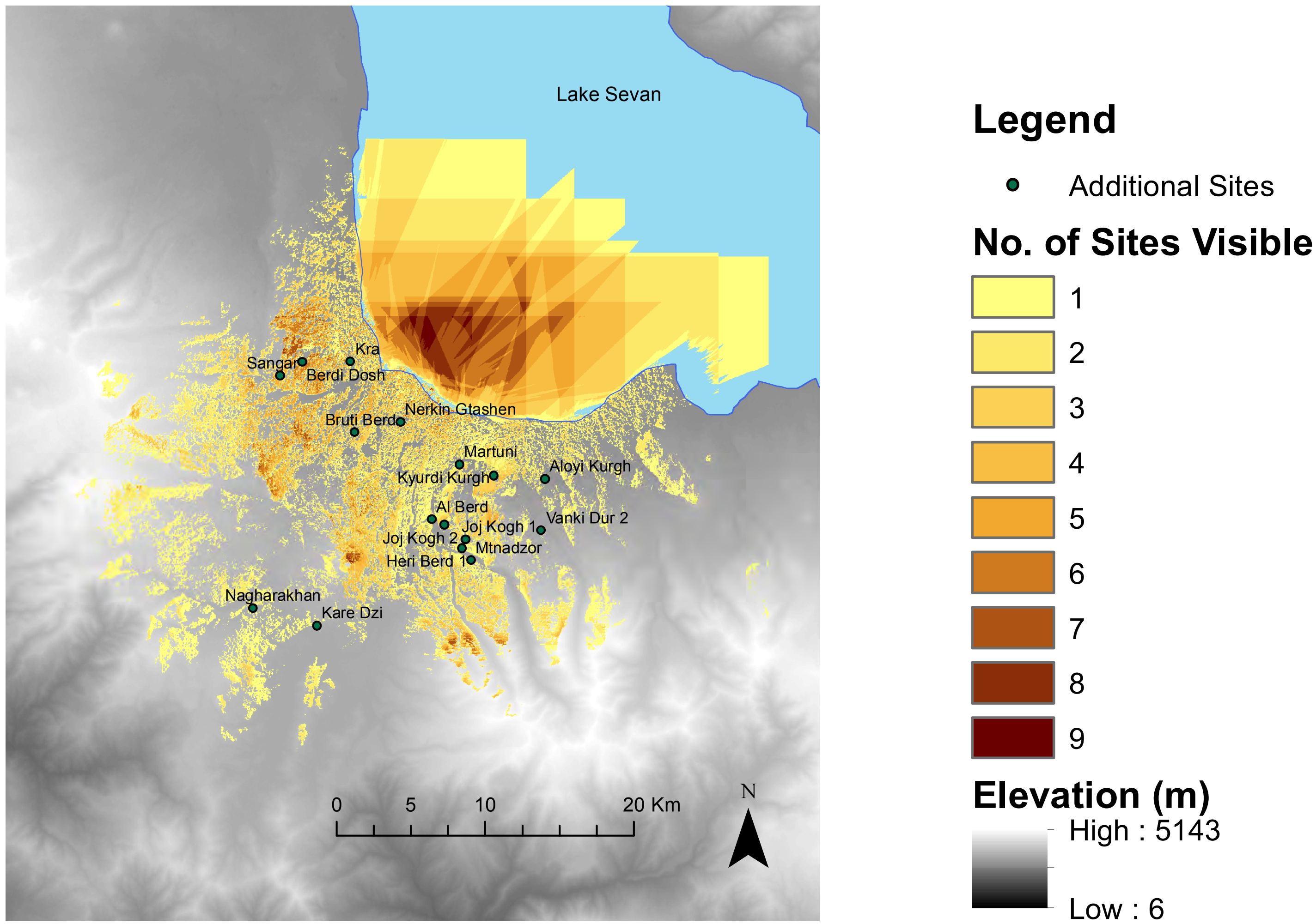


Figure 7-41: Cumulative viewshed analysis of additional sites in the Sevan region

not be entirely a flaw in the methodology, but rather a reflection of the importance of the efficiency, rather than quantity, of visual communication, as discussed above.

As in the previous analysis, Urartian sites were more visible than pre-Urartian sites—nearly twice as visible, in this case, and more than three times as intervisible with other sites (Table 7-12). Urartian sites were also more likely than pre-Urartian sites to be more visible than their surroundings; six of eleven pre-Urartian sites (54.5%) were more visible than their surroundings, while four of five (80%) of Urartian sites were. Since many of these Urartian sites were constructed in pre-Urartian times, these numbers confirm Earley-Spadoni's (2015) findings that Urartians chose to reuse earlier sites with favorable visibility. While Urartians on the Ararat Plain had an ideological interest in destroying or avoiding earlier sites (Smith 2000), it may have been the case that in the Sevan region, a frontier less securely under Urartian control, practicality was more important than ideology, in which case the pre-existing visual networks of the Early Iron Age fortresses were too valuable of a resource to ignore. Fortresses were also more visible in general, and more intervisible, than kurgans, which agrees with the previous analysis (Table 7-13). Fortresses were less accessible than sites with kurgans, but these differences were slight (Table 7-14). This is not surprising, as most of the sites surveyed were on high hills in a rugged landscape. Urartian sites were more physically accessible than pre-Urartian sites (Table 7-15), a pattern that is in agreement with the previous analysis and with the pattern observed in the Aragats region. In both sets of analyses, the differences in physical accessibility can likely be attributed to the fact that the Urartian sites were located on flatter ground closer to the lake, while pre-Urartian sites were often located in the rugged hills to the south of the lake. This pattern forms an interesting

		10k Viewshed		
Time Period		**% Visible to Site Point**	**% visible to Average Random Point**	**Number of Other Sites Visible**
Pre-Urartian	**Average**	9.75	8.28	0.82
	Range	30.27	16.82	3.00
Urartian	**Average**	18.22	7.83	2.60
	Range	23.16	6.83	5.00

Table 7-12: GIS analysis of visibility of additional sites in the Sevan region, broken down by time period

		10k Viewshed		
Type of Site		**% Visible to Site Point**	**% visible to Average Random Point**	**Number of Other Sites Visible**
Fortresses	**Average**	12.58	6.60	1.63
	Range	22.75	16.49	5.00
Kurgans	**Average**	12.21	9.68	1.13
	Range	30.27	16.08	3.00

Table 7-13: GIS analysis of visibility of additional sites in the Sevan region, broken down by type of site

Type of Site		Travel time for points 10k away (hours)	Area within 1 hour's travel time (km2)	Average distance for 1 hour pts (km)	Percent visibility of 1 hour points
Fortresses	**Average**	2.54	47.73	3.99	21.63
	Range	0.28	19.15	0.72	45.37
Kurgans	**Average**	2.58	48.20	4.00	22.72
	Range	0.40	27.68	1.29	54.54

Table 7-14: GIS analysis of physical accessibility of additional sites in the Sevan region, broken down by type of site

Time Period		**Travel time for points 10k away (hours)**	**Area within 1 hour's travel time (km2)**	**Average distance for 1 hour pts (km)**	**Percent visibility of 1 hour points**
Pre-Urartian	**Average**	2.59	46.04	3.93	21.09
	Range	0.33	21.96	1.07	54.54
Urartian	**Average**	1.46	34.00	2.50	37.82
	Range	2.26	24.08	2.86	33.45

Table 7-15: GIS analysis of physical accessibility of additional sites in the Sevan region, broken down by time period

parallel with the situation in the Aragats region, where the arrival of Urartians led to a shift in site location from the hills and onto the plain (Smith 1999).

Combining GIS and Phenomenological Analysis

In some aspects, GIS and phenomenological analyses confirmed each other. In particular, both agreed on the fact that physical accessibility increased with the arrival of Urartu in the Sevan region. Like in the Aragats region, Urartian sites were more accessible than pre-Urartian sites, as measured by least cost paths and subjective experience. Both analyses also agreed that kurgans were less physically accessible than fortresses. This is likely because some fortresses were located on high, inaccessible ridge tops, while others were located on almost flat ground, an interesting pattern that is different from what would be expected and what has been observed elsewhere. By contrast, the kurgans were universally located on high, inaccessible ridge tops, which is line with previous research.

On the other hand, there were some areas in which phenomenology and GIS analyses disagreed. The phenomenological analysis rated the kurgans relatively low for visual accessibility, and in general found that they were often blocked from view of important features such as mountains or the lake. This analysis suggested that visibility was not a priority for kurgans. GIS analysis confirmed that kurgans were less visible than fortresses at the ten-kilometer level, though surprisingly they were more visible at the fifty-kilometer level. Kurgans were also, however, in general more visible than random points within one kilometer, suggesting that visible was in fact a priority. The difference here likely reflects the subjective human experience of visibility versus the objective analysis of the GIS. Thinking back on the kurgans, there was generally a lot of land that was visible to them, in that they were located on flat ridge tops with little to impede vision. This led to relatively large viewsheds as calculated by GIS. However, these sites still registered as visually inaccessible because they were often out of view of the lake and of the mountains and flat land around the ridges; fortresses, which tended to be located on the edge of ridges, had sightlines to these features and thus by comparison were perceived as more visually accessible. The fact that kurgans were more visible than their surroundings, however, does suggest that visibility was a priority in their location, which would confirm previous research that kurgans were generally located in highly visible locations.

CHAPTER 8: QUALITATIVE AND QUANTITATIVE COMPARISONS ACROSS THE THREE REGIONS

The central question of this dissertation is whether Urartian leaders imposed their own architectural traditions on the regions they conquered, or whether they adopted the traditions of local populations. Comparing Urartian sites in the Aragats and Sevan regions with pre-Urartian sites in the same region and with Urartian sites in the Van region will help to answer this question. In particular, similarities between Urartian and pre-Urartian sites would indicate that local traditions continued and/or that landscape was a more important determinant of site location than culture (that is, sites that were close to each other were similar regardless of who built them). On the other hand, differences between Urartian and pre-Urartian sites would indicate the imposition of an Urartian imperial package. If Urartian rulers imposed the traditions of their homeland, we would expect Urartian sites in the Aragats and Sevan regions to be more like Urartian sites in the Van region than like pre-Urartian sites in their own regions. Finally, a third possibility—not initially considered when this analysis began—is that Urartians changed patterns of site location when they came to the Aragats and Sevan region, but rather than making these sites more like sites in the Van region, they enhanced site characteristics that they found advantageous. In this case, we would expect local patterns of site location to be amplified. All three of these possibilities were observed in various aspects of the data, and together, they provide a more complex understanding of how Urartians interacted with conquered populations than the imposition or autonomy models discussed earlier.

Phenomenological Comparisons

Phenomenological rankings were compared across all three regions (Table 8-1, Figure 8-1). In the Aragats region, these analyses found that in general, when it was convenient to do so, Urartian rulers built sites in the style of their native Van, rather than in the style of local, earlier sites. Urartian sites in the Aragats region (henceforth referred to as AU sites) were more similar to Urartian sites in the Van region (henceforth referred to as VU sites) than to pre-Urartian sites in the Aragats region (henceforth referred to as APU sites) for phenomenological measures of visual accessibility, visibility within the site, skill and technology of cultural features, emotional impact of cultural features, physical accessibility, physical accessibility within the site (Table 8-2, Figure 8-2). AU sites were more similar to APU sites for phenomenological measures of visibility of topographic features, emotional impact of natural features, extent to which the site incorporates natural features, acoustic impact, and tactile impact. This may be due to differences in landscape between the Van and Aragats regions and, in particular, the less rocky nature of the landscape in the Aragats region, which would have influenced the characteristics of AU and APU sites. In particular, sites in the Aragats region scored lower on acoustic impact compared to sites the Van region, as fewer stone features are present to generate echoes or other interesting acoustic patterns. They also scored lower on tactile impact, again because fewer stone features require climbing or touching. In general, however, AU sites seem to be more similar to VU sites in aspects of site location and design that have to do with physical and visual accessibility, whereas they appear to be more like APU sites in terms of characteristics relating to natural features. It may have been the case that relationships to natural features were more difficult for humans to

Region	Visual accessibility	Visibility of topographic features	Physical accessibility	Skill and technology of cultural features	Emotional Impact of cultural features	Emotional impact of natural features immediately associated with the site	Visibility within the site	Physical accessibility within the site	Extent to which the site incorporates natural features	Acoustic Impact	Tactiile Impact
Van: Average	3.23	3.62	2.69	3.62	3.15	3.69	3.31	2.77	3	2.46	2.46
Van: Range	3	3	4	4	4	3	3	4	4	3	4
Aragats: Average	3.65	4.06	3.06	3	3.06	3.18	3.41	3.71	3.94	1.59	1.35
Aragats: Range	3	3	4	3	4	4	4	3	4	3	4
Sevan: Average	2.67	3.08	2	2.67	2.88	3.42	3.7	4	4.08	1.75	1
Sevan: Range	2	3	3	1	2	3	2	2	2	2	0

Table 8-1: Comparison of phenomenological rankings for sites in the Van, Aragats and Sevan Regions

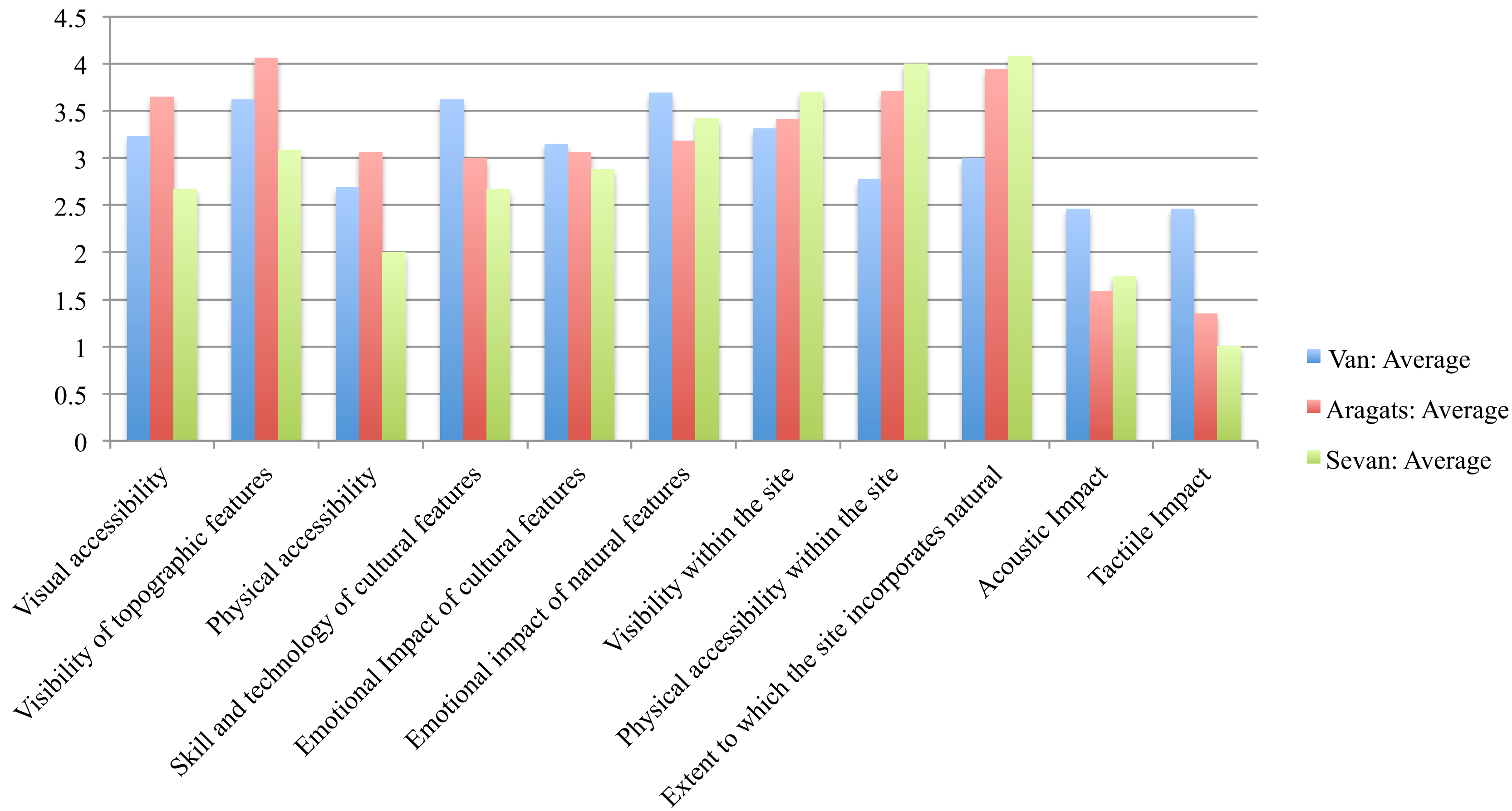


Figure 8-1: Comparison of phenomenological rankings for sites in the Van, Aragats and Sevan Regions

Region	**Visual accessibility**	**Visibility of topographic features**	**Physical accessibility**	**Skill and technology of cultural features**	**Emotional Impact of cultural features**	**Emotional impact of natural features immediately associated with the site**	**Visibility within the site**	**Physical accessibility within the site**	**Extent to which the site incorporates natural features**	**Acoustic Impact**	**Tactiile Impact**
VU: Average	3.33	3.58	2.5	3.75	3.25	3.83	3.8	3.1	3.17	2.58	2.58
VU: Range	3	3	4	4	4	3	3	4	4	3	4
APU: Average	3.27	3.73	3.18	2.7	2.9	3.09	3.91	3.91	3.82	1.55	1.36
APU: Range	2	3	4	1	3	4	2	3	4	3	4
AU: Average	4.33	4.67	2.83	3.5	3.33	3.33	2.5	3.33	4.17	1.67	1.33
AU: Range	2	2	2	2	2	3	3	2	2	2	1
SPU: Average	2.57	3	1.43	2.75	3	3.57	3.83	4.17	4.29	1.71	1
SPU: Range	2	3	2	1	2	3	2	2	2	2	0
SU: Average	2.8	3.2	2.8	2.6	2.75	3.2	3.5	3.75	3.8	1.8	1
SU: Range	2	1	3	1	1	2	1	1	2	2	0

Table 8-2: Comparison of phenomenological rankings for sites in the Van, Aragats and Sevan Regions, broken down by time period

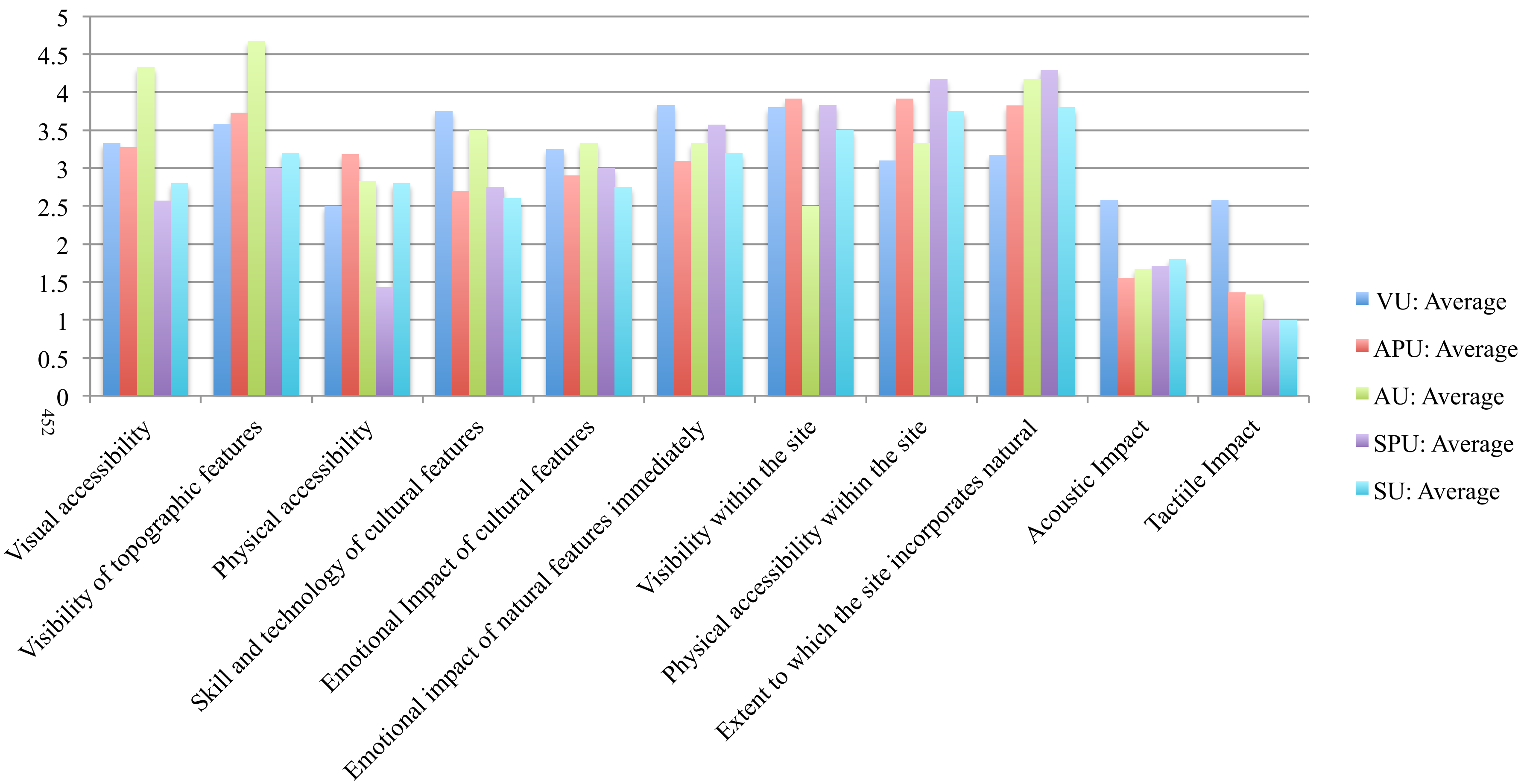


Figure 8-2: Comparison of phenomenological rankings for sites in the Van, Aragats and Sevan Regions, broken down by time period

control and more limited by the nature of the landscape, or it may have been the case that Urartians did not consider relationships to natural features to be as important as practical matters of visual and physical accessibility.

Another interesting pattern emerges from this comparison. It would be expected that AU sites, if they showed any degree of blending of Urartian and local traditions, would have values between VU and APU sites. However, this was often not the case. For visibility of topographic features, extent to which the site incorporates natural features, and tactile impact, APU features were between VU and AU sites. For visual accessibility, visibility within the site and emotional impact of cultural features, VU sites were between APU and AU sites. Only for physical accessibility, physical accessibility within the site, skill and technology of cultural features, emotional impact of natural features immediately associated with the site, and acoustic impact were AU sites between APU and VU sites. This suggests that most (6 of 11) phenomenological features of AU sites were not simply mixtures of Urartian and local traditions, but rather were definitively one or the other.

Visual accessibility for the Aragats sites was higher than Van, and this difference had in part to do with the type of visibility. Many Van sites that were rated 3 or 4 for visual accessibility had a high degree of visibility in one direction but were largely blocked from view in others; by contrast, many Aragats sites that were rated 3 or 4 had good but not necessarily excellent visibility in all or most directions. Thus, the experience of sites in the Van region is often multi-sensory, involving not just sight, but also acoustic and tactile interactions with natural and human-made features of stone. Important parts of the site can be located on different levels, and the necessity of climbing up and down to navigate the site, along with steep drop-offs and precarious edges, means that people moving around the site have a high degree of bodily engagement with and awareness of the site. On the other hand, the experience of sites in the Aragats region is much more exclusively visual.

The situation is slightly different for Sevan sites. The sites in the Sevan region scored the lowest of the three regions for visual accessibility and for visibility of topographic features, but they also scored the lowest on skill and technology of cultural features and emotional impact of cultural features. Sites in the Sevan scored higher than the Aragats sites for emotional impact of natural features associated with the site, though not as high as sites in the Van region. Sites in the Van region awed visitors with displays of technological skill, the complex textures and topographies of the sites themselves, and auditory and tactile sensations, while sites in the Aragats region created a strong impact with sweeping vistas. Many Sevan sites, however, did neither, resulting in the low scores on all four of these rankings. There were exceptions; Tsovinar had an inscription, a feat of great skill and technology, and Joj Kogh 2 and Kyurdi Kurgh had striking associated natural features. However, there were many sites—namely Sotk 1, Sotk 2, Sangar, Martuni, Kra and Tsovinar 2—where there was little of interest, either culturally or naturally, either close by or on the surrounding landscape. Much of this had to do with these sites' remoteness. Sevan sites scored the lowest on physical accessibility, and many of these sites were isolated, cut off physically and visually from emotionally evocative features in their surroundings, and lacking skilled architecture or other cultural features. Whereas I could easily imagine a bustling cultural and natural landscape in the Van and Aragats regions, the Sevan region often felt like a lonely and removed place—in other words, a frontier. However, while this region was a frontier for Urartu, it would not have been a frontier for the people who lived here originally in pre-Urartian times and who constructed many of the most remote sites. In this case, site location might reflect a “hands off” approach to leadership and an interest in vertical differentiation between rulers and subjects, similar to what Smith (1999) argues existed in the Aragats region in pre-Urartian times.

SU sites are more similar to SPU sites in all criteria except physical accessibility, where they were more similar to VU sites, and visibility within the site, where they were equally similar to SPU and VU sites. The fact that physical accessibility is the only criteria in which SU sites were more “Urartian” than “Sevan” is particularly interesting considering Smith’s (1999) analysis, which showed that Urartian sites on the Ararat Plain were consistently in more accessible locations than earlier sites, suggesting that Urartian leaders had a greater desire for direct oversight of and interaction with their subjects. Thus, Urartian leaders were content to adopt most SPU traditions, but that they did have distinct preferences for more physically accessible sites, and that this was one of the most significant aspects of the Urartian “imperial program.”

When comparing Sevan sites to the Van region, SU sites usually (for 7 out of 11 criteria) had values that were between SPU and VU sites. The exceptions were physical accessibility, where VU sites were in the middle—suggesting that SU sites reflect a tendency to amplify the Urartian preference for physically accessible sites—and emotional impact of cultural features, and emotional impact of natural features immediately associated with the site, where SPU sites were in the middle. However, in general, unlike in the Aragats region, SU sites blended Urartian and local traditions to create something between the two. This may reflect the idea that Urartian strategies and styles represent a divergence from the Bronze Age (represented by many sites in the Aragats region), but were reflective of broader trends that began in the Early Iron Age (the time of many of the Sevan sites).

GIS Comparisons

Visibility Analysis

Sites in the three regions were compared for visibility (Table 8-3, Figure 8-3). In general, sites in the Aragats region had slightly less visibility compared to sites in the Van region at the ten and fifty kilometer levels. For a ten kilometer viewshed, nine out of seventeen Aragats sites (52.9%) had greater average visibility compared to a random sample of points within one kilometer, in contrast to ten out of thirteen in the Van region (77%). However, for a fifty kilometer viewshed, these numbers were eight out of seventeen (47.1%) and four out of thirteen (30.1%) respectively. Thus, Van sites were more likely to be more visible than random points nearby over a shorter distance, but Aragats sites were more likely to be more visible than random points over longer distances. In both regions, sites were more visible than random points nearby at the ten kilometer level, suggesting that sites were intentionally placed for greater visibility. This was particularly true in the Van region.

Another notable pattern is that sites in the Aragats region had substantially less variability in their visibility than sites in the Van region. This difference can likely be attributed almost entirely to the fact that sites in the Van region with Lake Van in their viewsheds had unusually high visibility due to the flat surface of the lake. There was no

	10k Viewshed			50k Viewshed			
Region	**% visible to at least 1 polygon point**	**% visible to average polygon point**	**% visible to average random point**	**% visible to at least 1 polygon point**	**% visible to average polygon point**	**% visible to average random point**	**Number of other sites visible**
Van: Average	20.94	11.69	9.76	7.89	4.65	4.43	1.15
Van: Range	51.37	33.48	26.1	20.24	18.36	13.86	2
Aragats: Average	19.48	7.84	6.46	7.21	3.46	3	3.12
Aragats: Range	26.95	12.99	12.04	18.32	9.2	7.75	7
Sevan: Average	23.51	10.36	7.27	10.2	5.22	3.64	1.08
Sevan: Range	39.36	20.33	9.52	16.42	10.6	6.7	3

Table 8-3: Comparison of GIS visibility analysis for the Van, Aragats and Sevan regions

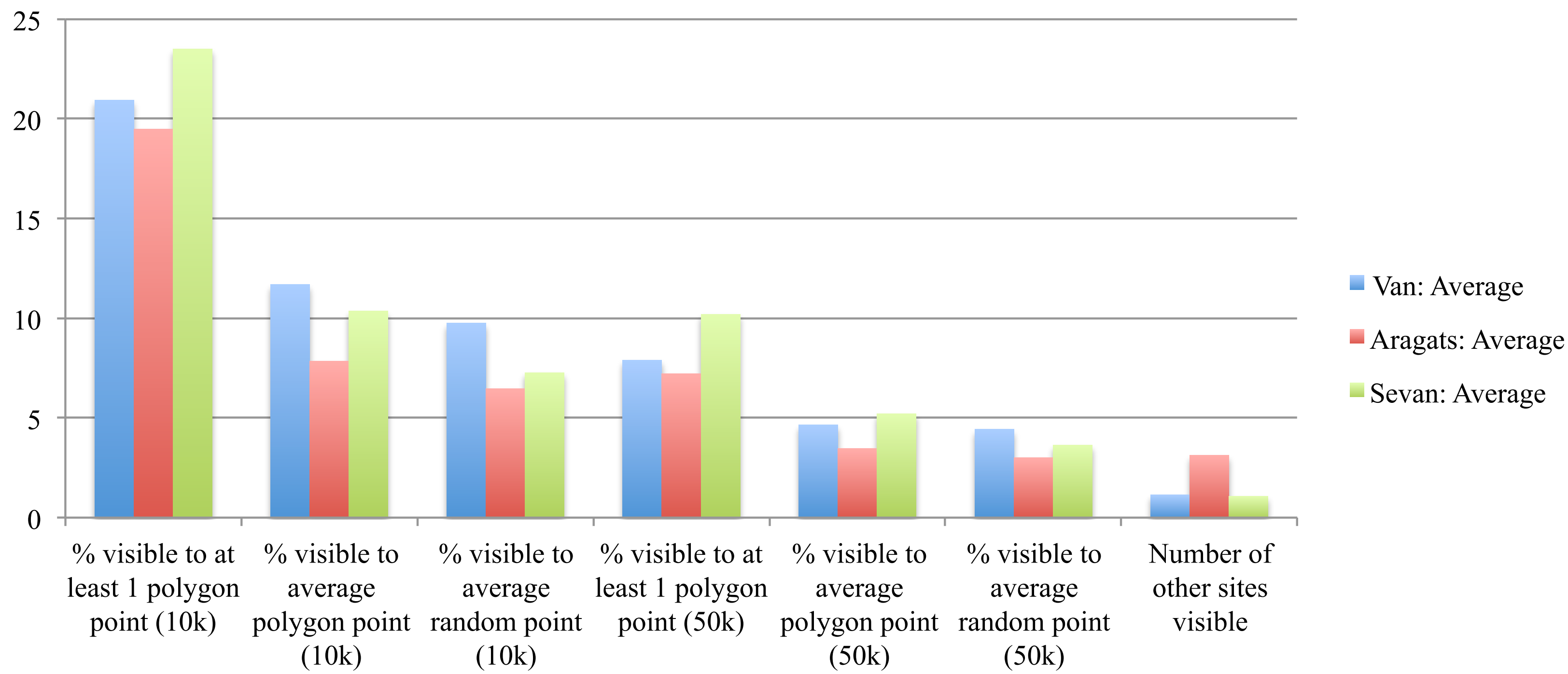


Figure 8-3: Comparison of GIS visibility analysis for the Van, Aragats and Sevan regions

comparable feature in the Aragats region, and thus visibility was generally more consistent across sites. On the other hand, sites in the Aragats region were significantly more intervisible to each other than sites in the Van region. The average site in the Van region was visible to 1.15 sites other than itself; the average Urartian site in the Aragats region was visible to 4.00 sites other than itself, while the average pre-Urartian site was visible to 2.18 other sites. Metsamor, one of the most visible sites over long distances, was visible to eight other sites (including the pre-Urartian ones). While intervisibility among contemporary sites is important for communication such as smoke signaling (Earley-Spadoni 2015), visibility of earlier sites that are no longer occupied is an important component of social memory and the establishment of legitimacy (Richardson 2005; Rubertone 2003b). Some of this likely has to do with the fact that there were more Aragats sites in the sample than Van sites, and thus more potential sites that could be seen. Even normalizing for the total number of sites (that is, dividing the number of sites visible by the total number of sites in the region, to allow for a comparison between regions with different numbers of sites), Urartian sites in the Aragats region were visible to 0.24 other sites per site. Excluding Kef Kalesi and Dogubeyazit because they were so far from the other sites, Van sites were visible to 0.12 other sites per site. This is also not a question of distance between sites; the maximum distance between two Van sites (excluding the sites of Kef Kalesi and Dogubeyazit) was approximately 67 kilometers, while the maximum distance between two Aragats region sites was approximately 72 kilometers. Thus, the Aragats region had more than twice the intersite visibility of the Van region over essentially the same distance.

Both pre-Urartian and Urartian sites across all three regions were compared to Urartian sites in the Van region (Table 8-4, Figure 8-4). At the fifty kilometer level, in terms of visibility to the average polygon point, AU sites were more similar to VU than to APU sites, while AU sites were more similar to APU sites at the ten kilometer level. AU sites were also more similar to APU sites in terms of average number of sites visible. For all measures of physical accessibility (average travel time for points ten kilometers away, total area within one hour's travel time, average distance for one hour points, percent visibility of one hour points, and slope), AU sites were more similar to APU sites than to VU sites. This variation suggests that it is not merely the nature of the landscape that dictates the visual and physical accessibility of sites, that is, that sites that are located close together in space do not automatically have similar characteristics. Thus, there were deliberate human choices made in the location of sites in different time periods. Interestingly, while for phenomenological experiences, AU sites were generally closer to VU sites, for most measures of physical and visual accessibility, AU sites were closer to APU sites, suggesting that while Urartians may have changed some aspect of site location in this region, as measured by GIS, Urartian sites in the Aragats region were more "Aragats" than "Urartian."

For percent visible to the average polygon point at ten kilometers and number of other sites visible, the values of APU sites are between those of AU and VU sites, while for percent visible to the average polygon point at fifty kilometers, the values of VU sites are between those of APU and AU sites. Thus, in terms of visibility, AU sites were not simply blends of Urartian and local traditions; rather, they tended to be more extreme manifestations of either Urartian or local tendencies, usually local tendencies. Over

	10k Viewshed			50k Viewshed			
Region	**% visible to at least 1 polygon point**	**% visible to average polygon point**	**% visible to average random point**	**% visible to at least 1 polygon point**	**% visible to average polygon point**	**% visible to average random point**	**Number of other sites visible**
VU: Average	20.91	11.33	9.63	8.4	4.92	4.68	1.08
VU: Range	51.37	33.48	26.1	20.24	18.36	13.86	2
APU: Average	18.49	8.19	7.59	4.66	2.31	2.48	2.18
APU: Range	26.95	12.99	9.82	11.13	5.46	4.57	7
AU: Average	19.47	6.9	3.59	11.62	5.83	4.38	4
AU: Range	17.07	4.27	7.17	12.35	6.86	6.42	4
SPU:Average	21.08	8.83	6.94	8.83	4.37	3.45	1.29
SPU: Range	39.36	20.33	9.52	16.42	10.6	6.15	3
SU: Average	26.92	12.5	7.71	12.12	6.42	3.9	0.8
SU: Range	23.65	11.63	8.01	9.01	7.34	4.73	1

Table 8-4: Comparison of results of GIS visibility analysis for the Van, Aragats and Sevan regions, broken down by time period

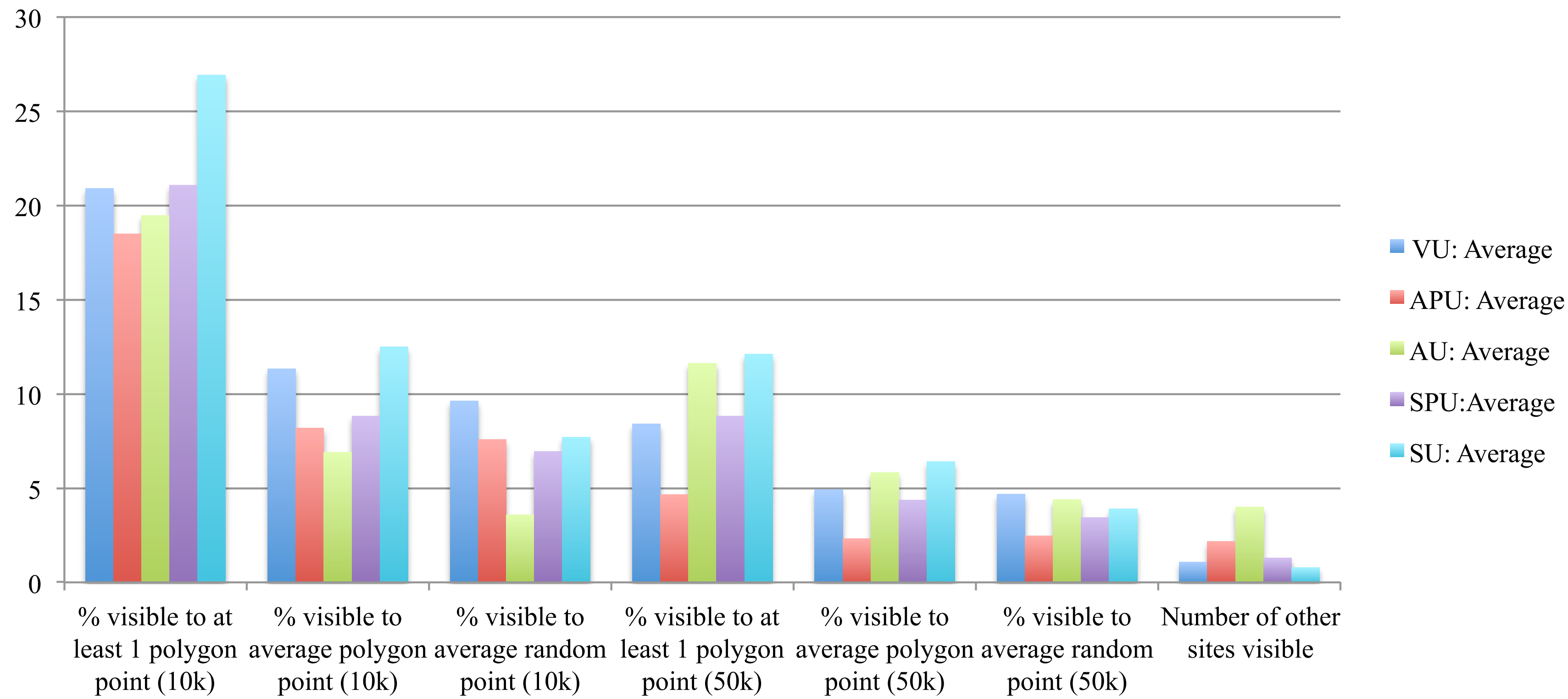


Figure 8-4: Comparison of results of GIS visibility analysis for the Van, Aragats and Sevan regions, broken down by time period

shorter distances, AU sites were an amplification of local traditions of visibility, while over long distances, they were an amplification of Urartian tendencies.

Visibility values for the Sevan region are higher than visibility values in the Aragats region. At ten kilometers the Sevan points are slightly less visible than the Van points, while at the fifty kilometer level the Sevan sites are slightly more visible than the Van sites. Interestingly, the Sevan sites are also like the Van sites in that they are substantially more visible than surrounding random points at the ten kilometer level, whereas this difference is less pronounced in the Aragats region. Both Van and Aragats sites show only a slightly higher average visibility of site points compared to random points at the fifty kilometer level, but substantial difference is still present for Sevan sites. Thus, Sevan sites are not only more visible than Aragats points in terms of total area that can be seen, which could be explained by the presence of the lake; Sevan sites are also more likely to be more visible than their surroundings, suggesting that visibility was more of a priority for site location in the Sevan region compared to the Aragats region. In terms of range, Sevan sites have a lower degree of variability than Van sites, but a higher degree than Aragats sites. Like in the Van region, the greater range for Sevan compared to Aragats likely relates to the difference between sites that could see the lake and those that could not.

For GIS measurements of visibility, SU sites follow a similar pattern to AU sites, in which they appear to be amplifications of either local or Urartian characteristics, rather than having intermediate values that would indicate a blend of the two. For example, SU sites had greater visibility than either SPU or VU sites at the ten kilometer and fifty kilometer levels, and they had also greater visibility than AU or APU sites. Their visibility characteristics at both levels were most similar to VU sites.

Travel Time and Least Cost Paths Analysis

Sites in the three regions were also compared for GIS measures of physical accessibility (Table 8-5, Figure 8-5). Sites in the Van and Aragats regions were similar in terms of mean travel time for points ten kilometers away. However, sites in the Aragats region had a larger area within one hour's walk than sites in the Van region, and points one hour's walk from sites in the Aragats region were on average 0.63 kilometers farther (that is, it is possible to walk 0.63 kilometers further in one hour in the Aragats region as compared to the Van region). Thus, physical accessibility in these two regions is comparable over larger distances, but that over shorter distances, sites in the Aragats region are more physically accessible. Sites in the Van region were more visible while traveling to and from them, and also had a greater range for this value. As with the visibility analysis, sites in the Van region had more variability in their physical accessibility than sites in the Aragats region, and this variability was likely in part attributed to the presence of Lake Van, which restricted the area accessible on foot. Because both analyses considered only land travel, this comparison likely underestimated the physical accessibility of sites in the Van region located on the shore of Lake Van. Sites in the Van region tended to be located on steeper slopes than sites in the Aragats region, but there was also greater variation in the steepness of slope. Again, the lower variability of sites in the Ararat/Aragats region was caused by a lack of outliers on the high end. The sites with the steepest slopes in the Van region were those located on sheer

Region	Average travel time for points 10k away (hours)	Area within 1 hour's travel time (km2)	Average distance for 1 hour pts (km)	Average percent visibility of 1 hour points	Average slope (degrees)
Van: Average	2.52	43.02	3.7	33.79	14.94
Van: Range	0.59	30.69	1.35	52.18	26.71
Aragats: Average	2.43	58.86	4.33	40.91	8.6
Aragats: Range	0.6	24.77	0.94	39.27	9.69
Sevan: Average	2.59	48.44	3.93	34.12	10.38
Sevan: Range	0.4	22.92	0.95	44.77	15.82

Table 8-5: Comparison of results of GIS physical accessibility analysis for the Van, Aragats and Sevan regions

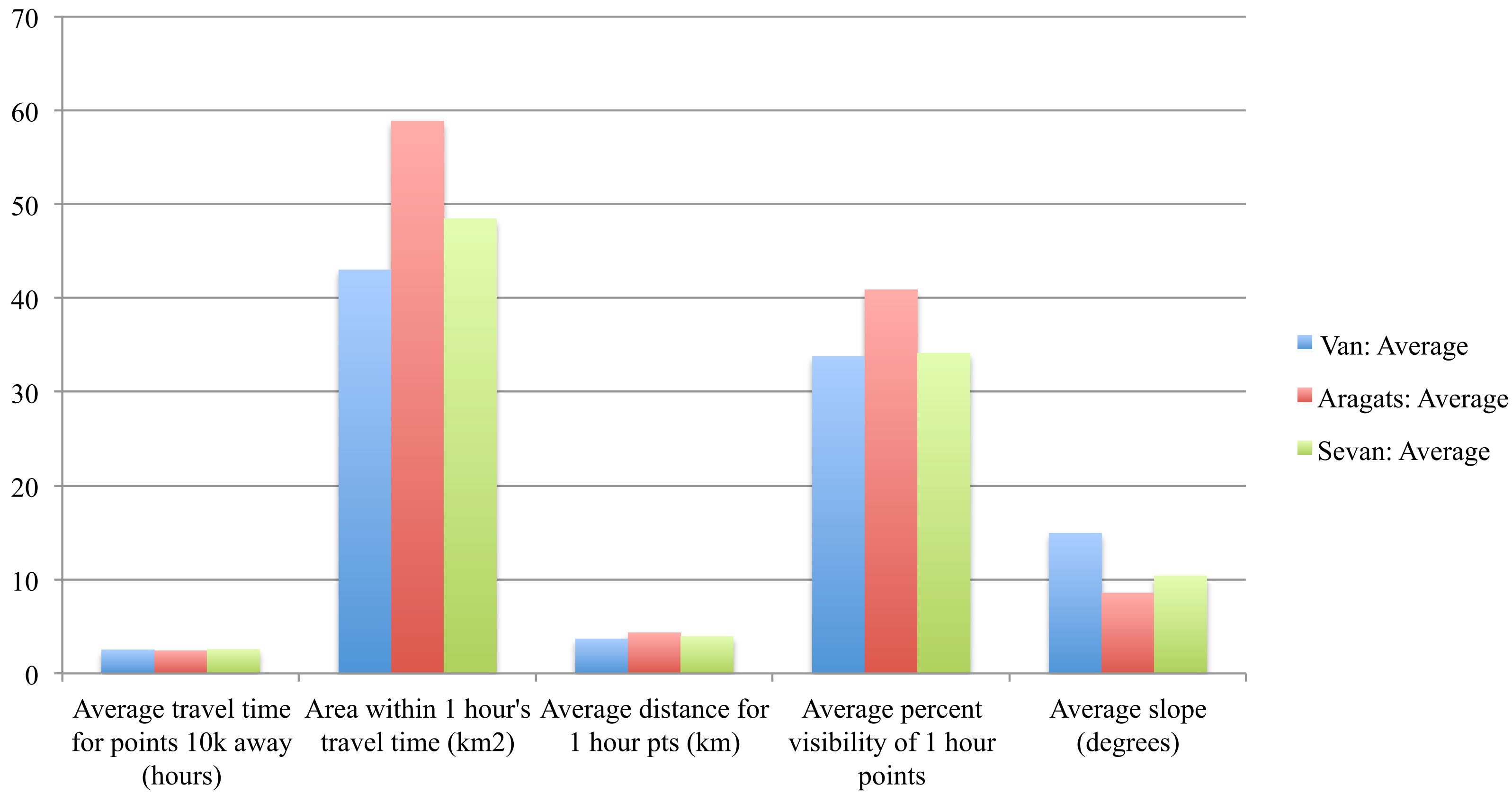


Figure 8-5: Comparison of results of GIS physical accessibility analysis for the Van, Aragats and Sevan regions

rock cliffs, but all of the sites in the Aragats region were located on grassy slopes that, while steep, did not feature any vertical or near-vertical faces the way sites in the Van region did.

With the exception of slope, where AU values were between APU and VU values, for all other measures of physical accessibility, the values of APU sites are between those of AU and VU sites (Table 8-6, Figure 8-6). Like with the visibility characteristics, in general, AU sites exaggerated either local or Urartian tendencies—usually local tendencies—rather than blending them. On the whole, it seems that Urartians found the visual and physical characteristics of sites in the Aragats region so useful for their purposes that they emphasized them in their own sites. This represents an odd blend of the imposition and autonomy models: Urartian leaders made significant changes in the nature of site location in the Aragats region, but in a way that amplified local traditions.

In most measures of physical accessibility, Sevan sites were highly similar either to Van or to Aragats sites. For example, the travel time for points ten kilometers away was similar for Sevan and Van but slightly higher than Aragats. For Sevan, the average area within one hour's travel time and the average distance for one hour points were between the values for Van and Aragats. Additionally, the visibility of one hour paths was similar to Van, both of which were lower than the visibility of one hour points in the Aragats region.

Sites in the Sevan region had less variability in measures of their physical accessibility compared to Van sites. The GIS analysis suggests that at greater distances (ten kilometers) sites in the Sevan region were less accessible than those in the Van and Aragats regions, while at closer distances (one hour's walk, usually between three and

Region	Average travel time for points 10k away (hours)	Area within 1 hour's travel time (km2)	Average distance for 1 hour pts (km)	Average percent visibility of 1 hour points	Average slope (degrees)
VU: Average	2.53	41.92	3.67	35.73	16.21
VU: Range	0.59	30.69	1.35	52.18	21.82
APU: Average	2.48	56.72	4.25	38.62	7.7
APU: Range	0.56	23.25	0.89	39.2	8.1
AU: Average	2.34	62.78	4.48	45.12	10.24
AU: Range	0.39	14.67	0.54	34.65	6.36
SPU: Average	2.64	45.64	3.82	36.72	11.5
SPU: Range	0.36	21.33	0.89	34.01	13.37
SU: Average	2.51	52.35	4.09	30.49	8.81
SU: Range	0.25	14.18	0.53	31.38	10.61

Table 8-6: Comparison of results of GIS physical accessibility analysis for the Van, Aragats and Sevan regions, broken down by time period

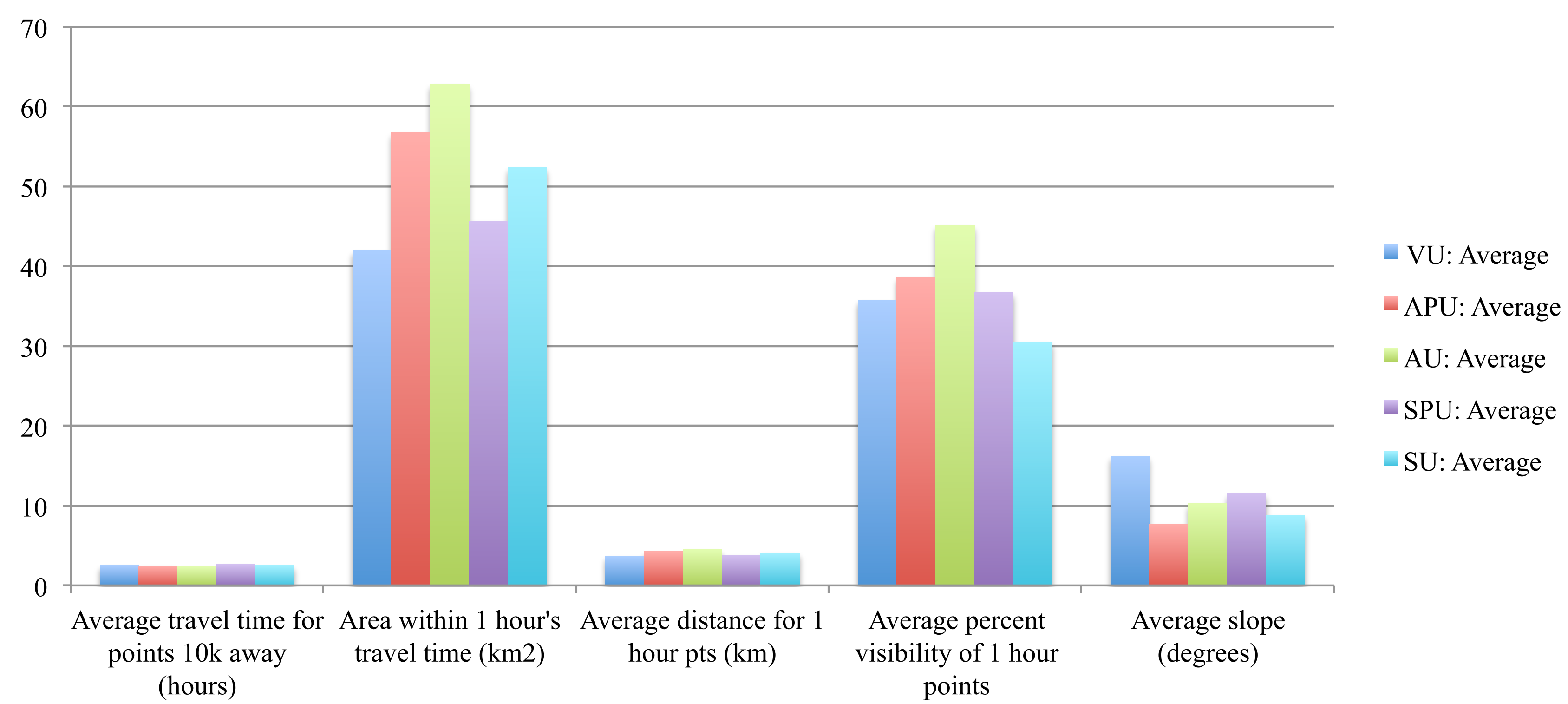


Figure 8-6: Comparison of results of GIS physical accessibility analysis for the Van, Aragats and Sevan regions, broken down by time period

four kilometers), sites in the Sevan region were more accessible than those in the Van region but less accessible than those in the Aragats region. Such sites also had a greater degree of visibility to points on paths leading to and from than sites in the Van region, but a lower degree of visibility than sites in the Aragats region. Finally, sites in the Sevan region were less variable in their physical accessibility than sites in either the Van or Aragats regions.

As with GIS measures of visibility, for measures of accessibility, SU sites also tended to be amplifications of either Urartian or local traditions. The only physical accessibility measure where SU values fell between SPU and VU values was slope. SU sites were nearly identical to VU sites in terms of mean travel time for points 10 kilometers away, and these values were smaller than SPU sites. SU sites had a greater area within one hour's walk than either SPU sites or VU sites, and a greater average distance for one hour point. Thus, SU sites were more similar to VU sites in terms of physically accessibility at greater distances, but more similar to SPU sites at shorter distances. Finally, SU sites had lower percentage visibility of pathways than either VU or SPU sites, but were more similar to VU sites.

In general, Urartian sites in the Sevan region, like Urartian sites in the Aragats region, were more physically accessible than earlier sites, confirming previous research (Smith 1999) that an increase in physical accessibility, including a decrease in slope in the case of SU sites, was a hallmark of Urartian site location. This increase in physical accessibility can be seen in an area firmly under the empire's control, and on the fringes of the empire. SU sites were also, in general, more visible than SPU sites, and more likely to be more visible than random points. On the other hand, in contrast to the pattern in the Aragats region, Urartian sites in the Sevan region were less intervisible to all sites (Urartian and pre-Urartian) than pre-Urartian sites. Without context, this might suggest that Urartians valued site intervisibility less than pre-Urartians, but considering previous research (Earley-Spadoni 2015), it might instead indicate that communication networks were becoming more sophisticated, requiring fewer visible connections between sites. This analysis was not as comprehensive as Earley-Spadoni's in regards to intersite visibility, nor was it intended to be, and many other sites were likely visible to each of these sites (explored further below).

Based on evidence from the Sevan and Aragats regions, then, physical and visual accessibility were significant priorities for Urartian leaders within their empire and on the periphery. At the same time, SU sites, like AU sites, retained and sometimes amplified aspects of local traditions. SU sites had some Urartian characteristics and some local characteristics, but rarely were they simply a blend of the two.

Combining Phenomenology and GIS

In general, the GIS analysis demonstrated that sites in the Aragats region as a whole were less visible but more physically accessible than sites in the Van region. The phenomenological analysis supported this conclusion for measures of accessibility—that is, sites in the Van region were also found to be qualitatively less accessible—but contradicted it for measures of visibility, as sites in the Van region were ranked as qualitatively less visually accessible than those in the Aragats region. One reason for this is that sites in the Aragats region seemed more visually accessible to the naked eye because they tended to have good visibility in all directions, whereas the Van sites tended to have poor visibility in one or two directions and excellent visibility in the others. While this created a feeling that the Van sites were visually blocked off from their surroundings in one or more directions, quantitatively, their viewsheds were still larger.

The most significant area in which the phenomenological and GIS analyses agreed, however, was comparing AU sites with APU sites and with VU sites. In general, qualitative and quantitative analyses found that AU sites were more similar to VU sites in terms of human-made features and certain aspects of visibility, and more similar to APU sites in terms of physical accessibility and other aspects of visibility (particularly across long distances). This difference is noticeable because physical accessibility is more limited by the constraints of landscape, whereas human-made features are almost completely under human control, and visibility, while also a product of landscape, can be more easily manipulated by slight changes in site locations. It makes sense, then, that AU sites were more similar to nearby sites in terms of physical accessibility, simply as a result of proximity and a shared landscape. However, the fact that the physical accessibility traits of AU sites were exaggerations of AU trends suggest that this may have actually been a deliberate choice and that Urartian leaders may have found that the local patterns of greater physical accessibility suited their needs better in this region. For cultural features and short-distance visibility, however, Urartian leaders appear to have replicated the patterns of their homeland rather than adopting local strategies.

Finally, GIS and phenomenological analysis revealed that in most aspects AU sites were not simply blends of Urartian and local traditions. With the exception of five phenomenological characteristics—physical accessibility, physical accessibility within the site, skill and technology of cultural features, emotional impact of natural features immediately associated with the site, and acoustic impact—the values of AU sites were not between those of APU or VU sites. This suggests that Urartian leaders were not generally interested in mixing their own traditions with local traditions. Rather, they either imposed their own traditions or, by choice or out of necessity due to the constraints of landscape, adopted local traditions, and in the process amplified the characteristics of each.

In the Sevan region, on the other hand, the GIS and phenomenological analyses diverged in some ways, particularly when it came to comparing the Sevan region as a whole to the other two regions. GIS analysis showed that Sevan sites were more accessible over larger distances than Aragats and Van sites, and that over shorter distances, they were more accessible than Van sites but less accessible than Aragats sites. On the other hand, phenomenological analysis found that Sevan sites were less accessible than either Van or Aragats sites. This is likely an issue of scale, as phenomenological experiences were most focused on the area immediately around the site. Thus, it may be that Sevan sites were less physically accessible at close distances but more accessible over larger distances. It may also be that certain aspects of Sevan sites and their surrounding landscape caused them to be perceived as less accessible than they were objectively measured to be. For example, a site might be located in a rugged landscape that to a human observer would appear inaccessible, but if the site happens to be located directly on a path through flatter ground, it would in fact be more accessible than it seems. Past people living at these sites likely would have known from experience how accessible they were, but may have still been influenced by phenomenological perceptions, and visitors for the first time, or invading enemies, likely would have experienced phenomenological perceptions more strongly.

Phenomenological analysis found that Sevan sites as a whole were less visually accessible than either Van sites or Aragats sites. On the other hand, GIS analysis found the opposite: Sevan sites had a greater percent visibility to the surrounding landscape at the ten kilometer and fifty kilometer levels. Again, this might be an issue of scale; it may be the case that Sevan sites are less visible at the close range of phenomenological analysis than the to the larger range of GIS analysis. While GIS considers all points in a viewshed equally regardless of distance, a human observer's perceptions of visibility will likely be more strongly shaped by their visibility of points and features nearby compared to farther away. Additionally, however, the differences in GIS and phenomenological analysis may reflect a difference in how humans versus computers perceive visibility. The sites in the Sevan region that received low phenomenological rankings generally had visibility blocked on multiple sides, creating a sense of visual isolation. However, most of these sites had excellent visibility in one narrow direction, which led to the calculation of a large viewshed. Visibility as perceived by a human involves not simply how much can be seen, but how the area within view is distributed. On the other hand, priorities might also shape human experience of visibility. If a site only had good visibility in one direction, but that direction was the direction in which other important sites were located or from which enemies were expected to approach, then the site might well have been regarded as more highly visible by contemporary people than by a modern observer. Thus, the social context of features and landscapes can affect perceptions of visibility, something that is difficult to capture by either a modern person's experience or by GIS.

On the other hand, GIS and phenomenological analyses did agree that the arrival of Urartu led to an increase in visibility relative to in earlier times, though this difference was less pronounced for the phenomenological analysis.

GIS analysis found that SU sites were more similar to VU sites in terms of visibility, slope, and long-distance accessibility, but more similar to SPU sites in terms of accessibility over shorter distances. Phenomenological analysis found that SU sites were more similar to SPU sites in terms of visibility but more similar to VU sites in terms of physical accessibility. Thus, while all analyses agree that visual and physical accessibility increased with the arrival of Urartu, the difference is how much. In certain regards—namely long-distance accessibility, slope, visibility, and perception of physical accessibility—Urartian sites in the Sevan region were more like the sites of their homeland than they were like previous sites in the region. That is, the Urartians substantially imposed their own traditions of site location. On the other hand, in other regards—accessibility over shorter distances and perceptions of visual accessibility—Urartians imposed their own traditions to a much lesser degree. In general, the arrival of Urartu led to greater changes in physical accessibility than visual accessibility, suggesting that the former was more of a priority and/or that there was greater difference between pre-Urartian and Urartian ideals of physical accessibility compared to visual accessibility. Previous research on the importance of visual networks at Urartian sites (Earley-Spadoni 2015) suggests the latter; visibility likely was important to Urartians, but because it was important to pre-Urartians too, Urartians were able to use pre-existing visual patterns. On the other hand, Urartians were presumably not as satisfied with the physical accessibility of pre-Urartian sites, and set out to change site locations to suit their needs.

CHAPTER 9: CONCLUSION—COMBINING GIS AND PHENOMENOLOGY FOR AN UNDERSTANDING OF THE URARTIAN IMPERIAL PROJECT

This dissertation had two major goals: to explore the nature of Urartian empire-building in the South Caucasus, and to examine how qualitative and quantitative methodologies, often thought to be at odds, can be combined to answer questions more comprehensively than either could answer alone. The phenomenological data and GIS analysis from the Van, Aragats and Sevan regions provided valuable information for understanding the Urartian imperial strategy in Turkey and Armenia.

The Urartian Imperial Project

This dissertation sought to answer three questions: What was the Urartian "imperial project", particularly in regards to engagement with and construction of landscapes? How does the Urartian imperial project compare to earlier strategies of political control in the region? What relationships did this project create between the Urartians and the people they conquered? As already discussed, compared to its Near Eastern neighbors in places such as Mesopotamia and Iran, Urartian empire-building would have faced unique challenges related to a rugged, mountainous landscape, a dispersed and mobile population, and entrenched traditions of fortification and local autonomy. This raised the question of whether Urartian rulers may have, by choice or by necessity, exerted looser control over their subject populations than traditional empires.

This dissertation sought to compare two models: the imposition model, in which Urartian rulers imposed their own traditions on local populations, and the autonomy model, in which Urartian rulers left local populations to their own devices. It was expected that if the imposition model were true, Urartian sites would show a distinctive change from pre-Urartian sites, with characteristics that were more similar to Urartian sites in the Van region than to pre-Urartian sites in the Aragats or Sevan regions. If the autonomy model were true, Urartian sites in the Aragats and Sevan regions would show little change from pre-Urartian sites. The results of this research suggest, however, that the situation in the Aragats and Sevan regions was actually a merger of these two models. Urartian sites in these two regions often differed substantially from their pre-Urartian predecessors, but these changes suggest an enhancement of existing local strategies for site location, rather than an imposition of Urartian ones.

How Urartian sites negotiated imperial and local traditions varied by region. In the Aragats region, for measures of physical and visual accessibility of the site and within the site and for the impact of cultural features, AU sites were more “Urartian” than they were “Aragats”, while these sites had more “Aragats” characteristics for measures associated with natural features (visibility of topographic features, emotional impact of natural features and extent to which the site incorporates natural features) and acoustic and tactile impact. In other words, Urartians appear to have imposed their own traditions when it came to the sites themselves and their cultural features, but to have maintained local traditions when it came to the sites’ relationship to natural features and to senses other than vision. Urartians may have regarded interactions with natural features as less important factors in site location, or these factors may be more dependent on the landscape as a whole and therefore less subject to human choice. However, it appears that regardless of whether Urartian rulers imposed Urartian traditions and/or adopted local traditions, more often not, they became more extreme versions of each, rather than blending them. For three out of eleven characteristics, AU sites exaggerated characteristics of APU sites, becoming even more “Aragats”. For three out of eleven characteristics, AU sites exaggerated characteristics of Van sites, becoming even more “Urartian”. For five out of eleven characteristics, a minority, AU sites were between APU and VU sites, suggesting a blending of traditions. In all cases, with the exception of acoustic impact and tactile impact, there were substantial differences between Urartian and pre-Urartian sites, suggesting that Urartians did make significant changes to site location in the Aragats region. The GIS analysis confirmed this. Urartian sites were twice as visible as pre-Urartian sites at the fifty-kilometer level, and much more likely to be more visible than random points nearby at both the ten and fifty-kilometer levels. While pre-Urartian sites had slightly larger total viewsheds at the ten-kilometer levels, the arrival of Urartu led to a substantial increase in relative visibility, intervisibility, and long-distance visibility. AU sites were also more physically accessible than APU sites. This suggests that Urartian sites in the Aragats region were more visually and physically accessible than pre-Urartian sites. However, this increase in physical accessibility appears to be a continuation of local traditions rather than an imposition of Urartian ones, as APU sites were more physically accessible than VU ones as verified by GIS. This suggests that Urartians found that the local Aragats tradition of physically accessible sites suited their needs, and located their sites to enhance this accessibility. While the Aragats region may simply be a more accessible, less rugged landscape than the Van region, Urartian leaders appear to have made a deliberate choice to exploit that accessibility. Smith (1999) came to a similar conclusion and suggests that this decision relates to a greater desire for interaction with local subject populations by Urartian rulers compared to Late Bronze Age and Early Iron Age leaders. While patterns of physical accessibility seem to represent a continuation of local traditions, they may in fact have been part of a pattern of imposition of Urartian authority. This suggests that there is an important distinction between local traditions as a sign of autonomy, and local traditions that have been fashioned into tools of imperial control.

Interestingly, AU sites were generally more like VU sites in terms of phenomenological characteristics, and more like APU sites in terms of GIS characteristics. In particular, AU sites demonstrated the Urartian preference for sites in visually striking, imposing locations with emotionally impactful cultural and natural features. These bombastic displays of power are well-documented in the Aragats region (Smith 2000) and may relate to a desire on the part of Urartian rulers to erase traces of a past that they found threatening (Smith 2015). These characteristics are also found in the Van heartland and suggest that impressive and intimidating site locations were an integral part of the Urartian "imperial project," one that Urartian rulers brought with them to the Aragats region. The physical and emotional impacts of these sites may have been a means of demonstrating Urartian power to conquered subjects, and would have been particularly effective for mobile populations or those coming from far away who only visited the sites occasionally. For measures of physical and visual accessibility, the Urartian "imperial project" in fact involved the adoption and enhancement of local traditions that made ruling easier by increasing possibilities for interactions between sites and between rulers and subjects. VU sites have low physical accessibility compared to sites in the Sevan and Aragats regions, suggesting that high physical accessibility is not an inherently Urartian characteristic the way impressive site location is, but rather a strategy they adopted only in certain landscapes. This strategy was important for exerting authority over a nomadic population who would have probably come into contact with Urartian sites while traveling with their herds, rather than as a result of living in settled communities nearby. The less physically and visually accessibility of pre-Urartian sites, on the other hand, suggest that rulers in the Late Bronze and Early Iron Ages were content to keep their distance from their subjects and perhaps allow them a greater degree of autonomy (Smith 1999). While the consolidation of power and the development of systems of centralized authority occurred in previous times, the arrival of Urartu appears to have led to a greater degree of engagement with authorities than subject populations would have been previously accustomed to. Whether subject populations accepted, ignored, or resisted this new authority is unclear, though textual descriptions of the forcible relocations of conquered peoples (Burney 2012; Khatchadourian 2014; Stone 2012; Zimansky 2012) suggests that this last possibility occurred at least fairly often. Additional research would be needed into domestic and pastoral contexts, evidence for which is lacking (Stone 2012; Stone and Zimansky 2003; Wilkinson 2003). This analysis cannot directly tell us whether Urartians successfully imposed their traditions on local people, but it does suggest that they sought to in a way that previous rulers might not have.

The situation is different in the Sevan region, an Urartian frontier rather than a region fully incorporated into the empire. Here, in terms of phenomenological ratings, Urartian sites were more similar to pre-Urartian sites than in the Aragats region, particularly in regards to visibility and cultural features. SU sites were also more similar to SPU sites than to VU sites in all characteristics except physical accessibility, in contrast to the Aragats region, where AU sites were more similar to VU sites than to

APU sites for most measures. Also unlike sites in the Aragats region, SU sites were more likely to be a blend of VU and SPU sites, rather than an exaggeration of the characteristics of one or the other. SU sites were an amplification of VU site characteristics in terms of physical accessibility, underscoring this factor as an important part of the Urartian imperial program. Sevan sites as a whole had greater visibility than Aragats sites and similar visibility to Van sites, which can largely be explained by the presence of the flat topography of a large lake in the Sevan and Van regions, while the Aragats region had no comparable feature. Sevan sites were less intervisible than sites in the other two regions, but this may actually reflect efficiency of visual networks (Earley-Spadoni 2015). In general, SU sites were more visually and physically accessible than SPU sites, suggesting that the Sevan region also underwent an imposition of the Urartian imperial program which may have facilitated greater visual and physical interaction between rulers and subject populations. In contrast to the Aragats region, in the Sevan region it appears that Urartian rulers did not impose their imperial project of physically and emotionally impressive site location and bombastic architecture, even though SPU sites in the Sevan region were generally less impactful than or similar to APU sites (the emotional impact of natural features related to the site is an exception). This may suggest that Urartian rulers were less invested in the region and in the bodily and sensory impact their sites had on subjects, and more interested in practical matters of trade and defense. It also appears that Urartians were more likely to allow local traditions to continue here, or to make only slight modifications, as compared with the Aragats region. This interpretation is also in line with earlier work on how Urartians interacted with previous sites in each of the two regions of Armenia: Urartians tended to destroy previous sites in the Aragats region (Smith 2000) but reuse them in the Sevan region (Hmayakyan 2002). Urartians may have needed to reorganize the Aragats landscape, for practical reasons and/or for psychological ones, but did not feel this need as strongly in the Sevan region.

One might expect that changes in site location might have involved tradeoffs—in particular, that more visually accessible or more emotionally impactful sites might be located on higher hills, and that Urartian rulers would have needed to compromise visibility or emotional impact to achieve what appears to have been a central goal of enhanced physical accessibility. In reality, sites on low hills such as Metsamor are both physically and visually accessible. Similarly, AU sites were both more emotionally impactful and more physically accessible (as measured by GIS) than APU sites. None of these characteristics are strongly correlated with each other in a way that was likely to force Urartian leaders to compromise visual accessibility for physical accessibility or vice versa. Instead, these could be chosen independently of each other, which makes it more likely that the sites sampled in this analysis truly represent Urartian choice in visual accessibility, physical accessibility and emotional impact.

Two components of the Urartian imperial project clearly relate to landscape. The first is bombastic architecture and site location and a high degree of visual accessibility, which is visible in the Urartian heartland and which was a distinctly Urartian characteristic that Urartian rulers brought with them to Aragats, and less so to Sevan. The second is a high degree of physical accessibility, which appears to have been a characteristic that Urartian rulers did not necessarily value in their heartland but that they adopted from local subject populations to suit their own needs in both the Aragats and Sevan regions.

The Utility of Combining Phenomenology and GIS

The second goal of this project was to explore the utility of combining a highly qualitative approach (phenomenology) with a highly quantitative approach (GIS) to understand landscapes. The combination of the approaches confirmed much previous research in the region. For instance, the phenomenological analysis showed that Urartian sites had more emotionally evocative locations, views, and architecture than pre-Urartian sites, which supports previous research documenting the Urartian fascination with bombastic constructions (Smith 2000, 2015). The GIS analysis showed that Urartian sites were generally more physically accessible than pre-Urartian sites, agreeing with previous analyses showing that Urartian leaders founded sites in more accessible locations on the Ararat Plain (Smith 1999), presumably in order to enhance their degree of interaction with their subjects.

The phenomenological analysis and GIS analysis agreed in several ways. For the Aragats and Sevan regions, phenomenological analysis and GIS demonstrated that Urartian sites were more physically accessible than pre-Urartian ones, underscoring the importance of physical accessibility in the Urartian imperial project. This agreement further demonstrates that physical accessibility was something that people could have experienced qualitatively as well as quantitatively, and at several different scales. On the other hand, GIS and phenomenological analyses differed in their analysis of physical and visual accessibility in certain situations. For these characteristics, some differences can be explained by scale; phenomenological analysis, and human experience in general, tends to privilege features in the immediate visual and physical vicinity over those further away, while GIS treats all features in the range of the analysis the same. Similarly, from a phenomenological point of view, the nature or context of certain features can have an outsize impact on perceived visibility or accessibility. For example, visibility of a certain important natural feature might cause a site to be perceived as highly visible, even if its overall viewshed is small; similarly, a large hill near a site might cause it to be perceived as physically inaccessible, even if the actual cost of going around it is small.

Both of these approaches to understanding landscape reflect different aspects of past people's perceptions of landscape, and qualitative and quantitative aspects of the sites and their surroundings likely would have had different levels of importance for different kinds of people and different situations. A large viewshed would have been useful for spotting approaching enemies, but a site that is perceived as visually imposing might intimidate subjects and encourage their obedience. Similarly, physical accessibility as measured by least cost paths might have been useful for people who traveled to the sites regularly; but qualitative perceptions of physical accessibility might have had a greater impact on enemies or less frequent visitors. A common critique of phenomenology is that it represents first impressions, rather than how someone living at the site would have experienced it (Brück 2005; Smith 2003). However, this dissertation explores how Urartian leaders might have managed a population that was mobile and dispersed, rather than consolidated in cities. Thus, most of the people these leaders sought to control were not experiencing the sites on a daily basis. But nor were they likely one-time visitors, particularly considering the Urartian imperial tendency to position fortresses on trade routes (Smith 2003). Like their predecessors, Urartian leaders might have united their subjects by encouraging them to gather at sites for religious, political and social rituals at certain times of the year (Greene and Lindsay 2013). Thus, most people visiting the sites surveyed by this project may have encountered them on a regular but infrequent basis, and as a result, both the first impression captured by phenomenology and the day-to-day experience captured by GIS would have had a role to play in their relationship to the Urartian landscape. Ultimately, this research demonstrates that GIS and phenomenology are useful but imperfect methods for understanding landscapes. Neither can take into account the impact of cultural meaning attached to features or fully reconstruct past landscapes, with all of the human and natural features that would have interacted to govern their experience and use—but then again, no archaeological method can fully do this. However, GIS and phenomenology can provide two different perspectives on the same sites and landscape. Where these two perspectives agree suggests important patterns that were present at multiple scales and in multiple scenarios. Where they disagree suggests the variety of experiences of sites and landscapes. Combining these two perspectives ultimately provided a richer analysis of the Urartian imperial project than either would have afforded alone, contributing to a more holistic understanding of how Urartian rulers changed the landscapes that they conquered, and how subject populations might have experienced these changes.

Like most empires, the Urartian Empire had a high degree of internal diversity. Despite lacking the advantages of a settled population, they managed to unite their subjects through a landscape program designed to facilitate a greater degree of interaction between rulers and subjects. This research demonstrates that a wide variety of imperial strategies can be used to control local populations, and suggests the need for a broader understanding of empires and imperial programs, an understanding which non traditional empires such as Urartu can help to facilitate.

APPENDIX 1: PHENOMENOLOGICAL DESCRIPTION AND RANKING OF SITES IN THE VAN REGION

Anzaf Upper Town

Visual accessibility—4: The site is visible from some distance away to the east, north and south, while a large mountain to the southwest blocks visibility in that direction. Upper Anzaf in particular stands out from the surrounding landscape and is highly noticeable, and also has good oversight of the surrounding agricultural lands.

Visibility of topographic features—4: The large mountain directly to the southwest of the site serves as a striking backdrop when the mound is viewed from other directions. The mountain is much bigger than the site and seems to tower over it, especially when viewed from a distance. The site also has views of Lake Ercek and surrounding mountains.

Visibility within the feature—4: Visibility is in general quite good across the top of the site, though some undulations in the rock block visibility in some locations. The two parts of the site also have good views of each other.

Physical accessibility of the feature—2: The site is located on a high, steep mound, which is made mostly of dirt. The slope is fairly equal all around, with a path up starting from the southwest and then leading up and around to an entrance carved of bedrock. The ascent would have been quite steep, but the site lacks the sheer rock cliffs of sites such as Van Kalesi.

Physical accessibility within the feature—3: The site is fairly flat and easily navigable across the top. However, it would have been difficult to get between the two parts of the site.

Skill and technology of cultural features—3: The site contains an inscription surrounded by stone blocks. The inscription and the carved blocks are impressive, and the inscription is finely done; the stone around the inscriptions were somewhat prepared, but were not perfectly smoothed the way inscriptions at other sites are. These stones not as finely carved as those at other sites such as Ayanis, and the stonework here seems designed to be practical rather than beautiful or impressive. The exception to this is a bedrock entryway, which does appear to have been carved with a fair amount of skill.

Emotional impact of cultural features—3: The carved stone blocks are impressive, as is the inscription. The entryway would likely have had a significant impact; as it currently stands it is impressive but not overly so, but it may have been bigger and more intimidating in the past. The inscription also likely would have evoked awe and curiosity in those who were unable to read it.

Emotional impact of natural features immediately associated with the location—4: Set against the towering mountain behind it, the mound is quite striking and very high, particularly as viewed from the lower town, and seems to loom over the lower town and the surrounding landscape. The view of Lake Ercek is also quite lovely.

Extent to which the location incorporates natural features—3: The distinction in height and location of the two mounds clearly serves to distinguish them and allow the upper to oversee the lower, as well as marker the upper as dominant by virtue of its much larger size. Additionally, the upper town contains an entryway carved of bedrock.

Acoustic impact—2: Sound likely would have carried well between the upper town and the lower town, and the narrow streets enclosed by walls may have generated echoes.

Tactile impact—2: The bedrock carved entranceway is fairly smooth. The inscriptions are at a level to touch, as in many buildings, and would have had an interesting texture, especially to those unfamiliar with writing.

Anzaf Lower Town

Visual accessibility—3: Like the upper site, the lower site is visible from some distance away to the east, north and south, while a large mountain to the southwest blocks visibility in that direction. However, the lower site is not as high up as the lower site and therefore not as visible.

Visibility of topographic features—4: The view here is similar to the upper site, with a large mountain directly to the southwest of the upper site and views of Lake Ercek and surrounding mountains.

Visibility within the feature—5: Visibility is in general quite good across the top of the site, as it is small and flat. The lower site also has a good view of the lower site.

Physical accessibility of the feature—3: The lower site is located on a lower mound the upper, but also has steep sides, which would have provided some impediment to access, though not as much as the upper site.

Physical accessibility within the feature—5: The site is very flat and easily navigable across the top.

Skill and technology of cultural features—2: The around the site is not of particularly high quality, but it is quite tall and made of large stones. However, these stones are uncut and smaller than those at the upper site.

Emotional impact of cultural features—1: The walls and buildings of the site are fairly nondescript, and there is little to inspire strong emotion.

Emotional impact of natural features immediately associated with the location—3: The hill on which the lower town is located is moderately imposing, though not as much as the upper site.

Extent to which the location incorporates natural features—1: The site does not significantly incorporate natural features.

Acoustic impact—2: As at the upper site, sound likely would have carried well between the upper town and the lower town, and the narrow streets enclosed by walls may have generated echoes.

Tactile impact—1: There is no significant tactile impact.

Ayanis Upper Town

Visual accessibility—3: The site is highly visible to the agricultural valley immediately surrounding it, but the valley itself is surrounded by hills and the site is not visible beyond those hills. In the immediate vicinity, the site is quite visually imposing. The presence of basalt stones and tall walls would have made the site stand out from the landscape.

Visibility of topographic features—5 The site has stunning view across the lake and in particular of Mt. Suphan on the other side of the lake. Mt. Suphan was an important mountain to the Urartians, and in fact the Urartian name for Ayanis means "in front of Mt. Suphan". On the day I visited it was hard to see across the lake due to haze, and Mt. Suphan was only barely visible, but I was informed that on clearer days the view is much better. The site also has a view of surrounding the valley and hills.

Visibility within the feature—3: The top is fairly flat and not very large, and without buildings in the way most parts are visible to most other parts. The western portion of the Upper Town, closer to the lake, can easily see the Lower Town. Approaching the site, the walls would have been tall enough to block much of the mound from the view of someone standing close by.

Physical accessibility of the feature—2: The side toward the lake is most imposing and steepest, and has a lot of natural rock. The other sides are grass and dirt, but quite steep, and there would have been tall walls partway up the slope. The mound is also quite high so it takes a while to get to the top. This is a treacherous walk, but not one that requires being on all fours. The approach would have been on the side away from the lake, though it is possible to get down the side close to the lake.

Physical accessibility within the feature—3: The top of the site was easy to navigate, though it is difficult to tell how architecture would have impacted this. However, the top of the mound is flat, and no natural features impede movement. However, it would have been somewhat difficult to get between the Upper Town and the Lower Town.

Skill and technology of cultural features—5: The site has walls made of large, finely cut stones, which would have been massive and incredibly imposing. These walls would have been so high that they would have blocked much of the mound from view up close, and some of these stones were carved of basalt, which provides a visually striking contrast to the natural landscape and to stones made of bedrock. The site also included a monumental entrance, large walls at the temple and other large structures, and extremely skilled stone reliefs.

Emotional impact of cultural features—5: The walls would have been extremely imposing, in both their skill and size. The monumental architecture and in particular the reliefs were also extremely beautiful and awe-inspiring.

Emotional impact of natural features immediately associated with the location—5: In terms of location, this site was by far the most beautiful of those surveyed. The top of the mound provides picturesque views out over the lake on one size and an agricultural valley on the other, creating a sense of both wonder and peace. The site's location in a valley makes it feel very secluded. On the other hand, the mound is steep and imposing, but it lacks the truly impressive towering cliffs of places like Van Kalesi. There is some natural rockiness on the side near the lake, but it is not as imposing as that of other sites.

Extent to which the location incorporates natural features—4: The stones for the wall were quarried from the bedrock, and visitors today can see places in the bedrock where the stones were carved out. Additionally, differences in location and topography between the Upper and Lower Towns serve to distinguish the two and create a natural hierarchy within the site as a whole.

Acoustic impact—1: There are no features that create a significant acoustic impact

Tactile impact—1: There are no features that create a significant acoustic impact.

Ayanis Lower Town

Visual accessibility—2: The site is highly visible across the lake, and somewhat to the surrounding hills; however it is blocked from view of much of the valley by the upper part of the site.

Visibility of topographic features—4: The experience of the lower town is very similar to that of the upper town, though the upper town blocks visibility of some of the surrounding hills.

Visibility within the feature—5: The site is flat and small, and all parts of the site can see each other.

Physical accessibility of the feature—4: The Lower Town is on a gentle slope and an easy walk from the Upper Town, and easily accessible from the valley and the lake, though it would have been somewhat difficult to get from the Upper Town to the Lower Town.

Physical accessibility within the feature—5: The top of the site was easy to navigate, though it is difficult to tell how architecture would have impacted this. However, the top of the mound is flat, and no natural features impede movement. However, it would have been somewhat difficult to get between the Upper Town and the Lower Town.

Skill and technology of cultural features—1: Little remains of the architecture, but the buildings appear to have been small and very simply constructed of small, uncut stones.

Emotional impact of cultural features—1: There is little about the architecture to inspire strong emotion.

Emotional impact of natural features immediately associated with the location—4: This site had much of the beauty of the Upper Town, though it was slightly less impactful due to the fact that the Upper Town blocked visibility of much of the valley.

Extent to which the location incorporates natural features—1: The site does not incorporate natural features in any significant way.

Acoustic impact—1: There are no features that create a significant acoustic impact

Tactile impact—1: There are no features that create a significant acoustic impact.

Cavustepe

Visual accessibility—4: In general, the site is significantly visible from its immediate surroundings and from far away in several directions, though it is also sometimes blocked from view by intervening hills and outcroppings. In particular, the site is highly visible from the flat agricultural lands surrounding it.

Visibility of topographic features—3: The site has a good view of surrounding mountains. However, it does not have views of any particularly significant mountains, or of Lake Van or other water features.

Visibility within the feature—4: In general, visibility within the site is quite good, as it is located along the top of a ridge. Some of the more eastern parts of the site are blocked from each other by hills and curvature of the rock. However, the Haldi temple has a great view of essentially the entire site and presumably could see people and be seen by people at most of the site. Additionally, the main settled area consists of two raised parts of the ridge—the Haldi temple platform, and a collection of other buildings—which overlook each other.

Physical accessibility of the feature—3 The site is located on a steep grassy slope which is difficul to ascend, but not as imposing as the rocky cliffs of sites such as Van Kalesi. A steep set of stairs on the north face would have been the main point of access. Around the mound, the land is fairly flat.

Physical accessibility within the feature—4: The site is located along the top of a narrow ridge, with a single path down the center between the buildings. The site is very strongly oriented east-west and is very narrow north-south, to the point where there was probably only one building on either side of the single street. The Haldi temple is located up a small but steep staircase, and the eastern portion of the mound requires some climbing to access, but in general it is fairly easy to walk around the built part of the site.

Skill and technology of cultural features—5: The site has several inscriptions on finely carved large blocks that fit together well without any kind of joining agent. The staircase on the north face, carved into the bedrock, is also impressive considering the steepness of the slope, especially as it presumably would have had tall walls on either side. The Temple of Haldi consists of a large bedrock platform carved into the side of the rock face, which also demonstrates impressive stone-working capabilities.

Emotional impact of cultural features—4: The staircase is imposing, and the stone blocks are impressive and intimidating. The Temple of Haldi platform in particular stands out as a stark contrast to the rest of the site; rather than respecting the natural topography, the builders artificially flattened the land to create a sheer vertical face and flat horizon platform. This stone is white compared to the surrounding rock and the other types of stone used for the buildings, which more closely resembles the natural stone. Compared to the rest of the site, which rolls along with the natural topography, the Haldi Temple looks very artificial and somewhat jarring.

Emotional impact of natural features immediately associated with the location—3: The ridge on which the site is located is one of many the region, and while large and imposing, it is not as dramatic as some of the other sites.

Extent to which the location incorporates natural features—3: The staircase on the northern face was carved into the bedrock. The Haldi temple is also at the naturally highest part of the site, causing it to tower over the rest of the built features.

Acoustic impact—2: In general there is little in the way of acoustic features, but sound likely would have echoed off the rock on either side of the staircase, or the narrow street if walls were built high.

Tactile impact—3: The stone blocks with the inscription are very smooth, with well carved edges. The Haldi platform is also very smooth.

Dogubeyazit

Visual accessibility—3: The site is highly visible from the west, and has excellent visible for a long distance overlooking a valley. However, to the east, north and south it is blocked from view by mountains almost immediately.

Visibility of topographic features—2: Some mountains can be seen on the surrounding landscape. However, the site cannot see Mt. Ararat, the most prominent mountain in the vicinity, as it is blocked from view by lower, intervening mountains.

Visibility within the feature—2: There is a fair amount of vertical spread to the site, and due to the different levels, curvature of the rock and the presence of many outcroppings, similar to Van Kalesi, much of the sight would not be visible from other parts. However, it is difficult to tell how far across the hilltop the site spread, as only the south face is accessible today.

Physical accessibility of the feature—2: To access the castle itself would have required climbing up steep stairs as the site is clearly built into the side of a sheer rock face. There is evidence of at least one staircase, which is steep and precarious, and the entire cliff side is treacherous and difficult to navigate. The area where the castle is located is a significant ways up a mountainside, which would have required a long and moderately difficult ascent from the west. From other directions, it would have been necessary to navigate the intervening mountains and hills.

Physical accessibility within the feature—2: Because of the site's vertical spread, getting from one part to another would have required navigating treacherous staircases and doing a lot of climbing up steep parts of the cliff.

Skill and technology of cultural features—4: It is difficult to tell what is Urartian at the site and what was constructed by later cultures. However, the walls that are built right into the cliffside are very impressive, as is the carving of the tomb and the stone cut stairs. The ability to build into and on bedrock, and to build walls and buildings right into the side of such an imposing cliff, would have taken considerable skill and technological sophistication.

Emotional impact of cultural features—5: From the base of the cliff, the walls and other structures tower imposingly above the viewer, and are very intimidating. The amount of technological skill required to build directly into the cliff side is impressive and awe-inspiring. The relief on the tomb, though now difficult to see, likely also would have been impressive and imposing in Urartian times, and the tomb itself, a dark hole cut into the side of the rock, had a distinctly spooky look.

Emotional impact of natural features immediately associated with the location—5: The cliff is very tall, and towers imposingly above visitors. When climbing around the site, one is intensely aware of the weight and size of the rock and the cliff face. The site also has impressive and beautiful views of the surrounding valley.

Extent to which the location incorporates natural features—4: Constructions are present on multiple levels of the cliff side, and the walls and buildings, particularly the defensive walls, follow the site's natural topography, making use of places of natural defensibility. The walls very much look natural extensions of the cliff. The site also has bedrock cut stairs and a bedrock cut tomb.

Acoustic impact—4: Sound travels very far from the valley far below. The tomb, which is not accessible today, likely would have had a great many echoes and other acoustic effects. The cliff itself and the stone buildings on it also would have created echoes and amplified sound.

Tactile impact—4: Difficult climbing in some areas likely would have required use of the hands, which would have brought visitors in contact with the texture of the rock. The tomb would also be cooler and damper than the outside.

Hosap Castle

Visual accessibility of the feature—5: This site is highly visible from all directions. The main modern road approaches from higher ground to the west, and the castle can clearly been seen from several miles away. It is also the highest point in the immediate vicinity and is visible from essentially everywhere nearby.

Visibility of topographic features—3: Low mountains can be seen in all directions, though Lake Van and more major mountains are not visible.

Visibility within the feature—5: The castle itself was likely only a single building. However, it has a three hundred and sixty degree view of associated features such as watchtowers and fortification walls on lower ground that likely would have been part of the fortress.

Physical accessibility of the feature—1: The site is set atop an extremely steep cliff. One road goes up the side of the cliff today, and it would have been almost impossible to ascend the cliff at any other point. The climb up the road, assuming this represents the path in Urartian times, is short but extremely strenuous.

Physical accessibility within the feature—1: Assuming that the surrounding towers and fortifications were part of the site, it would have been very difficult to get back and forth between these features, as all are located on steep slopes or cliffs.

Skill and technology of cultural features—N/A: Not enough of the Urartian architecture preserves to determine this. However, the one part of the castle itself that preserves from Urartian times, the tunnel, is large and imposing, with a steep slope that presumably would have been difficult to design. The surrounding walls on the hills near the castle appear rather crude, but do make a clear mark on the landscape.

Emotional impact of cultural features—N/A: Again, not enough of the Urartian architecture preserves to determine this. However, the large, dark, steeply sloped tunnel, with the weight of rock above it, is intimidating and also induces feelings of anxiety and claustrophobia. Additionally, the simple fact that any building was constructed atop such an imposing cliff would likely have been awe-inspiring.

Emotional impact of natural features immediately associated with the location—5: The cliff on which the castle is perched is extremely intimidated, tall and with steep sides, and towers above the viewer. Approaching on the modern road, coming around a curve, and seeing the castle perched atop the rock in the distance, inspired powerful feelings of awe and wonder. The surrounding hills with the walls also create an impressive rugged landscape. Compared to many of the other sites, the surrounding landscape here is much more dramatic.

Extent to which the location incorporates natural features—N/A: The tunnel was carved into the bedrock, but again, not enough of the Urartian architecture preserves to assign a ranking here.

Acoustic impact—4: The tunnel generates many echoes and interesting sound effects. Additionally, sound likely would have carried far from the surrounding walls and towers and across the landscape.

Tactile impact—3: The tunnel passage is slippery with wear and steep, and also much cooler than outside.

Karagunduz

Visual accessibility—2: While the location itself is visible from some distance away, little of the actual tombs can be seen until one is very close. The tombs are located in a flat field with little to distinguish them from a distance.

Visibility of topographic features—4: The site has views of mountains in all directions and in particular of Lake Ercek in the distance.

Visibility within the feature—5: The site is very small and everything can easily be seen, assuming the mounds were not big enough to block views.

Physical accessibility of the feature—5: The site is located with almost perfectly flat ground in all directions, though the ground was somewhat muddy and difficult to traverse due to vegetation. However, if the site was frequently used, paths would have solved this problem.

Physical accessibility within the feature—5: The mounds may have provided some small impediment to movement, but otherwise the site is very easy to navigate.

Skill and technology of cultural features—2: The piled rocks to make the tombs would have requires some skill and effort to make, but in general the technology associated with their construction was not particularly impressive.

Emotional impact of cultural features—2: The mounds and piles of rocks may have had emotional impact to those familiar with them, but by themselves they do not evoke particularly strong emotions.

Emotional impact of natural features immediately associated with the location—2: The site has a very peaceful feeling due to its location in the middle of a field.

Extent to which the location incorporates natural features—1: The site does not incorporate natural features in a significant way.

Acoustic impact—1: The site has no significant acoustic features

Tactile impact—1: The site has no significant tactile features

Kef Kalesi

Visual accessibility—3: The site is visible from the south in the direction of the lake, and would be visible to anyone sailing by on the lake. The site is also visible from surrounding hilltops to the north, east and west, but is otherwise blocked in those directions, and visually feels very enclosed. Where the site was visible, however, the black basalt would have made the site particularly stand out.

Visibility of topographic features—5: The site has excellent views of Lake Van and of mountains in all directions, and in particular of Mt. Suphan, an important mountain to the Urartians.

Visibility within the feature—4: There are several small rises within the site that impede visibility to some degree, but this likely would have been less significant when the buildings were at their full height. In general, most parts of the site can see most other parts.

Physical accessibility of the feature—1: The site is located on a steep slope high above the lake, with a long and difficult ascent. Even people living in the surrounding hills would have had to traverse difficult terrain to reach the fortress, and approaching from the hills to the north, west and east would have been particularly difficult. Additionally, the site feels isolated by the mountains surrounding it on three sides, and cut off from whatever is on the other side of the mountains.

Physical accessibility within the feature—4: The site is fairly flat and easily navigable, though this would have depended in part on street layout.

Skill and technology of cultural features—5: The foundations of all of the remaining buildings are made entirely of large, extremely well carved basalt blocks. These blocks are clearly not local stone but would have needed to be moved a significant distance, which would have required great skill and effort.

Emotional impact of cultural features—4: The remains of this site were relatively unimpressive in terms of size. However, the black color of the basalt stones was extremely striking and made the architecture appear both beautiful and imposing. Additionally, the knowledge that these stones had come from a volcanic source far away was rather awe-inspiring.

Emotional impact of natural features immediately associated with the location—5: The site has an extremely impressive and beautiful view of the lake, as well as of the surrounding mountains. The fact that it has good views of Mt. Suphan, a sacred mountain, also would have been extremely significant and impactful for Urartian visitors and residents.

Extent to which the location incorporates natural features—3: The basalt stones likely came from the slopes of Mt. Suphan, the nearest volcanic source. Thus, this site makes a visual and material connection between built architecture and a sacred natural feature.

Acoustic impact—3: Sound likely would have carried well from the surrounding hillsides.

Tactile impact—3: The basalt stones have an interesting feel to them that is different from the other stone in the area, and while they are smoothly cut, the stone maintains its spongy texture and is still therefore somewhat rough. These stones also get quite warm when the sun shines on them.

Meherkapisi

Visual accessibility—2: The site's location at the base of a rock outcropping means that it is highly visible from the east (?), where the ground slopes downward, but it is completely blocked from view from the west. Additionally, because it is located in a concavity in the outcropping, the surrounding rock largely obscures it from view from the north and south.

Visibility of topographic Features–2: The site is at the base of a tall rock outcropping, and this outcropping can be seen rising up on either side when one is standing in front of the inscription or climbing up to it. However, this outcropping also blocks the view of the surrounding topography; the land that the inscription looks out on is fairly flat and nondescript, with no major landforms.

Visibility within the site—N/A: The site is too small for this to be a factor.

Physical accessibility of the site—1: Unlike rock inscriptions elsewhere, there is no sign of stairs, and accessing the site requires climbing on all fours up a steep, jagged rock face

Physical accessibility within the site—N/A: The site is too small for this to be a factor.

Skill and technology of manmade features—4: Though the site is not very large, the niche is very finely carved, and the presence of a large amount of writing is particularly impressive.

Emotional impact of manmade features—3: The presence of writing would have likely had a strong impact, as would the size of the niche. Additionally, standing in the niche gives one the feeling of being surrounded on three sides by rock. There is little room to stand, creating a sense of precarity.

Emotional impact of natural features immediately associated with the site—3: The rock outcropping is not very large, though it does tower above the viewer. This site does not have the towering cliffs or alarming drops of some of the other sites, but the climb is treacherous, and one must balance carefully when standing in the niche.

Acoustic impact—3: Sound from behind would have been blocked by the rock face. Additionally, the presence of so much rock created echoes.

Extent to which the site incorporates natural features—4: The site is carved out of, and surrounded on three sides by, a bedrock outcropping.

Tactile impact—5: More than any other site surveyed, this site requires visitors to climb using their hands, bringing them into intimate contact with the bedrock, which is both jagged and slippery. Because of the narrowness of the ledge, visitors might also want to touch the carved rock for security, and this rock is much smoother than the surrounding rock.

Semiramis Channel Inscription

Visual accessibility—2: From the north, the inscription blocked by the cliff side; from the south it can be seen from a short distance away, but the inscription is not very high up. It is unclear whether the channel would have mostly blocked the inscription from view to visitors.

Visibility of topographic features—2: There is a rock formation directly behind the inscription with many interesting shapes and textures. Some mountains are also visible in the distance.

Visibility within the feature—N/A The feature is too small for this to be applicable.

Physical accessibility of the feature—3: From the south, the approach is on flat ground, though a brief climb up a steep rocky slope is required to get to the channel itself. From the north/above, access would have required climbing down a steep, rocky ridge.

Physical accessibility within the feature—N/A: The feature is too small for this to be applicable.

Skill and technology of cultural features—5: While any inscription is significant for its use of writing, this one is small and has no other features that make it particularly noteworthy. It is difficult to tell what the channel itself would have looked like; however, the ability to carve a channel into bedrock, and to manipulate the flow of water, would have required a large amount of skill and technology.

Emotional impact of cultural features—3: There are few significant visual features at the site today, though this may have been different in the past. However, even in the absence of impressive architecture, the ability to control the flow of water would have likely inspired awe and wonder.

Emotional impact of natural features immediately associated with the location—2: The side of the ridge that the channel is built into has interesting rock formations and is fairly high, looming above the visitor. These rock formations also have interesting textures, though they are not particularly impressive compared with the natural features associated with the fortresses.

Extent to which the location incorporates natural features—5: The channel was cut into bedrock, and of course has water flowing through it.

Acoustic impact—4: While difficult to say, presumably the rushing water would have created many interesting acoustic effects.

Tactile impact—3: The rock associated with the channel likely would have been cool and wet.

Van Kalesi

Visual Accessibility—5 Van Kalesi is highly visible from all directions, and is a major landmark in the modern day city of Van. Not only is it located on a prominent outcropping, but this outcropping is located on otherwise flat land. This means both that there are no intervening ridges or hills to block the site from view, and that the site contrasts sharply with the surrounding landscape, another factor that contributes to its visibility. Additionally, unlike several of the other sites that were built on relatively smooth, grassy slopes, the craggy, jagged texture of the outcropping attracts attention and contrasts sharply with the level fields and gentle hills of the surrounding landscape. The outcropping on which the citadel sits is a singular, dominating feature that catches the eye from all directions. Whether human-made constructions would have been as prominent is harder to tell, as few of them preserve, but medieval period constructions are obvious from a distance, and based on the size of Urartian walls at other sites, the Urartian walls at Van Kalesi likely would have also been visible from a distance. The single Urartian construction that remains standing at the site, a sun-dried mud brick tower on the western side, is prominent when the citadel is viewed from that direction. On the other hand, the medieval walls are similar in shape, texture and location to the natural ridges and cliff faces that run along the sides of the outcropping. If Urartian walls were made of bedrock, as they likely were, at a distance it may have been difficult to distinguish between natural and human-made stone features. This obscures the presence of human-made fortifications, yet also gives them a "natural" look that makes them appear as though they are outgrowths of the living stone rather than constructed features.

Visibility of Topographic Features–5: The most obvious natural feature visible from Van Kalesi is Lake Van, which, if it is indeed true that the lake was higher in Urartian times, would have come right up to the outcropping's edge. Across the lake, only the faint shadow of mountains is visible, and the far side of the lake was largely obscured by haze on the days that I visited. To the north, east and south, however, mountains are clearly visible, and the citadel has an uninterrupted view of Mount Erek, an important water source.

Visibility Within the Site–2: Van Kalesi was the site with the greatest variation in intrasite visibility throughout the site. Unlike most of the other sites, which had relatively flat tops and smooth sides, rock outcroppings and undulations mean that most parts of the site are not visible to each other. While the top of the site has excellent visibility of the surrounding landscape, it generally had poor oversight of other areas within the site. In particular, parts of the site that were beneath overhangs or inside the rock, such as the Fountain of Menua and the inscriptions at Anzali Piri Kapesi, felt visually isolated from the rest of the site. In general, each part of the site had its own unique visual environment.

Physical accessibility—3 overall: The lower parts of the site, such as the Sardursburg and the Anzali Piri Kapisi, are highly accessible, being located on flat ground. Sites on higher parts of the outcropping require climbing. The south face is the most difficult approach and is extremely steep and treacherous, though the remains of rock-cut stairs suggest that there was access along this face. The south face is mostly stone, and climbing requires the hands. The north face provides a more forgiving ascent that does not require use of the hands, though the footing is uneven and does require climbing over rocks and earthen slopes.

Physical Accessibility Within the Site—1: This is difficult to discern due to the presence of medieval architecture, but the presence of built features, as well as the variation in elevation throughout the site, would have made it difficult to move through the site.

Skill and Technology of Manmade Features—5: The majority of the Urartian built features were built over by later occupants of the site. However, a mud brick tower remains standing, testament to the skilled construction techniques used at this site. The stone staircases, carved into sheer rock faces, and the stone cut chambers that may have served as tombs, also attest to highly skilled stone-working. Precisely carved inscriptions and finely cut niches, in particular, showcase the sophisticated technology associated with writing at this site. The Urartian ability to finely shape bedrock would have surely made an impression on visitors, as would the site's many inscriptions that often tower above the viewer in hard-to-reach locations. The remains of buildings such as the Sardursburg and the mud brick tower suggest that other architecture at the site was similarly impressive.

Emotional Impact of Manmade Features—5: The site's many stone-cut staircases, carved into steep cliff-sides and often with dizzying drops inches away, evoke profound feelings of fear and anxiety. People in the past likely had different standards of safety than do modern visitors to the site, and erosion may have made these staircases more treacherous now than in the past. Nonetheless, anyone climbing these staircases would have needed to tread carefully to avoid falling, and in many locations a misstep could be fatal. Parts of the site that are in tunnels or beneath overhangs can provoke anxiety due to being dark, as well as generating feelings of claustrophobia. If these areas were tombs or religious sites, this may have contributed to their "spooky" feel. At the same time, the skilled construction techniques, and particularly the technology of writing—which many visitors would not have understood—likely provoked feelings of awe and wonder.

Emotional impact of natural features immediately associated with the site—5: As discussed above, the rock outcropping dominates the surrounding landscape, and its presence is abrupt and startling. The extreme jaggedness of the rock is striking, and the steepness of the rock faces are both intimidating and awe-inspiring.

Acoustic Impact—5 in places, 3 overall: As discussed above, the many rock outcroppings and the isolated nature of different parts of the site would have created a varied acoustic experience. Rock faces likely would have both created echoes and blocked sound from other parts of the site. Those parts of the sites that were inside the rock had significant echoes and sound effects that contributed to their "spookiness".

Tactile Impact—4: Because it was necessary to climb with the hands in certain parts of the site, visitors would have been forced to contend with the texture of the rock, which is both jagged and slippery. While in places the rock is sharp enough to cut oneself, it can also be extremely slick, particularly in heavily traveled areas where use has worn the rock smooth. Parts of the site that were inside the rock were also significantly colder than outside.

Yonçatepe

Visual accessibility—4: The site is highly visible from the hillsides nearby and from the valley immediately surrounding it.   Though the site lacks some of the striking visual features of sites such as Van Kalesi that attract attention, it is still a prominent and easily recognizable feature on the landscape.

Visibility of topographic features—4: Mountains can be seen in all directions, and there is also a good view of Lake Van to the west.

Visibility within the feature—4: The main building overlooks several other structures and features further down the hillside, all of which can see each other easily, though parts of the site on opposite sides of the hill would not have been able to see each other.

Physical accessibility of the feature–3: The site is located atop a steep, but not very tall, grassy hill. That hill is located in a valley that is accessed via rocky slope from steeper ground to the north. From the north, east, and south, visitors would have come down from the hills, and from the west would have come up from the agricultural fields surrounding the site. The ground is somewhat uneven and treacherous, but still fairly walkable.

Physical accessibility within the feature—3: All of the parts of the site are a short walk from each other, which would have involved climbing up and down the hillside. Other than this, however, there are no topographic features that impede movement.

Skill and technology of cultural features—2: This site lacks the intricate carved blocks of the fortresses, though there is a carved bedrock lintel. Instead, the architecture consists of a large number of small, flat stones stacked on top of each other, without any binding agent. However, the sheer number of stones is impressive, and the main building is very large, with a number of rooms. The number of stones and the time and care that it must have taken to place them and balance them on top of each other struck me as fairly skilled. That said, many buildings in the nearby modern village were built with the same technique, and thus this technology may have been unremarkable to Urartians. However, the sheer size of the main building at Yonçatepe likely would have been at least somewhat noteworthy.

Emotional impact of cultural features—2: The building's size and number of stones involved are moderately impressive, but in general this site lacks the awe-inspiring architecture of the fortress.

Emotional impact of natural features immediately associated with the location—2: The hill itself is not particularly remarkable. The site does have lovely views of Lake Van and the surrounding mountains, but again these vistas are not as impressive as though of the fortresses.

Extent to which the location incorporates natural features—3: The site appears to have used different levels of the hillside for different settlement levels, which the main house at the top. There is a lintel carved of bedrock, and the stones presumably come from a local source as well.

Acoustic impact—2: Sound likely would have carried well from the surrounding hillsides, but other than that there are no significant acoustic features.

Tactile impact—1: There are no significant tactile features.

APPENDIX 2: PHOTOS OF SITES IN THE VAN REGION

Figure A2-1: View of Upper Anzaf

Figure A2-2 View of Lake Ercek from Upper Anzaf

Figure A2-3: Inscription at Upper Anzaf

Figure A2-4: Rock cut entrance at Upper Anzaf

Figure A2-5: View of wall at Lower Anzaf, and Upper Anzaf beyond

Figure A2-6: View of landscape from Lower Anzaf

Figure A2-7: View of landscape from Lower Anzaf

Figure A2-8: Remains of architecture at Lower Anzaf

Figure A2-9: View of Lake Van from Ayanis

Figure A2-10: Architecture at Ayanis

Figure A2-11: View of landscape from Ayanis

Figure A2-12:View of Ayanis from a distance

Figure A2-13: Architecture at Ayanis Lower Town

Figure A2-14: View of Lake Van from Ayanis Lower Town

Figure A2-15: View of Ayanis Upper Town from Ayanis Lower Town

Figure A2-16: View of Ayanis Lower Town from direction of Upper Town


Figure A2-17: View of landscape from Dogubeyazit


Figure A2-18: Architecture at Dogubeyazit (Urartian and later)


Figure A2-19: Architecture at Dogubeyazit (Urartian and later)


Figure A2-20: View of Dogubeyazit

Figure A2-21 View of Hosap

Figure A2-22: View of landscape from Hosap

Figure A2-23: View of landscape from Hosap

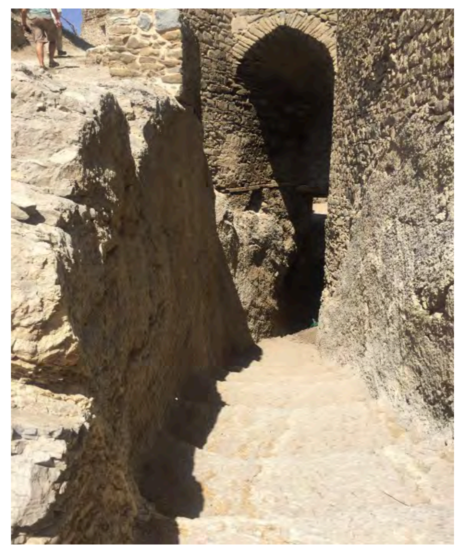


Figure A2-24: View of Urartian passage at Hosap (with later architecture)

Figure A2-25: View of Cavustepe from lower part of the mound

Figure A2-26: Inscription at Cavustepe

Figure A2-27: Architecture and landscape at Cavustepe

Figure A2-28: View of landscape from Cavustepe


Figure A2-29: Karagunduz


Figure A2-30: View of landscape from Karagunduz


Figure A2-31 View of Lake Ercek from Karagunduz


Figure A2-32: Burial at Karagunduz

Figure A2-33: View of Kef Kalesi from a distance

Figure A2-34: View of Mt. Suphan from Kef Kalesi

Figure A2-35: Architecture at Kef Kalesi

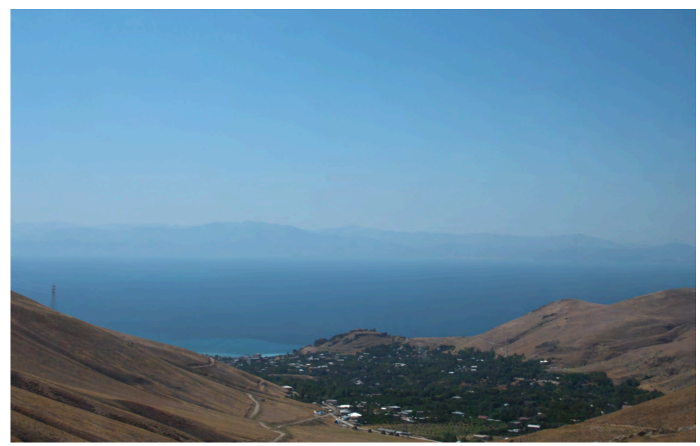


Figure A2-36: View of Lake Van from Kef Kalesi

Figure A2-37: View Van Kalesi from shore of Lake Van

Figure A2-38: Van Kalesi, with medieval architecture

Figure A2-39: South face of Van Kalesi

Figure A2-40: Inscription on staircase at Van Kalesi

Figure A2-41: Meherkapisi

Figure A2-42: Niche and landscape at Meherkapisi

Figure A2-43: View of landscape from Meherkapisi

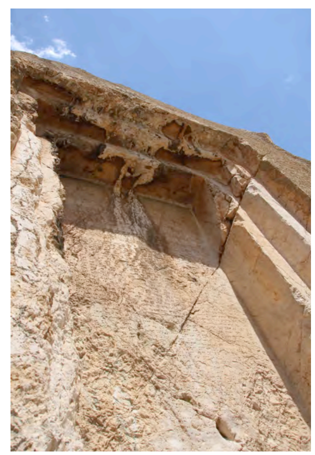


Figure A2-44: Inscription at Meherkapisi

Figure A2-45: Architecture at Yonçatepe

Figure A2-46: View of landscape from Yonçatepe

Figure A2-47: View of landscape from Yonçatepe

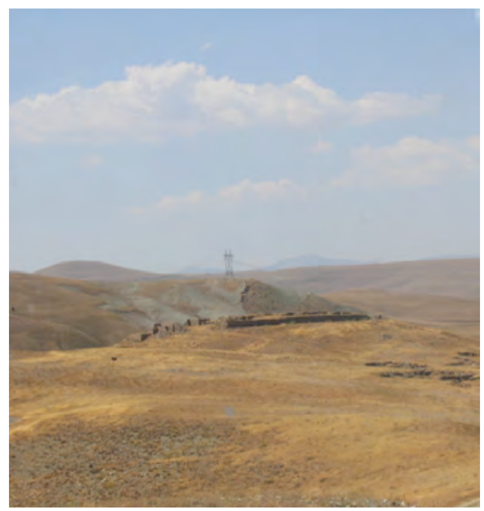


Figure A2-48: View of Yonçatepe from a distance

Figure A2-49: View of Semiramis inscription

Figure A2-50: Semiramis inscription

Figure A2-51: View of landscape from Semiramis inscription

Figure A2-52: View of landscape from Semiramis inscription

APPENDIX 3: GIS ANALYSIS OF SITES IN THE VAN REGION

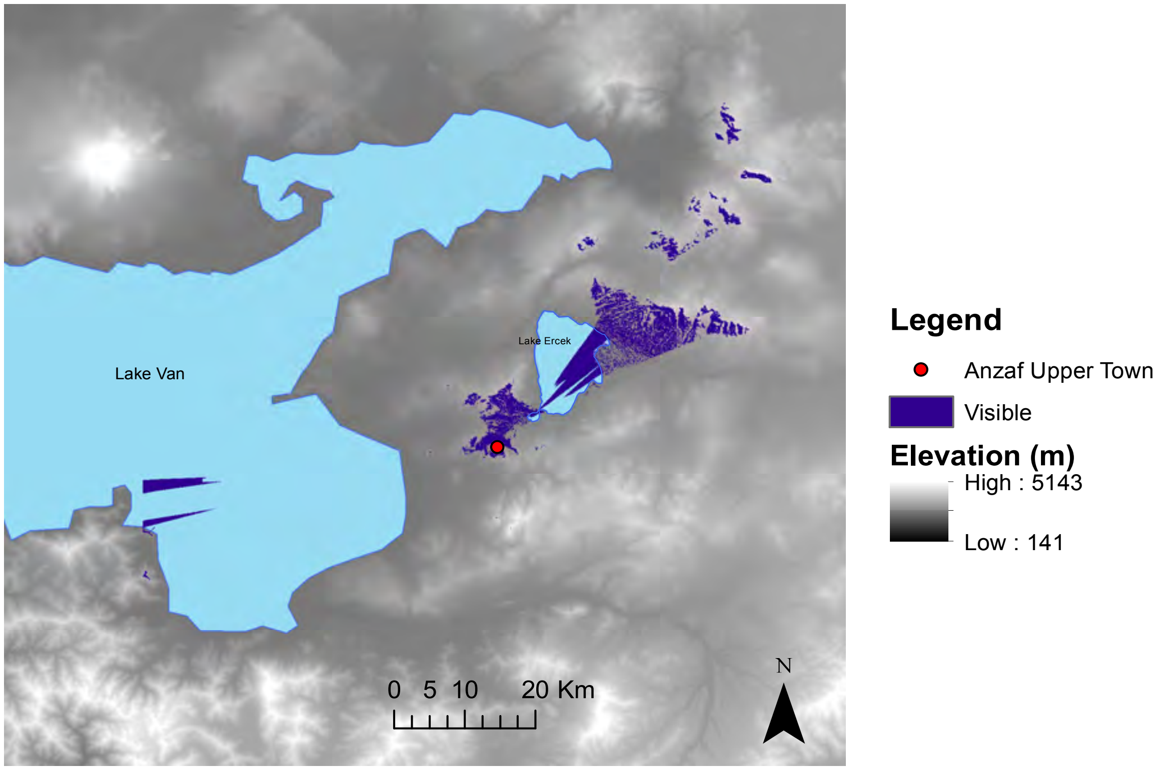


Figure A3-1: 50-kilometer viewshed of Anzaf Upper Town

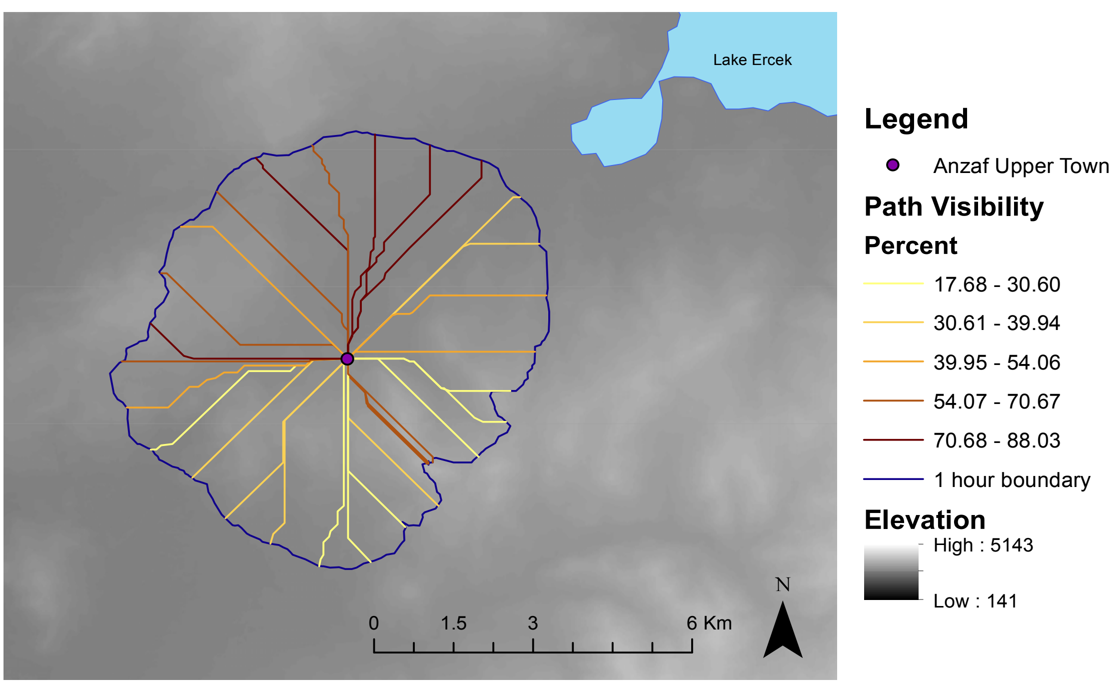


Figure A3-2: Least Cost Paths analysis of Anzaf Upper Town

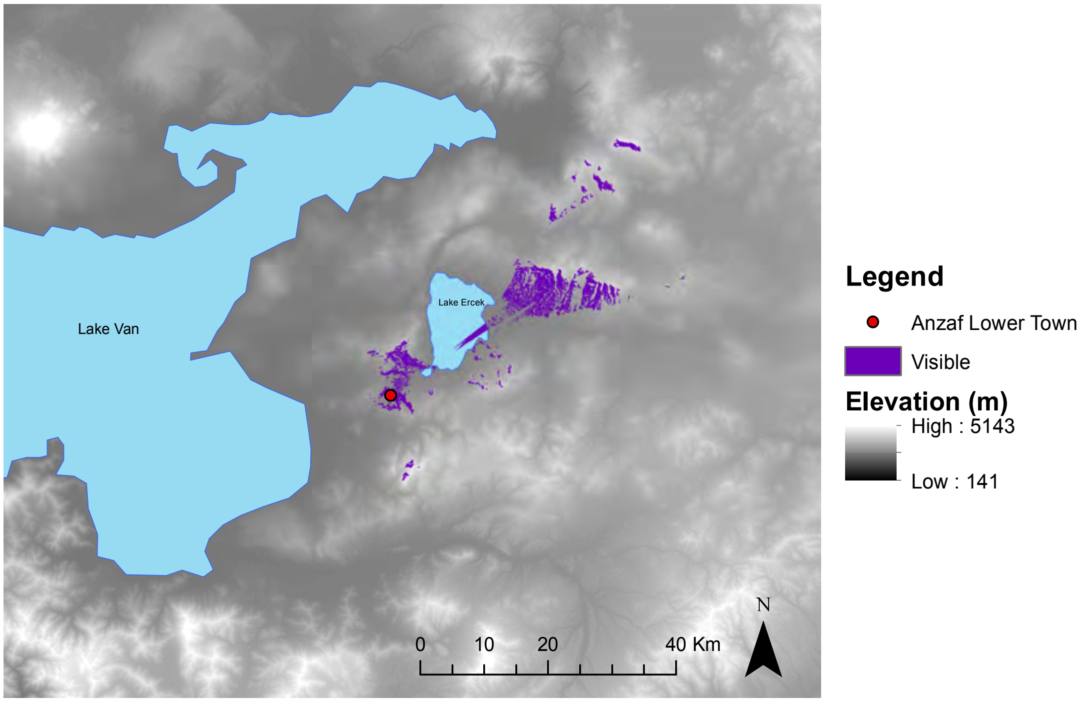


Figure A3-3: 50-kilometer viewshed of Anzaf Lower Town

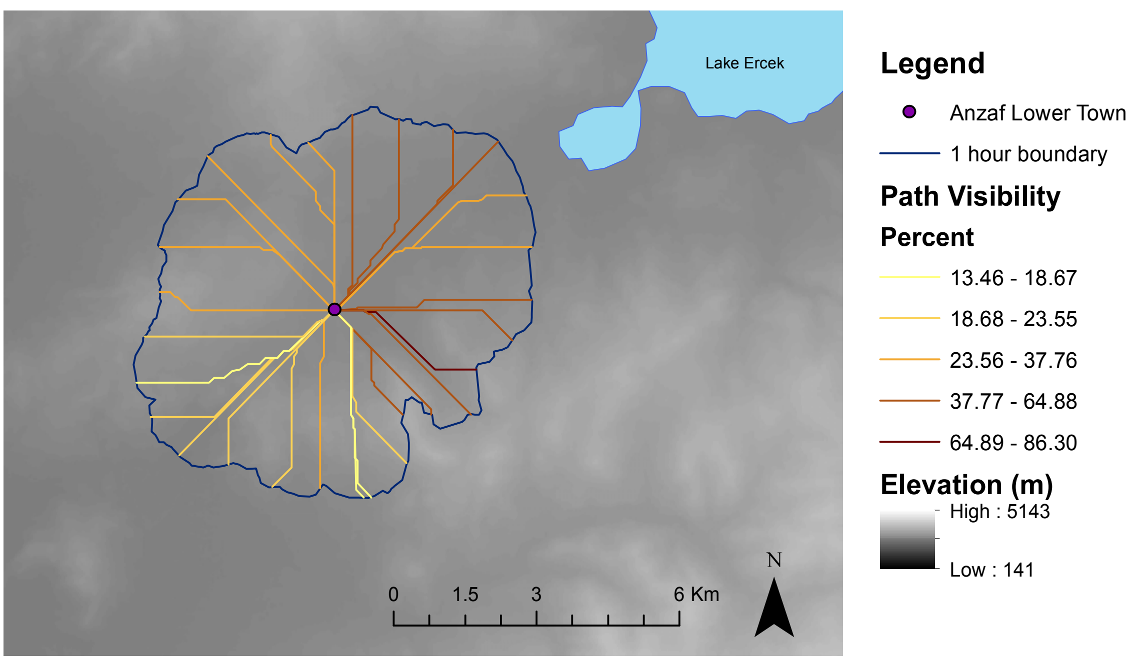


Figure A3-4: Least Cost Paths analysis of Anzaf Lower Town

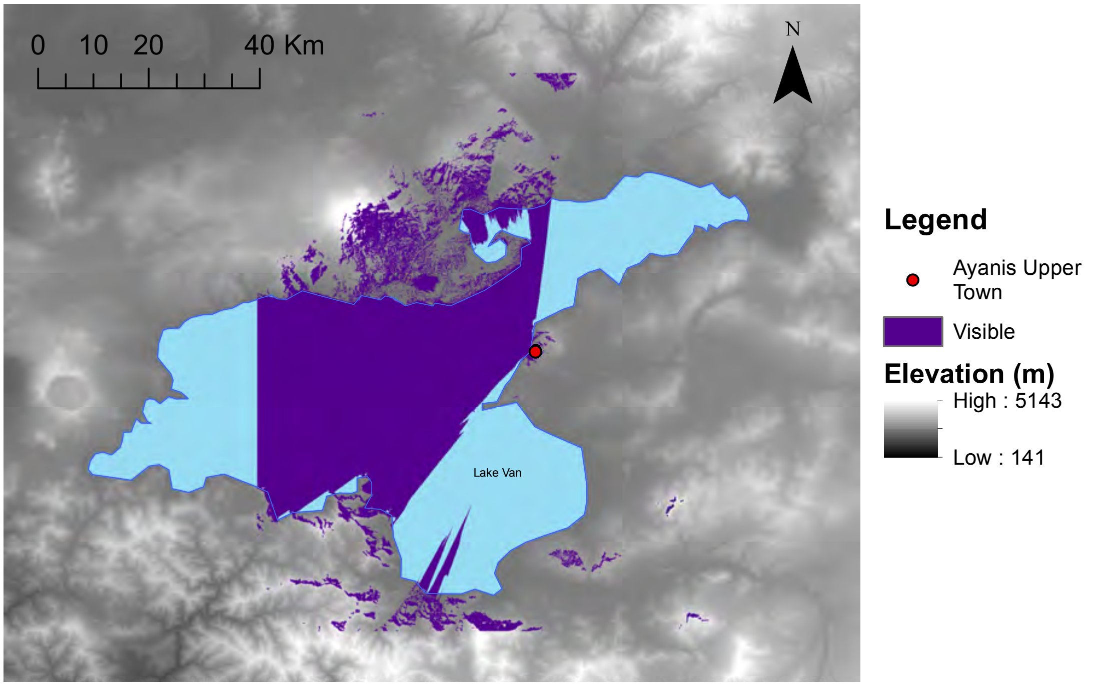


Figure A3-5: 50-kilometer viewshed of Ayanis Upper Town

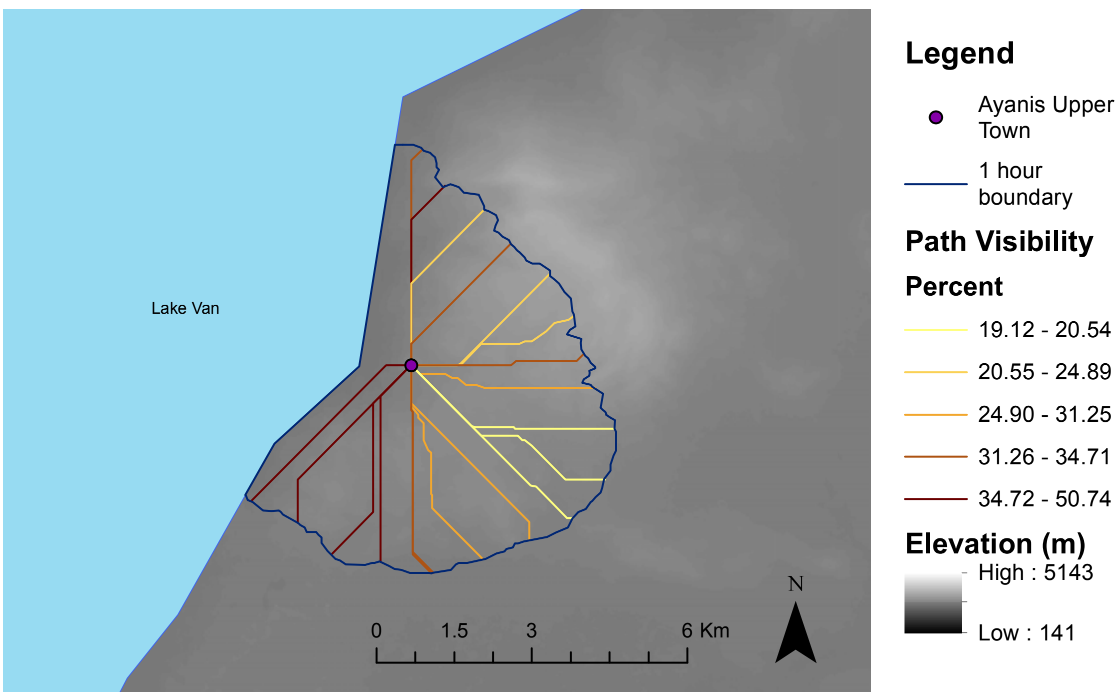


Figure A3-6: Least Cost Paths analysis of Ayanis Upper Town

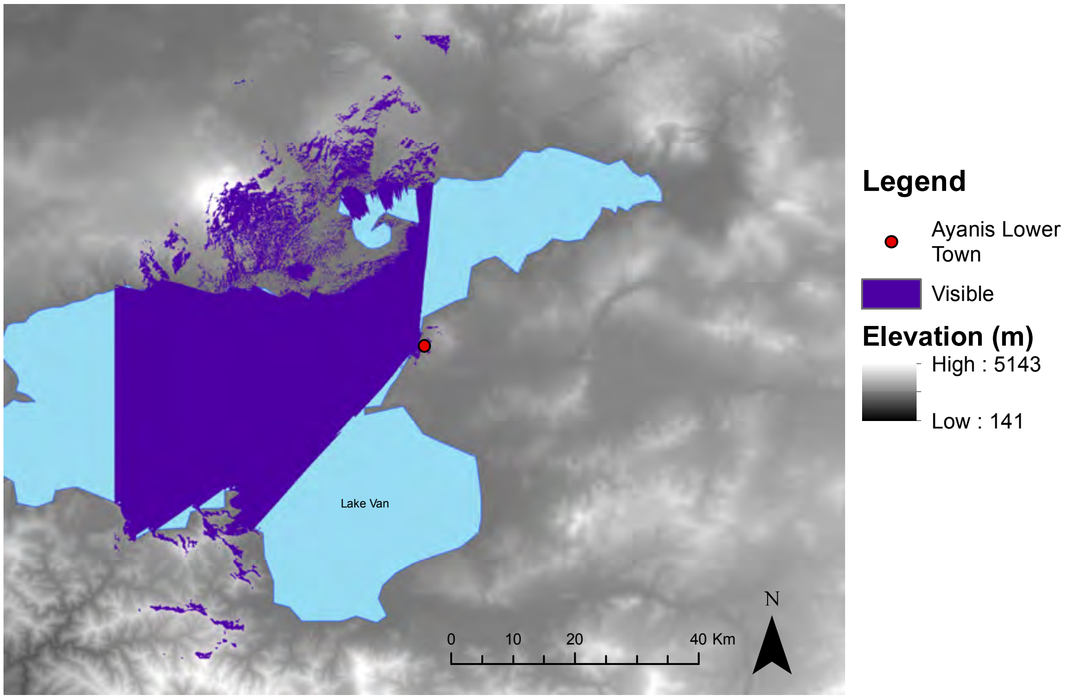


Figure A3-7: 50-kilometer viewshed of Ayanis Lower Town

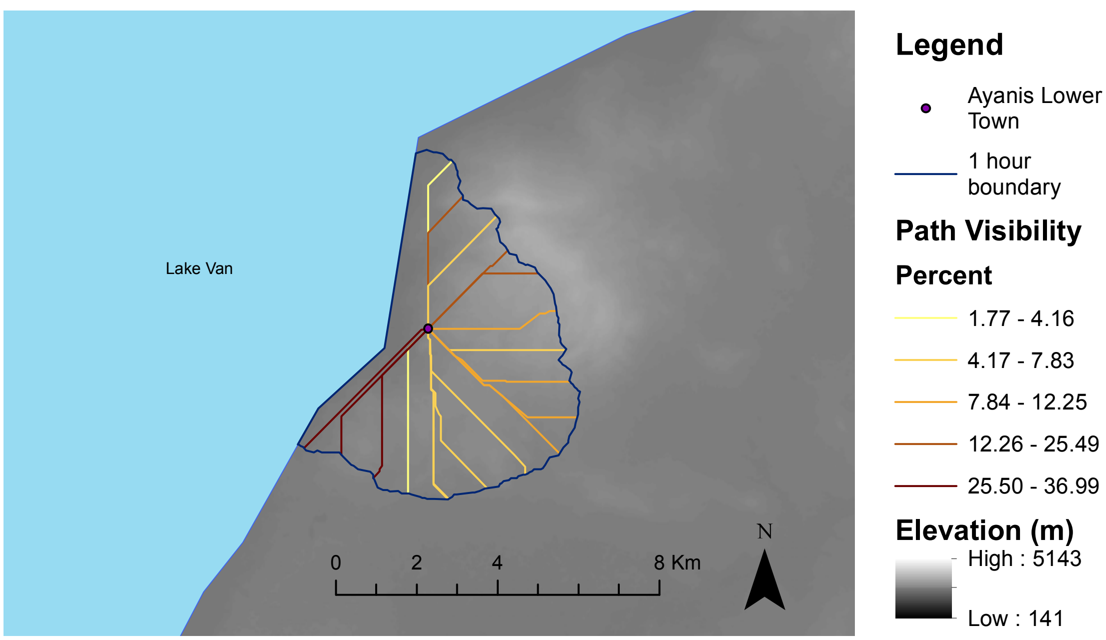


Figure A3-8: Least Cost Paths analysis of Ayanis Lower Town

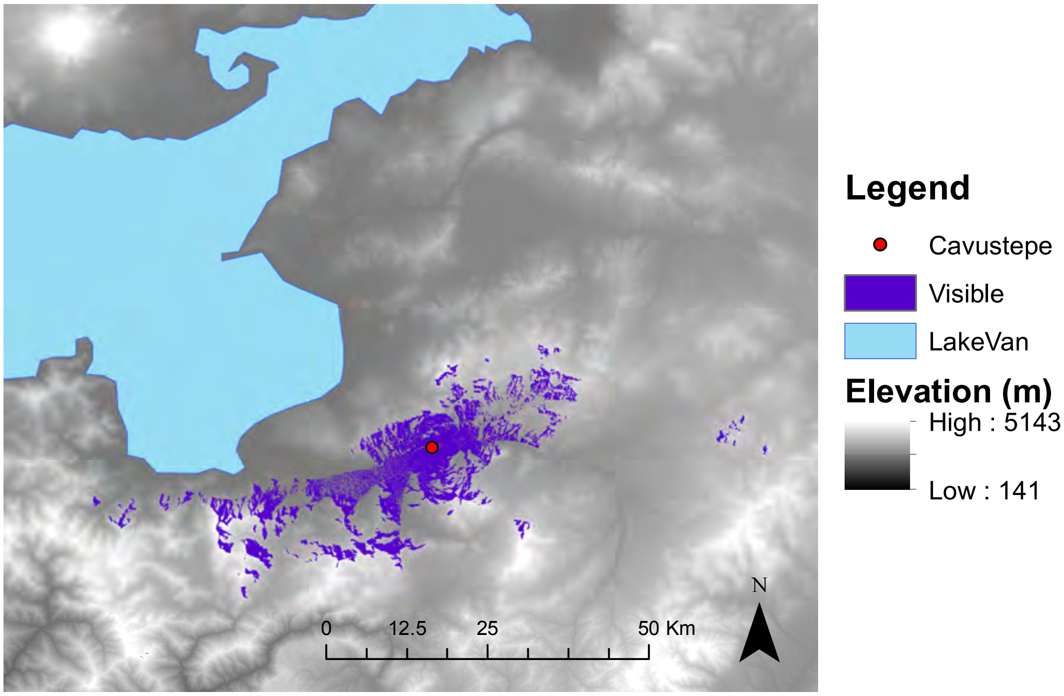


Figure A3-9: 50-kilometer viewshed of Cavustepe

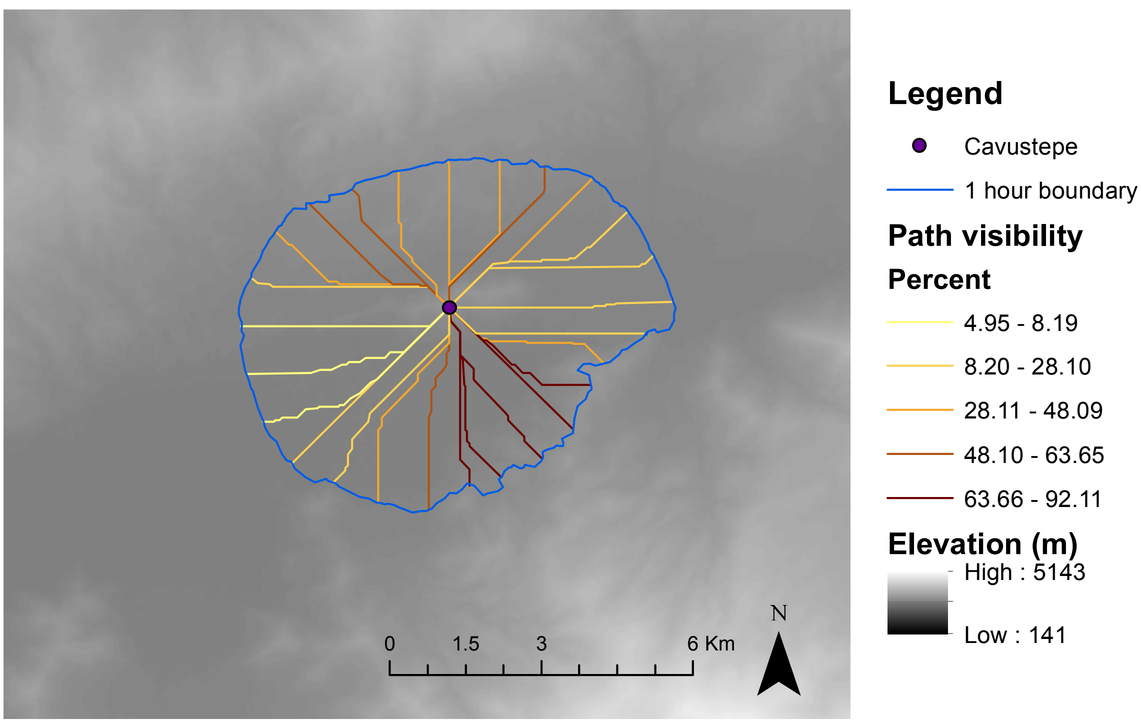


Figure A3-10: Least Cost Paths analysis of Cavustepe

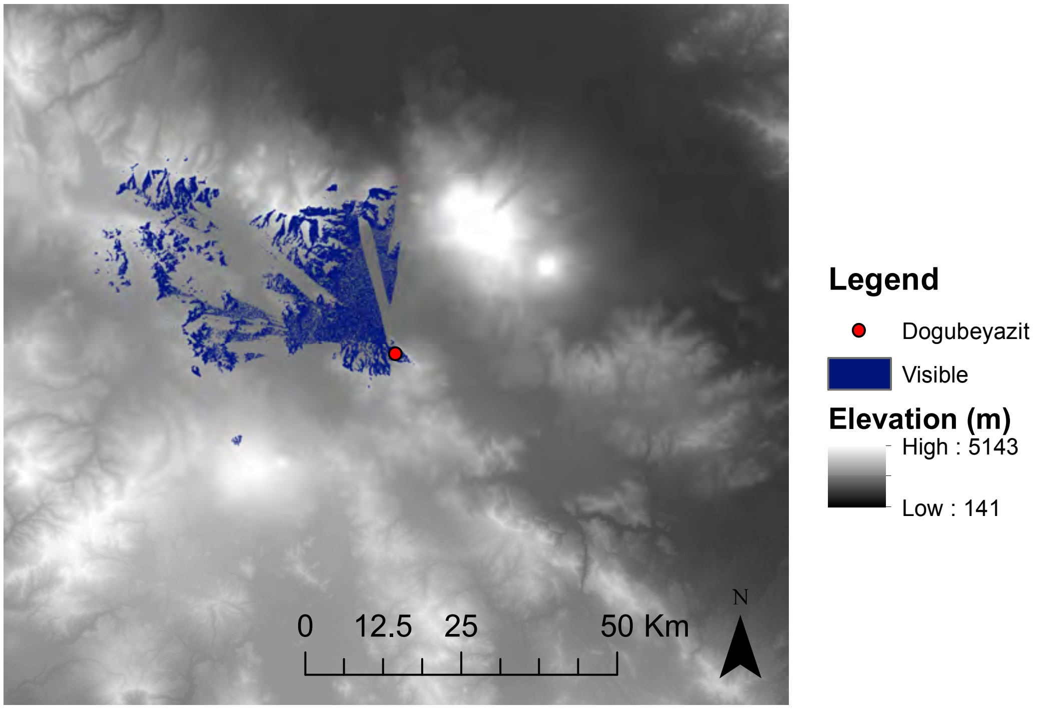


Figure A3-11: 50-kilometer viewshed of Dogubeyazit

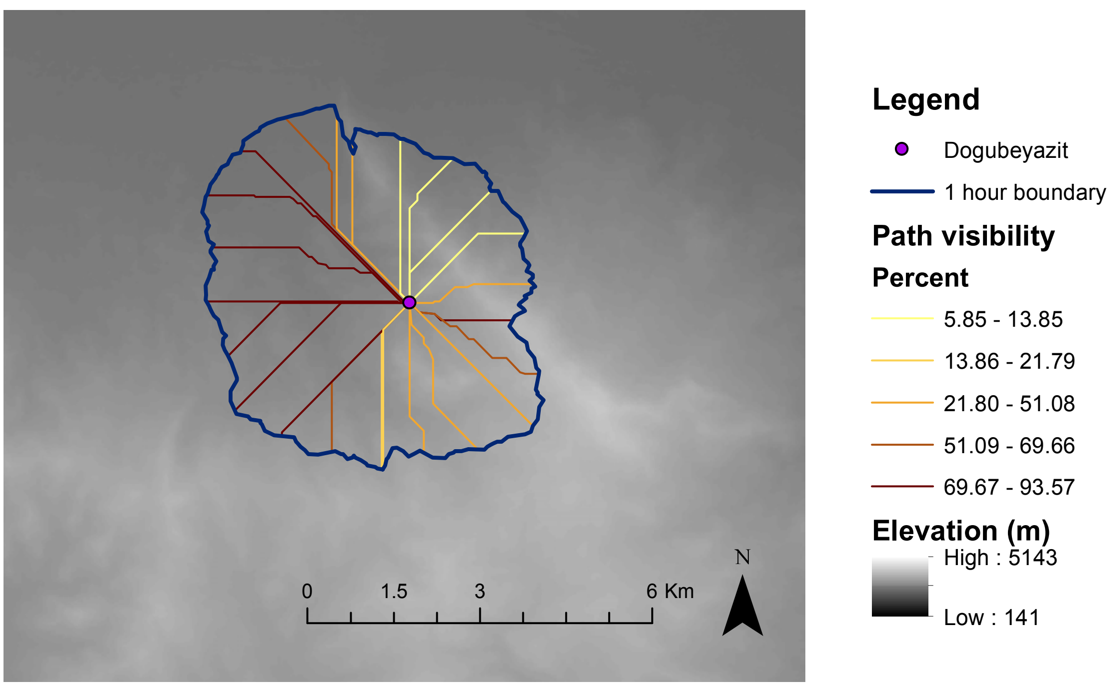


Figure A3-12: Least Cost Paths analysis of Dogubeyazit

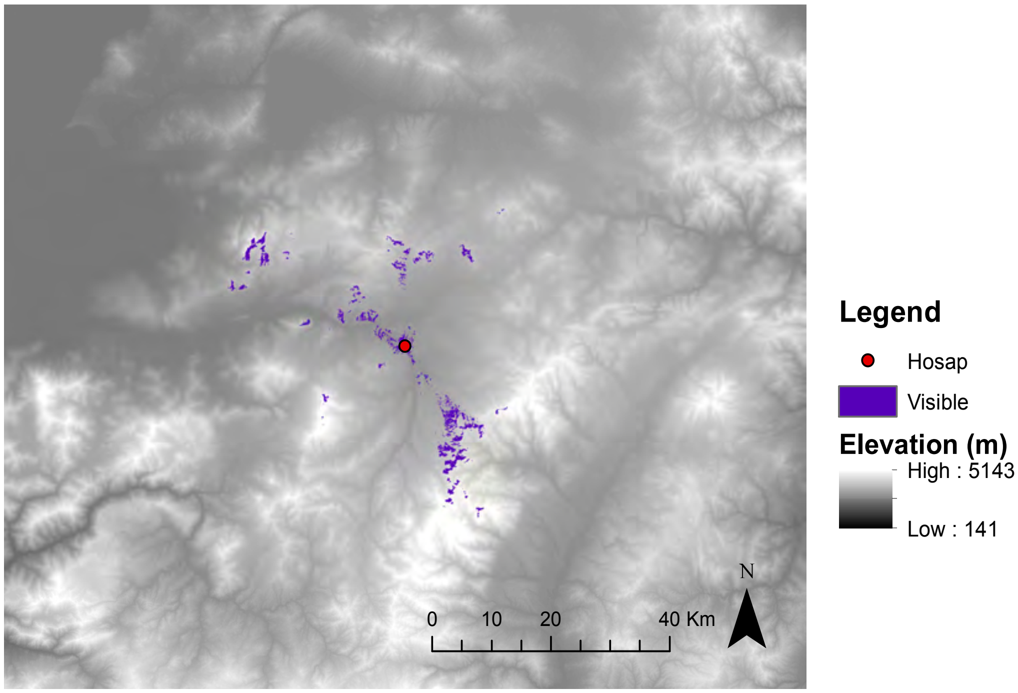


Figure A3-13: 50-kilometer viewshed of Hosap

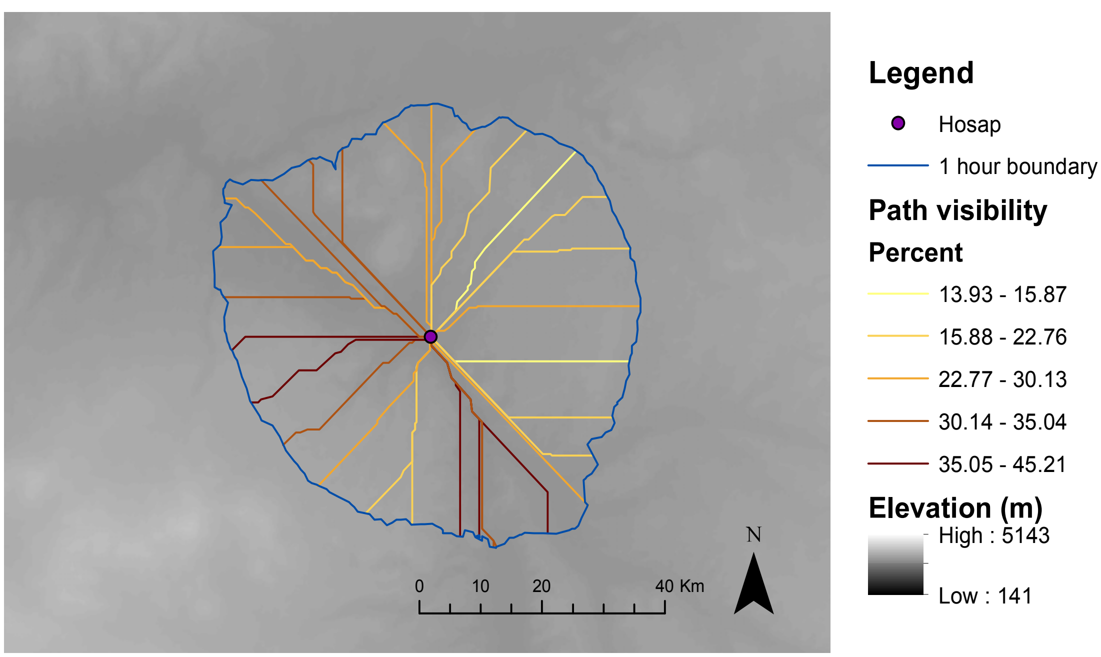


Figure A3-14: Least Cost Paths analysis of Hosap

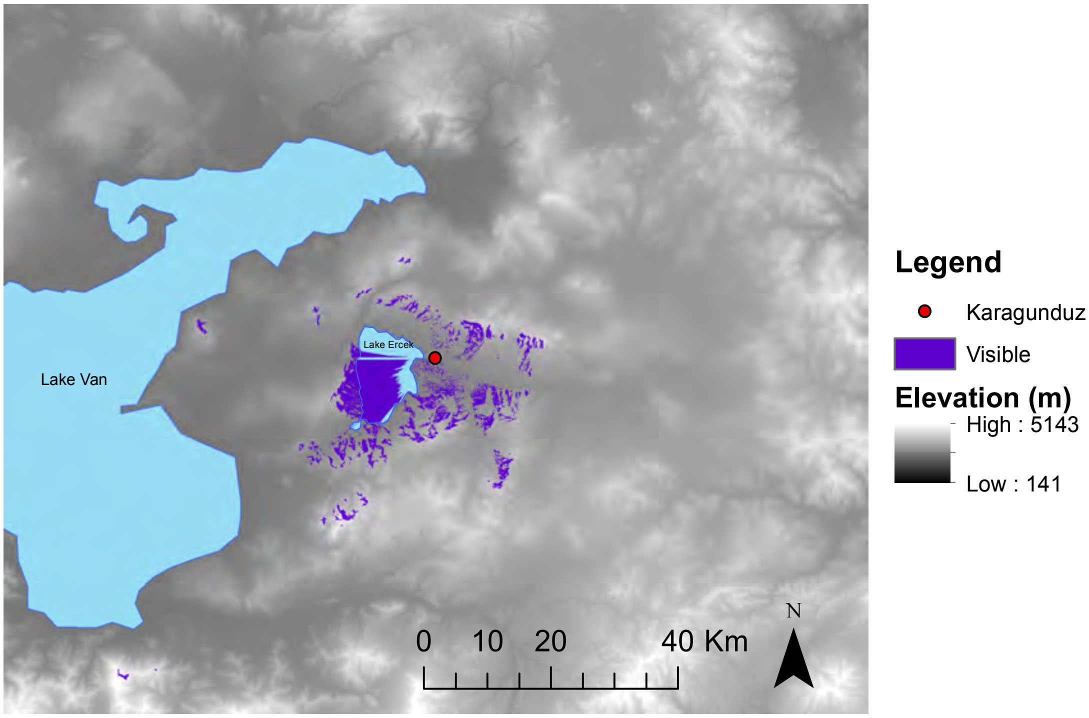


Figure A3-15: 50-kilometer viewshed of Karagunduz

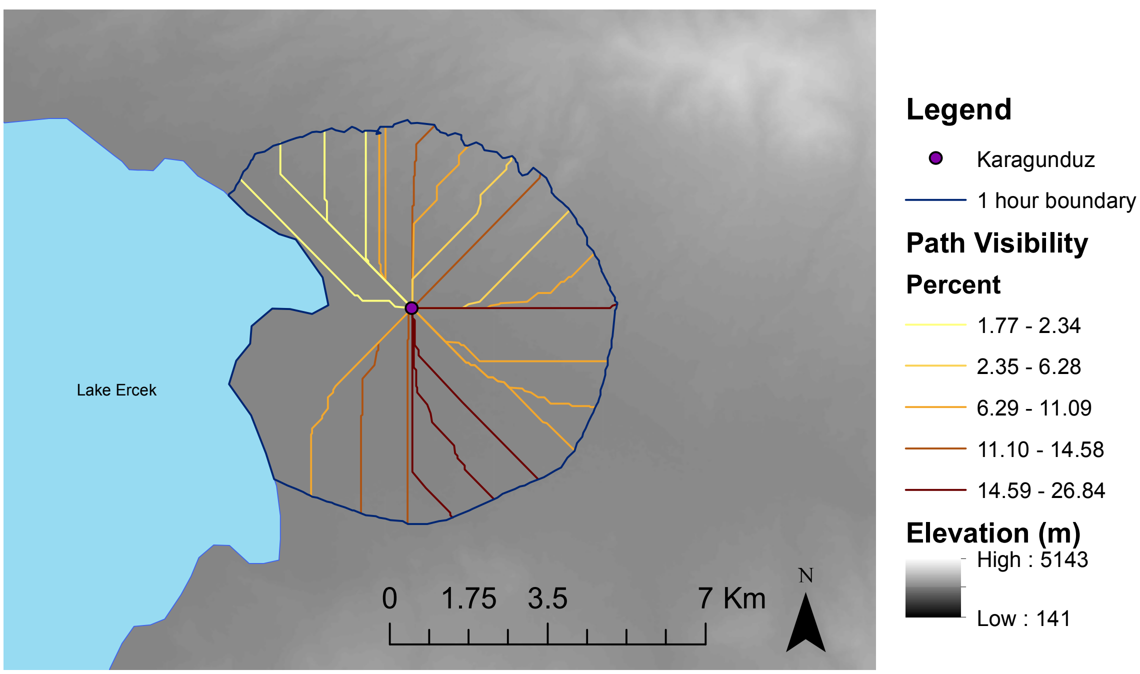


Figure A3-16: Least Cost Paths analysis of Karagunduz

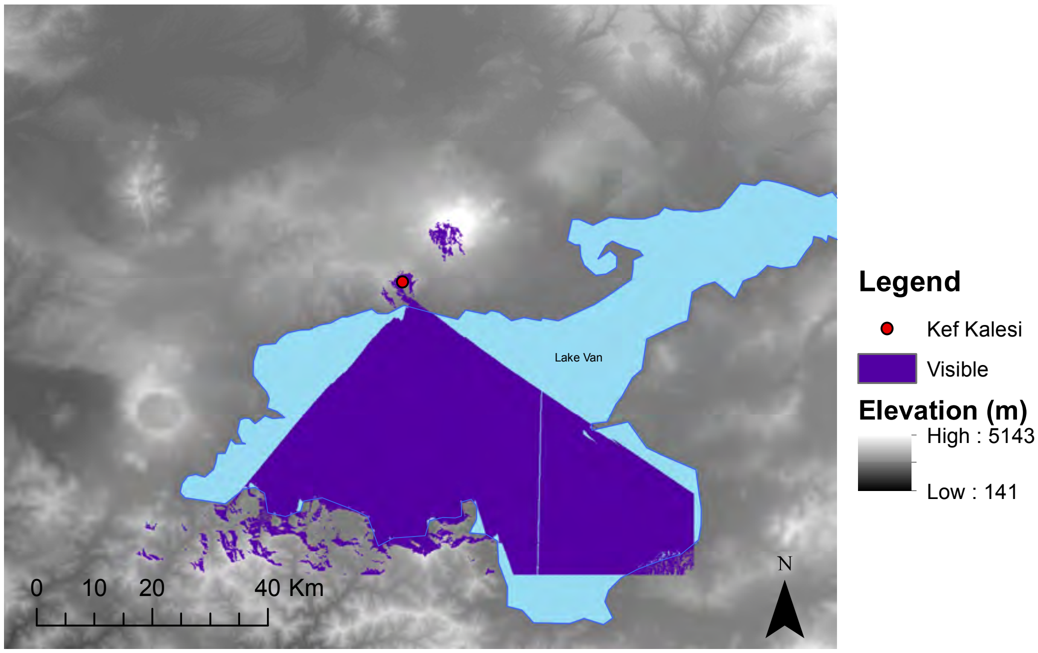


Figure A3-17: 50-kilometer viewshed of Kef Kalesi

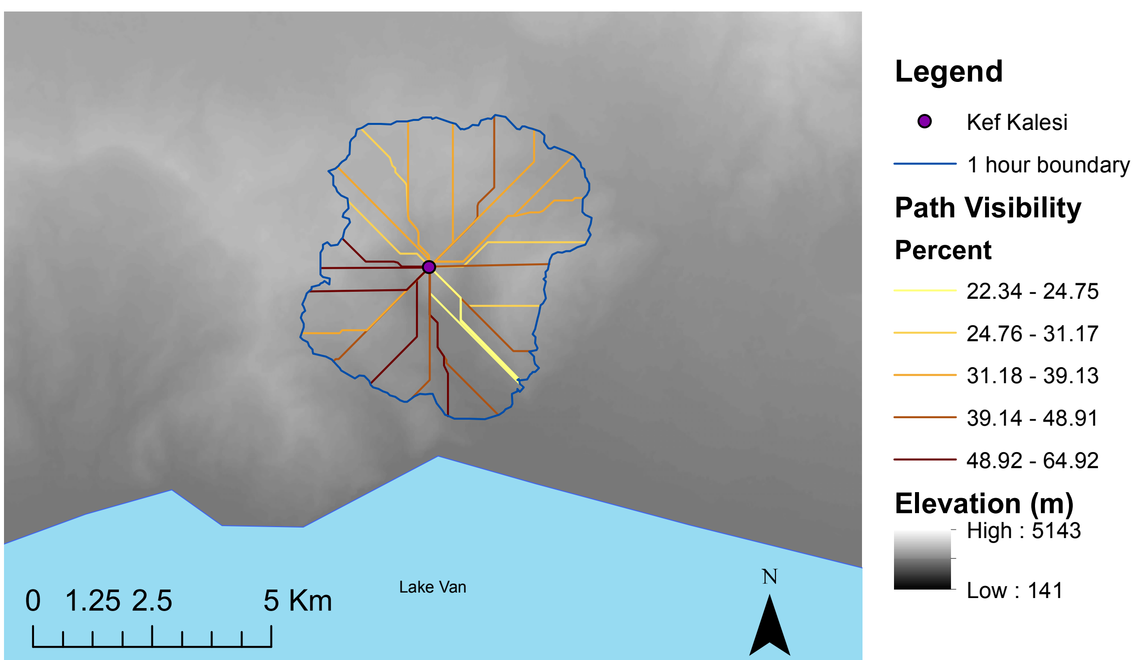


Figure A3-18: Least Cost Paths analysis of Kef Kalesi

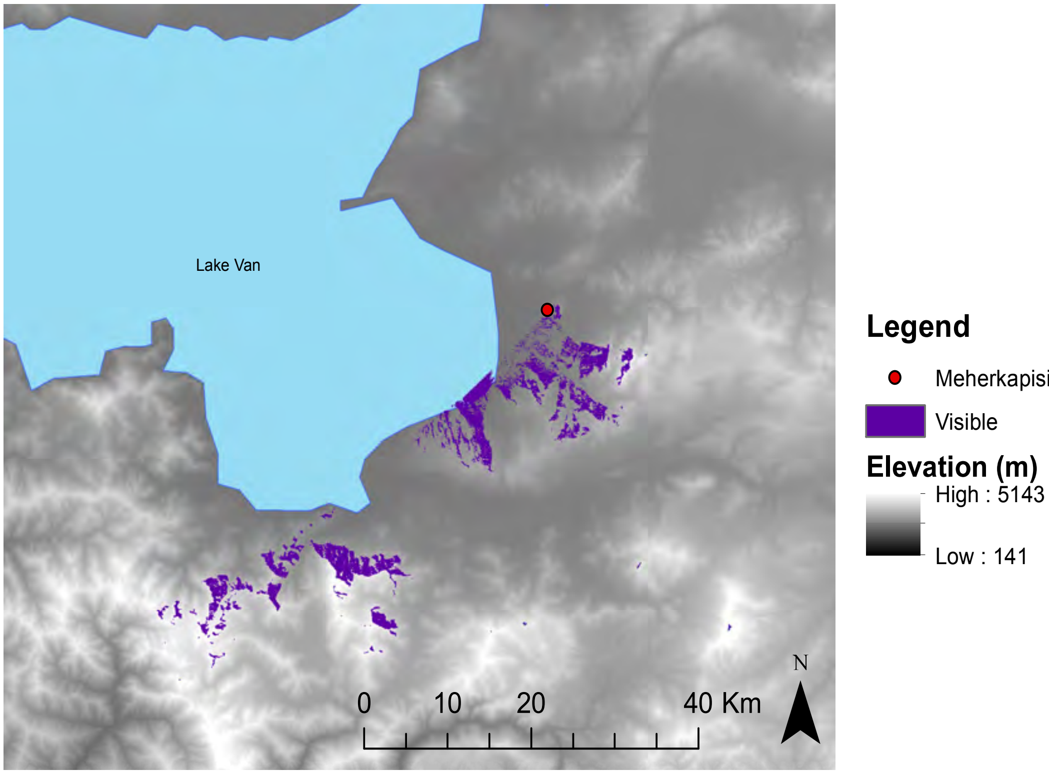


Figure A3-19: 50-kilometer viewshed of Meherkapisi

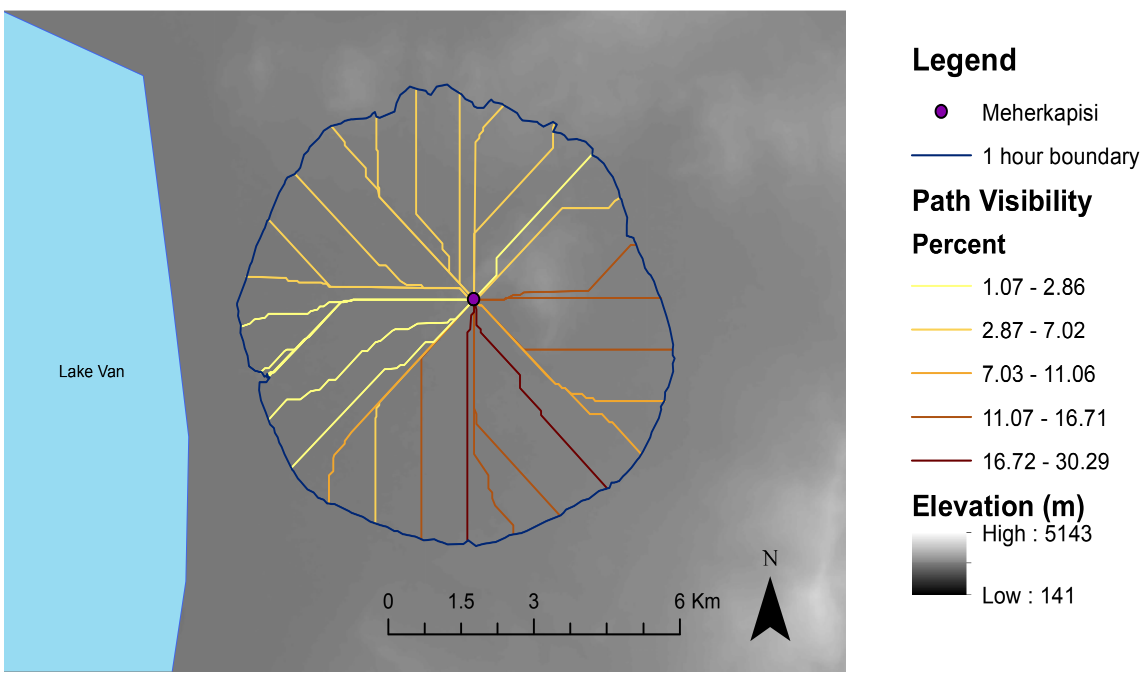


Figure A3-20: Least Cost Paths analysis of

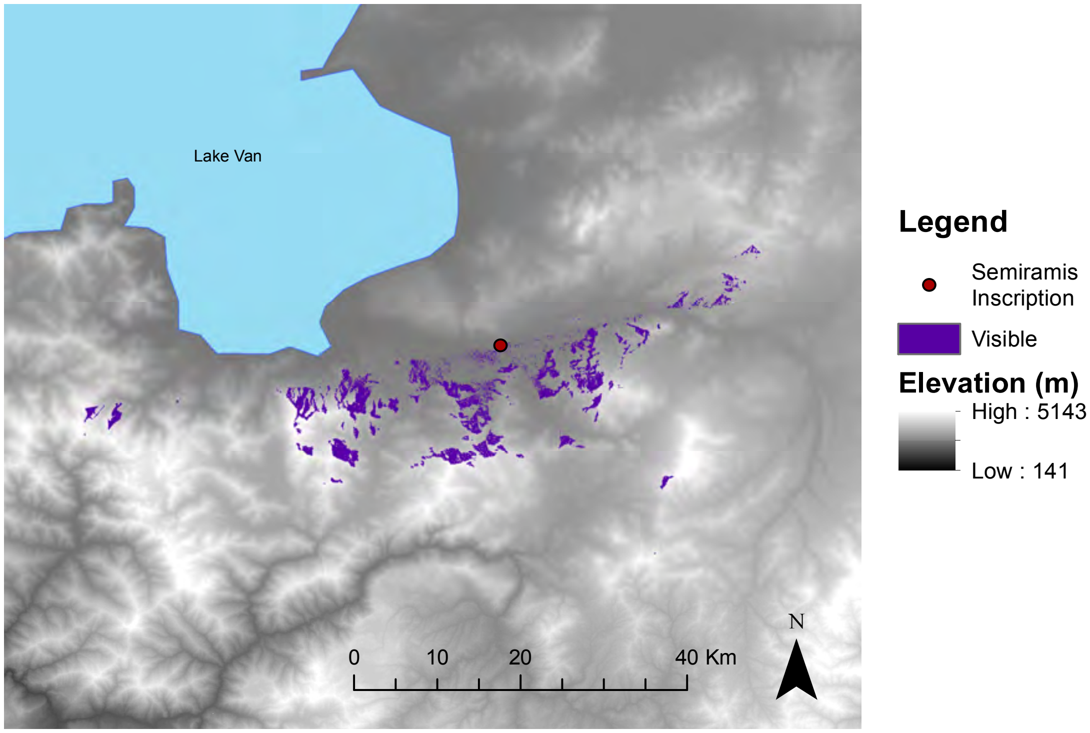


Figure A3-21: 50-kilometer viewshed of the Semiramis Inscription

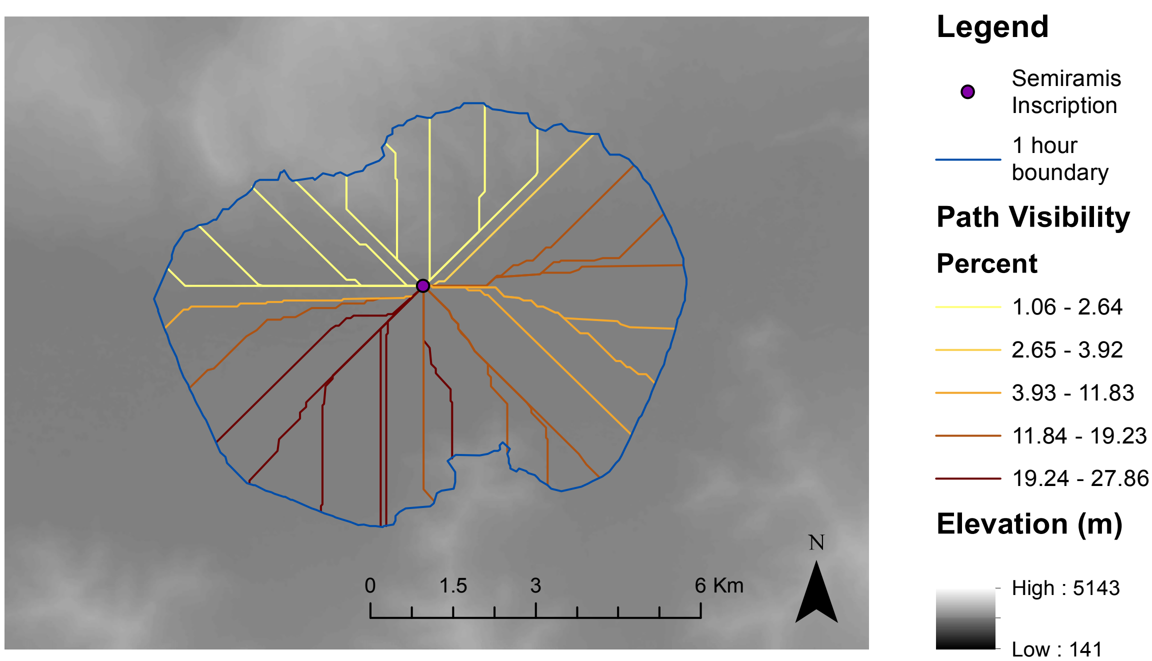


Figure A3-22: Least Cost Paths analysis of the Semiramis Inscription

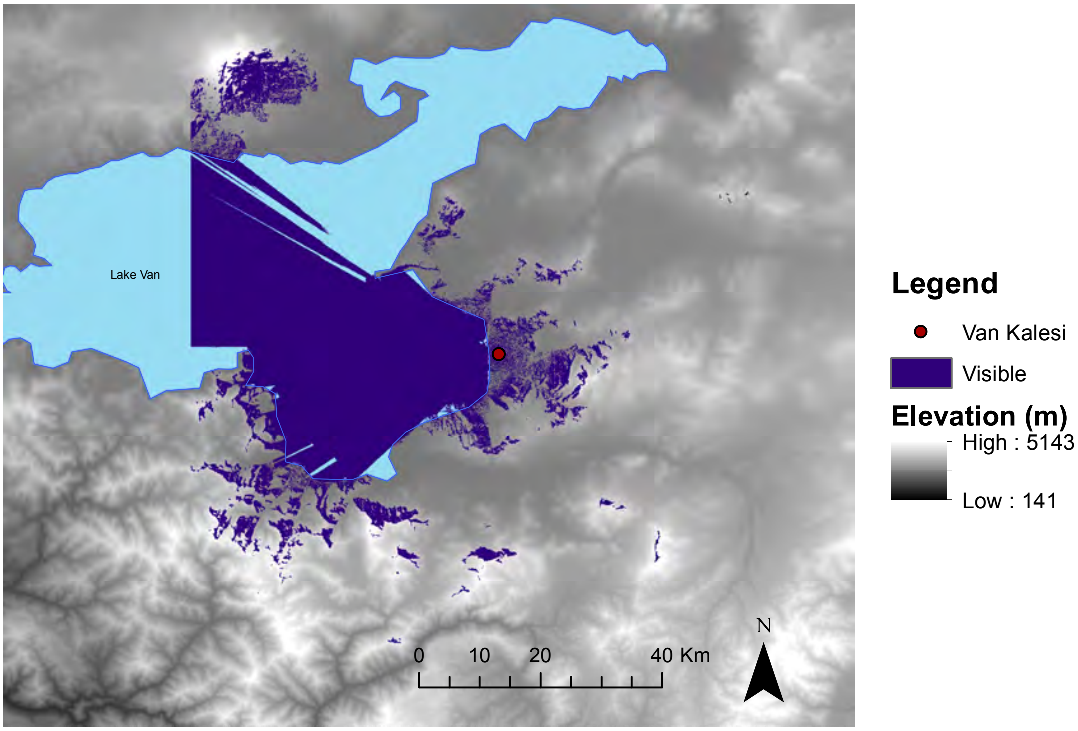


Figure A6-23: 50-kilometer viewshed of Van Kalesi

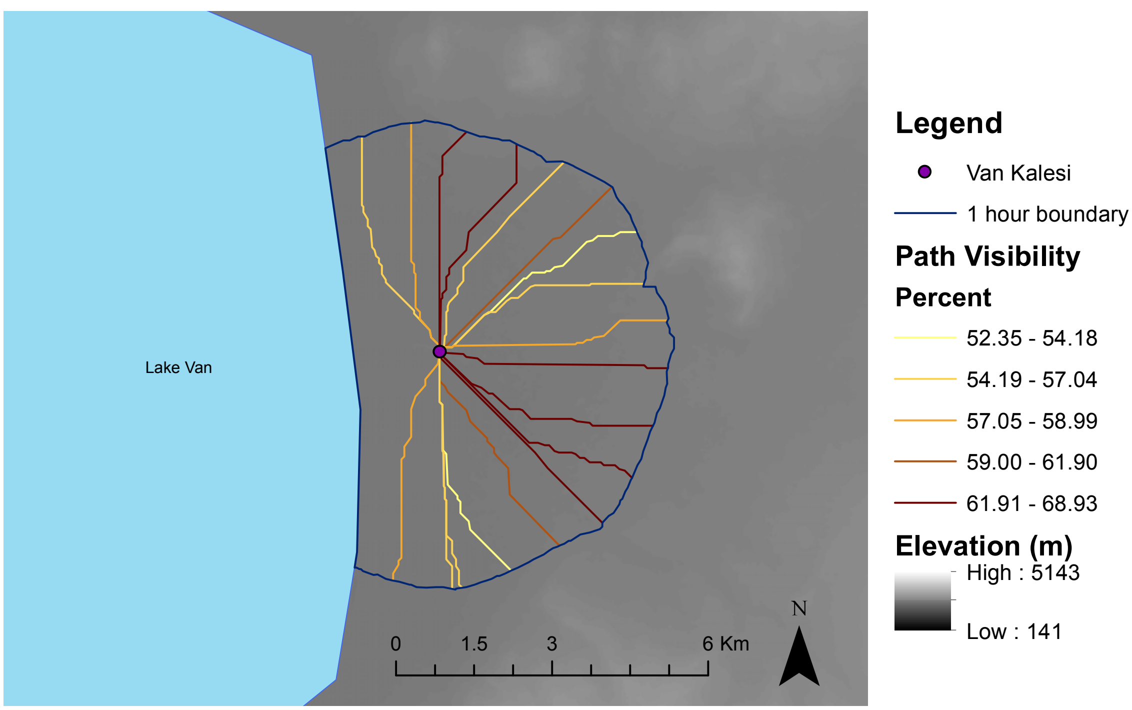


Figure A6-24: Least Cost Paths analysis of Van Kalesi

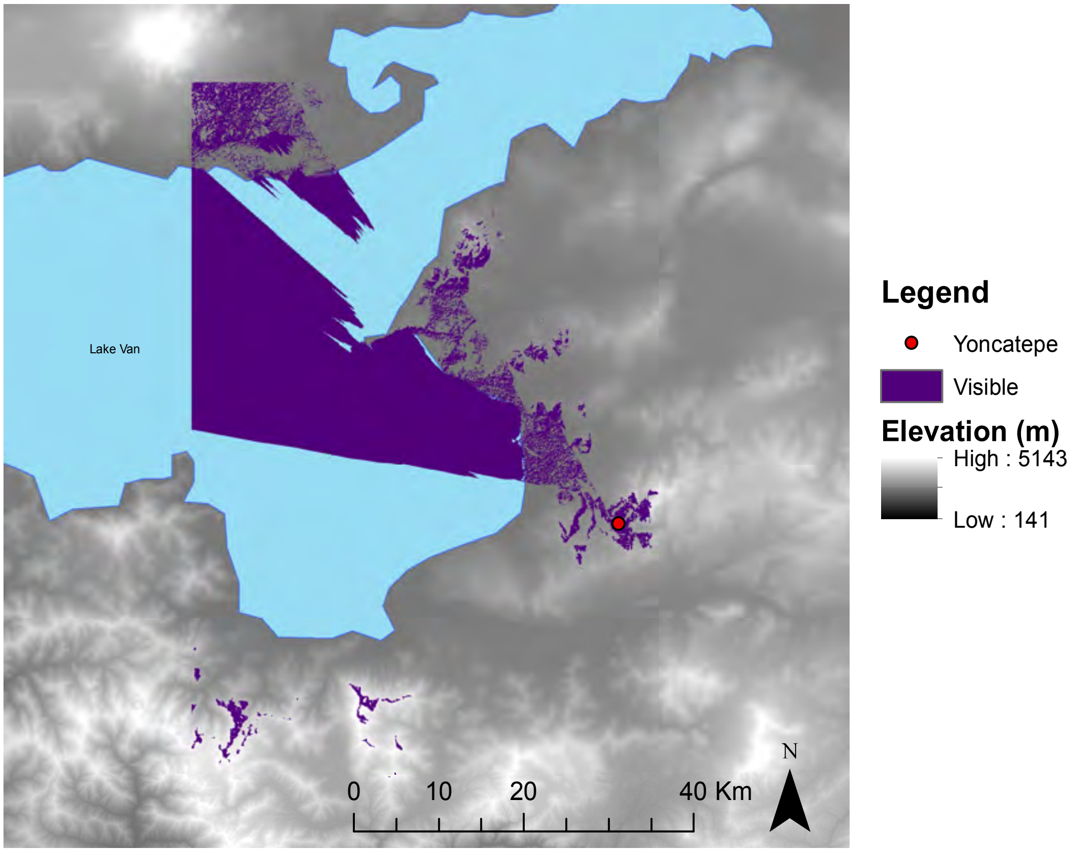


Figure A3-25: 50-kilometer viewshed of Yoncatepe

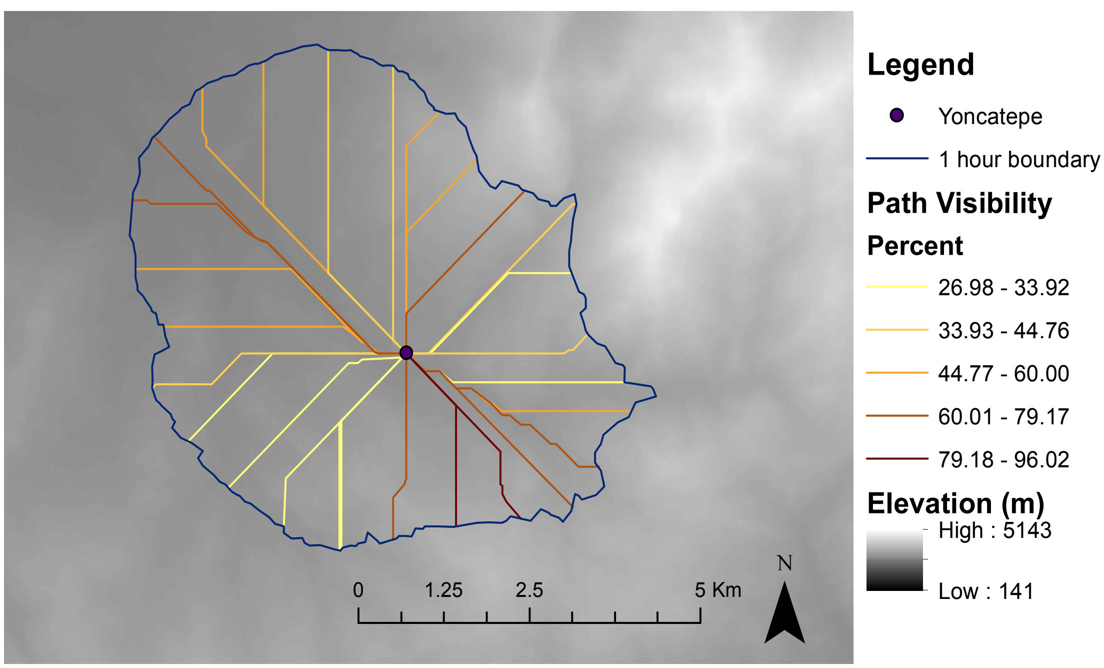


Figure A3-26: Least Cost Paths analysis of Yoncatepe

APPENDIX 4: PHENOMENOLOGICAL DESCRIPTIONS AND RANKINGS OF SITES IN THE ARAGATS REGION

Agarak

Visual accessibility—3: The site would have been most visible looking down from the surrounding hillsides, where the buildings and the rock outcropping would have stood out starkly from the landscape. The rock outcropping may have been visible from a short distance away from lower ground, but in general it lacks the prominence of sites on large hills.

Visibility of topographic features—5: The site has clear views of Mt. Ararat, Mt. Aragats and Mt. Ara, as well as surrounding mountains.

Visibility within the feature—5: There is good intervisibility between the parts of the site that are on the rock outcropping and those that are below it. With the exception of intervening buildings, all parts of the site can see all other parts of the site. As the outcropping is not very high, and the land is relatively flat, there are no undulations in the rock or other features to impede visibility.

Physical accessibility of the feature—4: Getting to the top of the outcropping requires a bit of climbing, but other than that, the ground is flat and grassy, and accessing most parts of the site requires only traversing a gentle slope.

Physical accessibility within the feature—4: While there is some steepness associated with the outcropping, it is not very high, and other than that, it is easy to get from one part of the site to another, over relatively flat, grassy land.

Skill and technology of cultural features—2: This site lacks monumental walls, inscriptions, carvings, or other impressive features that are associated with other sites. It is, however, noticeable for its size and the number of buildings, as well as the many circular and rectangular pits carved into the stone of the outcropping.

Emotional impact of cultural features—1: The architecture at this site is simple, and contains nothing remarkable that would evoke a strong emotional reaction.

Emotional impact of natural features immediately associated with the location—3: While not very large, the rock outcropping is interesting for its red color and distinctive shape, which causes it to stand out starkly from the surrounding landscape. This outcropping is not necessarily intimidating, but it does evoke a sense of curiosity and admiration.

Extent to which the location incorporates natural features—5: The main part of the site appears to have been located atop the outcropping, with outlying portions beneath the outcropping. Additionally, the site includes many features, such as pits, holes for water collection, and channels, that are carved directly into the bedrock of the outcropping.

Acoustic impact—1: There appears to be no significant acoustic impact.

Tactile impact—1: There appears to be no significant tactile impact.

Aramus

Visual accessibility—5: The site is on a prominent hill located in the midst of otherwise mostly flat ground, and is therefore highly visible from all directions.

Visibility of topographic features—5: The site can barely see the top of Mt. Aragats over intervening mountains. On a clear day Mt. Ararat is visible, though when I visited it was too hazy to make it out. There is also clear visibility of the surrounding agricultural land and nearby hills and mountains.

Visibility within the feature— 3: The top of the hill has several smaller ridges and rises, which limited visibility between the southeast and northwest parts of the site.

Physical accessibility of the feature—3: The site is located atop a steep grassy hill which is moderately difficult to climb, but the hill itself is located on otherwise flat land that is easy to traverse. Accessibility is fairly comparable from all directions.

Physical accessibility within the feature—3: The top of the hill has several ridges and rises, which means that some climbing is required to travel between the southwest and northwest portions of the site.

Skill and technology of cultural features—3: For the most part, the walls are made of mid-sized stones that are crudely carved and haphazardly stacked atop each other. The stones are smaller and the construction less precise and less skilled than similar sites in the area, and it is similar to Solak in this regard. However, there is some evidence of more finely worked blocks, though these are found out of context.

Emotional impact of cultural features—3: While the fortress's construction is not particularly remarkable, the site is large, and depending on the context of the more carefully worked blocks, there may have been some parts of the site that were more ornamental and therefore more impressive. Additionally, the act of building a fortress at such a commanding location likely would have been both impressive and intimidating.

Emotional impact of natural features immediately associated with the location—3: The hill is moderately intimidating in its steepness, and its location as the highest point on otherwise flat land makes it visually striking and causes it to stand out sharply from its surroundings. Additionally, the top of the hill has striking views of the surrounding landscape.

Extent to which the location incorporates natural features—5: The fortress's location atop a hill makes it well positioned for defense and surveillance.

Acoustic impact—1: There appears to be no significant acoustic impact.

Tactile impact—1: There appears to be no significant tactile impact.

Argishtihinili

Visual accessibility—4: From the top, the site has a commanding view of the surrounding flat agricultural land in all directions. However, the grassy slope, which is fairly gentle in some places, blends in with the rest of the landscape to some degree, as do many of the walls, which appear to be made of local stone and bedrock.

Visibility of topographic features—5: The site has clear views of Mt. Ararat and Mt. Aragats, as well as surrounding mountains. Due to the heat, these views are not as good at this time of year, but I was told that when the weather is cooler or earlier in the morning, both mountains are clearly visible.

Visibility within the feature—4: While some parts of the site are hidden from view from others by natural undulations in the rock, in general, most parts of the site could see each other.

Physical accessibility of the feature—3: While the slope is moderately steep in places, it is still fairly easy to climb, and the mound is not very high compared to other similar sites. It also lacks rock faces or other impediments to access that are found at some of the other sites. On the other hand, the slope is steep enough that it likely would have posed a significant problem for attacks.

Physical accessibility within the feature—4: While there is some uneven ground, in general, it is fairly easy to get from one part of the site to another.

Skill and technology of cultural features—3: The structures at the site were clearly large, with walls made of large rocks. However, these rocks were not particularly well shaped, and appear to be simply piled on top of each other, with none of the ornamentation or careful stone working that is found at some of the other sites. On the other hand, it clearly took a good deal of skill to build a structure this large.

Emotional impact of cultural features—3: The site is quite large, with thick walls made of stones that, when they were highly, likely would have been quite imposing.   On the other hand, much of the fortress has a haphazard look to it, and the relative lack of display of technological skill makes it less intimidating and awe-inspiring than similar fortresses.

Emotional impact of natural features immediately associated with the location—3: The area around the site is flat, and the hill itself fairly unremarkable. On the other hand, it is fairly isolated on otherwise flat landscape, which makes it more impressive.

Extent to which the location incorporates natural features—3: The site takes advantage of a hill on otherwise flat ground to provide a location with good visibility and defense.

Acoustic impact—3: The site's location on a hill makes it well situated to hear sounds from the surrounding villages.

Tactile impact—1: There appears to be no significant tactile impact.

Dovri

Visual accessibility—3: The site overlooks flat ground to the west and north, and has excellent visibility from those directions. To the east and south, low hills block the site from view, though the site would have been visible from the slopes of those hills. The hill on which the site is located is not particularly prominent, and appears to blend in with the many other similar hills in the region; it has relatively little to distinguish it from the surrounding landscape. However, the use of basalt stones for the walls, assuming those stones were visible, would have made the fortress more visible due to the contrast between the dark color and the surrounding landscape.

Visibility of topographic features—3: The top of Mt. Aragats is visible over the intervening peaks. Mt. Arailer, at whose base the site is located, is also clearly visible, though this is not a very large mountain. On the day I went, it was exceptionally hazy, and thus the visibility of Mt. Ararat and other, more distant features was difficult to determine.

Visibility within the feature— 2: The fortress is located on the other side of a small rise from the rest of the settlement, which limits visibility between the two. However, most parts of the town outside the fortress walls can see each other.

Physical accessibility of the feature—3: From the west, east and south, the site can be approached a moderately steep, moderately high grassy slope. This is somewhat strenuous, but does not require as much effort as some of the other sites. To the north, the hill slopes down very gently to flat ground, and access from this direction is quite easy.

Physical accessibility within the feature—4: It is a short walk over slightly hilly ground between the main fortress and the surrounding settlement; in general, most parts of the site are easily accessible to others.

Skill and technology of cultural features—3: The fortress itself has walls made of large and medium-sized rectangular basalt blocks. While not as flawless as the ashlar masonry present at some other Urartian period sites such as Karmir Blur and Erebuni, these walls demonstrate a greater degree of technical skill than those at sites from the Late Bronze Age/Early Iron Age such as Hnaberd, Gegharot and Tsaghkahovit. Additionally, the basalt likely had to be transported some distance, though likely not far, as there are several volcanoes nearby. However, this still would have required more effort than simply using bedrock. The rest of the settlement, however, has cruder walls made of more roughly shaped, smaller blocks.

Emotional impact of cultural features—3: The basalt fortification wall is intimidating and impressive, due to its size, the skill involved in its construction, and its dark color, which stands out strikingly from its surrounding. Additionally, the knowledge that these stones were moved from a nearby volcano may have been impressive and awe-inspiring.

Emotional impact of natural features immediately associated with the location—2: The hill itself is not very impressive or imposing, especially as it is one of many similar hills in the area.

Extent to which the location incorporates natural features—5: The fortress's location atop a hill makes it well positioned for defense and surveillance.

Acoustic impact—3: The fortress's location atop a hill means that sound carries significantly from the surrounding villages.

Tactile impact—1: There appears to be no significant tactile impact.

Erebuni:

Visual accessibility—5: The site is on a massive mound that dominates the surrounding area. Additionally, the large walls, made of multi-colored black and red stones, are visible from a great distance and stand out strikingly against the surrounding landscape.

Visibility of topographic features—5: The site has good views of Mt. Ararat, as well as the surrounding landscape and mountains.

Visibility within the feature: 1: Essentially the entire hillside was covered with structures, with perhaps small streets between different areas, but in general almost all views are blocked by walls.

Physical accessibility of the feature—2: The gentlest approach and therefore the entrance is on the south side, but this is still fairly steep, and the mound is quite high. On the other sides, the grassy hillside is much steeper, though still technically accessible.

Physical accessibility within the feature—3: Access within the site was facilitated by streets and corridors; however, sometimes pathways between different parts of the site were somewhat convoluted.

Skill and technology of cultural features—5: The entire site is built of towering walls of red and black stone. Certain areas contain large, finely cut ashlar blocks made of basalt, while most of the other walls use stones that were not carefully cut, but precisely stacked on top of each other. Several areas contain well-carved inscriptions. Most impressive was the temple, which contained floor-to-ceiling frescos in bright colors and with fine detail.

Emotional impact of cultural features—5: The site's walls are not only impressive in their size and the number of stones used, but the combination of black and red stones is visually striking and quite beautiful. In addition, the inscription and the temple frescoes inspire a sense of awe and wonder.

Emotional impact of natural features immediately associated with the location—5: The mound has a commanding view of essentially all of modern-day Yerevan and the surrounding hills, providing impressive vistas and also intimidating drop-offs.

Extent to which the location incorporates natural features—5: The site is located atop an impressive natural hill.

Acoustic impact—1: There are no acoustic effects of note.

Tactile impact—2: The basalt stones of the wall likely would have been warm to the touch in the sun, and were a different texture than the natural bedrock.

Gazanots 1

Visual accessibility—2: The site is surrounding by low hills, and while it is visibility from the slopes of those hills, it is not visible from beyond them. This site lacks the striking views and high visibility of the hilltop sites, and in fact is lower than much of the surrounding land. In general this site is quite visually limited and feels somewhat enclosed.

Visibility of topographic features—3: The site overlooks a gorge through which the Kasakh rivers flows. On the other side of the gorge, Mt. Arelier is clearly visible. Mt. Aragats and other major mountains are not visible, as they are blocked from view from the low hills surrounding the site.

Visibility within the feature— 5: The site is on flat ground and all parts of the site can see each other.

Physical accessibility of the feature—4: Approach from the south, west or north is easy, over relatively flat ground. What appears to be an entranceway to the fortress overlooking the gorge to the east raises the question of whether the site was meant to be approached from this direction as well. If so, this approach would have been much more difficult.

Physical accessibility within the feature—5: The site is on relatively flat ground and all parts of the site are easily accessible to each other.

Skill and technology of cultural features—3: The walls of the fortress are built of medium-sized to large stone blocks. While the blocks are roughly carved, some effort appears to have been made to make them all more or less the same size and shape, which gives the fortress a more carefully constructed and orderly appearance than some of the other fortresses such as Tsaghkahovit or Gegharot. The rest of the settlement is built of smaller, more coarsely carved stones.

Emotional impact of cultural features—3: The size of the fortresses and its large, well-structured walls likely would have been moderately intimidating, though it lacks the advantage of elevation that the hilltop fortresses have in terms of emotional impact.

Emotional impact of natural features immediately associated with the location—5: The site overlooks a gorge through which a river flows. In particular, the site is built right on the edge of a cliff, with a sheer drop right down to the floor of the gorge and the river below. This drop is intimidating, but the beauty of the location inspires awe and a sense of wondering. Additionally, the flowing river, and the sense of isolation that comes from the site being largely blocked in by hills, contributes to a peaceful feeling.

Extent to which the location incorporates natural features—3: The site's location beside a river gorge was presumably a defensive advantage.

Acoustic impact—4: From the site, the sound of the rushing river below can be clearly heard. Other sounds from inside the gorge can also be heard echoing off the walls.

Tactile impact—1: There appears to be no significant tactile impact.

Gazanots 2

Visual accessibility—3: The site is more visible than Gazanots 1, as it is not blocked from view by nearby hills. Instead, is has decent visibility in all directions, including up and down the river gorge, though it is still on a relatively low point on the land, which limits its visibility.

Visibility of topographic features—5: The site has strike views of Mt. Ara and, unlike Gazanots 1, also has a direct, clear view of Mt. Aragats, which seems very close. It also overlooks a river gorge, with the river clearly visible below.

Visibility within the feature—3: The site is fairly large, and some parts of the site are blocked from view by low rises in the land.

Physical accessibility of the feature—3: While the site is on fairly flat land, it is located between two ravines. One, which has the river flowing through it, is extremely deep, and would limit accessibility from that direction to a great degree. The other is not as deep and can be crossed with relatively little effort, though it does require some climbing.

Physical accessibility within the feature—5: The site is flat throughout, and it is easy to move from one part to another.

Skill and technology of cultural features—2: The buildings are relatively small and made of uncut stones, and the tombs are also fairly simply. However, the site is quite large and extensive.

Emotional impact of cultural features—2: The main thing about this site that is impressive is its size and the number of features. In general, however, these features do not inspire strong emotion, though the presence of tombs likely would have evoked feelings of awe and perhaps fear.

Emotional impact of natural features immediately associated with the location—5: As at Gazanots 1, the ravine is extremely striking and inspires feelings of awe, as well as fear and anxiety upon approaching the edge.

Extent to which the location incorporates natural features—4: The site's location between two ravines allow it to be defensible without being located on a high hill.

Acoustic Impact—4: The sound of rushing water can be clearly heard in the gorge, and other sounds in the gorge can also be heard echoing off the walls.

Tactile Impact—1: There appears to be no significant tactile impact.

Gegharot Fortress

Visual accessibility—4: The site overlooks flat ground to the west, south and east, and from here it is visible from a great distance away, as well as having an excellent view of the surrounding landscape. The north, the landscape transitions into higher foothills; the fortress would have been visible from the hills immediately surrounding it, but those hills would have blocked visibility from points beyond them.

Visibility of topographic features—3: Mt. Aragats is visible in the distance from certain points within the site, but the majority of it is blocked from view by intervening hills. When it is visibility, it is not particularly prominent on the skyline, as there are many other peaks and low hills.

Visibility within the feature— 4: Most parts of the sites can see each other, though some parts are blocked from view of others due to the slope of the hill.

Physical accessibility of the feature—2: The site is located atop a steep grassy slope which is challenge to traverse; however, it is not as high or sheer as certain sites. However, it would have posed a significant barrier to attackers. It would have also been more accessible from the hills to the north.

Physical accessibility within the feature—4: Most parts of the site are easily accessible to other parts, though to get from some parts to others, it is necessary to climb up and down the slope.

Skill and technology of cultural features—3: The structures themselves are made of large, uncarved rocks stacked on top of each other rather haphazardly. There is no ashlar masonry or adornment present. However, considering the size of the stones and the size and steepness of the hill, the mere existence of a fortress on top of the hill clearly required skill to construct. Additionally, features were built on different levels of the slope, which also would have required some degree of technical knowledge.

Emotional impact of cultural features—3: The size of the fortress's walls, and its commanding location atop a large hill, would have been intimidating to attackers and likely would have been impressive to visitors and residents.

Emotional impact of natural features immediately associated with the location—3: The hill itself is intimidating and impressive, and the fortress features striking views of the surrounding landscape.

Extent to which the location incorporates natural features—5: The fortress's location atop a hill makes it well positioned for defense and surveillance.

Acoustic impact—1: There appears to be no significant acoustic impact.

Tactile impact—1: There appears to be no significant tactile impact.

Gegharot Kurgans

Visual accessibility—3: The kurgans are visible from the hills immediately surrounding it, including from Gegharot Fortress. However, as they are located between two hills, they are mostly blocked from view beyond the immediate vicinity.

Visibility of topographic features—2: Mt. Aragats is blocked from view by the small hill at whose base the kurgans are located. Lower mountains are visible to the north.

Visibility within the feature— 5: All of the kurgans can see each other.

Physical accessibility of the feature—5: The kurgans are on flat ground and easily approachable from the north, east and west.

Physical accessibility within the feature—5: The ground is flat and the kurgans are close together, making it easy to navigate between them.

Skill and technology of cultural features—N/A: This is difficult to say, as the kurgan mounds themselves have been excavated and therefore are no longer present; all that remains are circles of stones and the remains of the burial pit.

Emotional impact of cultural features—N/A: This is also difficult to determine for the same reason as above.

Emotional impact of natural features immediately associated with the location—1: The kurgans are on flat ground at the base of a low hill; there is nothing remarkable about this hill or about the immediate surroundings that would inspire strong emotion.

Extent to which the location incorporates natural features—1: The location does not incorporate natural features.

Acoustic impact—1: There appears to be no significant acoustic impact.

Tactile impact—1: There appears to be no significant tactile impact.

Hnaberd

Visual accessibility—4: The site overlooks flat ground to the north, and considering the hill's great height, it is visible from a great distance away in this direction. It also would have been visible from the surrounding foothills of Mt. Aragats, which are located directly to the south. However, these slopes would have blocked visibility from further to the south.

Visibility of topographic features—5: The fortress is located in the foothills of Mt. Aragats, and thus the mountain itself is clearly visible, and appears very close. Additionally, when the site is viewed from the north, Mt. Aragats appears to loom over it.

Visibility within the feature— 3: There are burials and rooms located on all slopes of the hillside, as well as at the top of the hill. Thus, many parts of the sites are blocked from view from others by the hill itself. However, the top of the hill would have had a commanding view of features on the slopes.

Physical accessibility of the feature—1: The site is located atop and on the slopes of an extremely high, extremely steep hill. Climbing this hill takes a significant amount of time and energy, and would have been particularly difficult for invaders.

Physical accessibility within the feature—2: Different parts of the site were located on different levels of the slope, and navigating between these features would have required a good deal of climbing, and thus would have been difficult.

Skill and technology of cultural features—3: Most of the structures are built of mid-sized, uncarved stones stacked haphazardly on top of each other, with no adornment and little care given to the stone work itself. These features, by themselves, are not particularly impressive. However, there is evidence of imposing fortification walls which likely would have required a good deal of skill to build. Additionally, the fortress is massive, and building something on that scale clearly required technical knowledge.

Emotional impact of cultural features—4: The fortress's massive size and spread, and its location atop an extremely high hill, are both very impressive and awe-inspiring. Additionally, the proximity of the fortress to burials likely would have created associations between the two and solidified the sense of this place as a significant location on the landscape lasting generations.

Emotional impact of natural features immediately associated with the location—4: The hill itself is extremely intimidating and impressive. The top of the hill provides strikingly beautiful views of the surrounding landscape and also of Mt. Aragats, which likely would have evoked wonder and awe.

Extent to which the location incorporates natural features—5: The fortress's location atop a hill makes it well positioned for defense and surveillance.

Acoustic impact—1: There appears to be no significant acoustic impact.

Tactile impact—1: There appears to be no significant tactile impact.

Karmir Blur

Visual accessibility—4: The site is on a fairly large grassy hill, making it visible from a good distance away, but this view is not as imposing as some of the sites on more dramatic outcroppings, particularly from the west. From the east, on the other hand, the site is located atop a steep dropoff into a ravine, which would have been a much more imposing sight.

Visibility of topographic features—5: The site has a clear view to Mt. Ararat, as well as to other mountain ranges to the south. It also overlooks the Razdan River, which runs through a gorge below.

Visibility within the feature—3: While some parts of the site are blocked from others by undulations in the rock or different levels of the mound, much of the site is located on the top of the mound, and would have been intervisible. The upper part of the site and the residential part are also highly intervisible.

Physical accessibility of the feature—3: From the west, the approach is fairly steep, up a grassy slope. From the north, the approach is gentler. From the east and south, however, the site is inaccessible, as it is perched atop a cliff side that drops into a ravine.

Physical accessibility within the feature—4: Most of the site is located at the top of the mound, and the ground here is fairly flat. Additionally, accessibility is fairly easy between the residential town and the main mound, as the slope here is at its gentlest.

Skill and technology of cultural features—4: Though it is not the most physically or technologically impressive of the sites, the site does have large walls with cyclopean masonry and finely carved stones. Additionally, many of those stones are basalt, which would have had to have been transported a great distance.

Emotional impact of cultural features—3: The site's walls are fairly typical of Urartian sites, and while impressive, do not particularly stand out compared to similar architecture elsewhere.

Emotional impact of natural features immediately associated with the location—3: The hill is moderately high, with a good view of the surrounding landscape, as well as an intimidating drop into a ravine on the eastern side. However, much of the mound is not particularly steep, and there are no other natural features of note nearby.

Extent to which the location incorporates natural features—3: The site is located with the fortress on a natural hill and the lower town on flatter ground lower down on the slope.

Acoustic impact—1: There are no acoustic effects of note.

Tactile impact—2: The basalt stones of the wall likely would have been warm to the touch in the sun, and were a different texture than the natural bedrock.

Khojabagher

Visual accessibility—2: The site is on a very gentle slope, surrounded by hills to the west and north, and by largely flat ground to the east and south. The site is visible from the flat land and the slopes of the hills immediately surrounding it, but in general is not visible from very far away. Depending on the size and prominence of the kurgans, individual features may have been more visible, but in the present day the kurgans largely blend in with natural rises and dips in the landscape.

Visibility of topographic features—2: The top of Mt. Aragats is just barely visible. Other mountains are blocked from view by intervening hills, though some are barely visible are on the horizon.

Visibility within the feature— 5: All parts of the sites can see each other.

Physical accessibility of the feature—5: The site is located on a very gentle slope, with either low hills or flat ground in all directions, and is very accessible.

Physical accessibility within the feature—5: The site is on a very gentle slope, and all parts of the site are easily accessible to each other.

Skill and technology of cultural features—2: This is difficult to determine because changes in the landscape have likely made the tombs smaller and less prominent over time, and excavations and other disturbances have also likely changed their appearance. In general, however, the stones are fairly small and the construction haphazard. On the other hand, the builders of the some of these tombs clearly moved a significant amount of earth, which would have taken time and skill.

Emotional impact of cultural features—2: Again, this is difficult to determine; in the present day the burials do not evoke a particularly strong response, but this is likely because many of them were overgrown or collapsed.

Emotional impact of natural features immediately associated with the location—1: The location is fairly flat and unremarkable, and there are no natural features nearby or in association with the burials that evoke a particularly strong reaction.

Extent to which the location incorporates natural features—1: The site does not significantly incorporate natural features.

Acoustic impact—1: There appears to be no significant acoustic impact.

Tactile impact—1: There appears to be no significant tactile impact.

Metsamor

Visual accessibility—3: The site is on a moderately sized hill which is the highest point in the immediate vicinity. It likely would have been visible from the surrounding agricultural fields and flat land, but not from farther away.

Visibility of topographic features—5: The site has clear views to Mt. Ararat, Mt. Aragats and Mt. Ara.

Visibility within the feature—3: While there are several different parts of the site at different levels, in general, most of these locations can see each other, though parts of the site at the top of the hill are blocked from view from other parts of the site on lower ground.

Physical accessibility of the feature—3: The site is located on a moderately steeped but not very high hill with a grassy slope that is somewhat difficult to climb, but this climb is not a significant hardship on the average person. The lower parts of the site are on fairly flat ground and easily accessible.

Physical accessibility within the feature—4: The top of the hill is relatively flat, with easy access, and the lower parts of the site are also easy to navigate between. Getting from the lower part of the site to the upper part requires climbing the slope, which is moderately steep but not very high, and in general is not a particularly difficult climb.

Skill and technology of cultural features—3: The site has walls of large stone blocks, but these are fairly typical of many of these sites, and do not show any particular carving or shaping. However, standing stone carvings at the site would have required significant skill.

Emotional impact of cultural features—4: The site's walls are large and would have been imposing, but are nothing unusual. However, the stone carvings, such as the one depicting a dragon, likely would have evoked a sense of wonder and awe, particularly if they had a ritual significance.

Emotional impact of natural features immediately associated with the location—2: While the hill is moderately imposing, it is not particularly noteworthy. However, there are some interesting rock formations and unusually colored rocks associated with the location which would likely have evoked feelings of curiosity and interest.

Extent to which the location incorporates natural features—3: The main part of the site appears to have been on the hilltop, while other parts of the settlement were on lower ground.

Acoustic impact—1: There is no significant acoustic impact.

Tactile impact—1: There is no significant tactile impact.

Oshakan

Visual accessibility—5: The site is on a very large hill that is visible from a great distance away, including from Agarak; this hill rises over surrounding hills, making it very prominent on the landscape. The hill also towers over the modern-day nearby village, and modern-day structures at the top are clearly visible from a great distance away.

Visibility of topographic features—5: The site has a clear view to Mt. Ararat, Mt. Aragats, and Mt. Ara. The top of the hill also has impressive vistas of all of the surrounding landscape.

Visibility within the feature—2: Within the upper and lower parts, visibility is generally good, as both the top of the hill and the lower settlement are relatively flat. However, the lower settlement is generally not visible from most of the top of the hill, though towers may have helped in this regard. The lower settlement likely would have been able to see some walls, but in general very little of the fortress or the top of the hill is visible.

Physical accessibility of the feature—4: Though the slope is grassy, it is very steep and high, and climbing it is a time-consuming and difficult process. The fortress, thus, would have been extremely difficult to access and would have also been difficult to attack. The lower town, on the other hand, is only a short way up the hillside and is fairly easily accessible, being located on a gentler slope.

Physical accessibility within the feature—2: While accessibility within the two parts of the site is good, and the fortress was likely only a single building or small collection of buildings, traveling between the lower and upper settlements is quite difficult, as it involves climbing up or down most of the hill and traversing a steep slope.

Skill and technology of cultural features—3: The fortress has walls built of very large, roughly carved stone blocks. These are not as finely shaped as the ashlar masonry at several of the other sites, but nonetheless clearly would have required a good deal of skill to move and shape, particularly if they needed to be transported up the hill.

Emotional impact of cultural features—3: The fortresses walls are intimidating, though not as immense or imposing as some. However, the hill's size and steepness make it impressive that such a large structure could be built here and that rocks of this size were able to be moved. Thus, the mere fact of building a fortress at this location evokes a certain degree of awe.

Emotional impact of natural features immediately associated with the location—4: The hill is immense and the slope steep, making this a formidable natural feature. Attackers certainly would have found this intimidating, while visitors of the lower town likely would have found it an impressive reminder of the power of whoever built and/or controlled the fortress. Additionally, the views from the top of the hill are stunning, as it is possible to see for miles over the surrounding landscape.

Extent to which the location incorporates natural features—4: The site is located with the fortress on a natural hill and the lower town on flatter ground lower down on the slope.

Acoustic impact—1: There appears to be no significant acoustic impact

Tactile impact—1: There appears to be no significant tactile impact.

Tsaghkahovit

Visual accessibility—4: The site overlooks flat ground to the north and east, and was highly visible from those directions. To the south, the site is visible for a good distance from the foothills of Mt. Aragats; however, those hills block visibility from further south.

Visibility of topographic features—3: The top of Mt. Aragats is barely visible from some locations at the site, but in general most of it is blocked from view by intervening foothills. Lower mountains are visible to the north, and the site has a good view of the surrounding agricultural land and foothills of Mt. Aragats.

Visibility within the feature— 3: As different parts of the site are located at different points on the slope, some parts are not intervisible due to being blocked by the hill itself. However, the main fortress at the top of the hill has an excellent view of features on the slopes.

Physical accessibility of the feature—2: The site is located atop a steep grassy slope, which is difficult to climb, and is particularly steep to the west and north. This slope would have required a fair amount of effort to climb, and would have been particularly difficult for invaders.

Physical accessibility within the feature—3: Navigating among the various parts of the site located at the base of the site is generally not very difficult, though the ground can be uneven in some places. Traveling between the fortress at the top of the hill and the other parts of the site lower down on the slope, however, would have been difficult and required some climbing.

Skill and technology of cultural features—3: Like similar fortresses (Hnaberd, Geghort), the structures themselves are made of large, uncarved rocks stacked on top of each other rather haphazardly. There is no ashlar masonry or adornment present. However, considering the size of the stones and the size and steepness of the hill, the mere existence of a fortress on top of the hill clearly required skill to construct.

Emotional impact of cultural features—4: The size of the fortress's walls, and its commanding location atop a large hill, would have been intimidating to attackers and likely would have been impressive to visitors and residents. Additionally, the presence of kurgans and the association between ancestors and the fortress would have carried a strong emotional impact and emphasized the importance of this site.

Emotional impact of natural features immediately associated with the location—3: The hill itself is intimidating and impressive, and the fortress features striking views of the surrounding landscape.

Extent to which the location incorporates natural features—5: The fortress's location atop a hill makes it well positioned for defense and surveillance.

Acoustic impact—1: There appears to be no significant acoustic impact.

Tactile impact—1: There appears to be no significant tactile impact.

APPENDIX 5: PHOTOS OF SITES IN THE ARAGATS REGION

Figure A5-1: View of Agarak

Figure A5-2: View of landscape around Agarak

Figure A5-3: View of Agarak and Mt. Aragats

Figure A5-4: Stone cut feature at Agarak

Figure A5-5: View of Aramus from bottom of mound

Figure A5-6: Carved stone blocks at Aramus

Figure A5-7 View of surrounding landscape from Aramus

Figure A5-8: View of Mt. Aragats from Aramus

Figure A5-9: Architecture at Argishtihinili

Figure A5-10 View of Ararat from Argishtihinili

Figure A5-11: View of Argishtihinili from base of mound

Figure A5-12: View of surrounding landscape from Argishtihinili

Figure A5-13: View of Dovri from base of mound

Figure A5-14: View of Mt. Aragats from Dovri

Figure A5-15: View of surrounding landscape from Dovri

Figure A5-16: Remains of architecture at Dovri

Figure A5-17: View of Erebuni

Figure A5-18: Reconstructed architecture at Erebuni

Figure A5-19: View of landscape from Erebuni

Figure A5-20: Mural and former location of inscription at Erebuni

Figure A5-21: Remains of architecture and landscape at Gazanots 1

Figure A5-22: View of river gorge from Gazanots 1

Figure A5-23: Architecture at Gazanots 1

Figure A5-24: View of landscape and Mt. Ara from Gazanots 1

Figure A5-25: View of Mt. Ara from Gazanots 2

Figure A5-26: Remains of architecture at Gazanots 2

Figure A5-27: View of river gorge from Gaznots 2

Figure A5-28: View of landscape from Gaznots 2

Figure A5-29: View of Gegharot from base of hill

Figure A5-30: View of landscape from Gegharot

Figure A5-31: View of Mt. Aragats from Gegharot

Figure A5-32: Remains of architecture from Gegharot

Figure A5-33: Architecture and landscape at the Gegharot kurgans

Figure A5-34: View of landscape from Gegharot kurgans

Figure A5-35: Architecture at the Gegharot kurgans, and view of Gegharot fortress

Figure A5-36: Hill above the Gegharot kurgans

Figure A5-37: View of Hnaberd

Figure A5-38: View of landscape from Hnaberd

Figure A5-39: View of landscape from Hnaberd

Figure A5-40: Architecture at Hnaberd

Figure A5-41: View of Karmir Blur

Figure A5-42: Architecture at Karmir Blur

Figure 5-43: View of landscape from Karmir Blur

Figure 5-44: View of landscape from Karmir Blur


Figure A5-45: Kurgan and surrounding landscape at Khojabagher


Figure A5-46: View of landscape from Khojabagher


Figure A5-47: View of landscape from Khojabagher


Figure A5-48: Kurgan and surrounding landscape at Khojabagher

Figure A5-49: View of Kuchak 1

Figure A5-50: View of landscape from Kuchak 1

Figure A5-51: Kurgan at Kuchak 1, with Mt. Aragats in background

Figure A5-52: Remains of architecture and landscape at Kuchak 1

Figure A5-53: View of landscape from Kuchak 2

Figure A5-54: View of Kuchak 2

Figure A5-55: View of Mt. Aragats from Kuchak 2

Figure A5-56: Architecture at Kuchak 2

Figure A5-57: Metsamor and surrounding landscape

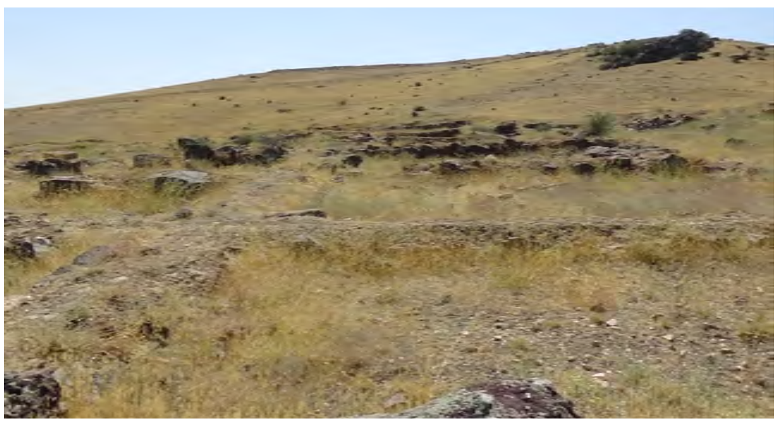
Figure A5-58: Metsamor and surrounding landscape

Figure A5-59: View of Aragats from Metsamor

Figure A5-60: Remains of architecture at Metsamor


A5-61: View of landscape from Oshakan


A5-62: Architecture at Oshakan


A5-63: View of Oshakan from lower town


A5-64: View of landscape from Oshakan

Figure A5-65: View of landscape from Tsaghkahovit, including burials

Figure A5-66: Architecture at Tsaghkahovit

Figure A5-67: View of Tsaghkahovit from base of hill

Figure A5-68: View of Mt. Aragats from Tsaghkahovit

APPENDIX 6: GIS ANALYSIS OF SITES IN THE ARAGATS REGION

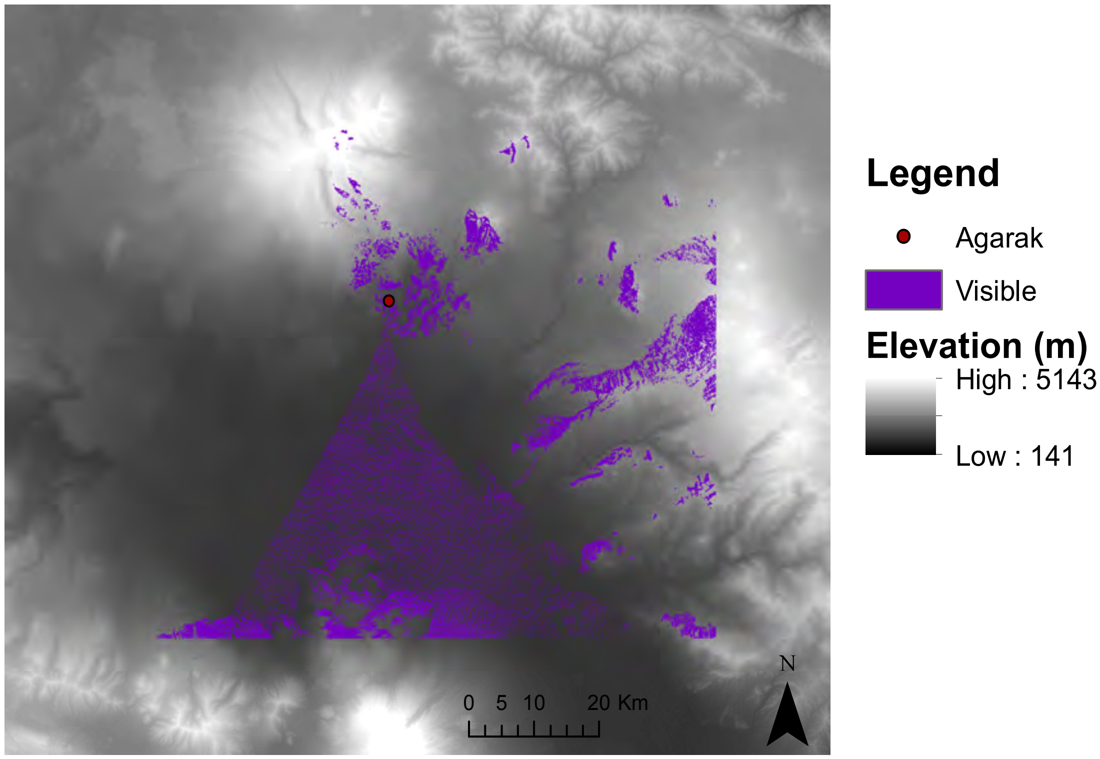


Figure A6-1: 50-kilometer viewshed of Agarak

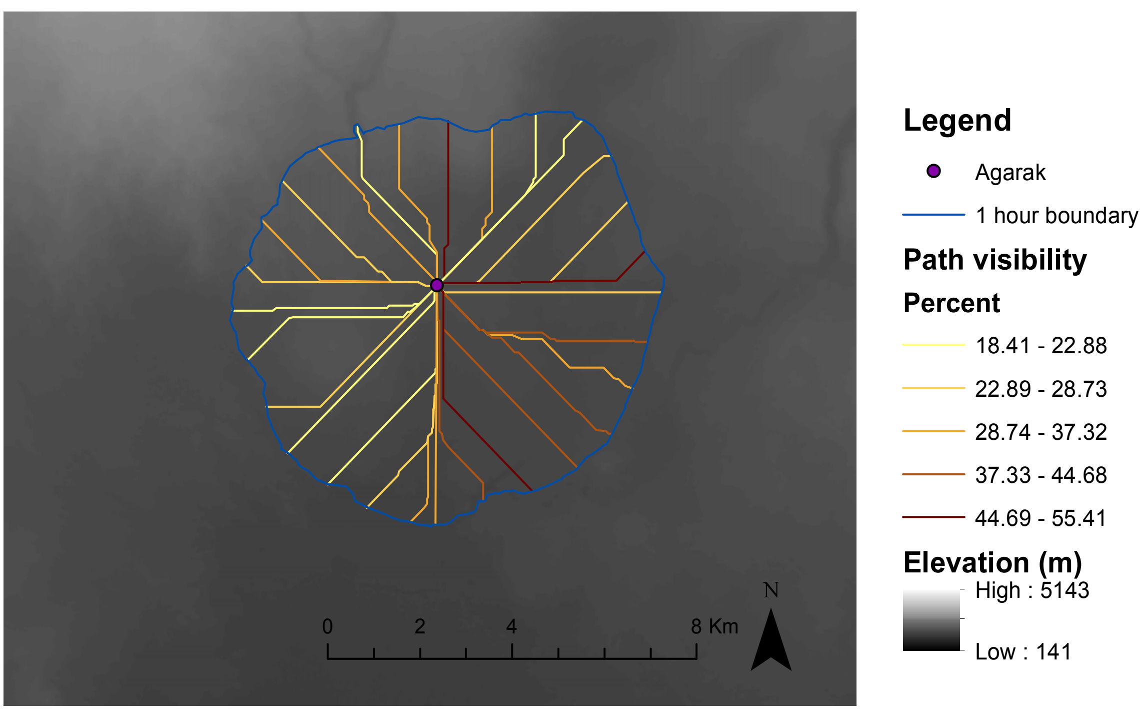


Figure A6-2: Least Cost Paths analysis of Agarak

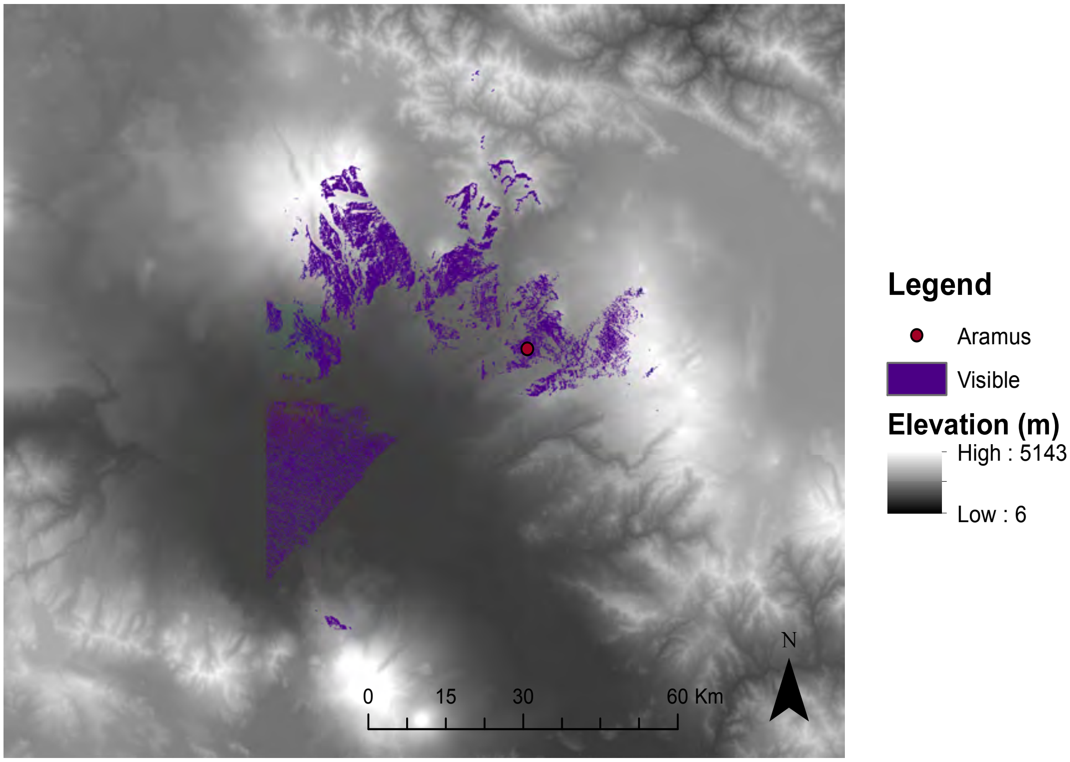


Figure A6-3: 50-kilometer viewshed of Aramus

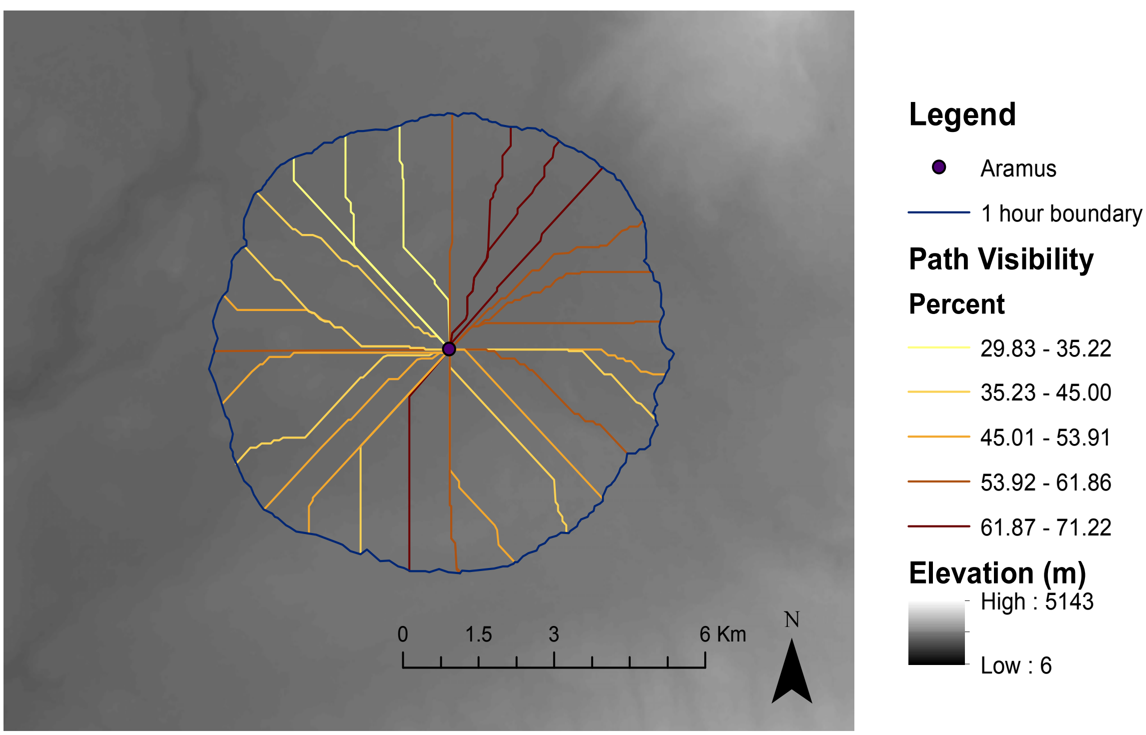


Figure A6-4: Least Cost Paths analysis of Aramus

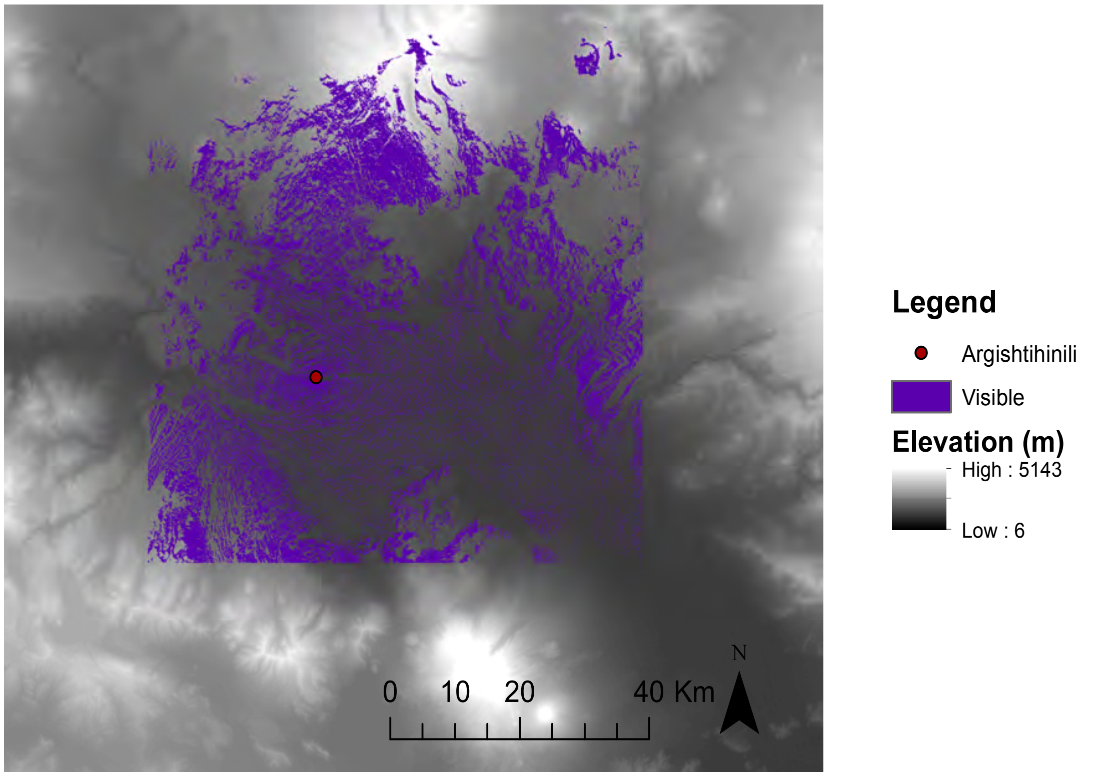


Figure A6-5: 50-kilometer viewshed of Argishtihinili

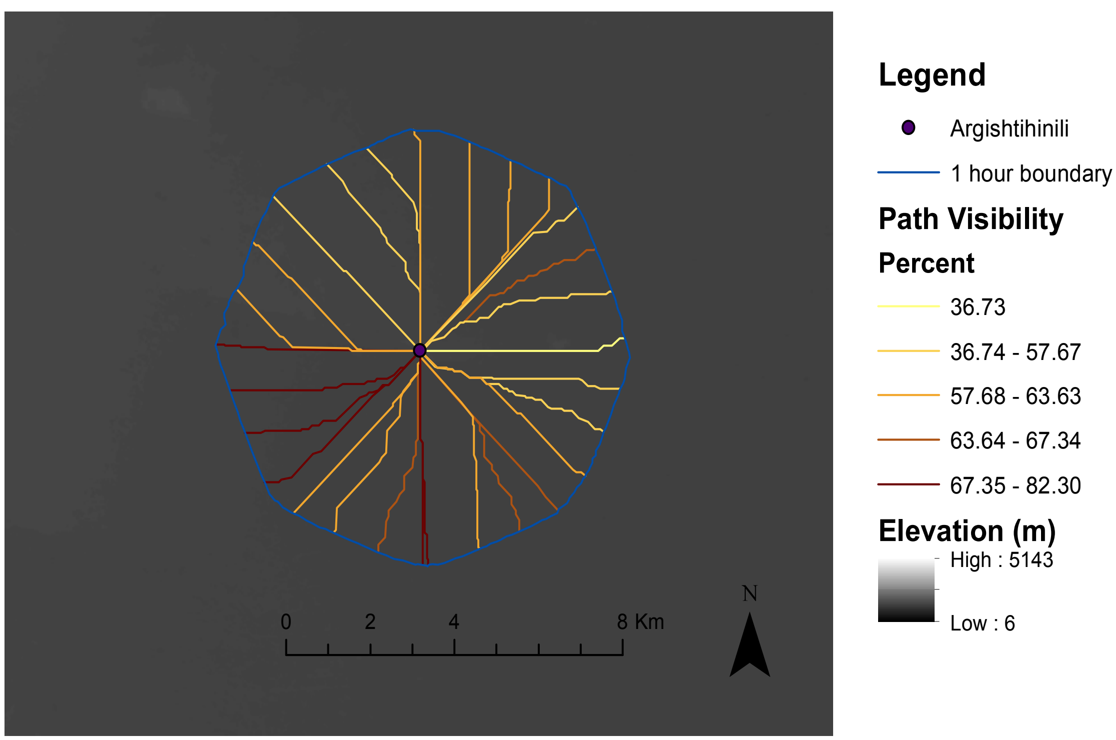


Figure A6-6: Least Cost Paths analysis of Argishtihinili

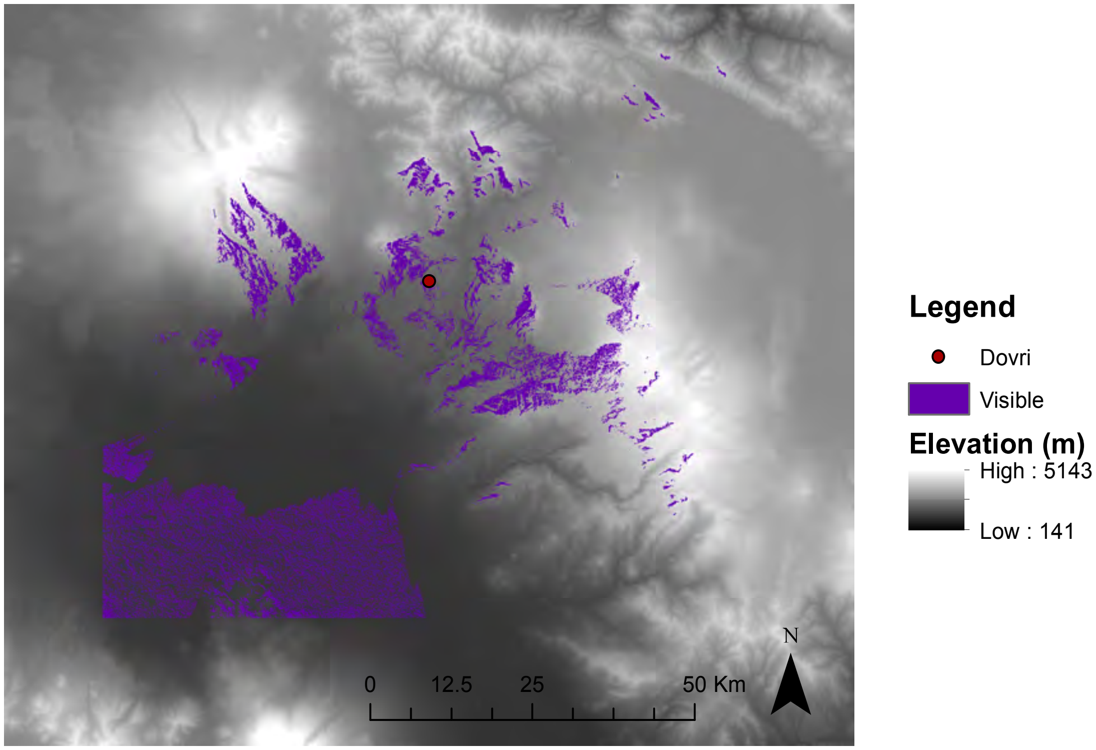


Figure A6-7: 50-kilometer viewshed of Dovri

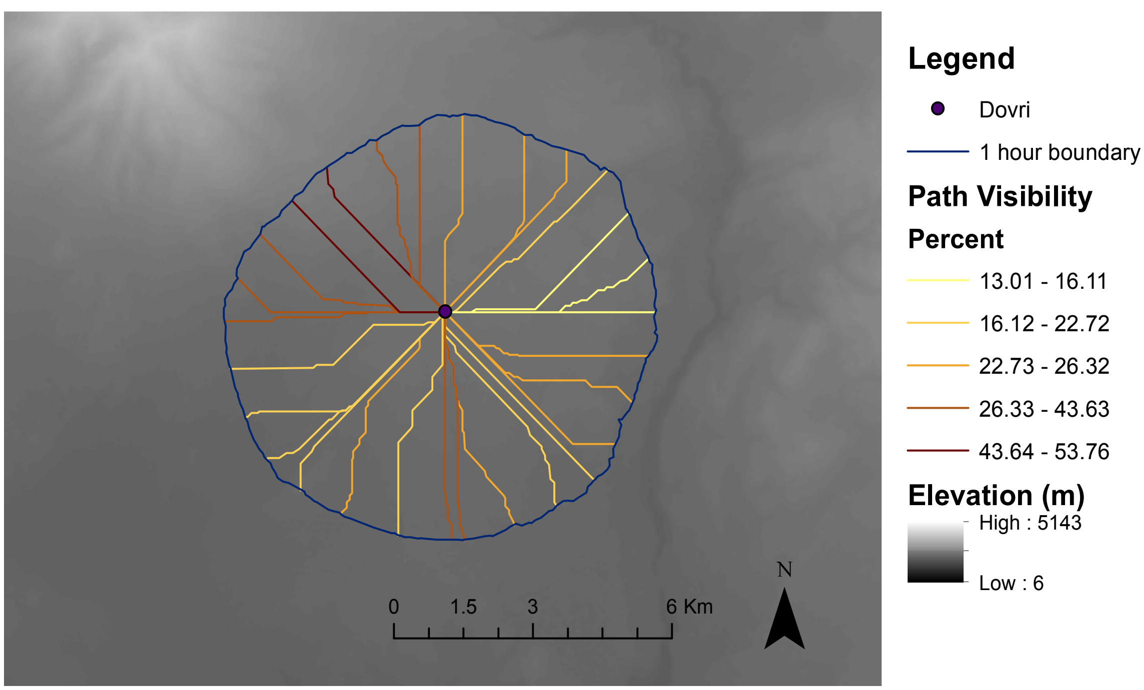


Figure A6-8: Least Cost Paths analysis of Dovri

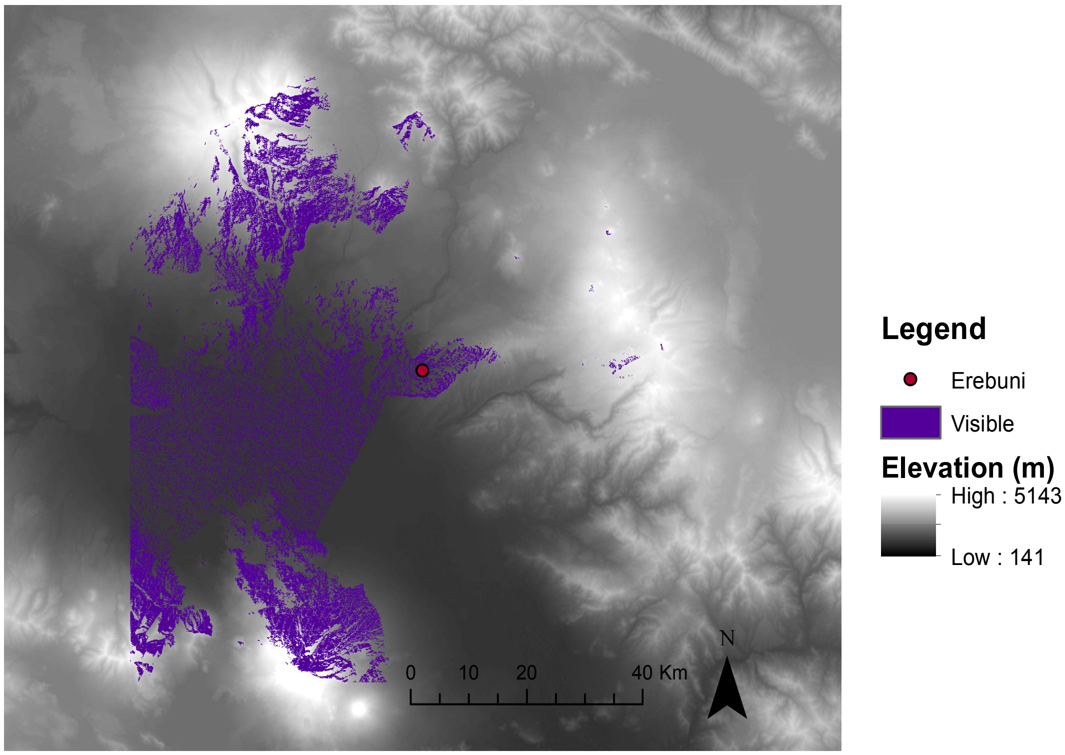


Figure A6-9: 50-kilometer viewshed of Erebuni

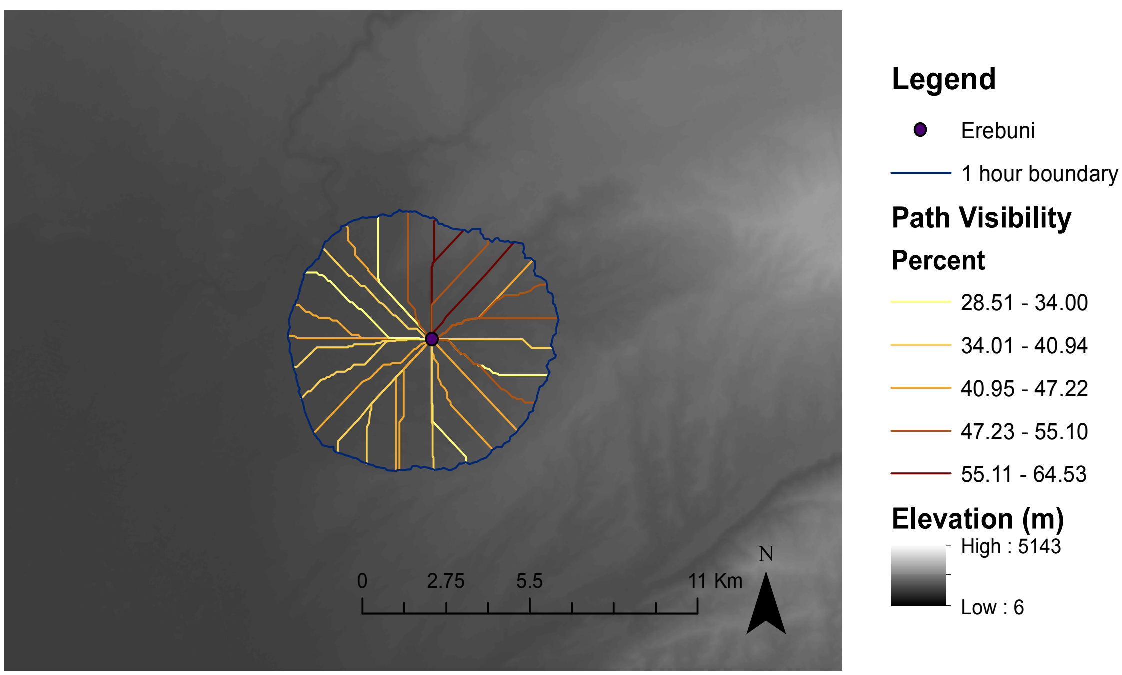


Figure A6-10: Least Cost Paths analysis of Erebuni

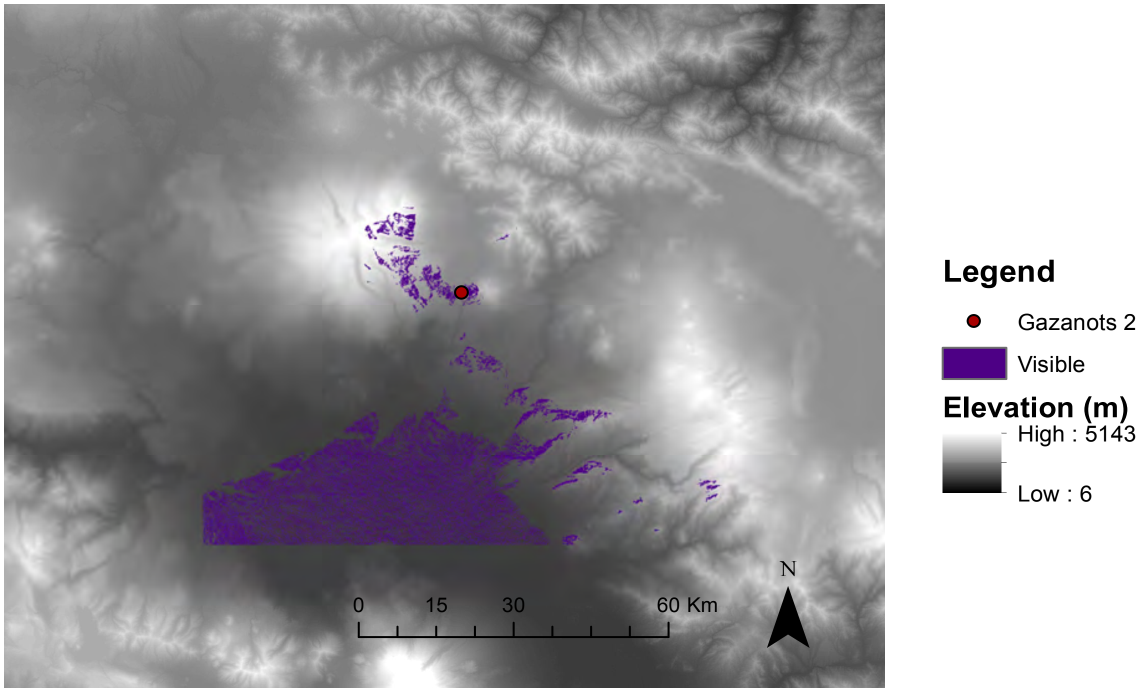


Figure A6-13: 50-kilometer viewshed of Gazanots 2

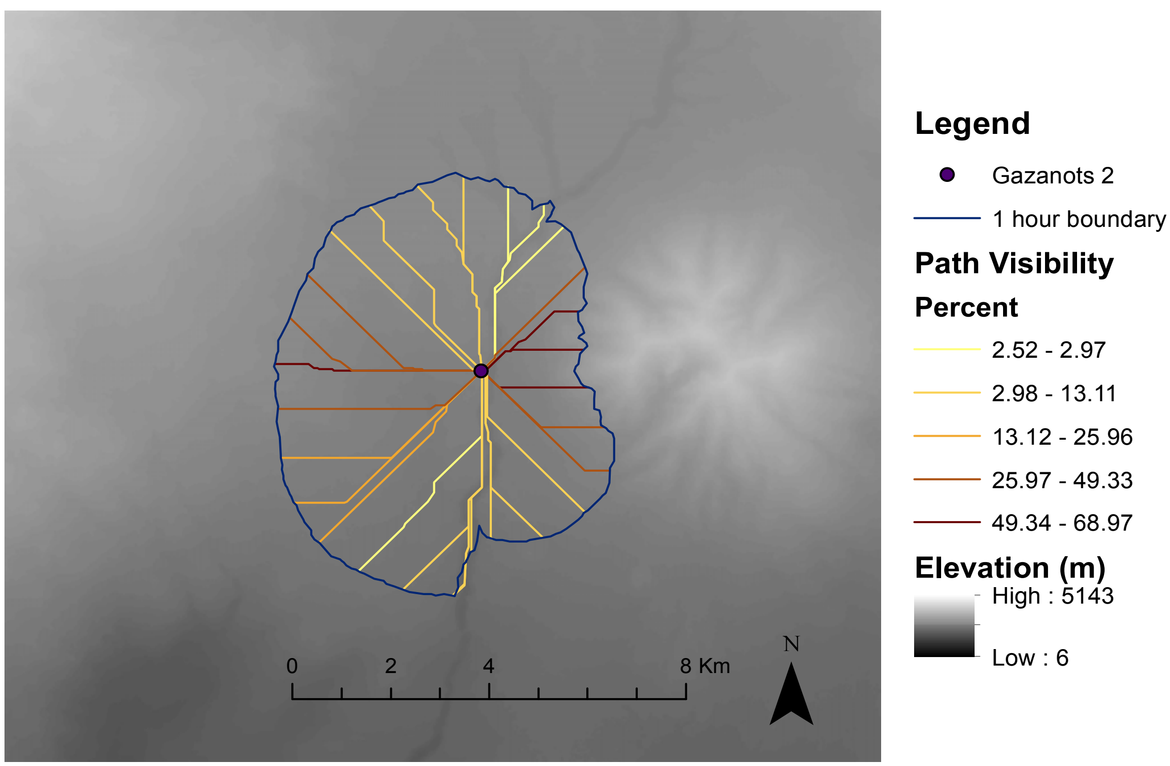


Figure A6-14: Least Cost Paths analysis of Gazanots 2

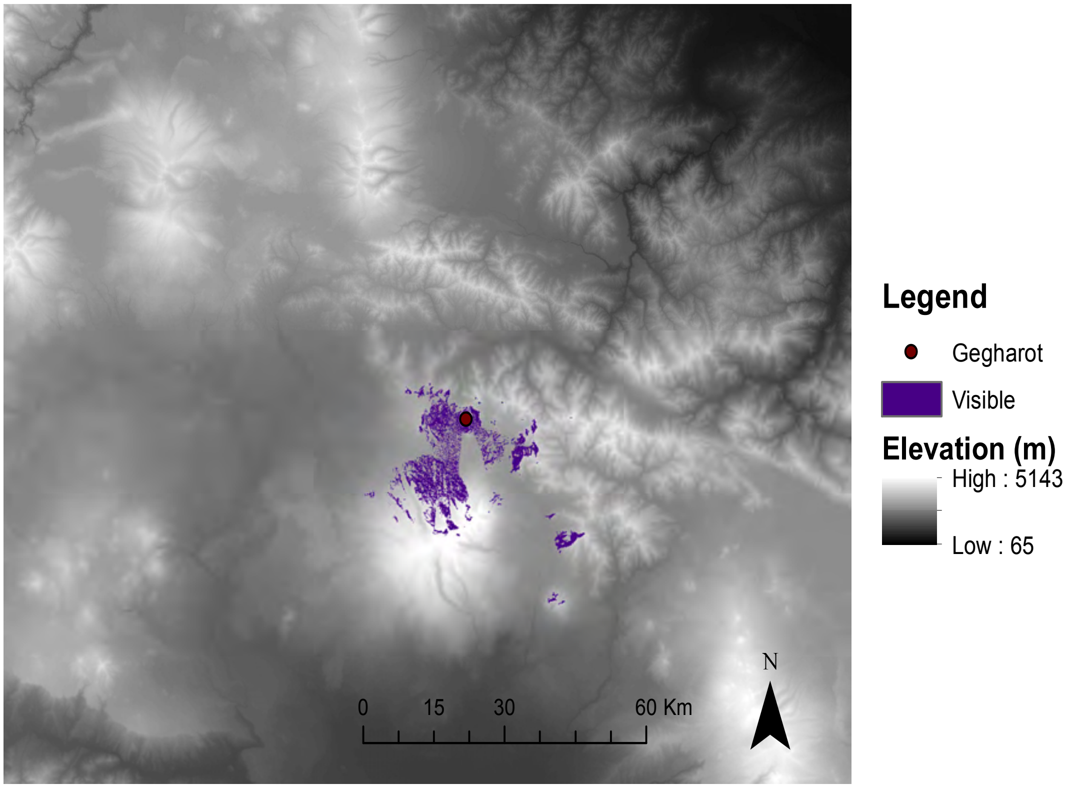


Figure A6-15: 50-kilometer viewshed of Gegharot

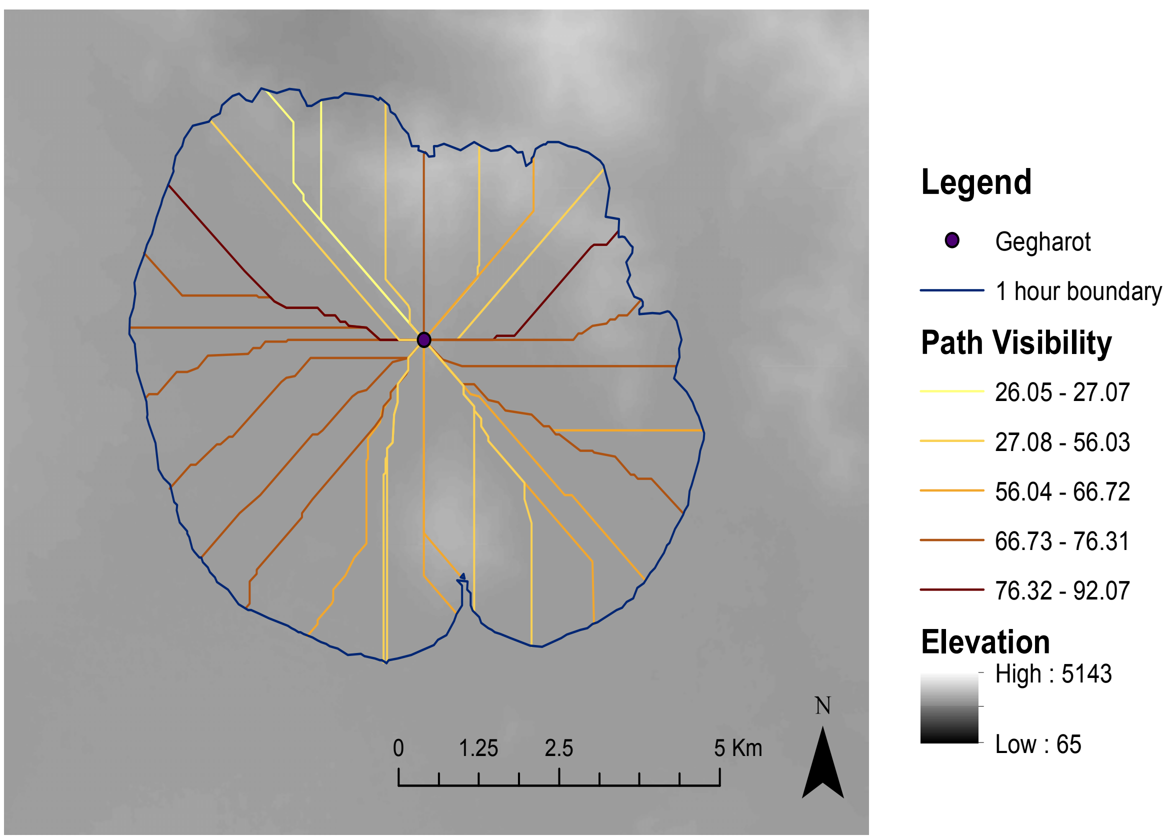


Figure A6-16: Least Cost Paths analysis of Gegharot

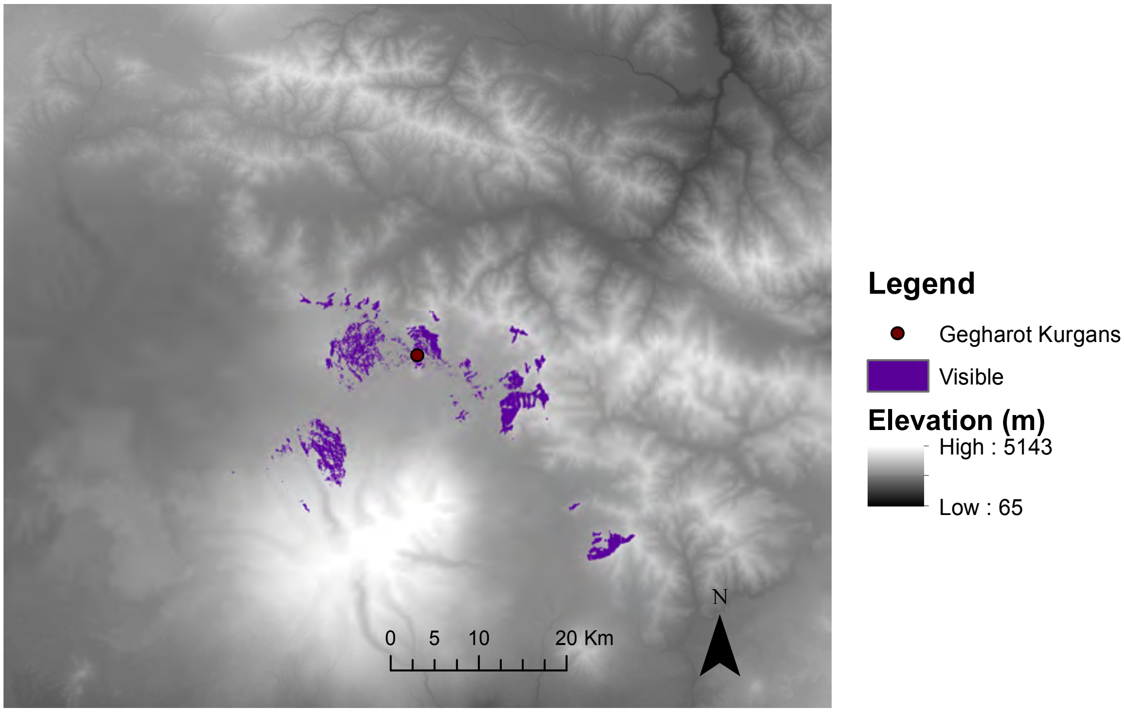


Figure A6-17: 50-kilometer viewshed of Gegharot Kurgans

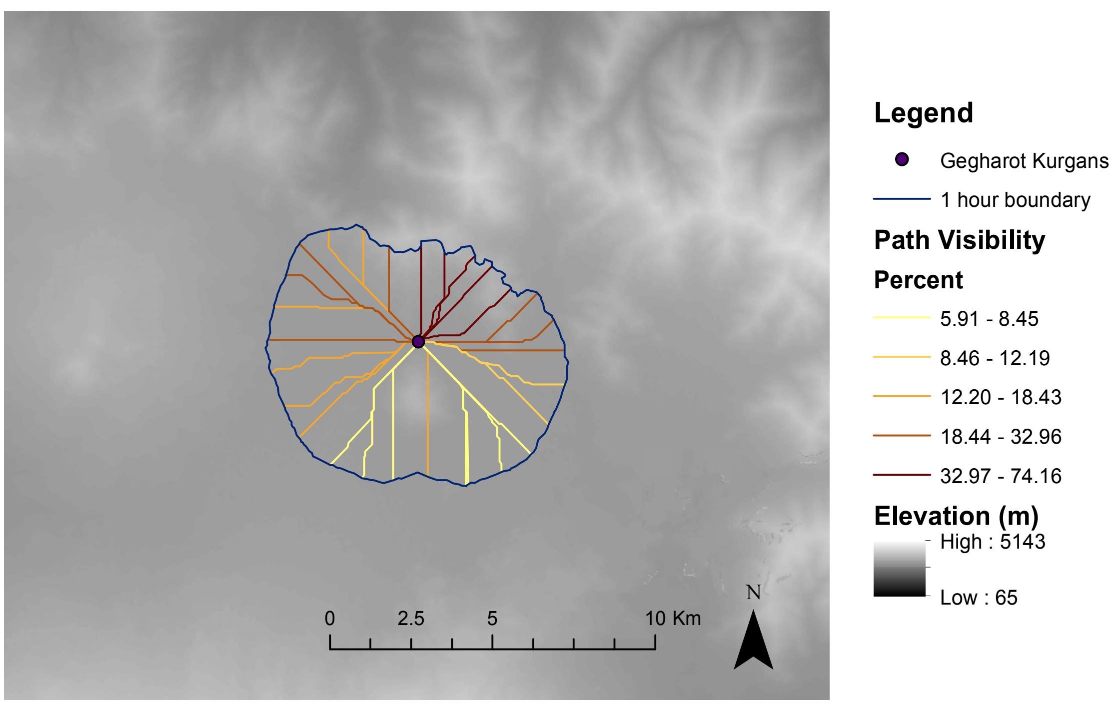


Figure A6-18: Least Cost Paths analysis of Gegharot Kurgans

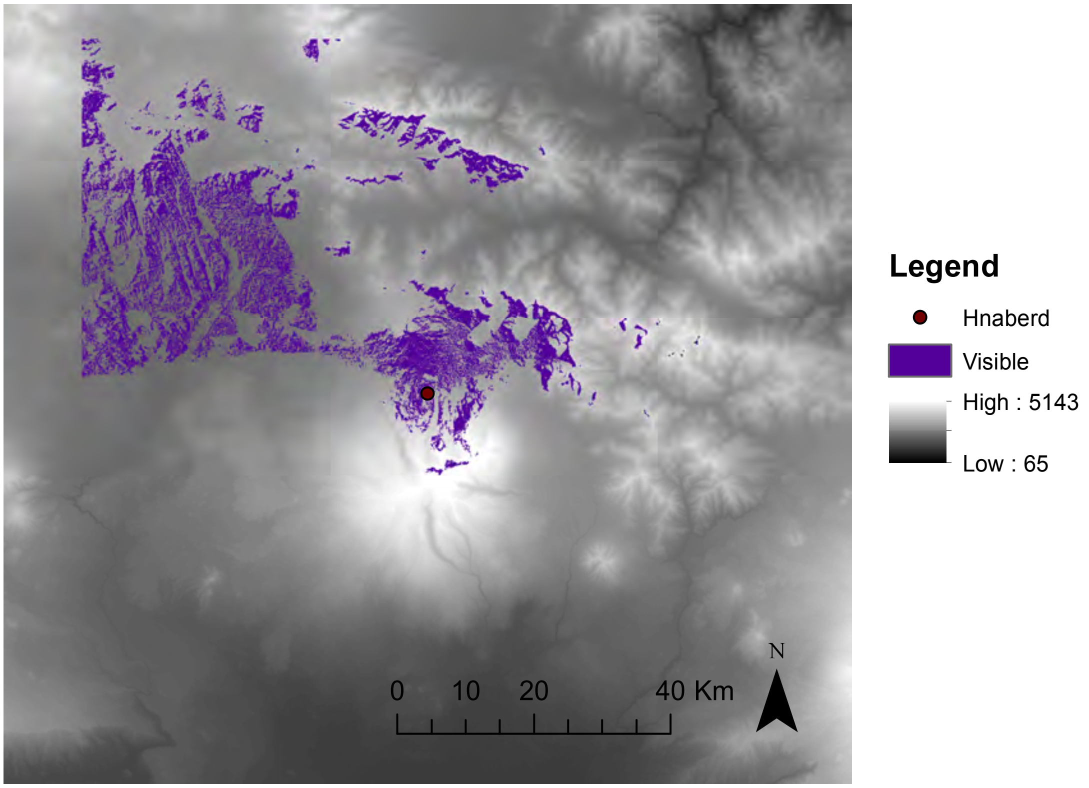


Figure A6-19: 50-kilometer viewshed of Hnaberd

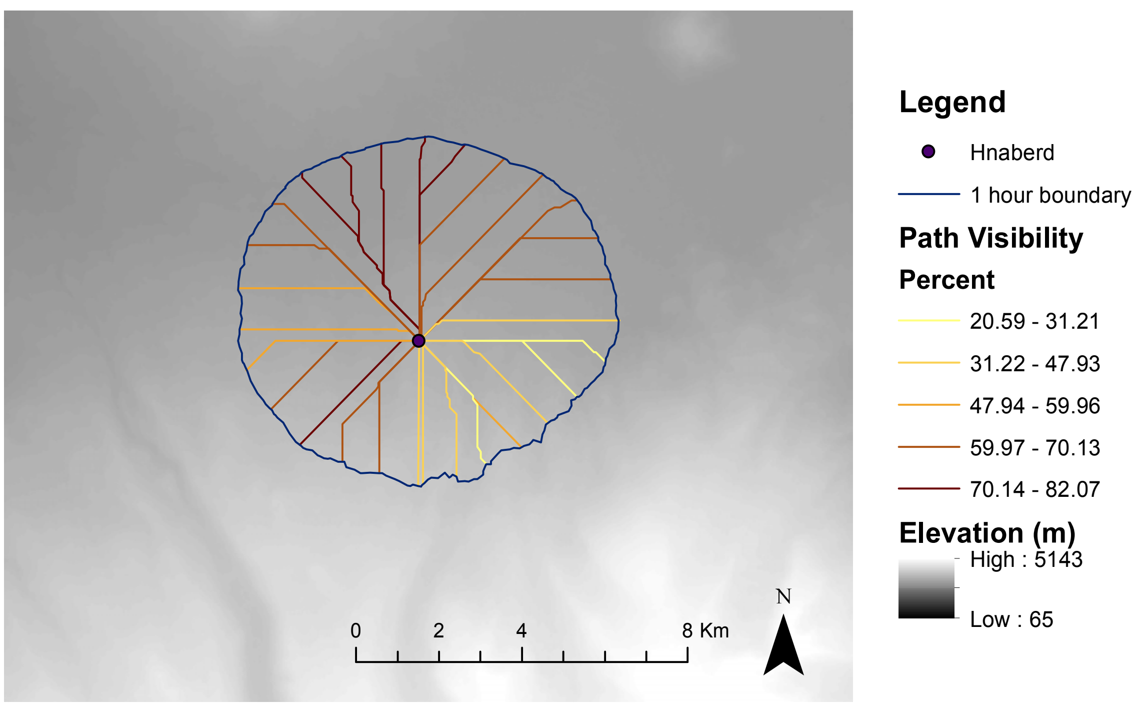


Figure A6-20: Least Cost Paths analysis of Hnaberd

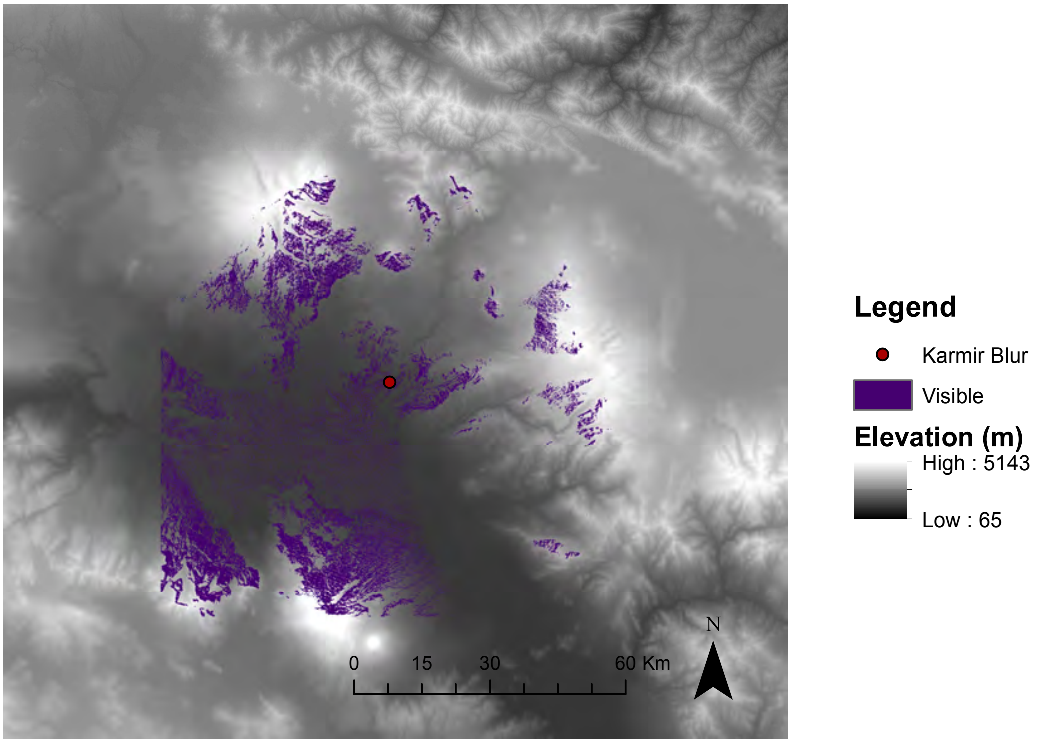


Figure A6-21: 50-kilometer viewshed of Karmir Blur

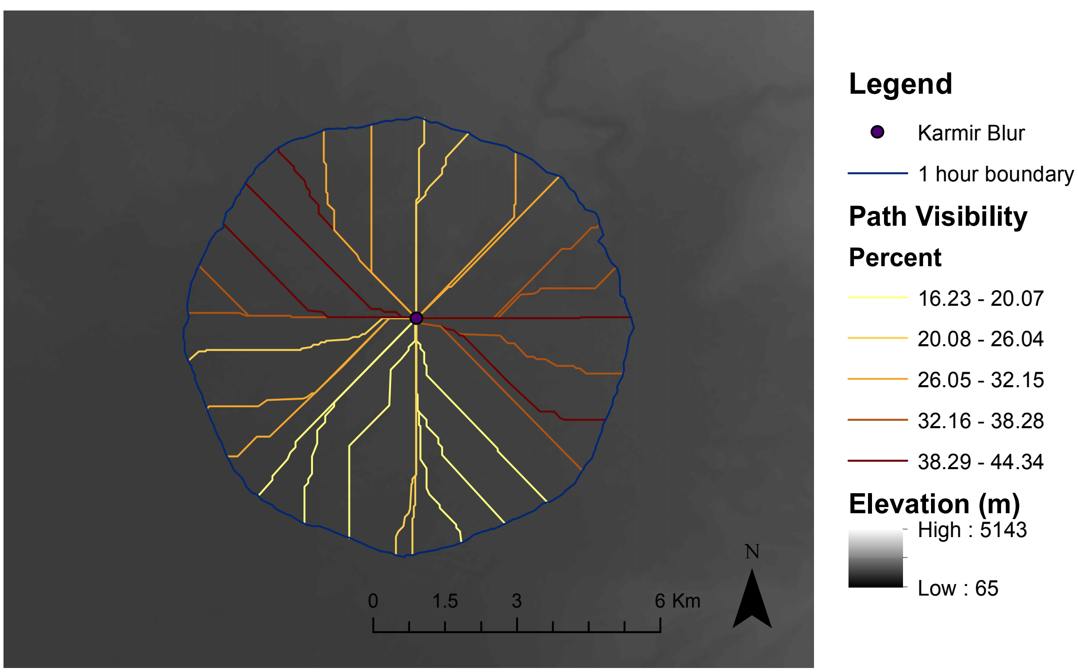


Figure A6-22: Least Cost Paths analysis of Karmir Blur

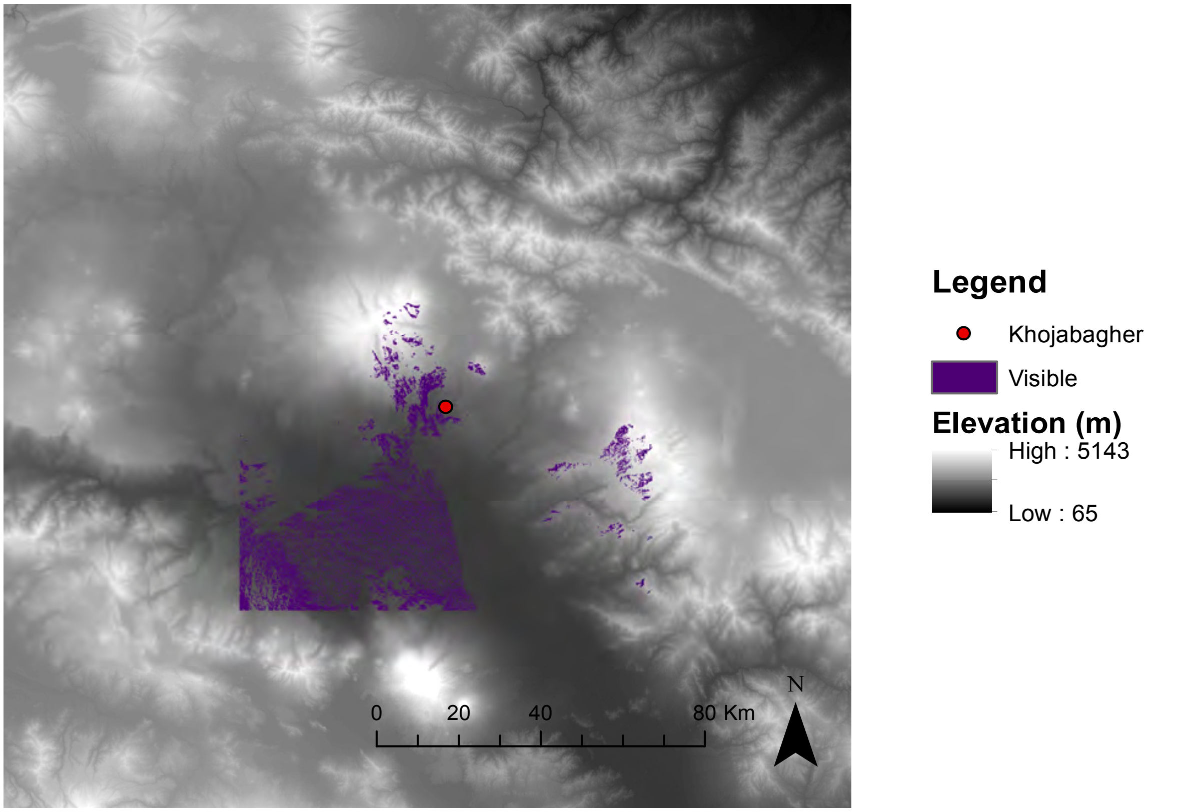


Figure A6-23: 50-kilometer viewshed of Khojabagher

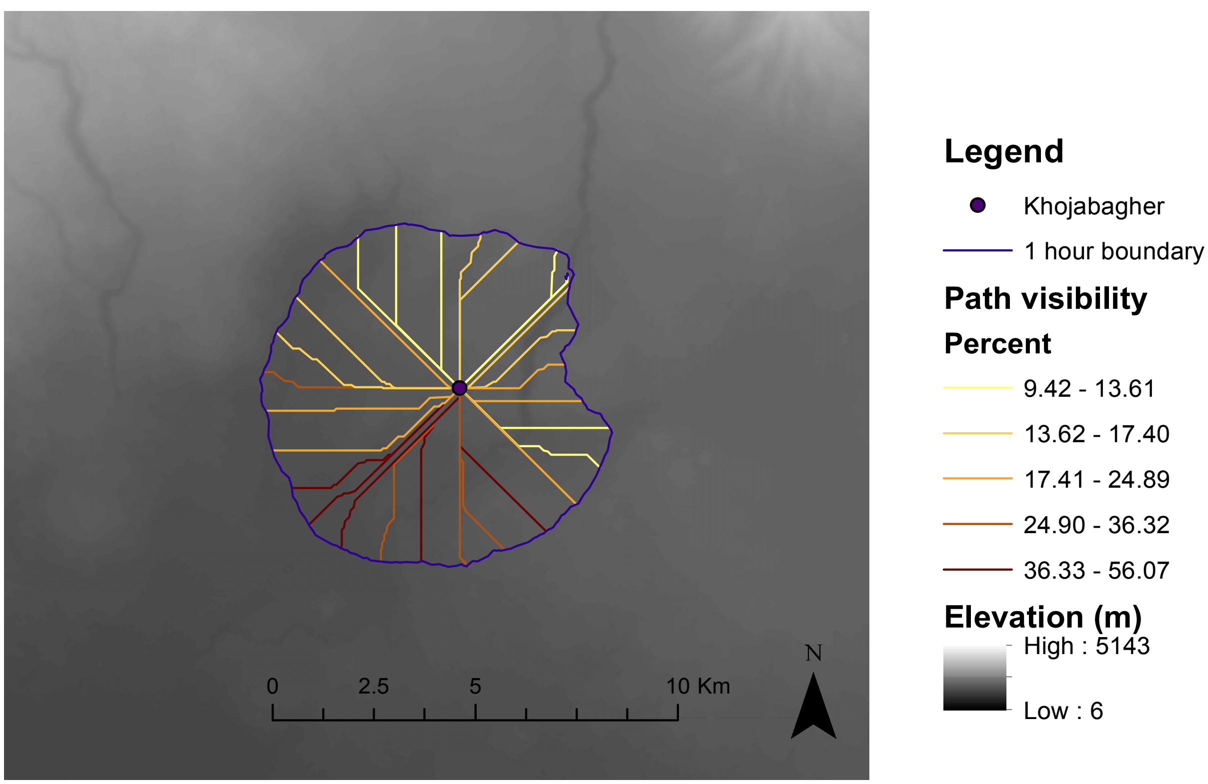


Figure A6-24: Least Cost Paths analysis of Khojabagher

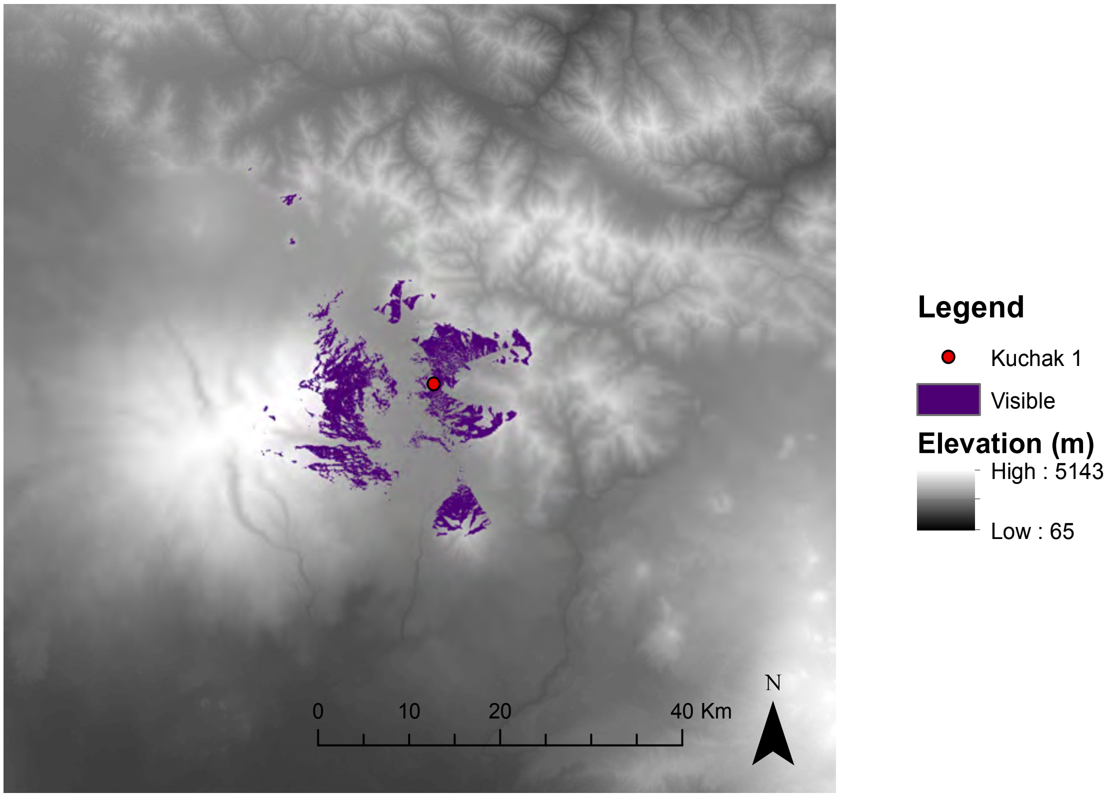


Figure A6-25: 50-kilometer viewshed of Kuchak 1

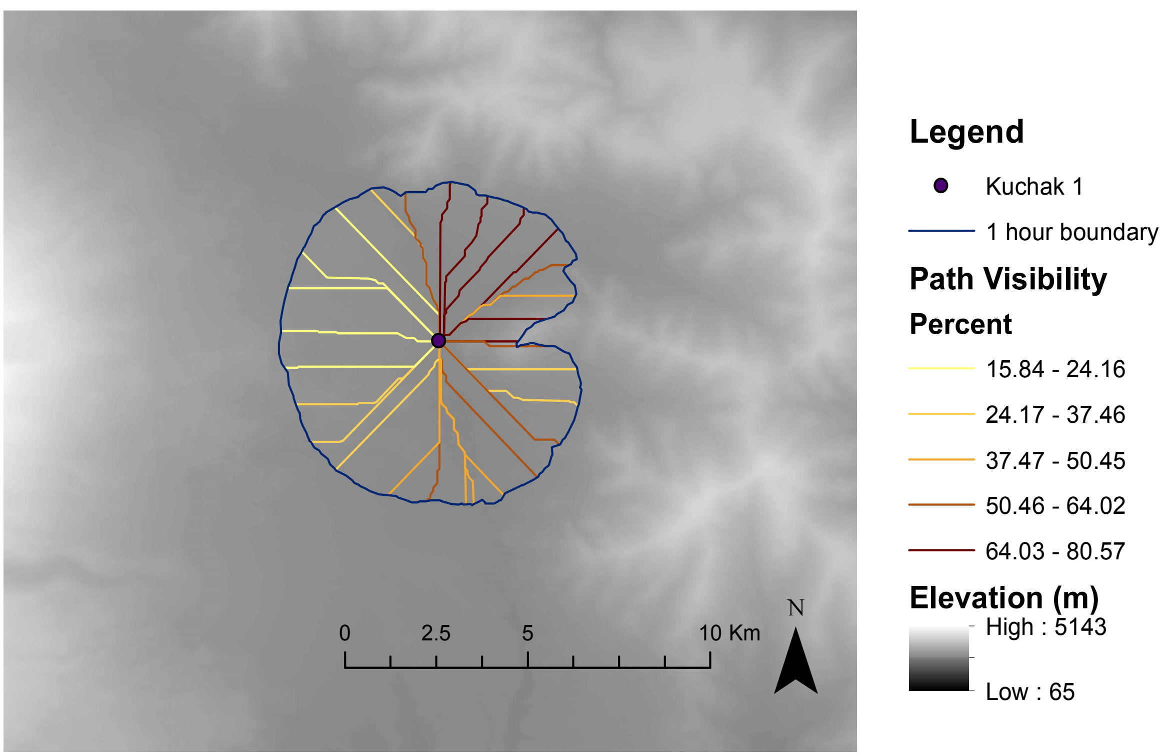


Figure A6-26: Least Cost Paths analysis of Kuchak 2

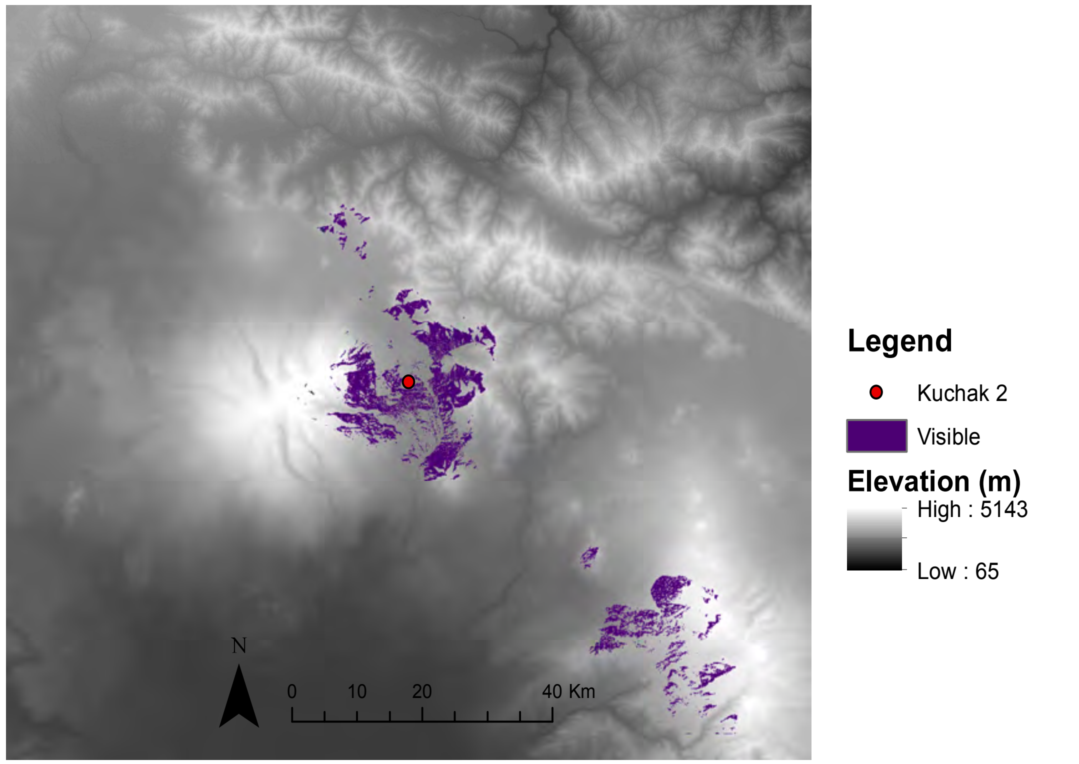


Figure A6-27: 50-kilometer viewshed of Kuchak 2

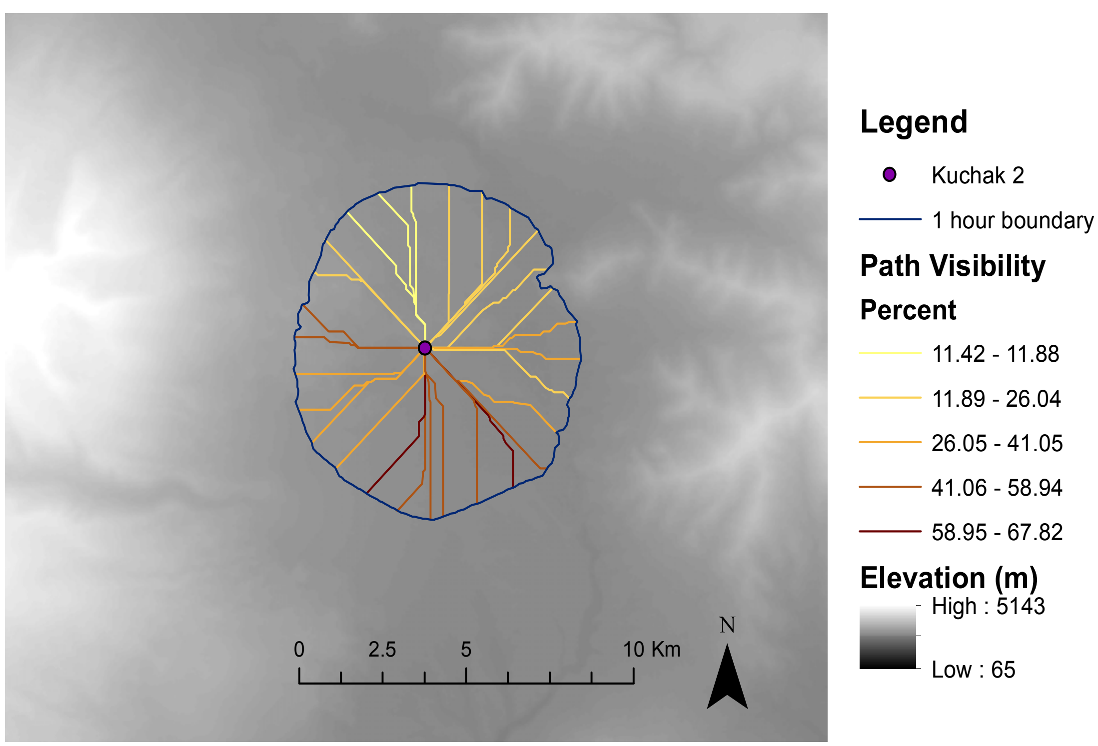


Figure A6-28: 50-kilometer viewshed of Kuchak 2

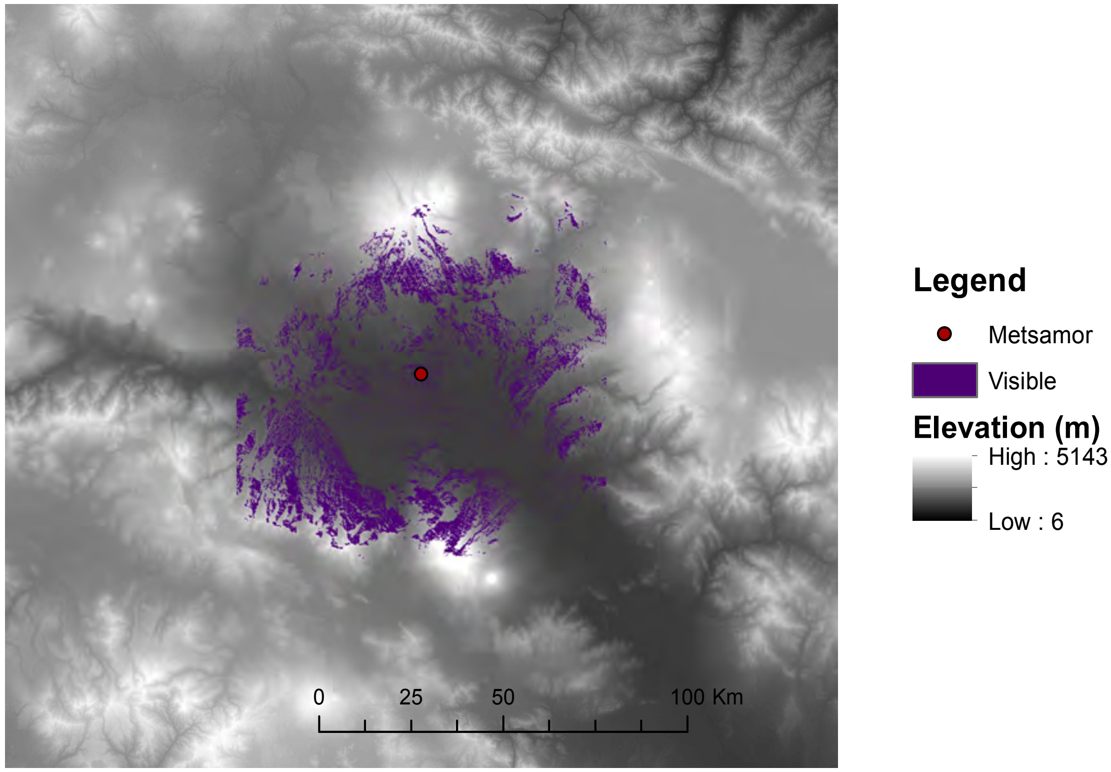


Figure A6-29: 50-kilometer viewshed of Metsamor

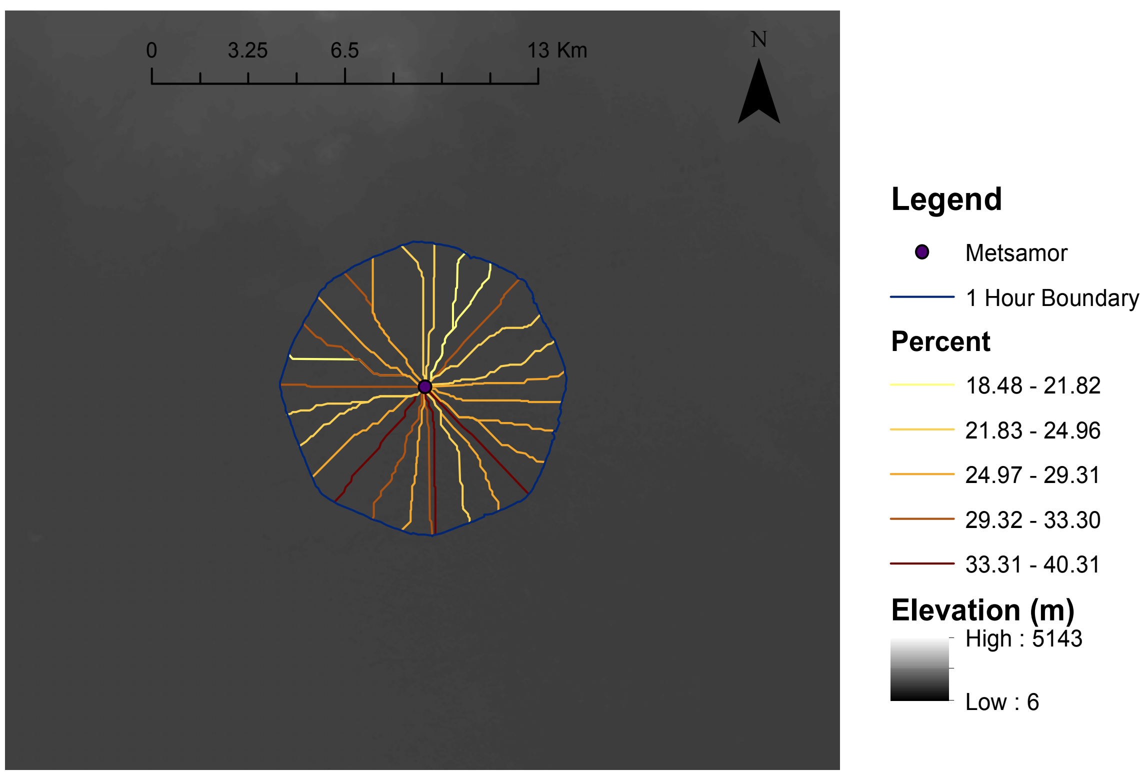


Figure A6-30: Least Cost Paths analysis of Metsamor

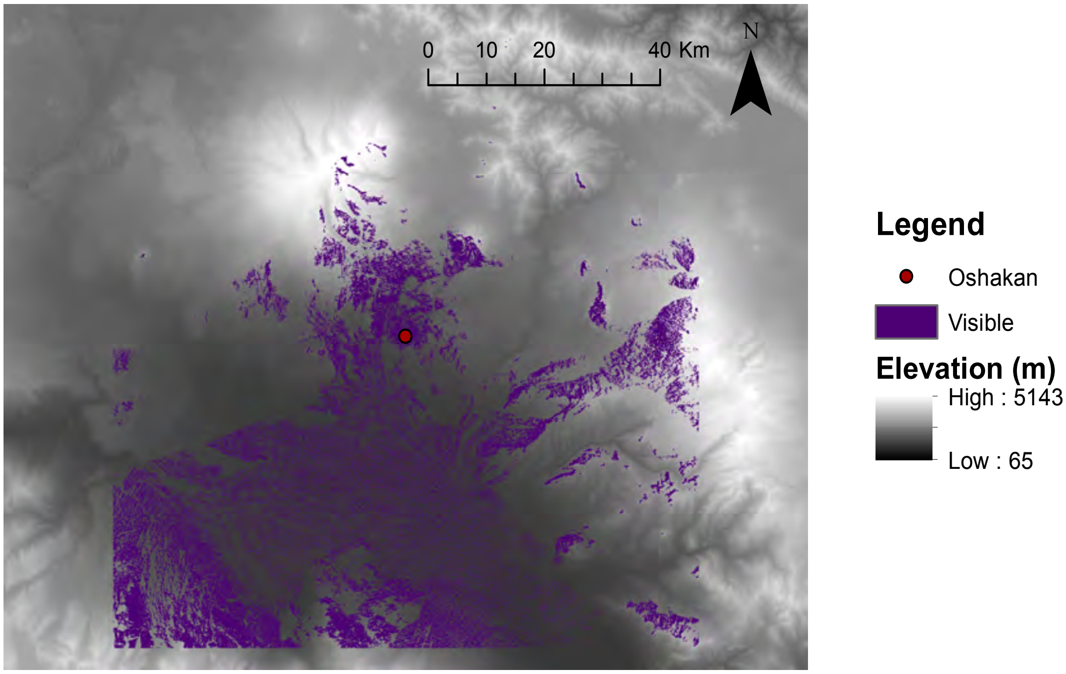


Figure A6-31: 50-kilometer viewshed of Oshakan

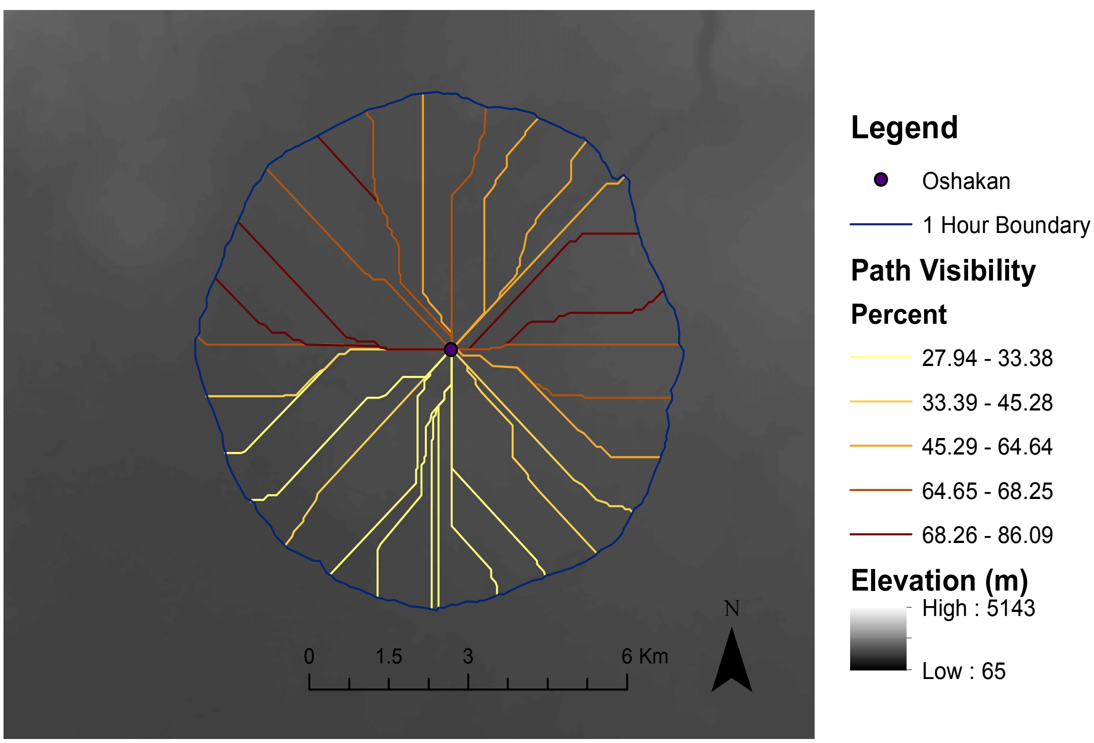


Figure A6-32: Least Cost Paths analysis of Oshakan

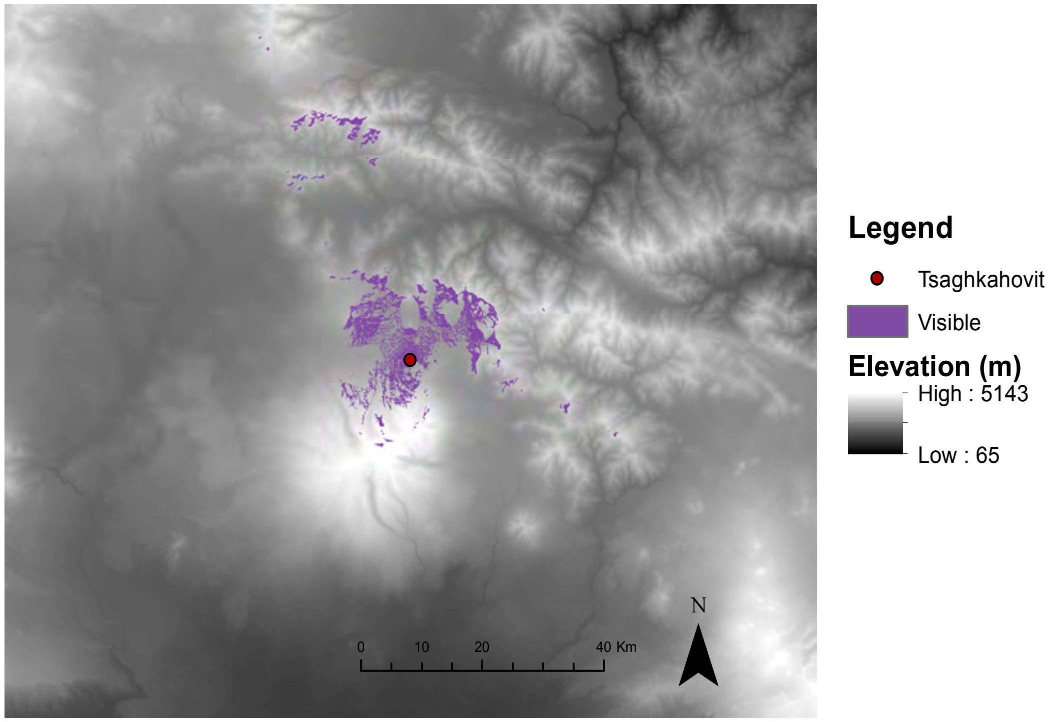


Figure A6-33: 50-kilometer viewshed of Tsaghkahovit

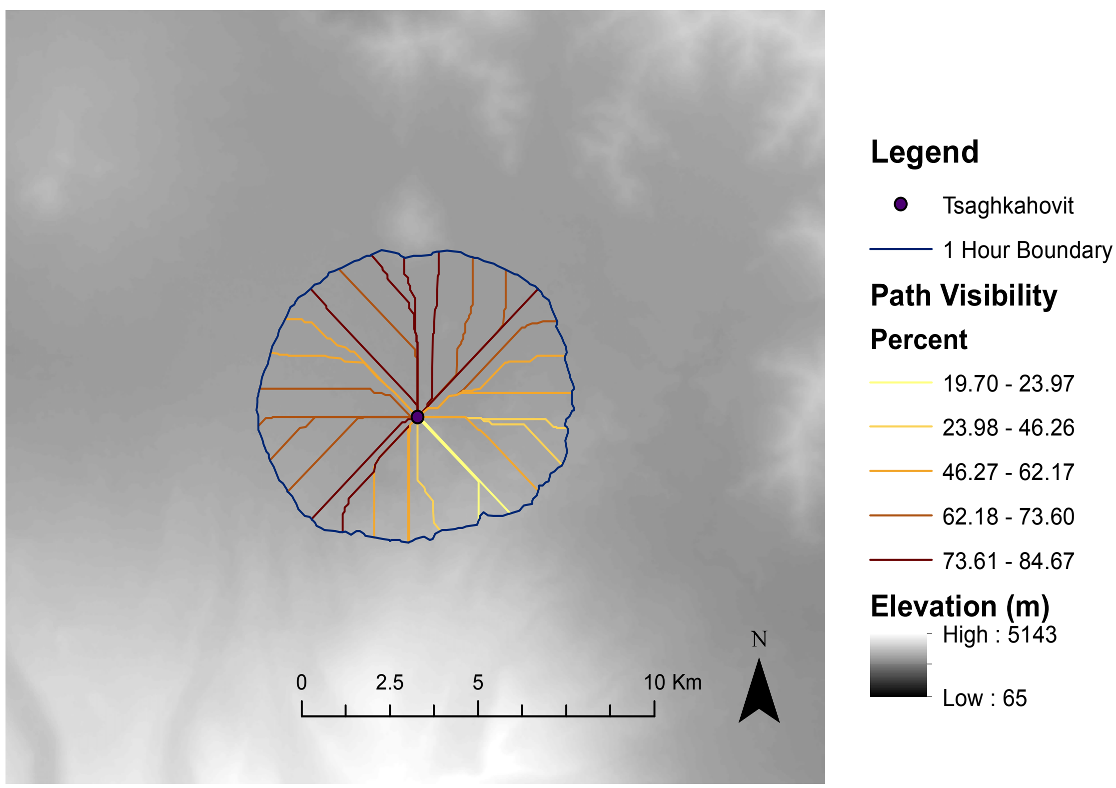


Figure A6-34: Least Cost Paths analysis of Tsaghkahovit

APPENDIX 7: PHENOMENOLOGICAL DESCRIPTIONS AND RANKINGS OF SITES IN THE SEVAN REGION

Joj Kogh 1

Visual accessibility—2: The site is not as visible as the nearby Joj Kogh 2 (see below). While it does have good visibility from surrounding slopes and hills, its location on relatively flat land means that long-distance visibility is limited. Because the kurgans are located away from the edge of the ridge, they lack the visibility of the fortress at Joj Kogh 2. The Joj Kogh 1 complex is at the edge of the ridge and thus is visible from the small stretch of flat land to the west, as well as from hillsides in that direction. However, further west visibility is blocked by hills, and in other directions, visibility is blocked by slight rises in the ridge itself. The far side of the lake is visibility, but not the near side or the shore.

Visibility of topographic features—3: The kurgans can see the lake, though not as well as Joj Kogh 2. It can also see the tops of mountains to the south, west and east, but unlike with Joj Kogh 2, most of these mountains are blocked from view by the intervening ridge. The complex has better views of the mountains and hills to the west, but not in other directions.

Visibility within the feature—3: Many of the kurgans can see each other, but most cannot see the complex, and some kurgan clusters are separated from each other by intervening rises in the ridge.

Physical accessibility of the feature—1: Like Joj Kogh 2, the site is located atop a very steep, very high grassy ridge; it is a half hour's walk from Joj Kogh 2, which in turn is a half hour's climb from the village on flat land below. Access to Joj Kogh 1 would have been faster from the flat land directly to the west, but this still would have involved a difficult climb up a steep, high slope. This flat land in turn is easily accessible to the lake and to points on the lake shore via the road around the lake. To the south and east, access would have involved walking across and up and down numerous hills.

Physical accessibility within the feature—4: The top of the ridge is fairly flat, and walking among different parts is easy. However, many of the kurgans are spaced out and are also somewhat far from the complex, and it takes some time to walk between them all.

Skill and technology of cultural features—2: The kurgans are all small, as are the stones used, and little skill would have been needed to build them. The walls of the structure are also made of small, crudely cut stones, and relatively little technical effort or skill went into the construction.

Emotional impact of cultural features—2: Both the kurgans and the complex are small and involve little technical skill. Thus, these features are generally unimpressive and have little emotional impact. However, the kurgans' role as burials would have likely evoked feelings of fear and awe, as well as serving as a reminder of the location's enduring significance on the landscape.

Emotional impact of natural features immediately associated with the location—4: The emotional impact of natural features at this site is not as strong as at nearby Joj Kogh 2, as the kurgans are located away from the edge of the ridge, which means that their views of the landscape are limited. Nonetheless, these views are still stunning and impressive, and the nearby mountains, as well as the site's elevation over the surrounding landscape, are awe-inspiring. Additionally, the site's ridge top location and general inaccessibility are imposing and intimidating.

Extent to which the location incorporates natural features—3: The site's location on a ridge makes it well positioned for surveillance, visibility and defense; however, these effects are somewhat negated by having most of the kurgans in the center of the ridge, where they are less visible.

Acoustic impact—1: There appears to be no significant acoustic impact.

Tactile impact—1: There appears to be no significant tactile impact.

Joj Kogh 2

Visual accessibility—4: The site is highly visible to the flat agricultural land to the northwest. While it is surrounded by hills in all other directions, the hills to the northeast and west are low enough that the site is also highly visible from those directions. The site can see the lake and likely would have been visible from other points on the shore. To the south, the site can be seen from the higher hills nearby, but these hills block from view from locations further in this direction.

Visibility of topographic features—5: The site has stunning views of the lake and the mountains on either side of the lake, as well as of mountains to the south, east and west.

Visibility within the feature—4: Most parts of the site can see each other, though certain parts of the site that are slightly further down on the western slope cannot see those parts that are on the top of the ridge.

Physical accessibility of the feature—1: The site is located atop a very steep, very high grassy ridge that took about half an hour to climb. The easiest access is from the modern village and agricultural land to the northwest and from the lake shore and the road around it to the north. This route is fairly flat and easy to traverse. However, the steep slope of the ridge would have still significantly limited access and also made an attack extremely difficult.

Physical accessibility within the feature—5: The top of the ridge is fairly flat, and the site is not very large, making it easy to get from one part to another.

Skill and technology of cultural features—3: The stones are small to medium sized, crude cut, and do not fit together particularly well. In general, minimal skill seems to have gone into the shaping and fitting of the stones. However, the technology and skill required to build at such an inaccessible location would have been significant.

Emotional impact of cultural features—2: The fortress is not very large, and its construction is not particularly impressive or awe-inspiring.

Emotional impact of natural features immediately associated with the location—5: This site, along with Kyurdi Kogh, is the most emotionally evocative of any of the sites in the Aragats/Ararat or Sevan regions. The ridge on which the site is located is extremely tall, steep and imposing, towering high over the village below. At the top, the site has stunning views in all directions, including of the lake and of surrounding mountains to the east, west and south. These views are awe-inspiring and also create a sense of surveillance and control over the surrounding landscape.

Extent to which the location incorporates natural features—5: The site's location on a hill makes it well positioned for surveillance and defense.

Acoustic impact—3: Some sounds carry to the hilltop from the nearby village, though the effect is not as pronounced as other hilltop sites.

Tactile impact—1: There appears to be no significant tactile impact.

Kra

Visual accessibility—4: The site has good visibility of the flat agricultural land in all directions, and as the hill stands on its own, it is a notable feature on the landscape.

Visibility of topographic features—3: The site can barely see the lake and the mountains on the other side, and also has views of the surrounding hills.

Visibility within the feature—3: Many parts of the site can see each other, though certain parts are blocked from view of others by the hill or by rises in the land on the top and sides of the hill.

Physical accessibility of the feature—3: The site is located atop a moderately high, moderately steep grassy hill. Access from the north, east and west require a bit of climbing, while the slope is much gentler and easier to access to the southwest. In terms of long-distance accessibility, the site is surrounded by flat land and is an easy walk. It is also not far from the lake and would have been an easy walk for anyone sailing across the lake or walking across the shore.

Physical accessibility within the feature—4: There are so rises and rocky ground atop the hill, but in general it is fairly easy to get from one part of the site to another.

Skill and technology of cultural features—3: The stones are medium sized, crude cut, and do not fit together particularly well, though there are a few locations where it appears that more care went into the construction. The fortress is also fairly large.

Emotional impact of cultural features—3: The fortress is moderately impressive for its size and the number of stones involved. However, its construction is not particularly skilled compared to the ashlar and semi-ashlar construction found at other sites.

Emotional impact of natural features immediately associated with the location—3: The hill is moderately impressive and imposing, and the fact that it is the highest point in the immediate vicinity makes it particularly prominent. In general, however, this hill is fairly unremarkable and average compared to other sites in the region. It does provide some views of the lake but these are not as striking as other nearby sites such as Tsovinar and Kyurdi Kurgh.

Extent to which the location incorporates natural features—5: The site's location on a hill makes it well positioned for surveillance and defense.

Acoustic impact—2: Some sounds carry to the hilltop from the nearby village, though the effect is not as pronounced as other hilltop sites.

Tactile impact—1: There appears to be no significant tactile impact.

Kyurdi Kurgh

Visual accessibility—3: The site is highly visible from the flat land to the north, from the shore of the lake, and from the lake itself. However, to the south, it is blocked from view by larger hills. Looking from the north, the direction of the modern village, the hilltop is one of several in the vicinity, but is still prominent for its size.

Visibility of topographic features—4: The has impressive views of a large amount of the lake and the lake shore, as well as huge swaths of agricultural land to the north, east and west.

Visibility within the feature—4: Most parts of the site can see each other, and in particular, the two distinct areas of construction can see other well across a dip in the ridge.

Physical accessibility of the feature—1: From the north, the top of the nearer hill is a very difficult, twenty-minute climb up a very steep, grassy and rocky slope. The second hill is an additional ten minutes, and about half an hour from the flat land directly beneath it. This is one of the least physically accessible sites out of all sites surveyed. From the east, west and south, intervening steep, high hills would have limited access.

Physical accessibility within the feature—3: It is a ten minute walk to get from the first hill to the second, which involves going up and down the hillside; however, getting between the two hills is much easier than getting to either of the hills in the first place, and in general the walk is not particularly difficult.

Skill and technology of cultural features—3: Like other sites in this area, the walls are constructed of medium-sized to large stones that are crudely carved and poorly fit together. However, the extremely inaccessible location makes any construction here particularly impressive.

Emotional impact of cultural features—3: The walls themselves are not particularly noteworthy in their construction, but their size and the site's spread is impressive. The fact that someone was able to build anything here is particularly awe-inspiring. Additionally, presence of burials would have inspired fear, awe, and a sense of the place's significance on the landscape.

Emotional impact of natural features immediately associated with the location—5: The hill is extremely intimidating and imposing, and the views from the top are stunning. This is one of the most impressive and emotionally inspiring sites in any of the three regions.

Extent to which the location incorporates natural features—5: The fortress's location atop a hill makes it well positioned for surveillance and defense.

Acoustic impact—3: The hilltop location means that sound carries far from the nearby village and surrounding agricultural land.

Tactile impact—1: There appears to be no significant tactile impact.

Martuni

Visual accessibility—3: The site is located on a hill that highly visible from the flat agricultural land to the north, east and west. To the south, larger hills block the site from view almost immediately. Unlike most other fortress sites, this one extends down the north slope of the hill, rather than being confined to the top; this would have enhanced visibility of the fortress itself from the north, but may have limited visibility from the east and west. Additionally, the fort is not located on the highest point of the hill, but rather about halfway up, which means that from the east and west, its visibility is limited the nearby slopes and by other parts of the hill.

Visibility of topographic features—3: The site can see the lake, as well as mountains to the west. To the east and south, topographic features are blocked from view by intervening low hills.

Visibility within the feature—4: Most parts of the site can see each other. In some points the western and eastern parts of the site are blocked from view of each other by an intervening rise in the hill.

Physical accessibility of the feature—3: The hill on which the site is located is quite high and steep, but the site is located only about halfway up that hill, which makes accessibility easier. The easiest access is from the modern village to the east and north. To the east, north and west, the ground around the hill is flat, and long-distance access would have been easy. Additionally, the site is not far from the lake and thus would have been accessible to people traveling across the lake or along the shore. The site is less accessible from the hills to the south.

Physical accessibility within the feature—3: The site is spread out down the north slope of the hill, and thus getting between different parts of the site would involve climbing up and down the hill, which is fairly steep in places.

Skill and technology of cultural features—3: The stones used for the walls are crudely cut and poorly fit together, but they are much larger than at many of the other sites in this region, and the walls themselves are corresponding larger. Additionally, the fort's position on a fairly steep slope would have required a good deal of technical skill.

Emotional impact of cultural features—3: The most impressive thing about this site is the size of the stones used for the wall. These massive walls are both impressive and intimidating, and the skill required to cut and move such large stones, and position them on a slope, is particularly impressive and awe-inspiring.

Emotional impact of natural features immediately associated with the location—3: While the hill on which the site is located is quite high, the fact that the site is located only partway up it somewhat detracts from this effect. The site does have striking views of the lake and the surrounding agricultural land, but not to the extent of sites that are higher up or that are the highest point in their vicinity.

Extent to which the location incorporates natural features—3: The fortress is located on a hill that gives it good visibility over the immediately vicinity. However, the fact that the fortress is located only partway up the hill limits this effect.

Acoustic impact—2: Sounds carries some distance from the surrounding village, though not as much as other sites that are located higher up on larger hills.

Tactile impact—1: There appears to be no significant tactile impact.

Mtnadzor

Visual accessibility—2: The site is visible from a great distance away from the flat land to the northwest. However, in all other directions it is blocked from view almost immediately by higher hills and mountains, and in general feels very visually isolated and enclosed.

Visibility of topographic features—2: The site has striking views of high ridges and mountains to the east, west and south, and it also overlooks the Martuni River. However, none of these mountains are particularly high or significant.

Visibility within the feature—3: While many parts of the sites are visible to each other, other parts are hidden from view by rises and unevenness in the hillside, and in the slope of the hill itself, as the site extends slightly down the ridge to the north.

Physical accessibility of the feature—1: The site is located on a very high, steep ridge which is difficult and time-consuming to reach from village to the northwest. A narrow valley provides a path from this village and the surrounding flat land to the site; beyond that, the land all around the site is extremely rugged, and accessibility from any other direction would have been difficult.

Physical accessibility within the feature—3: The site extends partway down the hillside, and there is a lot of uneven ground, meaning that some climbing is required to get from one part of the site to another.

Skill and technology of cultural features—3: The walls of the fortress are made of large, uncut stones, which would have taken a good amount of skill to move and stack. Additionally, the kurgans at this site are unusually large in both width and particularly height, with a great many stones arranged in concentric circles. Clearly a significant amount of work went into moving such large quantities of earth.

Emotional impact of cultural features—4: The fortress's walls, with their large stones, are intimidating and imposing. While moving these stones would have taken a good deal of skill and effort, the ability to construct such a large structure in such a remote location is particularly impressive. The kurgans are also unusually large compared to those at other sites, and their size likely would have been awe-inspiring. In addition, their role as burials would have elicited feelings of fear, reverence, and a sense of this place's enduring significance on the landscape.

Emotional impact of natural features immediately associated with the location—4: The ridge is extremely imposing and intimidating, and also has striking views of the rugged landscape surrounding it. The site feels very elevated and remote, able to see the nearby village, but clearly separate from it. It also feels somewhat wild and uncivilized, with hills and ridges in almost all directions, rather than the flat agricultural land that surrounds many of the other sites.

Extent to which the location incorporates natural features—5: The fortress's location atop a high ridge makes it well positioned for defense and surveillance. It also appears to be located overlooking a pass leading from the lake into the mountains to the south.

Acoustic impact—2: A handful of houses and gardens were located directly at the base of the ridge, and while it was quiet the day I visited, sounds from these houses likely would carry to the fortress.

Tactile impact—1: There appears to be no significant tactile impact.

Norabak 1

Visual accessibility—2: The site is blocked from view almost immediately by mountains to the east, north and south. The ridge where the site is located is visible from a short distance away in the nearby village, but even then it is mostly blocked from view by intervening hills. Additionally, as the landscape the site is located in is so hilly, the ridge on which the site sits does not stand out from the surrounding landscape, but rather is dwarfed by larger hills nearby. In generally this site feels visually limited and enclosed.

Visibility of topographic features—2: The site overlooks foothills to the north, east and south, and these foothills block views of other mountains beyond. To the west, the site overlooks flat land. There are no topographic features of note nearby, with the exception of a much larger hill directly to the north.

Visibility within the feature—3: This is difficult to determine because it was difficult to discern the site's extent. However, it seemed to be quite large, and because of the hilly nature of the landscape, some parts of the site were blocked from view from others.

Physical accessibility of the feature—2: The ridge itself is not very high or steep. However, the site is closely surrounded by mountains to the north, east and south, and accessibility would have been difficult from that direction. The easiest access is from the west, the direction of the modern village, but even that involves traversing a hilly, rugged landscape. It should be noted, however, that the site is along the modern-day Norabak-Karvachar Route that connects the Sevan area with the mountains to the east. Thus, the site may have been located along a commonly traveled route.

Physical accessibility within the feature—4: The ground is somewhat hilly, but in general it is easy to walk around the site and from one part to another.

Skill and technology of cultural features—2: All the remains of cultural features are the outlines of very low walls, and raised earth and piles of stones representing tombs. In general the architecture appears to be crude, and the stones are coarsely cut and do not fit together well. On the other hand, some of the tombs clearly involved the movement of a large amount of earth and the construction of earthen mounds. Some are also quite large.

Emotional impact of cultural features—3: This is difficult to determine, as so little of the cultural features remain. However, the site as a whole appears to have been quite large, as were some of the tombs, which likely would have been impressive. Additionally, the presence of tombs in association with the fort likely would have evoked feelings of awe, fear, and a sense of connection to the past.

Emotional impact of natural features immediately associated with the location—3: The site is located at the base of a much larger hill, which towers over it and is quite intimidating. The hill also overlooks ravines on either side, though these ravines are not very deep. The low hills surrounding the site are somewhat interesting but not particularly remarkable.

Extent to which the location incorporates natural features—4: The fortress is located on a ridge that gives it good visibility over the immediately vicinity. Additionally, it is located along a mountain pass, which would have made it well-positioned to control the movement of goods and people between the eastern mountains the Sevan region to the west.

Acoustic impact—1: There appears to be no significant acoustic impact.

Tactile impact—1: There appears to be no significant tactile impact.

Sangar

Visual accessibility—2: The site is visible from its immediate vicinity, as it is on an open ridge top. However, it is not clear enough to the edge of the ridge to be visible to the flat land below, and its visibility in all directions is almost immediately blocked by higher hills and mountains.

Visibility of topographic features—2: The western part of the site can just barely see the lake, but most of the site cannot. Most of the site can also see the tops of nearby mountains, but much of the topography is blocked from view by the ridge itself, and in general this site does not have the striking views of natural features that many other sites have.

Visibility within the feature—5: The top of the ridge is flat and open, and thus all parts of the site can see each other.

Physical accessibility of the feature—1: The site is located on a very high, very steep ridge that can only be accessed with a good deal of time and difficulty from the flat to the west, the easiest point of access. In all other directions, the site is surrounded by high hills and mountains that also would have made access difficult.

Physical accessibility within the feature—5: The top of the ridge is flat, and it is easy to walk from one part of the site to another.

Skill and technology of cultural features—N/A: Not enough remains of the cultural features to discern this.

Emotional impact of cultural features—N/A: Not enough remains of the cultural features to discern this.

Emotional impact of natural features immediately associated with the location—2: While the ridge on which the site is located in intimidating and imposing, the site itself is located some ways along this ridge, and the surrounding area looks and feels very flat.

Views of topographic features are limited, and in general there is little to evoke strong emotion.

Extent to which the location incorporates natural features—3: The fortress's location atop a ridge makes it well positioned for defense and surveillance, but its location away from the ridge's edge means that it lacks the visual and emotional impact that often comes from a site that is located on a ridge or hill.

Acoustic impact—1: There appears to be no significant acoustic impact.

Tactile impact—1: There appears to be no significant tactile impact.

Sotk 1

Visual accessibility—2: The site is visibility from the lower ground immediately around it and from parts of the nearby village. However, the surrounding land is hill and the fort is not on a very high hill, and thus it only visible from a short distance away.

Visibility of topographic features—3: The site has striking views of low mountains to the north and west, and also overlooks a creek.

Visibility within the feature—N/A: The site is too small for this to be relevant.

Physical accessibility of the feature—4: The site is located atop a small hill that is moderately steep. It is easily climbed from the north and west, and slightly steeper to the south and east. It is very approachable from the flat land surrounding it in all directions, though further to the west and north, hills and low mountains would have made it less accessible from this direction over a longer distance.

Physical accessibility within the feature—N/A: The site is too small for this to be relevant.

Skill and technology of cultural features—2: All that remains of the cultural features on the surface is a single course of stones for a wall. These stones are large but crudely cut and do not appear to have fit together well, suggesting relatively little technical skill.

Emotional impact of cultural features—N/A: Not enough remains of the cultural features to discern this.

Emotional impact of natural features immediately associated with the location—2: The site offers some nice views of the surrounding mountains, but in general there are no associated natural features that carry a strong emotional impact. There are also some small bedrock outcroppings that are interesting, though not particularly intimidating or impressive.

Extent to which the location incorporates natural features—3: The fortress's location atop a hill makes it well positioned for defense and surveillance, though the hill is small enough that the effect would not have been very great.

Acoustic impact—1: There appears to be no significant acoustic impact.

Tactile impact—1: There appears to be no significant tactile impact.

Sotk 2

Visual accessibility—3: The site overlooks flat ground in the form of a valley to the south, and from this direction it is highly visible. There is limited visibility from the slopes of the hills to the north, west and east and from the flat land in between, but those hills block visibility from points beyond them. The hill itself blends in against the backdrop of these hills.

Visibility of topographic features—3: The site has striking views of low mountains to the north, west and south

Visibility within the feature—N/A: This is difficult to determine without being able to discern the full extent of the site.

Physical accessibility of the feature—3: The site is located atop a moderately steep grassy slope, though this slope is not very high, and is easier climb than many of the sites in the Aragats/Ararat region. In terms of long distance accessibility, the site is more accessibility from the flat land and modern village to the east; to the north, west and south, foothills and low mountains would have made travel to the site more difficult.

Physical accessibility within the feature—N/A: This is difficult to determine without being able to discern the full extent of the site.

Skill and technology of cultural features—N/A: Not enough remains of the cultural features to discern this.

Emotional impact of cultural features—N/A: Not enough remains of the cultural features to discern this.

Emotional impact of natural features immediately associated with the location—3: The site offers striking views of the surrounding hills and mountains. Most interesting is the way that these mountains come in and out of view while moving around the site. Particularly when climbing the hill from the west, the mountains to the east come slowly into view, looming over the hill.

Extent to which the location incorporates natural features—5: The fortress's location atop a hill makes it well positioned for defense and surveillance.

Acoustic impact—1: There appears to be no significant acoustic impact.

Tactile impact—1: There appears to be no significant tactile impact.

Tsovinar Fortress

Visual accessibility—3: The is highly visible from the flat agricultural land immediately to the north, east and west, as well as from the lake and from other locations on the shore of the lake. However, the site is blocked from view by larger hills to the west, south and east, and set against the backdrop of these hills, it is not as visually distinctive as sites on hills that are otherwise surrounded by flat ground. On the other hand, the reddish-brown rock on the north and west faces of the slope has a unique texture and color that causes it to stand out from the surrounding landscape, which would have made it slightly more visibly prominent.

Visibility of topographic features—4: The site has striking views out across the lake and to mountains on the other side of the lake, as well as views of hill to the east, south and west.

Visibility within the feature—4: Currently, parts of the site are hidden from each other by low rises in the land on top of the hill. However, this likely would not have been an issue when the built features were at their full height.

Physical accessibility of the feature—3: The site is located atop a moderately, moderately high grassy slope. Rocky outcroppings in some areas make this hill somewhat difficult to climb, but the hill is not as high or as steep as at other sites, such as Kyurdi Kurgh. In terms of long distance accessibility, the site is easily accessible from the flat land to the north, and would have been easily accessible to someone sailing across the lake or traveling along the lake's shore. The site is less accessibly from the hills to the south, east and west; the hill to the south, in particular, are quite high and steep.

Physical accessibility within the feature—4: The hill is fairly flat on top, and in general it is not difficult to move from one part of the feature to another.

Skill and technology of cultural features—3: The stones used to construct the walls are relatively small, crudely cut, and do not fit together well; little skill seems to have gone into their construction. On the other hand, this site also has an inscription, a significant work of technology, though it is not as neatly carved as inscriptions at other sites such as those in the Van region.

Emotional impact of cultural features—3: The walls and structures themselves likely were not particularly impressive. However, the presence of an inscription would have been intimidating, awe-inspiring, and likely mysterious to those who did not know how to read.

Emotional impact of natural features immediately associated with the location—4: The site offers striking views of the surrounding hills, agricultural land, and particularly of the lake. These views are quite beautiful, and also create a sense of surveillance over the surrounding land. Additionally, the sheer rock faces on the west and north are impressive and also striking in their unusual color and texture.

Extent to which the location incorporates natural features—5: The fortress's location atop a hill makes it well positioned for defense and surveillance.

Acoustic impact—3: The site's location on a hill means that sound from the surrounding villages carries far.

Tactile impact—1: There appears to be no significant tactile impact.

Tsovinar Kurgans

Visual accessibility—2: The kurgans are flat, open land on top of a ridge. Depending on their size, they would have been visible from some distance away on top of the ridge and perhaps from the surrounding hilltops. However, visibility is quickly blocked by hills. The kurgans are also not close to the edge of the ridge to be visible from any of the surrounding lower ground.

Visibility of topographic features—3: The kurgans have a limited view of the lake and of the mountains on the other side, as well as other hills and mountains nearby, but they lack the visibility of the fortress.

Visibility within the feature—4: This is difficult to determine as it is not clear how far the kurgan field extends. However, most of the kurgans would have been able to see each other, as the ground is fairly flat.

Physical accessibility of the feature—1: The kurgans are located atop a high, steep ridge and were a difficult half hour's climb from the village to the north. The kurgans would have been similarly difficult to access from the flat land and village sin other directions.

Physical accessibility within the feature—5: The top of the ridge is flat, and it is easy to walk from one kurgan to another.

Skill and technology of cultural features—N/A: This is difficult to say, as only traces of the kurgans currently remain.

Emotional impact of cultural features—N/A: This is difficult to say, as only traces of the kurgans currently remain.

Emotional impact of natural features immediately associated with the location—3: The ridge is intimidating and difficult to access, and the kurgans have nice views of the lake, though these views are not as striking as those from the fortress. The ridge top itself, however, is fairly flat and unimpressive, and the location of the kurgans means that the surrounding land, the striking views of that land that are present at the fortress, are absent here.

Extent to which the location incorporates natural features—3: The kurgans' location atop a ridge gives them a commanding position in the landscape. However, it does not give them enhanced visibility, as they are too far from the edge of the ridge.

Acoustic impact—1: There appears to be no significant acoustic impact.

Tactile impact—1: There appears to be no significant tactile impact.

APPENDIX 8: PHOTOS OF SITES IN THE SEVAN REGION

Figure A8-1: Ascent to Joj Kogh 1

Figure A8-2: View of landscape to the north of Joj Kogh 1, including Lake Sevan

Figure A8-3: Architecture at Joj Kogh 1

Figure A8-4: View of landscape to the southwest of Joj Kogh 1

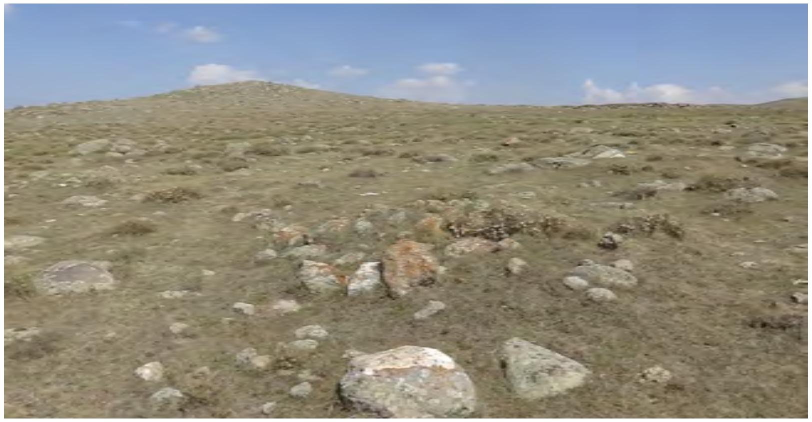


Figure A8-5: Kurgan from Joj Kogh 2

Figure A8-6: View from Joj Kogh 2 looking west

Figure A8-7: View from Joj Kogh 2 looking north, including Lake Sevan

Figure A8-8: Architecture at Joj Kogh 2


Figure A8-9: View from Kra of surrounding landscape


Figure A8-10: The mound of Kra as seen from the base


Figure A8-11: Architecture at Kra


Figure A8-12: View from Kra of surrounding landscape

Figure A8-13: Kyurdi Kurgh as seen from a distance

Figure A8-14: View of landscape, including Lake Sevan, from Kyurdi Kurgh

Figure A8-15: View of architecture at Kyurdi Kurgh and larger hill to the north

Figure A8-16: View of landscape from Kyurdi Kurgh

Figure A8-17: Architecture at Martuni and view of landscape

Figure A8-18: View of landscape from Martuni

Figure A8-19: Architecture at Martuni

Figure A8-20: View from Martuni up the slope

Figure A8-21: View of landscape from Mtandzor

Figure A8-22: View of landscape from Mtandzor

Figure A8-23: Architecture at Mtandzor

Figure A8-24: Kurgan at Mtandzor


Figure A8-25: View of Norabak 1


Figure A8-26: Architecture at Norabak 1


Figure A8-27: Landscape around Norabak 1

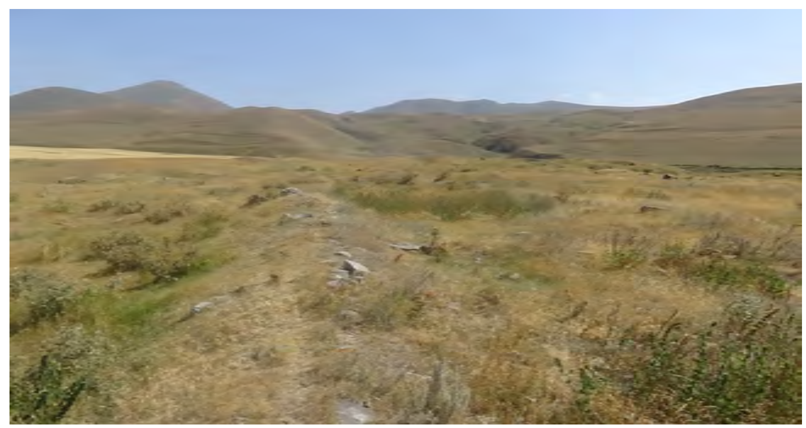


Figure A8-28: Architecture and landscape around Norabak 1

Figure A8-29: Landscape around Sangar

Figure A8-30: Architecture at Sangar

Figure A8-31: Landscape around Sangar

Figure A8-32: Landscape around Sangar


Figure A8-33: Architecture at Sotk 1


Figure A8-34: Rocky slope at Sotk 1


Figure A8-35: Landscape around Sotk 1


Figure A8-36: Landscape around Sotk 1

Figure A8-37: Sotk 2 and surrounding landscape

Figure A8-38: View up slope of Sotk 2

Figure A8-39: Sotk 2 and surrounding landscape

Figure A8-40: Trench with architecture at Sotk 2

Figure A8-41: Inscription at Tsovinar 1

Figure A8-42: View ofTsovinar 1

Figure A8-43: Landscape around Tsovinar 1

Figure A8-44: View of Lake Sevan from Tsovinar 1

Figure A8-45: Landscape around Tsovinar 2

Figure A8-46: View of the lake from Tsovinar 2

Figure A8-47: Kurgan at Tsovinar 2

Figure A8-48: Landscape around Tsovinar 2

APPENDIX 9: GIS ANALYSIS OF SITES IN THE SEVAN REGION

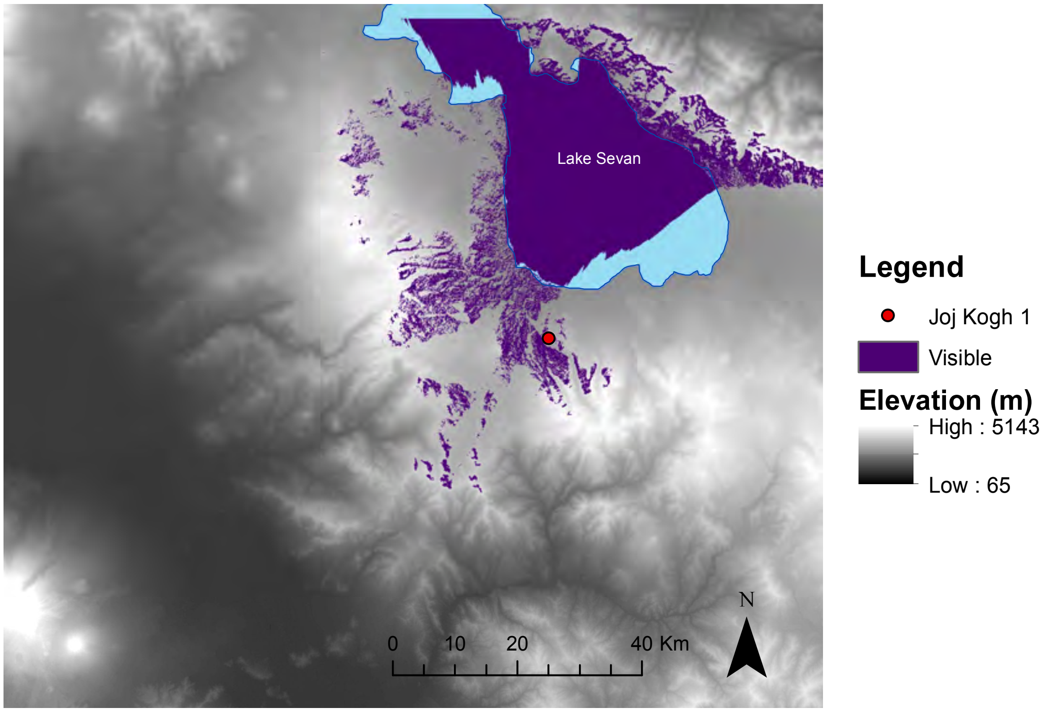


Figure A9-1: 50-kilometer viewshed of Joj Kogh 1

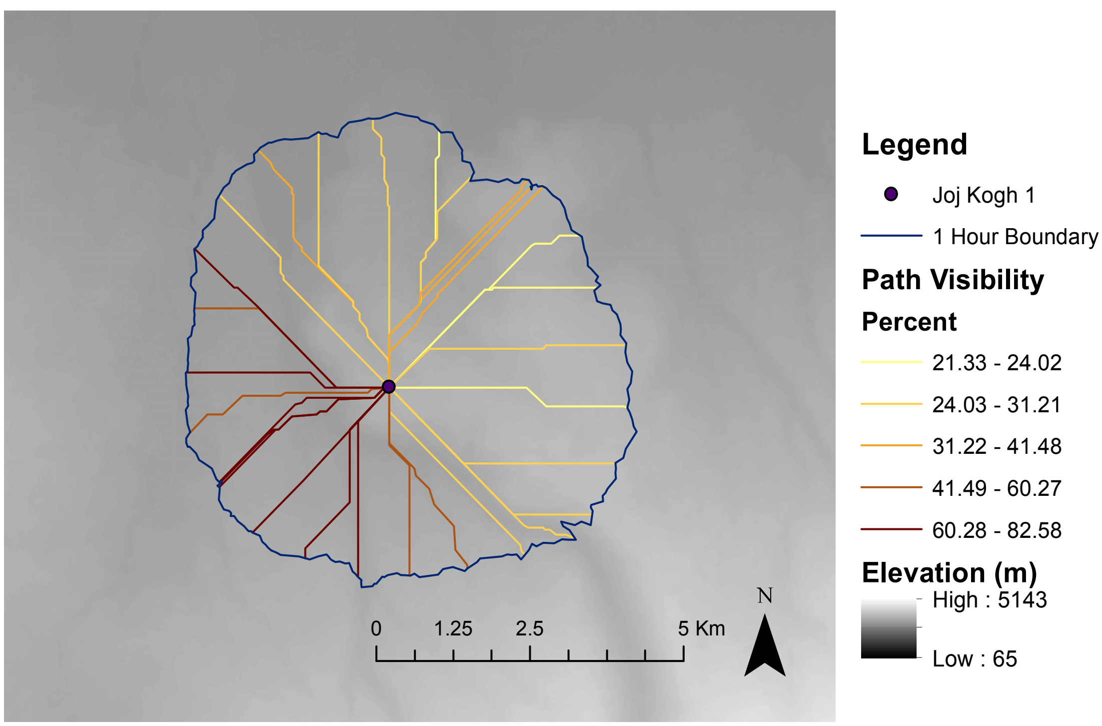


Figure A9-2: Least Cost Paths analysis of Joj Kogh 1

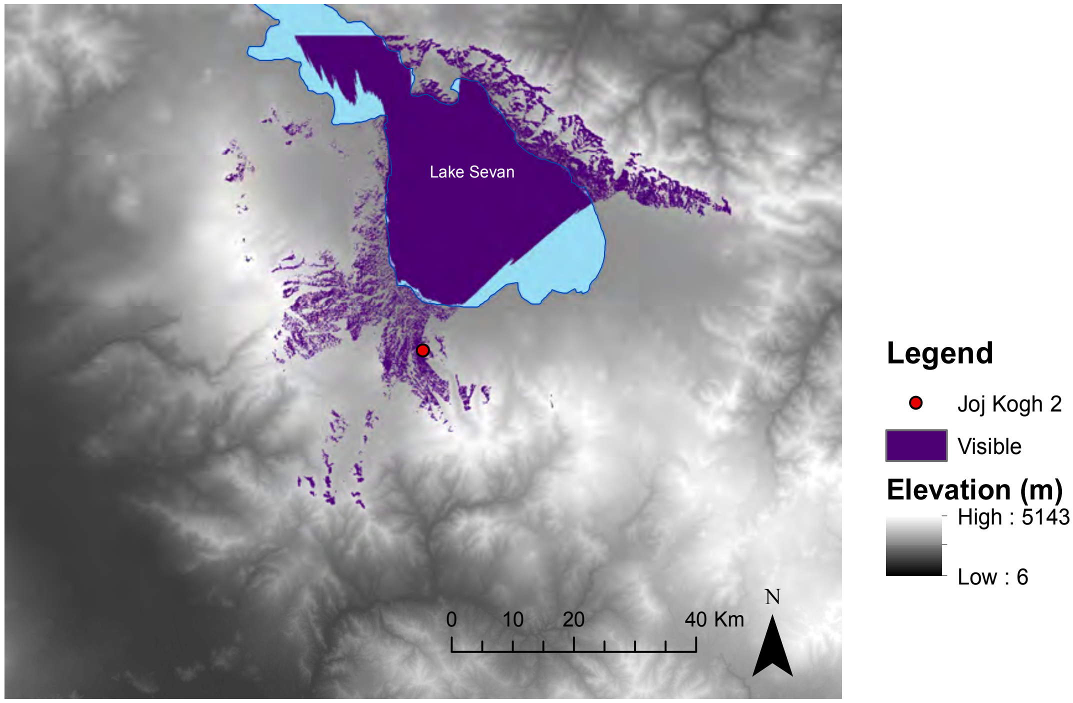


Figure A9-3: 50-kilometer viewshed of Joj Kogh 2

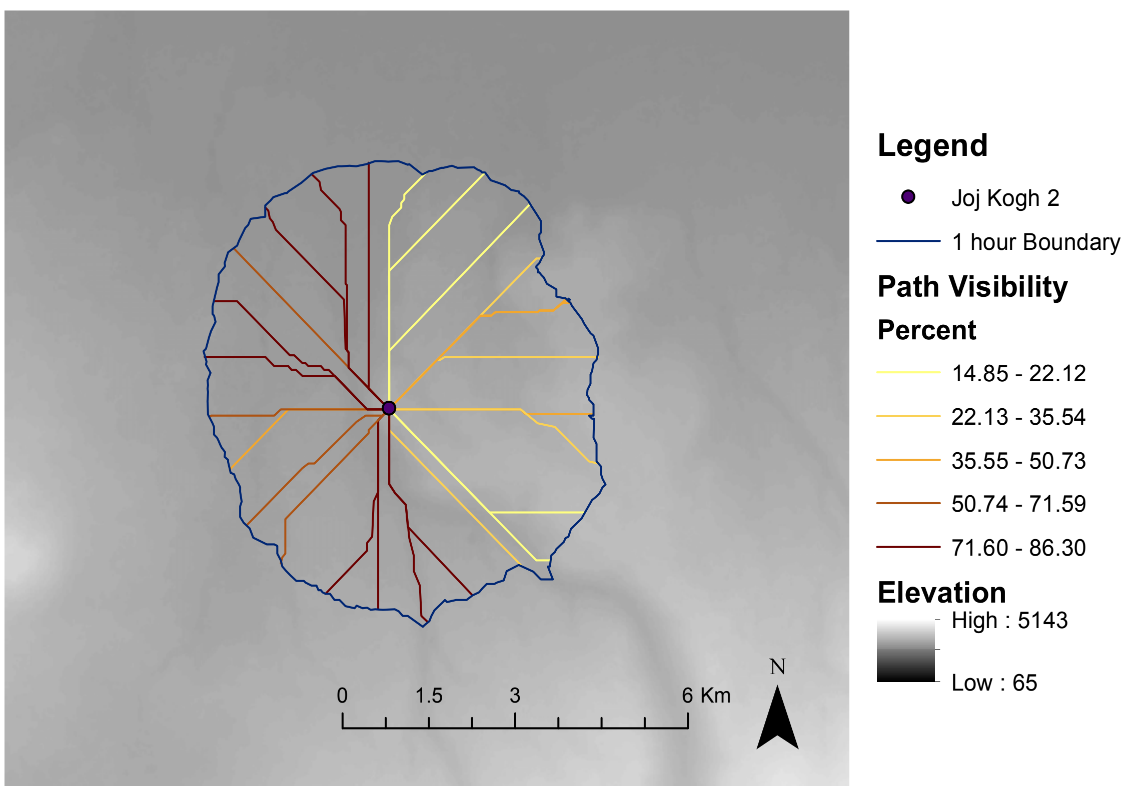


Figure A9-4: Least Cost Paths analysis of Joj Kogh 2

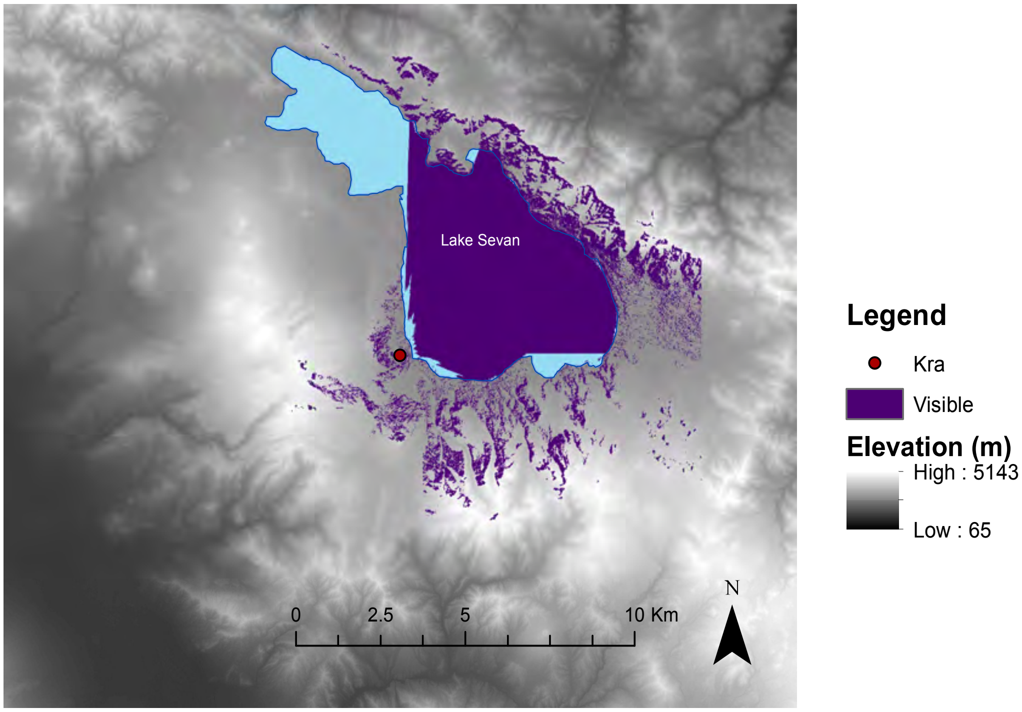


Figure A9-5: 50-kilometer viewshed of Kra

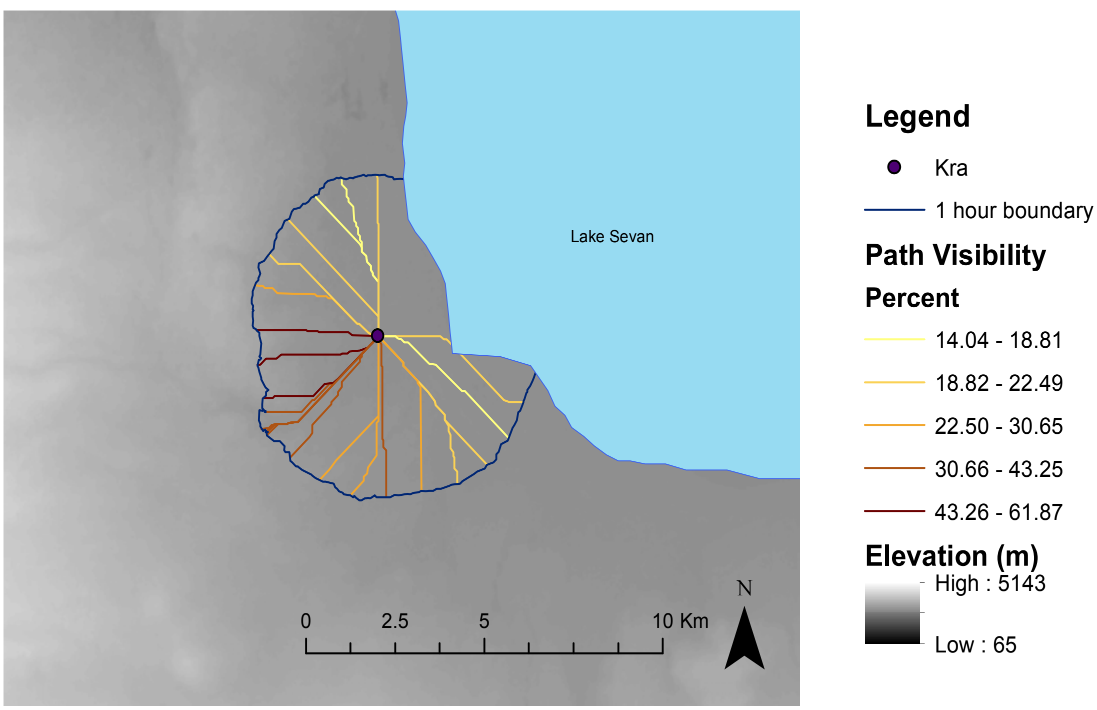


Figure A9-6: Least Cost Paths analysis of Kra

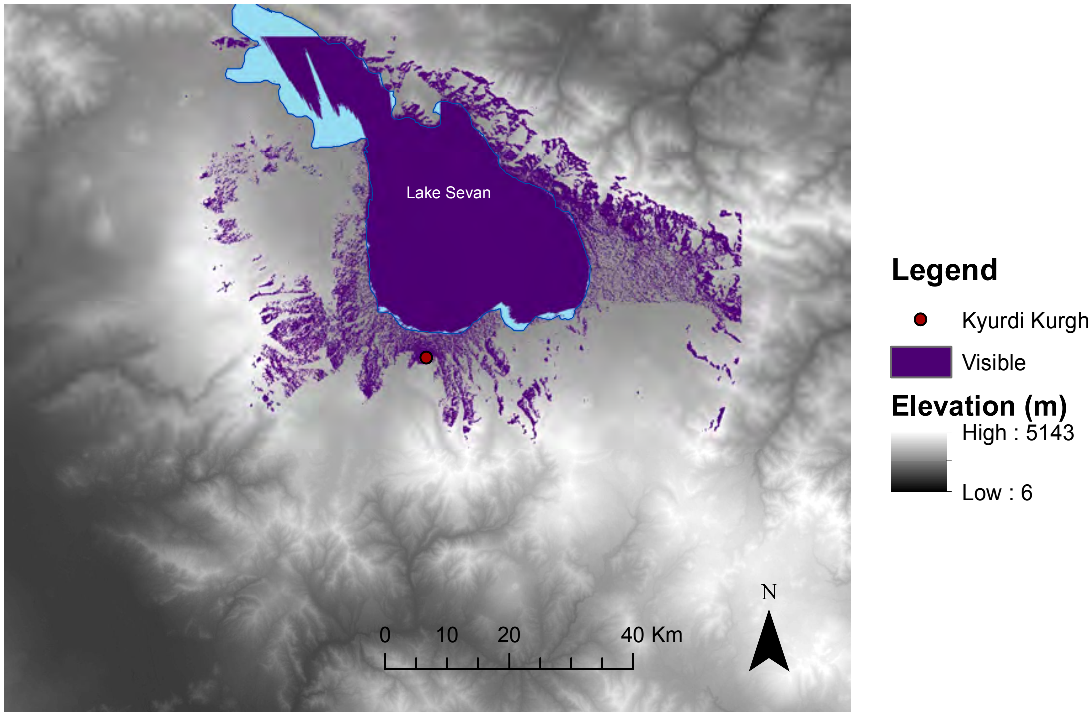


Figure A9-7: 50-kilometer viewshed of Kyurdi Kurgh

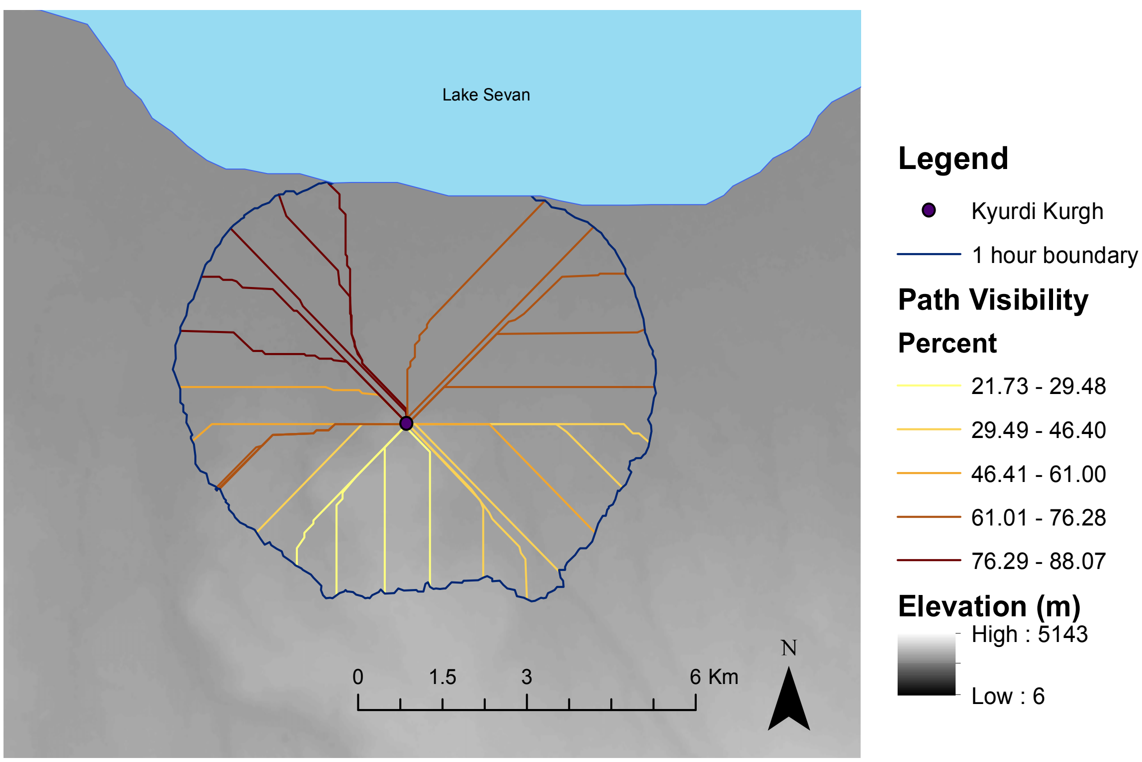


Figure A9-8: Least Cost Paths analysis of Kyurdi Kurgh

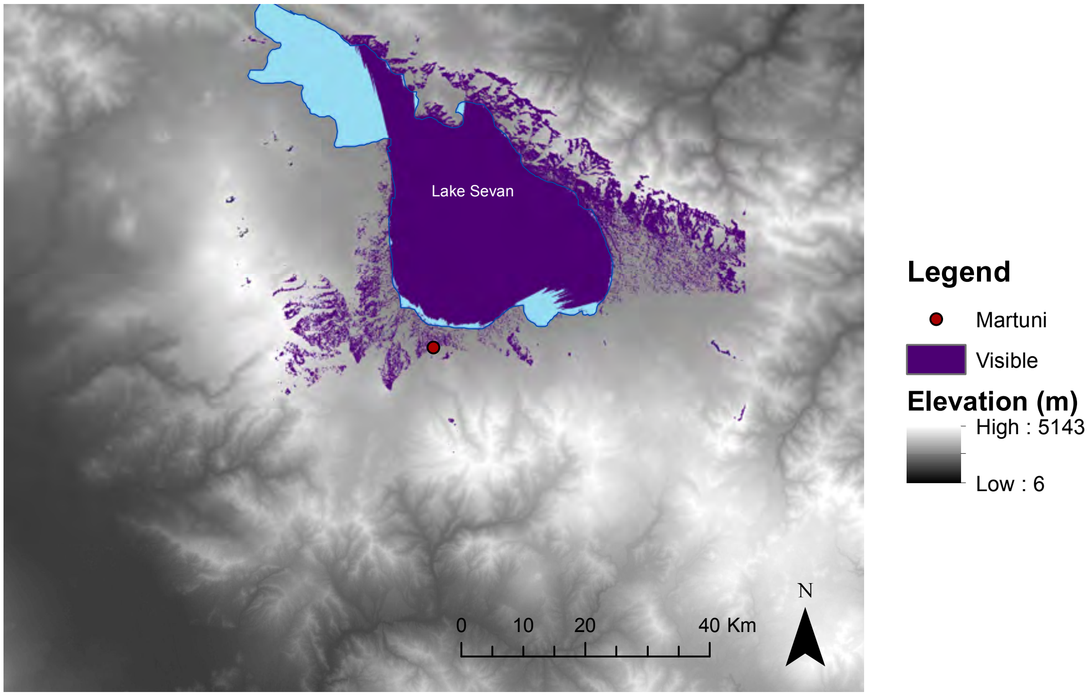


Figure A9-9: 50-kilometer viewshed of Martuni

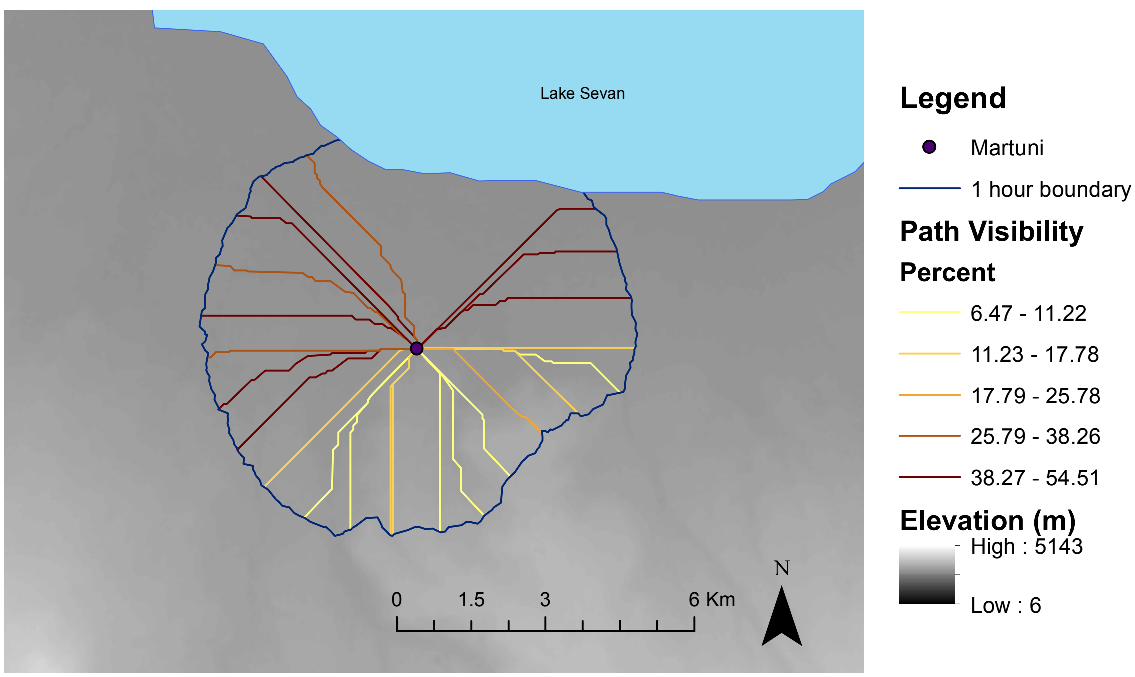


Figure A9-10: Least Cost Paths analysis of Martuni

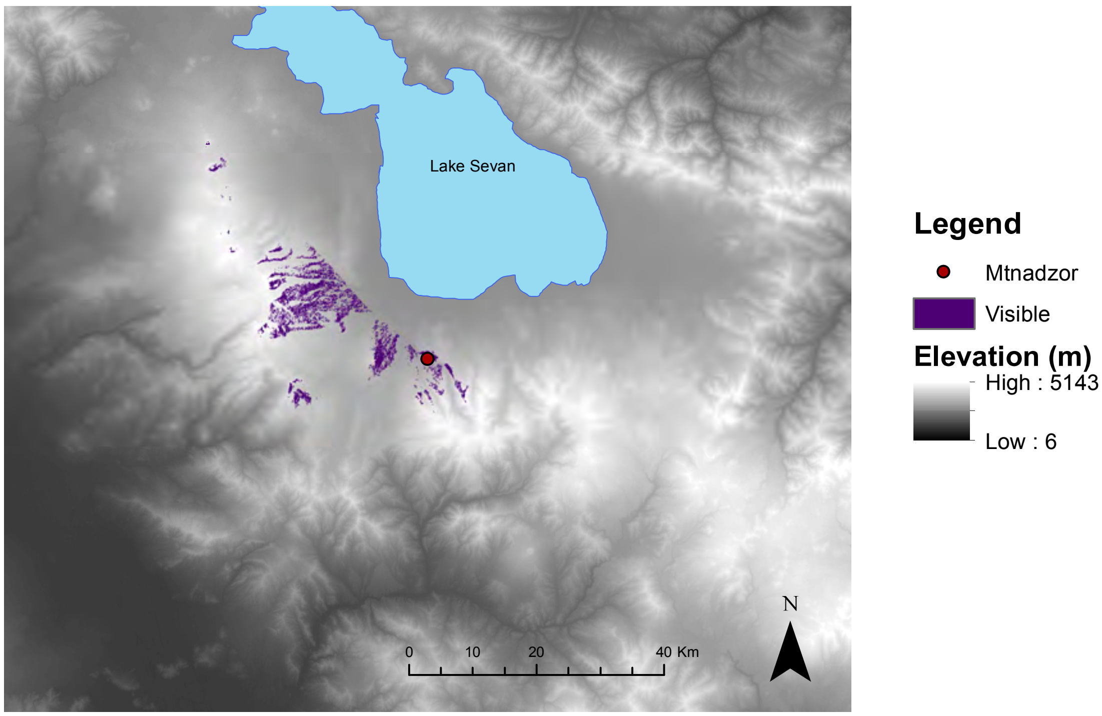


Figure A9-11: 50-kilometer viewshed of Mtnadzor

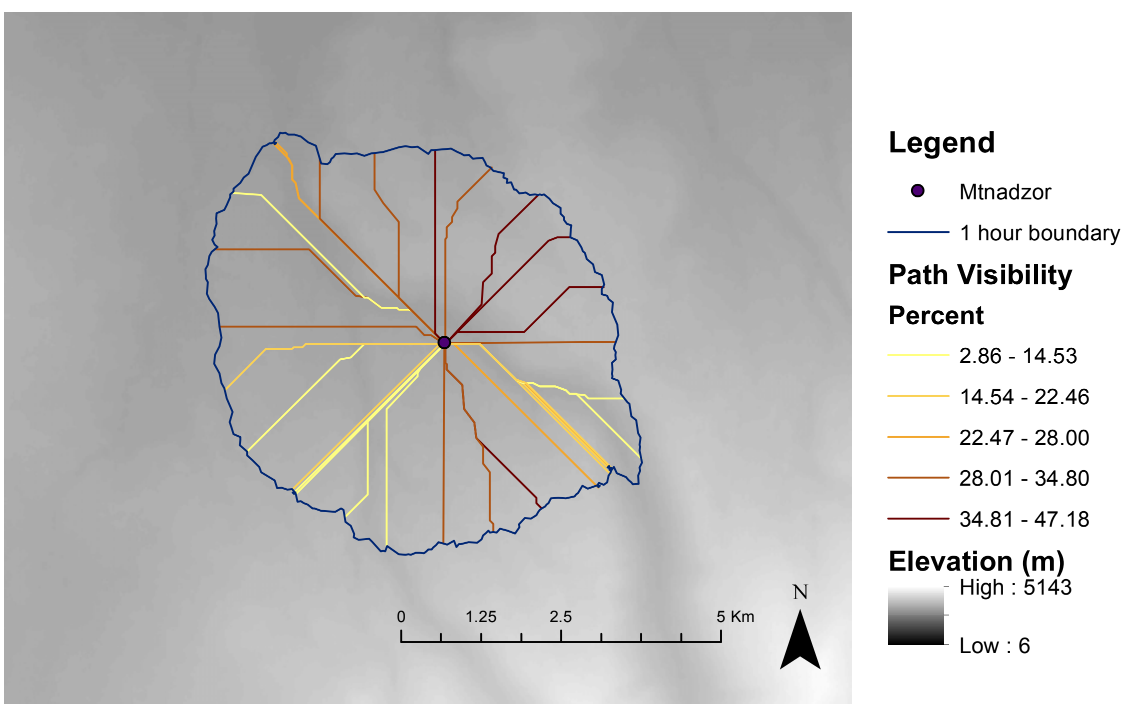


Figure A9-12: Least Cost Paths analysis of Mtnadzor

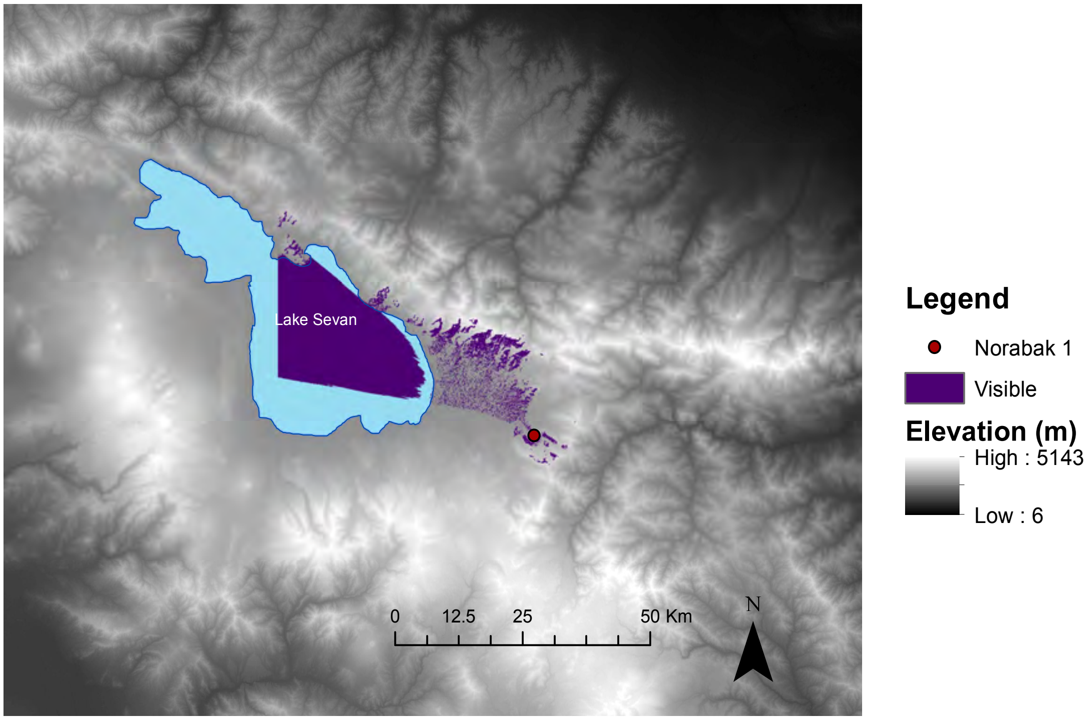


Figure A9-13: 50-kilometer viewshed of Norabak 1

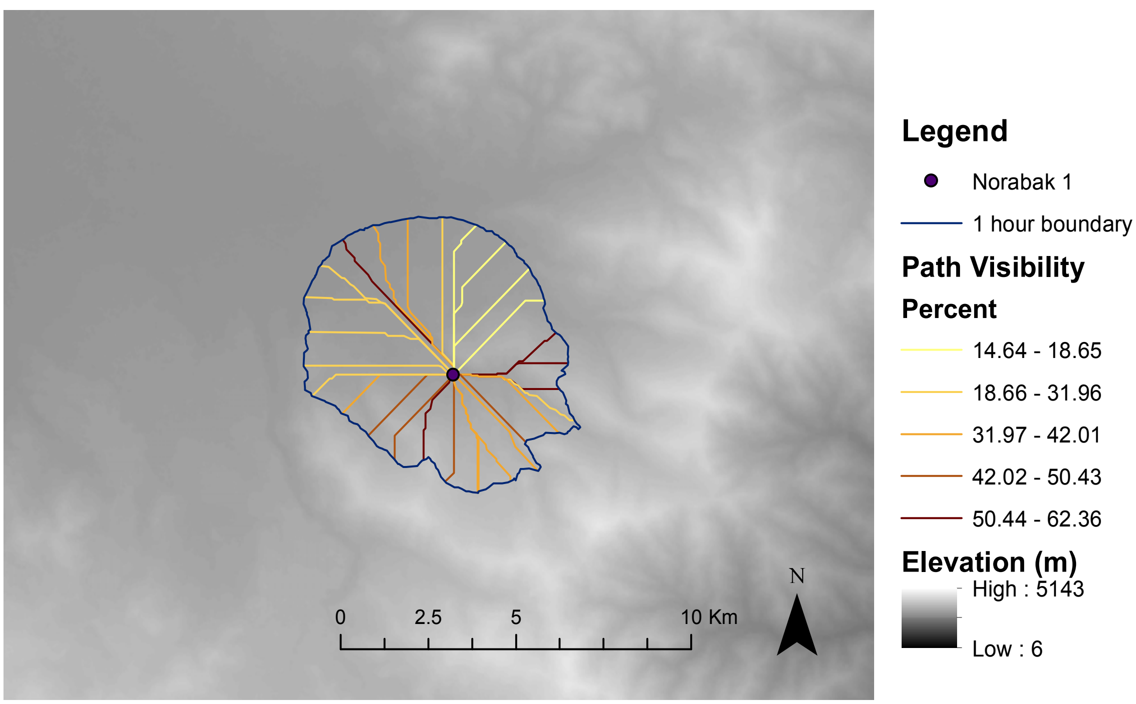


Figure A9-14: Least Cost Paths analysis of Norabak 1

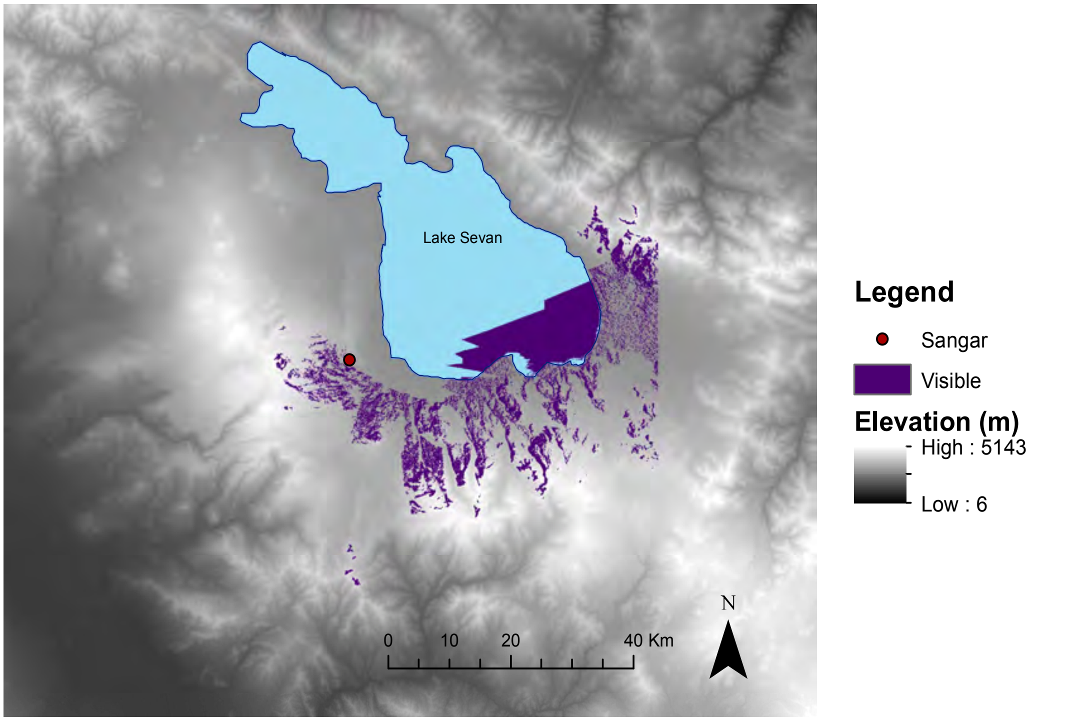


Figure A9-15: 50-kilometer viewshed of Sangar

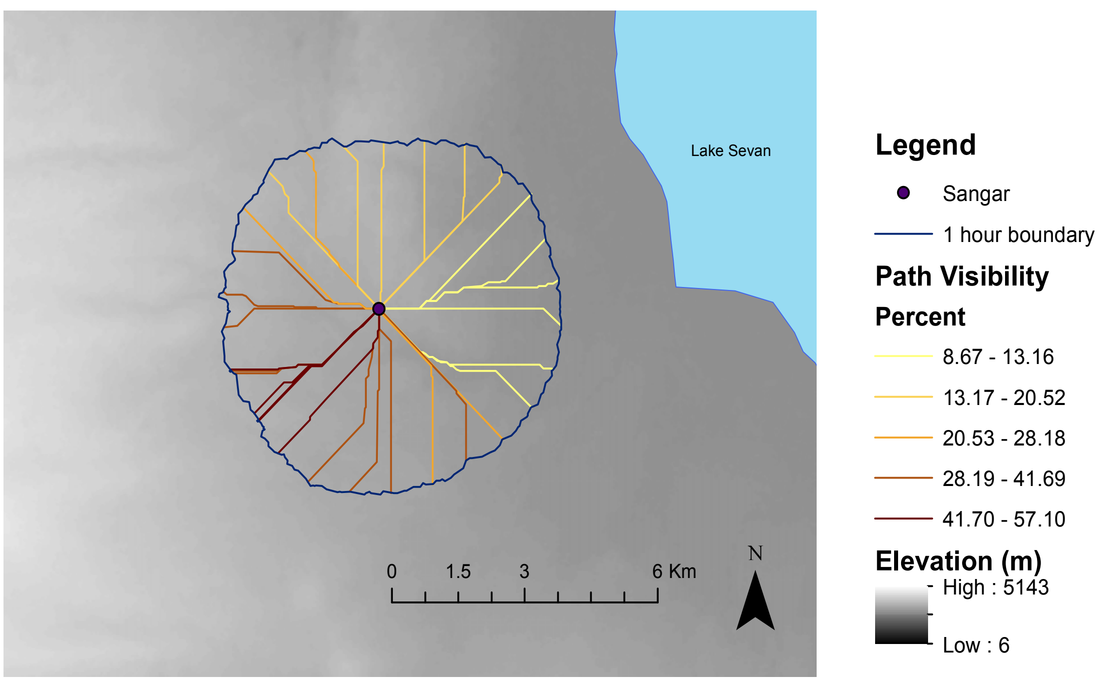


Figure A9-16: Least Cost Paths analysis of Sangar

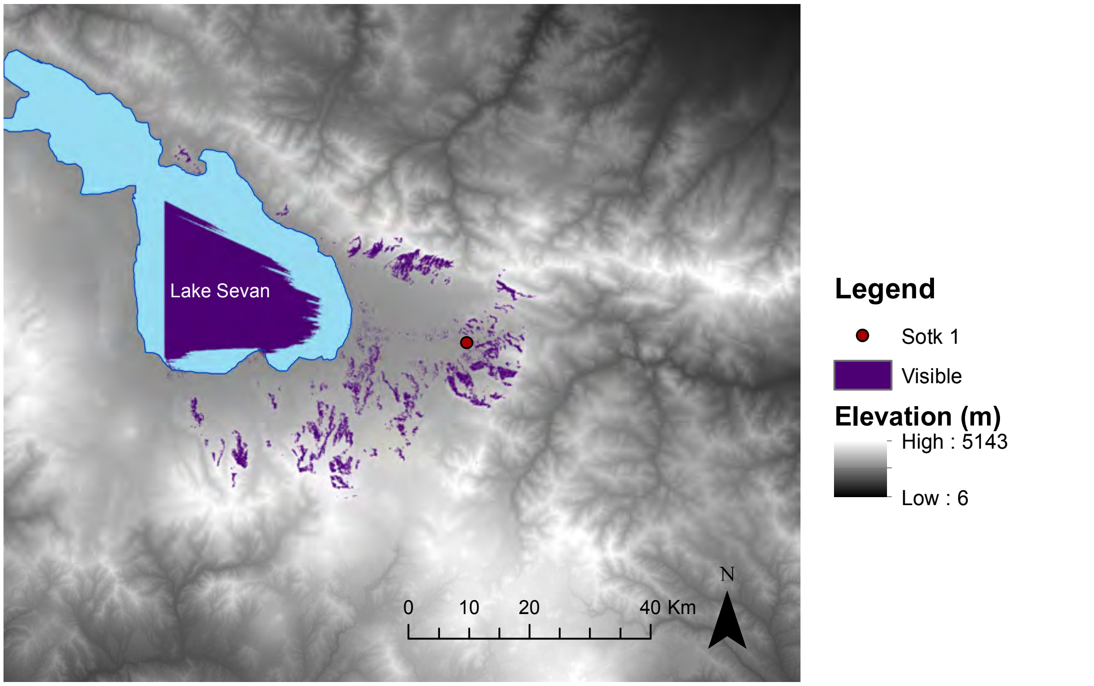


Figure A9-17: 50-kilometer viewshed of Sotk 1

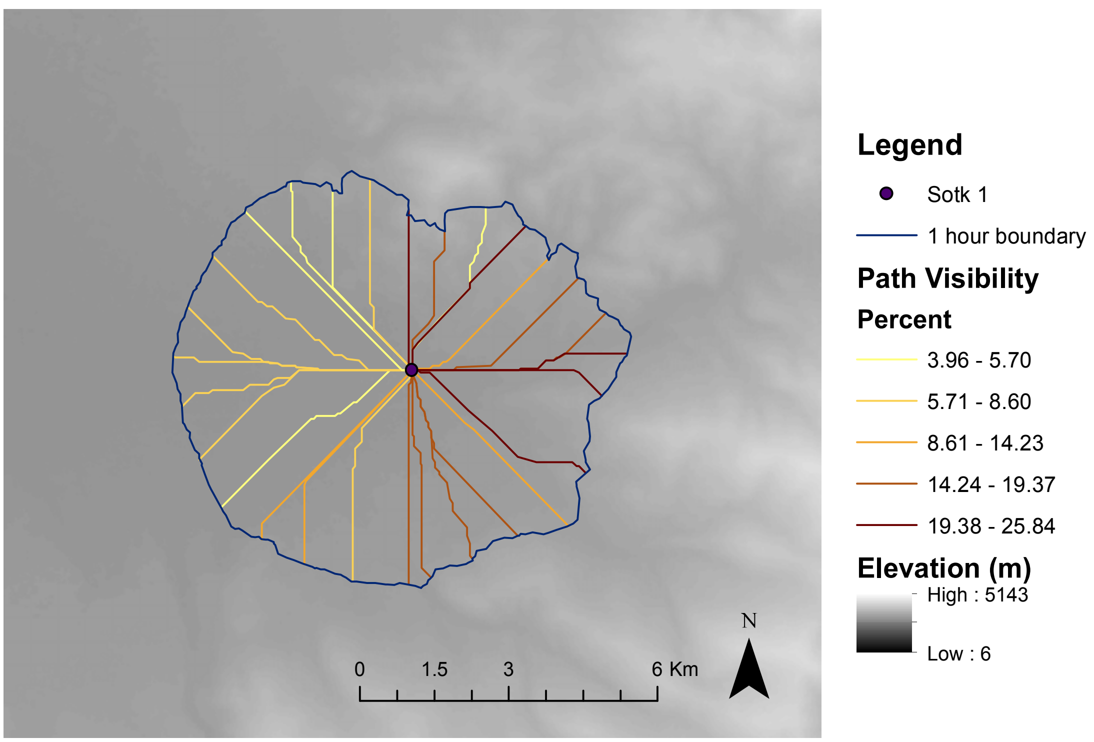


Figure A9-18: Least Cost Paths analysis of Sotk 1

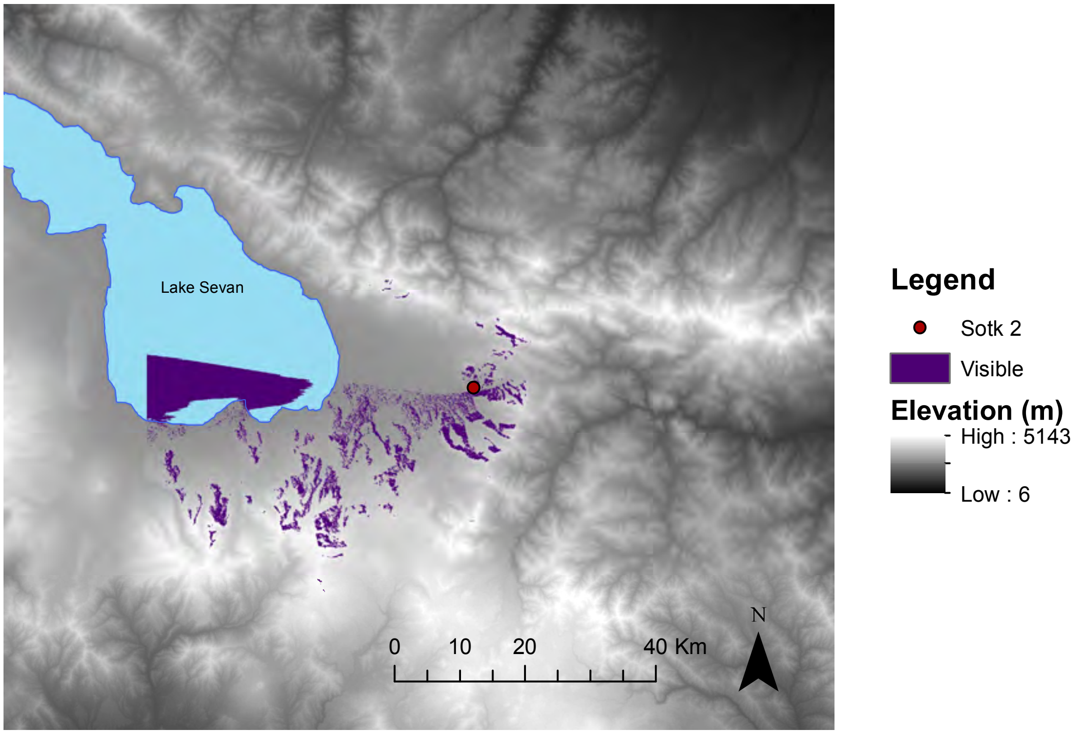


Figure A9-19: 50-kilometer viewshed of Sotk 2

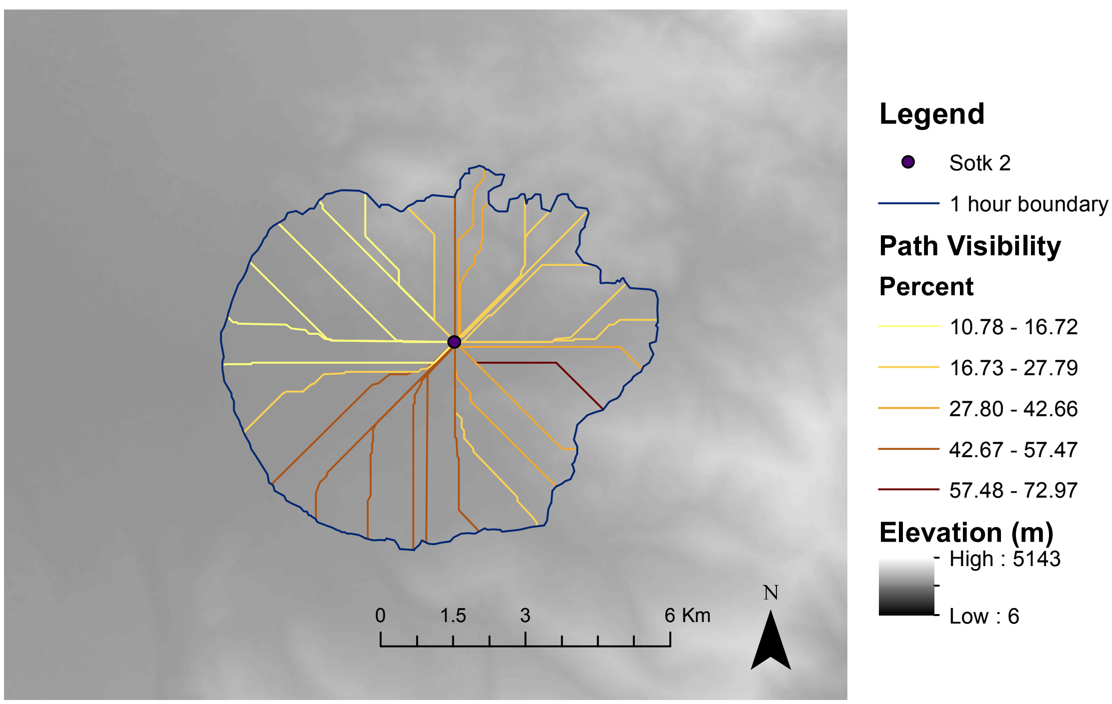


Figure A9-20: Least Cost Paths analysis of Sotk 2

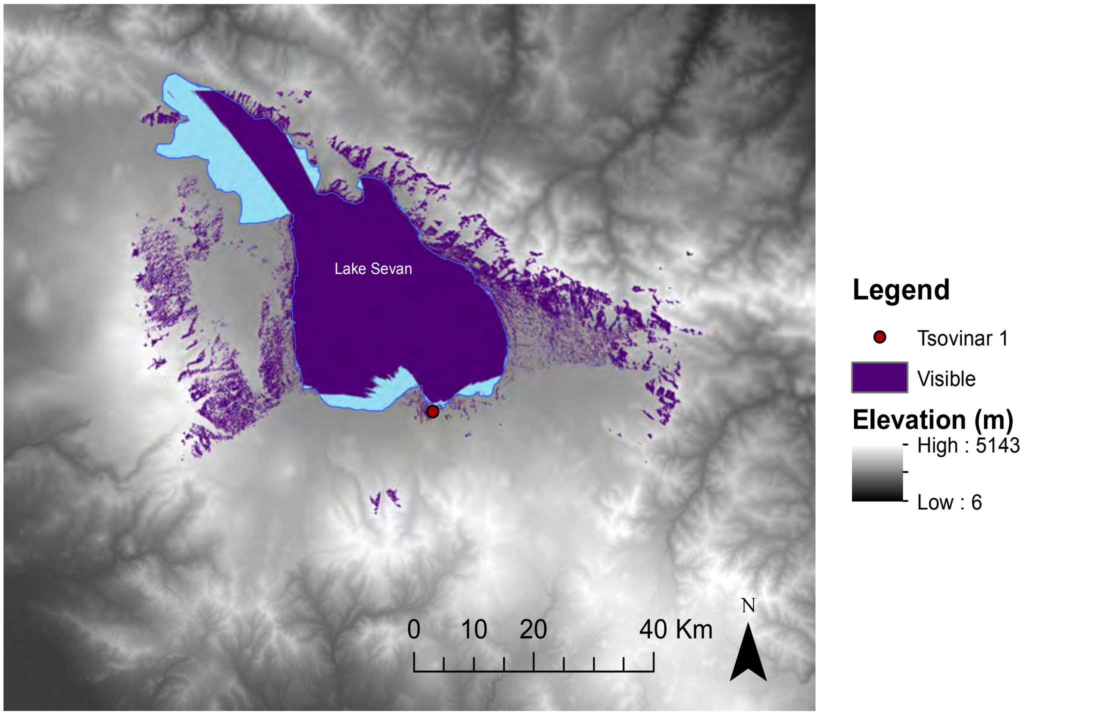


Figure A9-21: 50-kilometer viewshed of Tsovinar 1

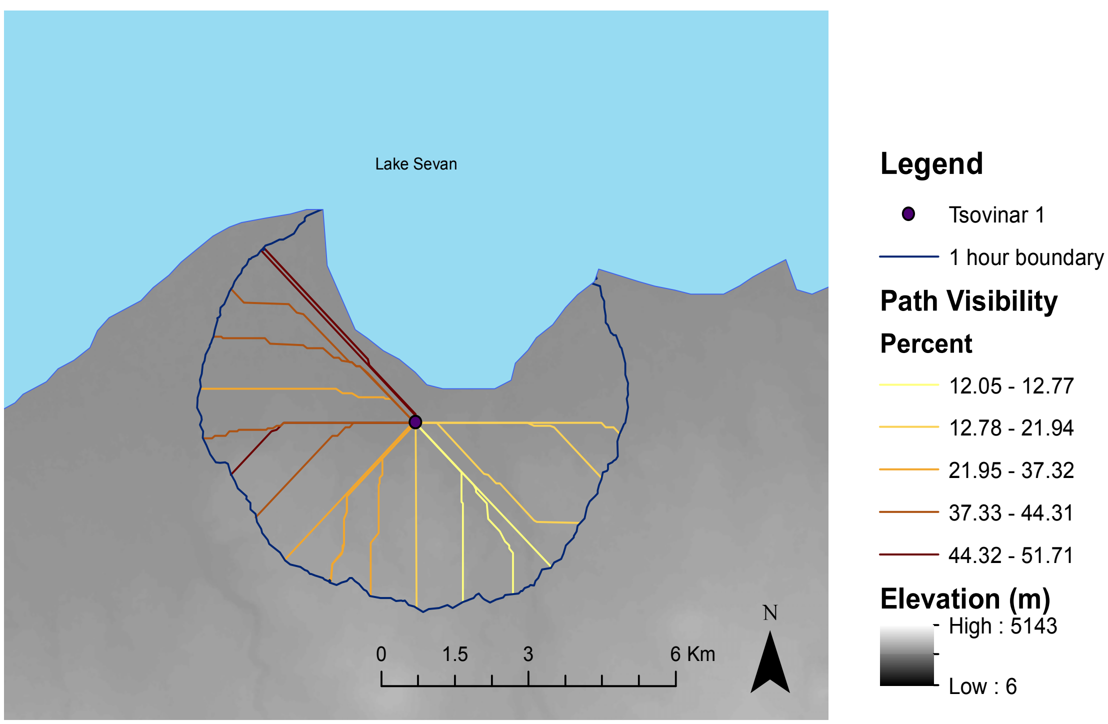


Figure A9-22: Least Cost Paths analysis of
Tsovinar 1

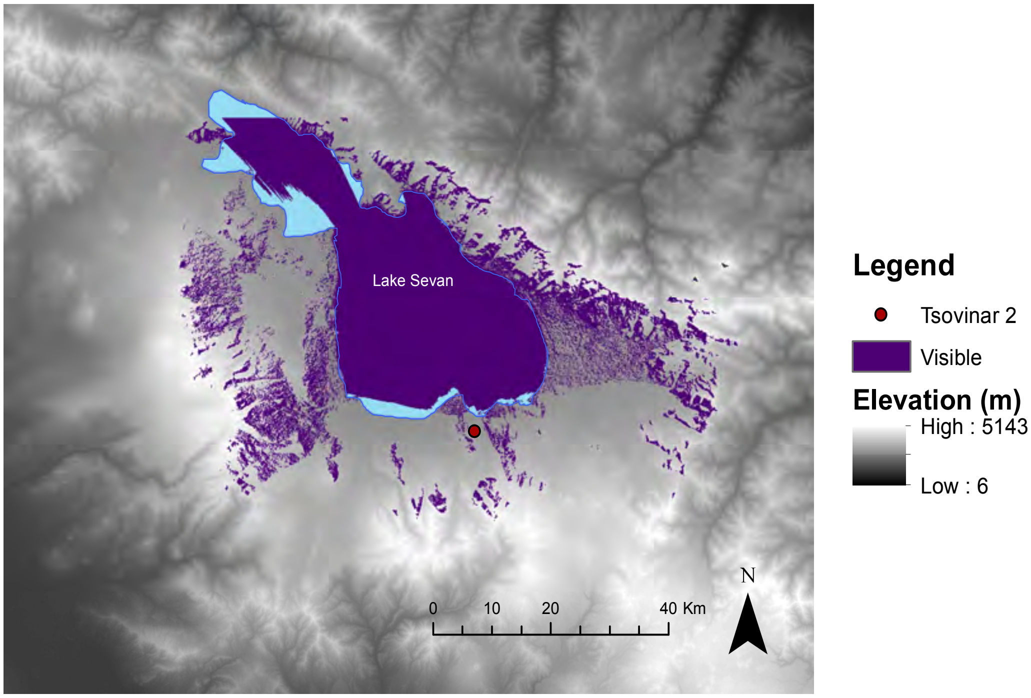


Figure A9-23: 50-kilometer viewshed of Tsovinar 2

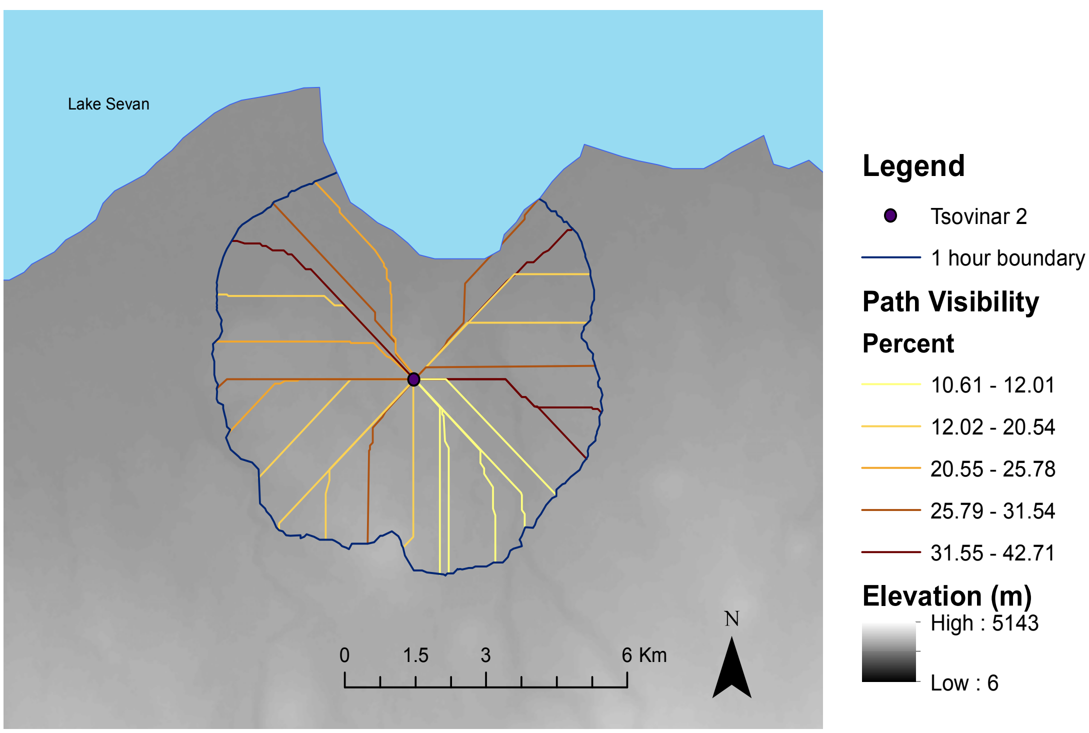


Figure A9-24: Least Cost Paths analysis of Tsovinar 2

References Cited

Abdi, Kamyar

2001 Nationalism, Politics, and the Development of Archaeology in Iran. *American Journal of Archaeology* 105:51-76.

Abrams, Elliot M.

1989 Architecture and Energy: An Evolutionary Perspective. *Journal of Archaeological Method and Theory* 1:47-87.

Adams, Richard M.

1981 *Heartland of Cities: Surveys of Ancient Settlement and Land Use on the Central Flood Plain of the Euphrates*. Chicago: University of Chicago Press.

Adelyan, G. E., and K. Kafadaryan

1996 "Mas Arajin." in *Haykakan Chartarapetutyan Patmutyun*, edited by Babken N. Arakeylan, pp. 13–67. Gitutyun, Yerevan:

Adzhan, A. A., L. T. Gyuzalian, and B. B. piotrovskii

1932 "Tsiklopichesckii kreposti Zakavkaz'ya." *Soobshchenia Gosudarstvennoi Akademii Istorii Material'noi Kultury* 1/2: 61–64.

Alizadeh, K., and J. A. Ur.

2007. Formation and Destruction of Pastoral and Irrigation Landscapes on the Mughan Steppe, North-Western Iran. *Antiquity* 81 (311): 148-160.

Ambridge, Lindsay

2007. Inscribing the Napatan Landscape: Architecture and Royal Identity. In *Negotiating the Past in the Past: Identity, Memory, and Landscape in Archaeological Research,* edited by Norm Yoffee, pp 128-154. The University of Arizona Press, Tucson.

Anderson, David

2012 Least Cost Pathway Analysis in Archaeological Research: Approaches and Utility. In *Least Cost Analysis of Social Landscapes*, edited by Devin White and Sarah Surface-Evans, pp. 239-257. University of Utah Press. Salt Lake City.

Anderson, William, Jessie Birkett-Rees, Michelle Negus Cleary, Damjan Krsmanovic and Nikoloz Tskvitinidze

2014 Archaeological Survey in the South Caucasus (Samtshkhe-Javakheti, Georgia): Approaches, Methods and First Results. *Anatolia Antiqua* 22:11-33.

Anschuetz, Kurt L., Richard H. Wilshusen, and Cherie Scheick

2001 An Archaeology of Landscapes: Perspectives and Directions. *Journal of Archaeological Research* 9(2):157-211.

Anthony, David W.

2007 *The Horse, the Wheel, and Language: How Bronze-Age Riders from the Eurasian Steppes Shaped the Modern World*. Princeton University Press, Princeton, New Jersey.

Areshyan G.E

1978 Voprosy tipologii naselennykh punktov Armenii pozdnego bronzovogo i rannego zheleznogo vekov. *Nauchnye soobshcheniya. Vypusk X Respublikanskay nauchnaya konferentsiya po problemam kul'tury i iskusstva Armenii. Doklady po sektsii drevnego i srednevekovogo iskusstva.* Moskva, p. 91-108.

Areshyan G.E., Kafadaryan K.K., Simonyan H.E., Tiratsyan G.A., Kalantaryan A.A.

1977. Archaeological investigations in the Ashtarak and Nairi regions of Armenian SSR. *VON* 4, p. 77-93 (in Armenian).

Arkush, Elizabeth

2011 Hillforts of the Ancient Andes: Colla Warfare, Society, and Landscape. University Press of Florida

2009 Warfare, space, and identity in the south-central Andes: Constraints and choices. In *Warfare in Cultural Context: Practice, Agency, and the Archaeology of Violence,* edited by Axel E. Nielsen and William H. Walker, pp. 190 217. University of Arizona Press, Tucson.

2008 War, causality, and chronology in the Titicaca Basin. *Latin American Antiquity* 19(4):339-373.

Ashmore Wendy

2008 Visions of the Cosmos: Ceremonial Landscapes and Civic Plans. In *Handbook of Landscape Archaeology*, edited by David Bruno and Julian Thomas, pp. 167-175. Left Coast Press, Walnut Creek, CA.

2004 Social Archaeologies of Landscape. In *A Companion to Social Archaeology,* edited by Lynn Meskell and Robert Preucel, pp. 255-271. Blackwell, Oxford.

Aspinall, Arnold, Chris Gaffney and Armin Schmidt

2008 *Magnetometry for Archaeologists.* AltaMira Press, Plymouth.

Avetisjan, G.G.

1997 Fortifikacionnye kompleksy Aramusa [Fortification constructions of Aramus], *Vestnik Erevanskogo Universiteta* 92(2): 118-124 (in Russian)

Avetisyan, Pavel

2003 Newfound recordings of the "Sacred Landscape" in Armenia (Results of the excavations of Agarak complex). *Abstracts of reports of the conference "Aragatsotn. Spiritual and Cultural Heritag",* Oshakan, p. 53-55 (in Armenian).

Avetisyan, P., and A. Bobokhyan

2008. The pottery traditions of the Armenian Middle to Late Bronze Age 'transition' in the context of Bronze and Iron Age periodization. In *Ceramics in Transition: Chalcolithic through Iron Age in the Highlands of the Southern Cacucasus and Anatolia*, edited by K. Rubinson and A. K.S., Sagona, pp. 123–183. Peeters, Dudley, MA.

Badalyan, R., Smith, A.T., Avestisyan, P.
2003. The emergence of sociopolitical complexity in southern Caucasia: an interim report on the research of project ArAGATS. In *Archaeology in the Borderlands: Investigations in Caucasia and Beyond,* edited by Adam Smith and K Rubinson, edited by Adam Smith and K Rubinson. The Cotsen Institute of Archaeology, Los Angeles.

Bailey, Geoff
2007 Time perspectives, palimpsests and the archaeology of time. J*ournal of Anthropological Archaeology* 26(2):198–223.

Balée, William and Clark L. Erickson
2005 Introduction: Time and Complexity in Historical Ecology. In Time and Complexity in Historical Ecology: Studies from the Neotropical Lowlands, edited by William Balée and Clark Erickson, pp. 1-20. Columbia University Press, New York.

Bankes, S. C.
2002 Agent-based modeling: A revolution? *Proceedings of the National Academy of Sciences* 99: 7199–7200.

Banning, E.B.
1996. Highlands and Lowlands: Problems and Survey Frameworks for Rural Archaeology in the Near East. *Bulletin of the American Schools of Oriental Research* 301:25-45.

Barfield, Thomas
2001 The shadow empires: imperial state formation along the Chinese-Nomad frontier. In *Empires: Perspectives from Archaeology and History,* edited by Susan E. Alcock Terence N. D'Altroy Kathleen D. Morrison Carla M, pp.10-41. Cambridge University Press, Cambridge.

Barkhudaryan , S. G.,
1973. *Gegharkunik, Kamoyi, Martunu ev Vartenisi Shrdzannere. Divan Hai Vimagrutian IV, Erevan*

Barrett, John C., and Lhong Ko
2009 A Phenomenology of Landscape: A Crisis in British Landscape Archaeology. *Journal of Social Archaeology* 9:275–294.

Bar-Yosef, Ofer
2008 Farming, Herding and the Transformation of Human Landscapes in Southwestern Asia. In *Handbook of Landscape Archaeology,* edited by Bruno David and Julian Thomas, pp. 315-327. Left Coast Press, Walnut Creek.

Başturk, Mahmut
2015 Considerations on the Belief Systems of the Early Iron Age Peoples in Lake Van Basin. In *International Symposium on East Anatolia—South Caucasus Cultures, Proceedings II,* edited by Mehmet Işikli and Birol Can, pp. 2-11. Cambridge Scholars Publishing, Newcastle upon Tyne.

Beck, A., Philip, G., Abdulkarim, M. & Donoghue, D
2007 Evaluation of Corona and Ikonos high resolution satellite imagery for archaeological prospection in western Syria. *Antiquity* 81(311): 161-175.

Bell, Tyler, Andrew Wilson and Andrew Wickham
2002 Tracking the Samnites: Landscape and Communications Routes in the Sangro Valley, Italy. *American Journal of Archaeology* 106(2):169-186.

Belli, Oktay
1999a Dams, Reservoirs and Irrigation Channels of the Van Plain in the Period of the Urartian Kingdom. *Anatolian Studies* 49(4):11-26.
1999b *The Anzaf Fortresses and the Gods of Urartu* (trans. G.D. Summers & A. Üzel), Arkeoloji ve Sanat Yayınları [Research, Study and Documentation Series 2a], Istanbul
2001 Excavations at Upper and Lower Anzaf Urartian fortresses, in *Istanbul University's Contribution to Archaeology in Turkey,* edited by Oktay Belli (trans. F. Artunkal), Istanbul: 165-172

Belli, Oktay and Konyar, Erkan
2000 Excavations at Van-Yoncatepe fortress and necropolis, *Tel Aviv* 28: 169-212

Belli, Oktay, Ali Dinçol and Belkis Dinçol
2005. Bronze Door Rings with Cuneiform Inscriptions of Sarduri II from the Upper Anzaf Fortress. *Anatolica* 31:217-226.

Bernardini, Wesley, Alicia Barnash, Mark Kumler, and Martin Wong
2013 Quantifying visual prominence in social landscapes. Journal of Archaeological Science 40:3946–3954.

Bertelson, P., and G. Aschersleben
1998 Automatic Visual Bias of Perceived Auditory Location. *Psychonomic Bulletin and Review* 5:482–489.

Bevan, Andrew
2011. Computational models for understanding movement and territory. In

Tecnologías de Información Geográfica Y Análisis Arqueológico Del Territorio. Actas Del V Simposio Internacional de Arqueología de Mérida, Anejos de Archivo Español de Arqueología. CSIC, edited by V. Mayoral and S. Celestino, pp. 384–393. Instituto de Arqueología, Mérida.

Bilgiç, Emin and Baki Ögün.
1967. Excavations at Kef Kalesi of Adilcevaz, 1964. *Anatolia (Anadolu)* 9:11–19.

Biscione, Raffaele
Biscione, Raffaele
2012: Urartian fortifications in Iran: an attempt at a hierarchical classification. In *Biainili-Urartu* edited by S. Kroll, P. Zimansky, U. Hellwag, C. Gruber, M. Roaf, pp. 77-88. Peeters, Leuven.
2009 The distribution of pre-and protohistoric hillforts in Iran. *Studi Micenei ed Egeo Anatolic*i 51:123-143
2003 Pre-Urartian and Urartian Settlement Patterns in the Caucasus, Two Case Studies: The Urmia Plain, Iran, and the Southern Seven Basin, Armenia. In *Archaeology in the Borderlands,* edited by Adam Smith and K Rubinson, pp. 167-84. Cotsen Institute of Archaeology, Los Angeles.
2002 The Iron Age Settlement Patterns: Pre-Urartian and Urartian Periods. In, *The North-Eastern Frontier: Urartians and Non-Urartians in the Sevan Lake Basin I, The Southern Shores*, Documenta Asiana 7, Rome. Edited by R. Biscione, N. Hmayakyan & N. Parmegiani, pp 351-370

Biscione, Raffaele, Simon Hmayakyan, Neda Parmegiani and Yuriy V. Sayadyan
2002 Description of the Sites. In, *The North-Eastern Frontier: Urartians and Non-Urartians in the Sevan Lake Basin I, The Southern Shores*, Documenta Asiana 7, Rome. Edited by R. Biscione, N. Hmayakyan & N. Parmegiani, pp 61-250.

Bongers, Jacob, Elizabeth Arkush and Michael Harrower
2012 Landscapes of death: GIS-based analyses of chullpas in the western Lake Titicaca basin. *Journal of Archaeological Science* 30:1-7.

Bonacassi, Daniele Morandi.
1996. Landscapes of power. The political organisation of space in the lower Habur Valley in the Neo-Assyrian period. *Bulletin of the State Archives of Assyria* 10 (2): 15-49.

Bradbury, Jennie
2010. Space, place and burial: An examination of the importance of interdisciplinary approaches within the investigation of burial monuments in the ancient near East. In *Proceedings of the 6th International Congress of the Archaeology of the Ancient Near East,* pp. 205-218.

Bradley, Richard
2000 *An Archaeology of Natural Places.* New York: Routledge.

1993 *Altering the Earth: The Origins of Monuments in Britain and Continental Europe* (Monograph Series 8), Edinburgh: Society of Antiquaries of Scotland

Briant, Pierre
2012 From the Indus to the Mediterranean: The Administrative Organization and Logistics of the Great Roads of the Achaemenid Empire. In *Highways, Byways, and Road Systems in the Pre-Modern World,* edited by Susan E. Alcock, John Bodel, and Richard J. A. Talbert, pp. 185-201. Wiley-Blackwell, West Sussex, UK.
2006 "L'Asie mineure en transition". *La Transition Entre L'Empire Achéménide et les royaumes hellénistiques, Persika 9,* edited by Pierre Briant and F. Joannès, pp. 209-51. Paris.

Brodsky, Marcella C., Antonio Gilman, and Concepion Martin Morales
2013 Bronze Age Political Landscapes in La Mancha. In *The Prehistory of Iberia: Debating Early Social Stratification and the State,* edited by Maria Cruz Berrocal, Leonardo Garcia Sanjuan and Antonio Gilman, pp. Routledge, New York 141-169.

Brück, Joanna
2005 Experiencing the past? The development of a phenomenological archaeology in British prehistory. Review essay. *Archaeological Dialogues* 12(1):45–67.

Bruno, David and Julian Thomas
2008 Landscape Archaeology: An Introduction. In Handbook of Landscape Archaeology, edited by David Bruno and Julian Thomas, 27-43. Left Coast Press, Walnut Creek, CA.

Burney, Charles
2012 The economy of Urartu: probabilities and problems. In *Biainili-Urartu* edited by S. Kroll, P. Zimansky, U. Hellwag, C. Gruber, M. Roaf, pp. 53-60. Peeters, Leuven.
1957 Urartian Fortresses and Town in the Van Region. Araştirma Sonuçlari Toplantisi. 7:37-53.

Burney, C. A., and Lang, D. M.
1971 *The Peoples of the Hills: Ancient Ararat and Caucasus*. London: Weidenfeld and Nicolson.

Canepa, Matthew
2014. Topographies of Power: Theorizing the Visual, Spatial and Ritual Contexts of Rock Reliefs in Ancient Iran. In *Of Rocks and Water: Toward an Archaeology of Place,* edited by Omur Harmasah, pp. 53-92. Oxbow Books, Oxford.
2010 Technologies of Memory in Early Sasanian Iran: Achaemenid Sites and Sasanian Identity. *American Journal of Archaeology* 114(4):563-596.

Canosa-Betés, Jorge

2016 Border surveillance: Testing the territorial control of the Andalusian defense network in center-south Iberia through GIS. In *Journal of Archaeological Science: Reports* 9:416-426.

Carr, Christopher
1995 Mortuary practices: Their social, philosophical-religious, circumstantial, and physical determinants. *Journal of Archaeological Method and Theory* 2(2): 105-200.

Casana, Jesse
2013. Radial route systems and agro-pastoral strategies in the Fertile Crescent: New discoveries from western Syria and southwestern Iran. In *Journal of Anthropological Archaeology* 32:257–273.
2012 Settlement, Territory, and the Political Landscape of Late Bronze Age Polities in the Northern Levant. *Archaeology Papers of the American Anthropological Association* 22(1):107-125.

Çevik, Özlem and Aylin Ü. Erdem
2015 Ethnoarchaeology in Ayanis Village in Eastern Anatolia: Production, Storage and Consumption of Pastoral Products Both in the Present and the Past. In *International Symposium on East Anatolia—South Caucasus Cultures, Proceedings II,* edited by Mehmet Işikli and Birol Can, pp. 312-327. Cambridge Scholars Publishing, Newcastle upon Tyne.

Chapman, Robert
1995 Ten Years After-Megaliths, Mortuary Practices, and the Territorial Model. In *Regional Approaches to Mortuary Analysis*, edited by Lane Anderson Beck, pp. 29-51. New York: Plenum.

Chang, Claudia and Harold A. Koster
1986. Beyond Bones: Toward an Archaeology of Pastoralism. *Advances in Archaeological Method and Theory,* 9:97-148.

Cheterian, Vicken
2012. The Origins and Trajectory of the Caucasian Conflicts. *Europe-Asia Studies* 64(9):1625-1649.

Çifçi, Ali
2017 *The Socio-Economic Organisation of the Urartian Kingdom.* Brill, Leiden.

Çilingiroğlu, A.
2004 How was an Urartian Fortress Built? In A *View from the Highlands: Archaeological Studies in Honour of Charles Burney*, edited by Antonio Sagona pp. 205-231. Peeters, Leuven, Belgium.

Çilingiroğlu, A. and M. Salvini

1995 "Rusahinili in Front of Mt. Eiduru": The Urartian Fortress of Ayanis (7th Century B.C.) *Studi Micenei ed Egeo-Anatolici* 35:111-124.
2001 (eds) *Ayanis I: Ten Years' Excavations at Rusahinili Eiduru-kai 1989-1998*, Documenta Asiana 6, Rome

Colson, Elizabeth
1997 Places of Power and Shrines of the Land. *Paideuma: Mitteilungen zur Kulturkunde* 43:47-57.

Connerton, Paul
1989 *How Societies Remember. Cambridge:* Cambridge University Press.

Connor, Simon and Antonio Sagona
2007 Environment and Society in the Late Prehistory of Southern Georgia, Caucasus. In *Les cultures du Caucase (VI-III millenaires avant notre ere). Leurs relations avec le Proche-Orient,* edited by B. Lyonnet, pp. 21-36. CNRS Editions, Paris.

Conolly, James and Mark Lake
2006. *Geographical Information Systems in Archaeology*. New York: Cambridge University Press.

Crumley, Carole L.
1994 Historical Ecology: A Multidimensional Ecological Orientation. In *Historical Ecology: Cultural Knowledge and Changing Landscapes*, edited by Carole Crumley, pp. 1-16.School of American Research, Santa Fe.

Crumley, Carole and William H. Marquardt
1990 Landscape: A Unifying Concept in Regional Analysis. In I*nterpreting Space: GIS and Archaeology,* edited by Kathleen Allen, Stanton Green and Ezra Zubrow, pp. 73-79. Taylor and Francis, London.

Cummings, Vicki
2002 Experiencing Texture and Transformation in the British Neolithic. *Oxford Journal of Archaeology* 21(3):49-261.

Deadman, William Morton
2012 Defining the Early Bronze Age landscape: a remote sensing-based analysis of Hafit tomb distribution in Wadi Andam, Sultanate of Oman. *Arabian Archaeology and Epigraphy* 23: 26-34.

DeMarrais, Elizabeth, Luis Jaime Castillo and Timothy Earle
1996 Ideology, Materialization, and Power Strategies. *Current Anthropology* 37(1): 15-31.

De Montis, A., and S. Caschili

2012 Nuraghes and landscape planning: coupling viewshed with complex network analysis. Landsc. Urban Plan. 105, 315–324.

Di Lernia, Savino and Mary Anne Tafuri
2013 Persistent deathplaces and mobile landmarks: The Holocene mortuary and isotopic record from Wadi Takarkori (SW Libya). *Journal of Anthropological Archaeology* 32(1):1-15.

Dietler, Michael
2010 *Archaeologies of Colonialism.* University of California Press, Berkeley and Los Angeles, California.

Dudwick, Nora
1990 The Case of the Caucasian Albanians: Ethnohistory and Ethnic Politics. *Cahiers du Monde russe et soviétique* 31(2/3): 377-383.

Dunnell, Robert C.
1992 The Notion Site. *In Space, Time, and Archaeological Landscapes,* edited by Jacqueline Rossignol and LuAnn Wandsnider, pp. 21-41. Plenum Press, New York
Ebert, David
2004 Applications of Archaeological GIS. *Canadian Journal of Archaeology* 28: 319–341

Dyson, R. H.
1965 Problems of Protohistoric Iran as Seen from Hasanlu. *Journal of Near Eastern Studies* 24:193-217.

Earley-Spadoni, Tiffany
2015 Landscapes of warfare: Intervisibility analysis of Early Iron and Urartian fire beacon stations (Armenia). *Journal of Archaeological Science: Reports* 3:22-30.

Ebert, David
2004 Applications of Archaeological GIS. *Canadian Journal of Archaeology* 28: 319–341.

Edens, Christopher
1995 Transcaucasia at the End of the Early Bronze Age. *Bulletin of the American Schools of Oriental Research*, 299/300: 53-64.

Erickson, Clark L.
2009 Agency, Roads, and the Landscapes of Everyday Life in the Bolivian Amazon. In *Landscapes of Movement: Trails, Paths, and Roads in Anthropological Perspective*, edited by James Snead, Clark Erickson, and Andy Darling, pp. 204-231. Penn Museum Press and the University of Pennsylvania Press, Philadelphia.

Erzen, Arif

1988 *Çavşutepe* I*: Urartian Architectural Monuments of the 7th and 6th Centuries B.C. and a Necropolis of the Middle Age*, Türk Tarih Kurumu Yayınları, Ankara
1976. Van Kalesi 1975 Calişmalar *Belleten* 40/160:714-715.
1975 Van Kalesi 1974 Calişmalar *Belleten* 39/155:561-562.
1959 Van-Toprakkale Sondajlan ve Bolgedeki Calişmalar. *TAD* 10/2 (1961):5-22.

Esajan, S.A. & Kalantarjan, A.A.
1988 *Osakan I: Osnovnye Resul'taty Raskopok 1971-1983* [*Oshakan I: Principal results of the excavations 1971-1983*], Archeologiceskie raskopki v Armenii 18, Izdatel'stvo Akademii Nauk Armjanskoj SSR, Erevan (in Russian)

Flanagn, J. R., and M.A. Beltzner
2000 Independence of Perceptual and Sensorimotor Predictions in the Size-Weight Illusion. *Nature Neuroscience* 3:737–741.

Fleming, Andrew
2006. Post-processual landscape archaeology: A critique. *Cambridge Archaeological Journal* 16:267-280.
2005 Megaliths and post-modernism: the case of Wales. *Antiquity* 79(306):921–932.

Fotiadis, Michael
1992 Units of Data as Deployment of Disciplinary Codes. In *Representations in Archaeology*, edited by Jean-Claude Gardin and Christopher Peebles, pp. 132-148. Indiana U. Press, Bloomington.

Frachetti, Michael
2008 *Pastoralist Landscapes and Social Interaction in Bronze Age Eurasia.* University of California Press, Berkeley.

Frieman, Catherine and Mark Gillings
2007 Seeing is perceiving? *World Archaeology* 39(1):4-16

Gaffney, Vincent, Zoran Stancic. and Helen Watson
1996. Moving from catchments to cognition: tentative steps towards a larger archaeological context for GIS. In Anthropology, Space and Geographic Information Systems, edited by M. S. Aldenderfer and H. D. G. Maschner, pp. 132–54. Oxford: Oxford University Press.

Gaffney, V., and P. M. van Leusen
1995 Postscript—GIS, Environmental Determinism and Archaeology. In *Archaeology and Geographical Information Systems: A European Perspective*, edited by G. Lock and Z. Stancic, pp. 367– 382. Taylor and Francis, London.

Gates-Foster, Jennifer
2012 The Well-Remembered Path: Roadways and Cultural Memory in Ptolemaic

and Roman Egypt. In *Highways, Byways, and Road Systems in the Pre-Modern World,* edited by Susan E. Alcock, John Bodel, and Richard J. A. Talbert, pp.202-221. Wiley-Blackwell, West Sussex, UK.

Gillespie, Susan D.
2008 History in Practice: Ritual Deposition at La Venta Complex A. In *Memory Work: Archaeologies of Material Practices*, edited by Barbara J. Mills and William H. Walker, pp. 109-136. Santa Fe: School for Advanced Research Press.

Gillings, Mark
2012 Landscape Phenomenology, GIS and the Role of Affordance. *Journal of Archaeological Method and Theory* 19(4):601-611.

Glatz, Claudia
2009 Empire as network: Spheres of material interaction in Late Bronze Age Anatolia. *Journal of Anthropological Archaeology* 28:127–141

Glatz, Claudia, and Aimée M. Plourde
2011 Landscape Monuments and Political Competition in Late Bronze Age Anatolia: An Investigation of Costly Signaling Theory. *Bulletin of the Schools of Oriental Research* 361: 33–66.

Gleason, Kathryn L.
1994 To Bound and to Cultivate: An Introduction to the Archaeology of Gardens and Fields. In *The Archaeology of Garden and Field*, edited by Naomi Miller and Kathryn Gleason, pp. 1-24. University of Pennsylvania Press, Philadelphia.

Graham, S. and J. Steiner
2008 Travellersim: Growing Settlement Structures and Territories with Agent-Based Modelling in *Digital Discovery: Exploring New Frontiers in Human Heritage. CAA 2006. Computer Applications and Quantitative Methods in Archaeology. Proceedings of the 34th Conference, Fargo, United States, April 2006, edited by* Jeffrey T. Clark and Emily M. Hagemeister, pp. 57-67. Archaeolingua; Budapest.

Greene, Alan
2013 The social lives of pottery on the Plain of Flowers: An archaeology of pottery production, distribution, and consumption in the Late Bronze Age South Caucasus. PhD Dissertation, University of Chicago, Chicago
2012. Where pottery and politics meet: mundane objects and complex political life in the Late Bronze Age South Caucasus. In *The archaeology of Eurasia: political authority and social change, from prehistory to the present: proceedings of the third University of Chicago Conference on Eurasian Archaeology*, edited by C. W. Hartley, A. T. Smith, and G. B. Yazicioglu, 302-322. Cambridge: Cambridge University Press.

Greene, Alan and Ian Lindsay
2013. Mobility, Territorial Commitments, and Political Organization among Late Bronze Age Polities in Southern Caucasia. *Archaeological Papers of the American Anthropological Association* 22(1):54-71.

Haerinck, Ernie and Bruno Overlaet
2009 The Sasanian Rock Relief of Bahram II at Guyum (Fars, Iran). *Iranica Antiqua,* 44:531-558.

Halbwachs, Maurice
1992 The Social Frameworks of Memory. In *On Collective Memory*, pp. 37-189. Chicago: University of Chicago Press.

Hamilton, Sue, Ruth Whitehouse, Keri Brown, Pamela Combes, Edward Herring and Mike Seager Thomas
2006 Phenomenology in Practice: Towards a Methodology for a 'Subjective' Approach. *European Journal of Archaeology*, 9(1):31-71.

Hammer, Emily
2014a Local Landscape Organization of Mobile Pastoralists in Southeastern Turkey. *Journal of Anthropological Archaeology* 35: 269-288.
2014b Highland fortress-polities and their settlement systems in the South Caucasus. *Antiquity* 88 (341): 757-774.
2013 Settlements in the Shadow of Fortresses in Azerbaijan. ISAW Newsletter 9 (Newsletter of the Institute of the Study of the Ancient World at New York University): 12-13.

Hare, Timothy S.
2004 Using measures of cost distance in the estimation of polity boundaries in the Postclassic Yautepec valley, Mexico. *Journal of Archaeological Science*, 31:799-814.

Harmansah, Ömür
2015 Stone worlds: Technologies of rock-carving and place-making in Anatolian landscapes. In *The Cambridge Prehistory of the Bronze and Iron Age Mediterranean*, edited by A. Bernard Knapp and Peter van Dommelen, pp. 379-393.. Cambridge: Cambridge University Press
2014a Introduction: Toward An Archaeology of Place. In *Of Rocks and Water: Toward an Archaeology of Place,* edited by Omur Harmasah, pp. 1-12. Oxbow Books, Oxford.
2014b Event, Place, Performance: Rock Reliefs and Spring Monuments in Anatolia. In *Of Rocks and Water: Toward an Archaeology of Place,* edited by Omur Harmasah, pp. 140- 168. Oxbow Books, Oxford.
2009 Stones of Ayanis: New Urban Foundations and the Architectonic Culture in Urartu during the 7th C. BC. In Bautechnik im Antiken und Vorantiken Kleinasien. Internationale Konferenz 13-16. Juni 2007 in Istanbul. (Byzas 9). Edited by Martin

Bachmann, pp. 177-197. Ege Yayınları: Istanbul.
2007. 'Source of the Tigris'. Event, place and performance in the Assyrian landscapes of the Early Iron Age. *Archaeological Dialogues* 14 (2):179–204

Harrower, Michael J
2008 Hydrology, Ideology, and the Origins of Irrigation in Ancient Southwest Arabia. *Current Anthropology* 49 (3): 497-510.

Harrower, Michael J. and A. Catherine D'Andrea
2014 Landscapes of State Formation: Geospatial Analysis of Aksumite Settlement Patterns (Ethiopia). *African Archaeology Review* 31:513–541.

Harrower, Michael J., Jared Schuetter, Joy McCorriston, Prem K. Goel, and Matthew J. Senn
2013 Survey, Automated Detection, and Spatial Distribution Analysis of Cairn Tombs in Ancient Southern Arabia. In *Mapping Archaeological Landscapes from Space*, edited by D.C. Comer and M.J. Harrower, pp. 259-268. Springer Science+Business Media New York.

Haroutunian, Samuel.
2015 A GIS analysis of Early Bronze Age settlement patterns in Armenia. *Quaternary International* xxx:1-9.

Head, Lesley
2008. Geographical Scale in Understanding Human Landscapes. In *Handbook of Landscape Archaeology*, edited by Bruno David and Julian Thomas. Left Coast Press, Walnut Creek

Heidegger, Martin
1971 Building, dwelling, thinking. In *Poetry, Language, Thought*, edited by Martin Heidegger. New York: Harper Colophon
1962 *Being and Time*. London: SCM Press

Heinsch, Sarah and Walter Kuntner
2010 Die armenisch-österreichischen Ausgrabungen in Aramus 2004-2009, Armenien. *Archäeologie Österreichs* 21(2):57-59.

Helmer, Matthew and David Chicoine
2013 Soundscapes and community organisation in ancient Peru: plaza architecture at the Early Horizon centre of Caylan," *Antiquity* 86:92-107.

Herzog, Irmela
2013 The Potential and Limits of Optimal Path Analysis. In *Computational Approaches to Archaeological Spaces,* edited by Andrew Bevan and Mark Lake, pp. 179–211. Left Coast Press, Walnut Creek.

Higgs, Eric S., and Claudio Vita-Finzi
1972 Prehistoric economics: a territorial approach. In *Papers in Economic Prehistory*, edited by Eric S. Higgs, pp. 27-36. Cambridge: Cambridge University**.**

Hmayakyan, Simon
2002 The Urartians on the southern coast of Lake Sevan. In, *The North-Eastern Frontier: Urartians and Non-Urartians in the Sevan Lake Basin I, The Southern Shores*, Documenta Asiana 7, Rome. Edited by R. Biscione, N. Hmayakyan and N. Parmegiani, pp 277-300

Hritz, Carrie
2014 Contributions of GIS and Satellite-based Remote Sensing to Landscape Archaeology in the Middle East. *Journal of Archaeological Research* 22:229-276.
2010. Tracing Settlement Patterns and Channel Systems in Southern Mesopotamia Using Remote Sensing. *Journal of Field Archaeology* 35(2):184-203.

Huff, Dietrich
1968 Das Felsgrab von Eski Dogubeyazıt, *IstMitt* 18: 58-86
1990 Das Grab von Dogubeyazıt. Seine Stellung unter den urartäischen und iranischen Felsgräbern, *X. Türk Tarih Kongresi I Ankara, 22-26 Eylül 1986*: 87-95

Husserl, Edmund
1964 [1907] *The Idea of Phenomenology.* Springer, Netherlands.

Ingold, Tim
1993 The Temporality of the Landscape. World Archaeology 25(2):152-174.

Isaksen, Leif
2008 The application of network analysis to ancient transport geography: A case study of Roman Baetica. *Digital Medievalist*.

Jakubiak, Krzysztof
2008 Eski Dogubayazit – A Tomb or a Sanctuary? In *Proceedings of the 4th International Congress of the Archaeology of the Ancient Near East,* edited by Hartmut Kühne, Rainer Maria Czichon, Florian Janoscha Kreppner, pp. 403-412. Harrassowitz Verlag, Wiesbaden.

Johnson, Matthew
2012 Phenomenological Approaches in Landscape Archaeology. *Annual Review of Anthropology* 41:269–84
2006a *Ideas of Landscape.* Oxford, Blackwell.
2006b On the nature of theoretical archaeology and archaeological theory. *Archaeological Dialogues* 13(2):117–132

Johnson, K.M. and W.B. Ouimet
2014 Rediscovering the Lost Archaeological Landscape of Southern New England

Using Airborne Light Detection and Ranging (LiDAR) *Journal of Archaeological Science* 43:9-20.

Joyce, Rosemary A.
2008 Practice in and as Deposition. In *Memory Work: Archaeologies of Material Practices*, edited by Barbara J. Mills and William H. Walker, pp. 25-39. Santa Fe: School for Advanced Research Press
2004 Unintended Consequences? Monumentality as a Novel Experience in Formative Mesoamerica. *Journal of Archaeological Method and Theory* 11(1):5-29.
2003 Concrete Memories: Fragments of the Past in the Classic Maya Present (500–1000 ad). In *Archaeologies of Memory*, edited by Ruth M. Van Dyke and Susan E. Alcock, pp. 104 – 26. Blackwell,Oxford & Malden, Mass.

Kafadarian, K
1984. *Arkitektura Goroda Argishtihinili.* Yerevan: Izdatel'stvo Armianskoi SSR.
Kalantarjan, A.A., Melkonjan, U.A., Zamkocjan, A.S., Babajan, F.S., Piloposjan, A.S. and
Kanetsjan, A.G.
2003 Rezultaty raskopok 2002 g. v Osakane [The results of the 2002 excavations at Oshakan] (in Rus- sian), *in* L. Abramjan, R. Badaljan, L. Vardanjan, A.A. Kalantarjan & A.G. Charatjan (eds.), *Archeologiya, etnologiya, i fol'kloristika Kavkaza*, Svjatoj Ecmiadzin:112-121

Kanter, John
2008 The archaeology of regions: From discrete analytical toolkit to ubiquitous spatial perspective. *Journal of Archaeological Research* 16(1):37–81
1997 Ancient Roads, Modern Mapping: Evaluating Chaco Anasazi Roadways using GIS Technology. *Expedition* 39(3):49-62.

Kantner, John and Ronald Hobgood
2003 Digital Technologies and Prehistoric Landscapes in the American Southwest. In *The Reconstruction of Archaeological Landscapes through Digital Technologies*, edited by Maurizio Forte and Patrick Ryan Williams co-edited by Farouk El Baz and James Wiseman, pp. 117-124. Archaeopress, Oxford.

Kavtaradze, G.
2004. The Chronology of the Caucasus during the Early Metal Age: Observations from Central Trans-Caucasus. In *A View from the Highlands. Archaeological Studies in Honour of Charles Burney, e*dited by Antonio Sagona, pp. 539-556. Peeters, Leuven.

Keall, Edward J.
1994 How Many Kings Did the Parthian King of Kings Rule? *Iranica Antiqua* 29:253-272.

Khanzadian, E.

1995 *Metsamor2: LaNecropole1, LesTombesdu BronzeMoyenet Recent.* Recherches et Publications, NeuchStel.

Khanzadian, E. V., K. A. Mkrtchian, and E. S. Parsamian
1973 *Metsamor.* Akademiya Nauk Armianskoe S.S.R., Yerevan.

Khachatrian, Telemak S
1974 "Iz Istorii Izuchenia Drevneyshikh Pamyatnikov Sklonov Gori Aragats." *Armenovedcheskie Issledovaniya* 1: 108–12.

Khatchadourian, Lori
2016 *Imperial Matter: Ancient Persia and the Archaeology of Empires.* University of California Press, Oakland, California.
*2*014 Empire in the Everyday: A Preliminary Report on the 2008–2011 Excavations at Tsaghkahovit. *Armenia American Journal of Archaeology,* 118(1):37-169
2008. Making Nations from the Ground up: Traditions of Classical Archaeology in the South Caucasus. In *American Journal of Archaeology*, 112(2):247-278.
2007. Unforgettable Landscapes: Attachments to the Past in Hellenistic Armenia. In *Negotiating the Past in the Past: Identity, Memory, and Landscape in Archaeological Research*, edited by Norm Yoffee, pp 43-75. The University of Arizona Press, Tucson.

Khazanov, Anatoly.
1984 *Nomads and the Outside World.* Cambridge University Press, Cambridge.

Kiguradze, T., and Sagona, A
2003 Origins of the Kura-Araxes Cultural Complex. In *Archaeology in the Borderlands, Investigations in Caucasia and Beyond,* edited by A. T. Smith & K. Rubinson, pp. 38–94. The Cotsen Institute of Archaeology at UCLA, Los Angeles.

Kirch, Patrick V.
1990 Monumental Architecture and Power in Polynesian Chiefdoms: A Comparison of Tonga and Hawaii *World Archaeology* 22(2):206-222.

Kleiss, W. and S. Kroll
1977 Urartäische Plätze in Iran, *Archäologische Mitteilungen aus Iran*, 10, 53-118.

Knapp, A. Bernard, and Wendy Ashmore
1999 Archaeological Landscapes: Constructed, Conceptualized, Ideational. In *Archaeologies of Landscape: Contemporary Perspectives*, edited by W. Ashmore and A. Bernard Knapp, pp. 1-32. Blackwell, Oxford.

Kohl, Philip
2009 Origins, Homelands and Migrations: Situating the Kura-Araxes Early Transcaucasian 'Culture' within the History of Bronze Age Eurasia, *Tel Aviv*, 36(2): 241-265.

2007 *The Making of Bronze Age Eurasia.* Cambridge University Press.
1992. The Transcaucasian "Periphery" in the Bronze Age: A Preliminary Formulation. In *Resources, Power, and Interregional Interaction*, Edited by Edward M. Schortman and Patricia A. Urban, pp. 117-137. Springer Science and Business Media, New York.

Kohl, Philip and Gocha Tsetskhladze
1995. Nationalism, politics and the practice of archaeology in the Caucasus. In *Nationalism, Politics and the Practice of Archaeology,* edited by Philip Kohl and Clare Fawcett, pp. 149-176. Cambridge University Press.

Kolb, Michael J.
2006 The Origins of Monumental Architecture in Ancient Hawai'i. *Current Anthropology* 47(4):657-665.

Kroll, Stephan
2005 Early Bronze Age settlement patterns in the Orumiye Basin. *Archäologische Mitteilungen aus Iran und Turan* 37:115-121.
2004 Prehistoric Settlement Patterns in the Maku and Khoy: Regions of Iranian Western Azarbaijan. In *Proceedings of the International Symposium on Iranian Archaeology: Northwest Region*, edited by M. Azarnoush, pp.45-56, Tehran.

Kroll, Stephan, Michael Roaf and Paul Zimansky
2012 Afterword: The future of Urartu's past. In *Biainili-Urartu* edited by S. Kroll, P. Zimansky, U. Hellwag, C. Gruber, M. Roaf, pp. 445-450. Peeters, Leuven.

Kroll, Stephan, Paul Zimansky, Ursula Hellwag, Claudia Gruber and Michael Roaf
2012. Introduction. In *Biainili-Urartu* edited by S. Kroll, P. Zimansky, U. Hellwag, C. Gruber, M. Roaf, pp. 1-38. Peeters, Leuven.

Kuftin, B. A and Henry Field
1946 Prehistoric culture sequence in Transcaucasia. *Southwestern Journal of Anthropology*, *2*(3):340–360.

Kuhrt, Amelie
2001 The Achaemenid Persian empire *(c. 550-c.* 330 BCE): continuities, adaptations, transformations. In *Empires: Perspectives from Archaeology and History,* edited by Susan E. Alcock Terence N. D'Altroy Kathleen D. Morrison and Carla M Sinopoli, pp.93-124. Cambridge University Press, Cambridge.

Kushnareva, K. K.
1997 *The southern Caucasus in prehistory*. The University of Pennsylvania Museum, Philadelphia.

Kuznar, Lawrence

1995 *Awatimarka: The Ethnoarchaeology of an Andean Herding Community.* Hardcrout Brace College Publishers, Orlando, Florida.

Kvamme, Kenneth
2006 There and Back Again: Revisiting Archaeological Locational Modeling. In *GIS and Archaeological Site Location Modeling*, edited by Mark Mehrer and Konnie Wescott, pp. 2-35. Taylor and Francis, New York.
2003 Geophysical Surveys as Landscape Archaeology. *American Antiquity* 68(3): 435-457.

Lageras, K. E
2002 Visible intentions? Viewshed analysis of Bronze Age burial mounds in western Scania, Sweden. In Monuments and Landscape in Atlantic Europe, edited by Chistropher Scarre, pp. 179–91. Routledge, London.

Lawrence, D. S. and S. M. Low
1990 The Built Environment and Spatial Form. *Annual Review of Anthropology* 19:453-505.

Lindsay, Ian
2006. *Late Bronze Age power dynamics in Southern Caucasia: a community perspective on political landscapes*. PhD thesis, University of California, Santa Barbara.

Lindsay, Ian and Adam Smith
2006. A History of Archaeology in the Republic of Armenia. Journal of Field Archaeology 31(2):165-184.

Lindsay, Ian, Adam T. Smith and Ruben Badalyan.
2009 Magnetic survey in the investigation of sociopolitical change at a Late Bronze Age fortress settlement in northwestern Armenia. *Archaeological Prospection* 17(1):15-27.

Lindsay, Ian, Leah Minc, Christophe Descantes , Robert J. Speakman , Michael D. Glascock
2008 Exchange patterns, boundary formation, and sociopolitical change in Late Bronze Age Southern Caucasia: preliminary results from a pottery provenance study in northwestern Armenia. *Journal of Archaeological Science* 35:673-1682

Liverani, Mario
1996 Reconstructing the Rural Landscape of the Ancient Near East. *Journal of the Economic and Social History of the Orient* 39(1): 1-41.

Llobera, Marcos
2012 Life on a pixel: challenges in the development of digital methods within an "interpretive" landscape archaeology framework. *Journal of Archaeological*

Method and Theory 19 (4):495-509.
2007 Reconstructing Visual Landscapes. *World Archaeology* 39(1): 51-69.
2003 Extending GIS-based visual analysis: the concept of visualscapes, *International Journal of Geographical Information Science* 17(1): 25-48.
2000 Understanding movement: A pilot model towards the sociology of movement. In *Beyond the Map: Archaeology and Spatial Technologies,* edited by G.R. Lock. NATO Science Series A: Life Sciences 321, pp. 64-84. IOS Press, Amsterdam.
1996 Exploring the Topography of Mind: GIS, Social Space, and Archaeology. *Antiquity* 70:612-622.

Lock, Gary
2001 Theorizing the practice or practicing the theory: archaeology and GIS. *Archaeologica Polona* 39:153-164.

Lock, Gary and Trevor Harris
2006 Enhancing Predictive Archaeological Modeling: Integrating Location, Landscape, and Culture. In *GIS and Archaeological Site Location Modeling,* edited by Mark Mehrer and Konnie Wescott, pp. 36-55. Taylor and Francis, Boca Raton.

Lucero, Lisa and Andrew Kinkella
2014 A Place for Pilgrimage: The Ancient Maya Sacred Landscape of Cara Blanca, Belize. In *Of Rocks and Water: Toward an Archaeology of Place,* edited by Omur Harmasah, pp. 13-39. Oxbow Books, Oxford.

Lyonnet, B., Guliyev, F., Helwing, B., Aliyev, T., Hansen, S. und Mirtskhulava, G.,
2012 Ancient Kura 2010–2011: the first two seasons of joint field work in the southern Caucasus. *Archaölogische Mitteilungen aus Iran und Turan* 44:1-190.

Madry, S.L.H., and L. Rakos
1996 Line-of-Sight and Cost-Surface Techniques for Regional Research in the Arroux River Valley. In *New Methods, Old Problems: Geographic Infor- mation Systems* in Modern Archaeological Research, edited by H. D. G. Maschner, pp. 104–126. Southern Illinois University at Carbondale Occasional Paper No. 23. Centre For Archaeological Investigation, Carbondale, Ill.

Maghakyan, Simon
2007 Sacred Stones Silenced in Azerbaijan. In *History Today* 57(11):4-5.

Marr, Nikolai & Orbeli, Joseph
1922 *Archeologiceskaja ekspedicija 1916 goda v Van. Raskopki dvuch nis na Vanskoj Skale i nadpisi Sardura vtorogo iz raskopok zapadnoj nisi* [*The 1916 Archaeological Expedition in Van. The excavations of the second niche in Van cliff and the inscriptions of Sarduri II in the excavated niche*], Akademiceskoe Izdatel'stvo, St. Petersburg (in Russian)

Martirosjan, A. A.

1974 *Argistichinili*, Archeologiceskie Pamjatniki Armenii 8, Izdatel'stvo Akademii Nauk Armjanskoj SSR, Erevan (in Russian)
1969 New sites of primitive culture of Armenia. *Istoriko-Filologicheskij Journal Natsional'noj Akademii Nauk Respubliki Armenia.* 3:191-208 (in Armenian)
1961 *Gorod Tejsebaini* [*The city of Teishebaini*]*,* Izdatel'stvo Akademii Nauk Armjanskoj SSR, Erevan (in Russian)

McAnany, Patricia
1995 *Living with the Ancestors*. University of Texas Press, Austin, Texas.

McCoy, Mark D. and Thegn N. Ladefoged
2009 New Developments in the Use of Spatial Technology in Archaeology. *Journal of Archaeological Research*17:263–295

McGurk, H., and J MacDonald
1976 Hearing Lips and Seeing Voices. *Nature* 264:746–748.

Meinig, D. W.
1979 The Beholding Eye: Ten Versions of the Same Scene, In *The Interpretation of Ordinary Landscapes: Geographical Essays*, edited by D. W. Meinig and John Brinckerhoff Jackson, pp. 1-9. New York: Oxford University Press.

Melville, Sarah
2016 The campaigns of Sargon II, King of Assyria, 721-705 B.C. The University of Oklahoma Press, Oklahoma.

Menze, Bjoern H. and Jason A. Ur
2012 Mapping patterns of long-term settlement in Northern Mesopotamia at a large scale. *PNAS* 109(14):E778-E787

Merleau-Ponty, Maurice
1945 *Phenomenology of Perception.* Routledge, London.

Meskell, Lynn
2003. Memory's Materiality: Ancestral Presence, Commemorative Practice and Disjunctive Locales. In *Archaeologies of Memory*, edited by Ruth M. Van Dyke and Susan E. Alcock, pp. 34 – 55. Blackwell,Oxford & Malden, Mass.

Mikayelyan, G.
1968 *Sevani Avazani Kiklopyan Amrotsnere,* Erevan.

Mlekuz, Dimitrij
2014 Exploring the topography of movement. In Computational Approaches to the Study of Movement in Archaeology: Theory, Practice and Interpretation of Factors and Effects of Long Term Landscape Formation and Transformation, edited by S. Polla, and P. Verhagen, pp. 5–21. De Gruyter, Berlin.

2010 Time Geography, GIS and Archaeology. In *Proceedings of the 38th Conference on Computer Applications and Quantitative Methods in Archaeology, Granada, Spain, April 2010,* edited by Francisco Contreras and Fco. Javier Melero, pp. 1-7.

Mohs, Gordon
1994 Sto:lo sacred ground. In *Sacred Sites, Sacred Places*, edited by David L. Carmichael, Jane Hubert, Brian Reeves, and Audhild Schanche, pp. 184-208. New York: Routledge.

Monahan, Belinda H
2012. Beastly goods: pastoral production in the Late Bronze Age Tsaghkahovit Plain. In *The Archaeology of Power and Politics in Eurasia: Regimes and Revolutions: Proceedings of the Third University of Chicago Conference on Eurasian Archaeology*, edited by C. Hartley, G.B. Yazıcıoğlu., and A.T. Smith, pp. 337–347. Cambridge University Press, New York.

Moore, Jerry D.
1996 The architecture of monuments. In *Architecture and power in the Ancient Andes: The archaeology of public buildings*, pp. 92-120. Cambridge: Cambridge University Press.

Morrison, Kathleen
2001 Sources, Approaches, Definitions. In *Empires: Perspectives from Archaeology and History,* edited by Susan E. Alcock Terence N. D'Altroy Kathleen D. Morrison Carla M. Sinopoli, pp. 1-9. Cambridge University Press, Cambridge.

Nystrom, Kenneth C., Jane E Buikstra, and Keith Muscutt
2010 Chachapoya mortuary behavior: A consideration of method and meaning. *Chungara, Revista de Antropología Chilena* 42(2):477-495.

Oganesjan, K.L.
1980 *Krepost' Erebuni* [*The fortress of Erebuni*], Izdatel'stvo Akademii Nauk Armjanskoj SSR, Erevan (in Russian)
1961 *Arin-Berd I. Architektura Erebuni: Po materialam raskopok 1950-1959 gg.* [*Arin-Berd I. The Architecture of Erebuni according to materials from excavations 1950-1959*], Archeologiceskie Raskopki v Armenii 9, Izdatel'stvo Akademii Nauk Armjanskoj SSR, Erevan (in Russian)

Ogburn, Dennis E.
2006 Assessing the level of visibility of cultural objects in past landscapes. Journal of Archaeological Science 33:405–413.

Opitz, Rachel
2014 Exploring Digital Landscapes at the Human Scale. Digital Domains, Dartmouth College, 20-22 March 2014.

Osborne, James
2014 Monuments and Monumentality. In *Approaching Monumentality in Archaeology,* edited by James Osbourne, pp. 1-19. SUNY Press, Albany, New York.

Osborne, James and Geoffrey Summers
2014 Visibility Graph Analysis and Monumentality in the Iron Age City at Kerkenes in Central Turkey. *Journal of Field Archaeology* 39/3: 292-309.

Oubina Cesar Parcero, Felipe Criado Boado and Manuel Santos Estevez
1998 Rewriting Landscape: Incorporating Sacred Landscapes into Cultural Traditions. In *The Past in the Past: the Reuse of Ancient Monuments.* Edited by Richard Bradley and Howard Williams, pp. 159-176. London: Routledge.

Owoc, Mary Ann
2002 Munselling the Mound: The Use of Soil Color as Metaphor in British Bronze Age Funerary Ritual. In *Colouring the Past: The Significance of Colour in Archaeological Research*, edited by Andrew Jones and Gavin MacGregor, pp. 127-140.

Oybak Donmez, Emel and Oktay Belli
2007 Urartian Plant Cultivation at Yoncatepe (Van), Eastern Turkey, *Economic Botany* 61(3): 290-298

Özdogan, Mehmet
2012 Ideology and Archaeology in Turkey. In *Archaeology Under Fire,* edited by Lynn Meskell, pp. 111-123. Routledge, London.

Özfirat, Aynur
2009 Pre-Classical survey in Eastern Turkey. Sixth preliminary report: Lake Van Basin and Mt. Agrı Region. *Archäeologische Mitteilungen Aus Iran und Turan,* 41:211-232.
2001 Research on the Cultures of East Anatolia in the 2nd Millenium BC. In *İstanbul University's Contributions to Archaeology in Turkey (1932-2000),* edited by O. Belli, pp. 326-330. İstanbul University Rectorate Publication No. 4285. Instanbul.

Palumbi, Giulio
2011 The Arslantepe Royal Tomb and the "Manipulation" of the Kurgan ideology in Eastern Anatolia at the beginning of the third millennium. In *Ancestral landscapes: burial mounds in the Copper and Bronze ages,* ed. S. Muller Celka, E. Borgna, 47-59 Travaux de la Maison de l'Orient, Lyon.
2003. Red-black pottery: Eastern Anatolian and Transcaucasian relationships around the Mid-Fourth Millennium B.C. *Ancient Near Eastern Studies*, 40:80–134.

Parcak, Sarah
2009 *Satellite Remote Sensing for Archaeology.* Routledge.
2007 Going, going, gone: towards a satellite remote sensing methodology for monitoring archaeological tell sites under threat in the Middle East. *Journal of Field Archaeology 42*, 61-83.

Parcak, Sarah, David Gathings, Chase Childs, Greg Mumford and Eric Cline
2016 Satellite evidence of archaeological site looting in Egypt: 2002-2013. *Antiquity* 90(349):188-205.

Parmegiani, N. and M. Poscolieri
2003 DEM Data Processing for a Landscape Archaeology Analysis (Lake Sevan – Armenia). *The International Archives of the Photogrammetry*, *Remote Sensing and Spatial Information Sciences* 34(5):255-258
1999. The Landscape of Lake Sevan (Armenia) During the Urartian Period, In *New Techniques for Old Times. CAA98. Computer Applications and Quantitative Methods in Archaeology. Proceedings of the 26th Conference, Barcelona, March 1998 (BAR International Series 757)*, edited by Barceló, J.A., I. Briz and A. Vila, pp. 271-274. Archaeopress, Oxford.

Patterson, Thomas C.
2008 The History of Landscape Archaeology in the Americas. In *Handbook of Landscape Archaeology*, edited by David Bruno and Julian Thomas, pp. 77-84. Left Coast Press, Walnut Creek, CA.

Pauketat, Timothy and Susan M. Alt
2003 Mounds, Memory, and Contested Mississippian History. In *Archaeologies of Memory*, edited by Ruth M. Van Dyke and Susan E. Alcock, pp. 151-179. Oxford: Blackwell.

Pearson, Michael Parker
1999 *The Archaeology of Death and Burial.* Texas A&M University Press.

Petrosyan L.A.
1992 Prehistorical Sites of Kuchak. *Archaeological Works at Newbuildings of Armenia (results of excavations of 1986-1987)* pp 61-65 (in Armenian).
1985 Excavations at Kuchak. *Abstracts of Reports of the Conference Devoted to the Archaeological Fieldwork Results (in Armenian) in Arm. SSR in 1983-198,* pp. 21-22 (in Armenian).

Piotrovskii, Boris
1970 *Karmir-Blur*, Izdatel'stvo 'Avrora', Leningrad (in Russian and English)
1969 *The Ancient Civilization of Urartu.* Translated by James Hogarth. Cowles Book Company, New York.
1967 *Urartu: The Kingdom of Van and its Art.* Translated by Peter S. Gelling. Evelyn Adams & Mackay, London

1960 Urartskie nadpisi iz raskopok Karmir-Blura 1939-1958 [Urartian inscriptions from the excavations in Karmir-Blur 1939-1958], *Epigrafika Vostoka* 13: 105-109 (in Russian)
1955 *Karmir-Blur* III. Archeologiceskie Raskopki v Armenii 5, Izdatel'stvo Akademii Nauk Armjanskoj SSR, Erevan (in Russian)
1952 *Karmir-Blur* II, Archeologiceskie Raskopki v Armenii 2, Izdatel'stvo Akademii Nauk Armjanskoj SSR, Erevan (in Russian)
1950 *Karmir-Blur* I, Archeologiceskie Raskopki v Armenii 1, Izdatel'stvo Akademii Nauk Armjanskoj SSR, Erevan (in Russian)

Poirier, Nicolas, Rachel Opitz, Laure Nuninger, Kristof Ostir.
2013 Lidar in Mediterranean agricultural landscapes: reassessing land use in the Mauguio. In *Interpreting archaeological topography: airborne laser scanning, 3D data and ground observation,* edited by Rachel S. Opitz; David C. Cowley, , pp.184-196. Oxbow Books.

Porter, Anne
2002 The dynamics of death: Ancestors, pastoralism and the origins of a third-millennium city in Syria. *Bulletin of the American Schools of Oriental Research* 325:1-36.

Prent, Mieke
2003 Glories of the Past in the Past: Ritual Activities at Palatial Ruins in Early Iron Age Crete. In *Archaeologies of Memory*, edited by Ruth M. Van Dyke and Susan E. Alcock, pp. 151 – 179. Blackwell,Oxford & Malden, Mass.

Reinhold Sabine & Dmitrij Korobov
2007 The Kislovodsk basin in the North Caucasian piedmonts – archaeology and GIS studies in a mountain cultural landscape. *Preistoria Alpina*, 42: 183-207.

Renfrew, Colin
1976 Megaliths, territories and populations. In *Acculturation and Continuity in Atlantic Europe,* pp. 198-220. Brages: De Tempel.

Ricci A., Helwing B., Aliyev T.
2012, The Neolithic on the Move: High Resolution Settlement Dynamics Investigations and Their Impact on Archaeological Landscape Studies in Southwest Azerbaijan. *eTopoi* 3: 369-375

Richards, Janet
2005 *Society and Death in Ancient Egypt: Mortuary Landscapes of the Middle Kingdom*. Cambridge University Press, Cambridge.

Richards-Rissetto, Heather, and Kristin Landau
2014 Movement as a means of social (re)production: using GIS to measure social integration across urban landscapes. *Journal of Archaeology Science* 41:365–375.

Ristvet, Lauren

2018 Negotiation, Violence and Resistance: Urartu's Frontiers in the Iron Age Caucasus. In *The Archaeology of Imperial Landscapes: A Comparative Study of Empires in the Ancient Near East and Mediterranean Worlds.* Edited by Bleda S. Düring and Tesse D. Stek, pp. 175-205. Cambridge University Press, Cambridge.

2014 *Ritual, Performance and Politics in the Ancient Near East.* Cambridge University Press, Cambridge.

2011 Travel and the Making of North Mesopotamian Polities. *Bulletin of the American Schools of Oriental Research* 361:1-31

2008 Legal and archaeological territories of the second millennium BC in northern Mesopotamia. *Antiquity* 82(317):585-599.

2007 The Third Millennium City Wall at Tell Leilan, Syria: Identity, Authority, and Urbanism. In *Power and Architecture: Monumental Public Architecture in the Bronze Age Near East and Aegean*, edited by J. Bretschneider, J. Driessen, and K. Van Lerberghe, pp. 183-211. Leuven: Peeters Publishers.

Ristvet, L. Gopnik, H. Bakhshaliyev, V., and S. Ashurov

2012 2010-2011 American-Azerbaijani Excavations at Oglanqala, in *Naxçıvan İlk Yaşayış və Şəhərsalma Yeri Kimi,* Naxçıvan: Əcəmi, pp. 39-65.

Ristvet, L., V. Bakhshaliyev and S. Ashurov

2011 Settlement and Society in Naxçıvan: 2006 Excavations and Survey of the Naxçıvan Archaeological Project *Iranica Antiqua*, 46: 1-53.

Ristvet, Lauren , Hilary Gopnik, Veli Bakhshaliyev, Hannah Lau, Safar Ashurov, and Robert Bryant

2012 On the Edge of Empire: 2008 and 2009 Excavations at Oğlanqala, Azerbaijan *American Journal of Archaeology*, 166(2): 321-362.

Robin, Cynthia and Nan Rothschild

2002 Archaeological Ethnographies: Social Dynamics of Outdoor Space. *Journal of Social Archaeology* 2(2):159-171.

Root, Margaret Cool

2010 Defining the Divine in Achaemenid Persian Kingship: The View From Bisitun. In *Every Inch a King: Comparative Studies on Kings and Kingship in the Ancient and Medieval Worlds,* edited by Lynette Mitchell and Charles Melvine, pp. 23-66. Koninklijke Brill NV, Leiden, the Netherlands.

Rubertone, Patricia E.

2008 Monuments, Memory, and Archaeology. In *Archaeologies of Placemaking: Monuments, Memories, and Engagement in Native North America*, edited by Patricia E. Rubertone. Left Coast Press, Walnut Creek, CA, pp. 1-33.

2003a Memorializing the Narragansett: Placemaking and Memory Keeping in the Aftermath of Detribalization. In *Archaeologies of Placemaking: Monuments,* *Memories, and Engagement in Native North America*, pp. 195-216. Walnut Creek: Left Coast Press. 2003b Engaging Monuments, Memories, and Archaeology. In Archaeologies of Placemaking: Monuments, Memories, and Engagement in Native North America, pp. 13-33. Walnut Creek: Left Coast Press.

Rubinson, Karen
2006 Over the Mountains and Through the Grass: Visual Information as 'Text' for the 'Textless". In *Beyond the Steppe and the Sown: Proceedings of the 2002 University of Chicago Conference on Eurasian Archaeology*, edited by D. L. Peterson, L.M. Popova, and A.T. Smith. Colloquia Pontica 13. Brill, Leiden/Boston.

Rubinson, Karen and Adam Smith
2003 Introduction: Archaeology in the Borderlands. In *Archaeology in the Borderlands: Investigations in the Cauacasus and Beyond*, edited by A. Smith and K. Rubinson, pp. 1-8. Cotsen Institute, Los Angeles

Sadr, Karim
2003. The Neolithic of Southern Africa. *Journal of African History* 44:195-209.

Sagona, Antonio
2004 Social Boundaries and Ritual Landscapes in Late Prehistoric Trans-Caucasus and Highland Anatolia. In *A View from the Highlands: Archaeological Studies in Honour of Charles Burney,* edited by Antonio Sagona, pp. 475-538.
2000 Excavations at Sos Hoyuk, 1998-2000: Fifth Preliminary Report. *Ancient Near Eastern Studies* 37:56-127

Salvini, Mirjo
2011 An Overview of Urartian History. In *Urartu: Transformation in the East,* edited by Kemalettin Köroğlu and Erkan Konyar, pp. 74-105. Yapı Kredi Yayınları, Istanbul.
2008 *Corpus dei testi urartei.* CNR Istituto di Studio sulle Civiltá dell'Egeo e del Vecino Oriente, Rome.
2005 Some Considerations on Van Kalesi. In *Anatolian Iron Ages 5 (Proceedings of the Fifth Anatolian Iron Ages Colloquium held at Van, 6-10 August 2001*, edited by A. Cilingiroglu and G. Darbyshire, pp. 145-155. British Institute at Ankara, London.
2002 Historical Geography of the Sevan Region in the Urartian Period. In *The North-Eastern Frontier: Urartians and Non-Urartians in the Sevan Lake Basin I, The Southern Shores*, Documenta Asiana 7, Rome. Edited by R. Biscione, N. Hmayakyan and N. Parmegiani

Scarre, Chris
2008 Shrines of the Land and Places of Power: Religion and the Transition to Farming in Western Europe. In *Belief in the Past: Theoretical Approaches to the*

Archaeology of Religion, edited by David S. Whitley and Kelley Hays-Gilpin, pp. 209-229. Walnut Creek: Left Coast Press.
2006 Sound, Place and Space: Towards an Archaeology of Acoustics. In *Archaeoacoustics,* edited by Chris Scarre and Graeme Lawson, pp. 1-10. Cambridge: McDonald Institute for Archaeological Research.

Schreiber, Katharina
2001 The Wari empire of Middle Horizon Peru: the epistemological challenge of documenting an empire without documentary evidence. In *Empires: Perspectives from Archaeology and History,* edited by Susan E. Alcock Terence N. D'Altroy Kathleen D. Morrison Carla M, pp. 70-92. Cambridge University Press, Cambridge.

Schwartz, Mark
2009 Migration, Diffusion and Emulation: Petrographic Comparisons of Early Transcaucasian and Anatolian Pottery from Malatya-Elazig, Turkey. *Ancient Near Eastern Studies* 46:138-159.

Scott, James
2009 *The Art of Not Being Governed.* Yale University Press.

Seitsonen, Oula, Jean-Luc Houle and Lee G. Broderick
2014. GIS Approaches to Past Mobility and Accessibility An Example From the Bronze Age Khanuy Valley, Mongolia. In *Past Mobilities: Archaeology Approaches to Movement and Mobility,* edited by Jim Leary. Ashgate Publishing Limited, Surrey, England.

Semple, Sarah
1998. A Fear of the Past: The Place of the Prehistoric Burial Mound in the Ideology of Middle and Later Anglo-Saxon England. *World Archaeology* 30(1):109-126.

Sevin, Veli
2003 Pastoral Tribes and Early Settlements of the Van Region. In *Archaeology in the Borderlands: Investigations in the Cauacasus and Beyond*, edited by A. Smith and K. Rubinson, pp. 179-203. Cotsen Institute, Los Angeles.
1999 The Origins of the Urartians in the Light of the Van/Karagündüz Excavations. *Anatolian Studies* 49:159-164.

Shafer, Ann
2007 Assyrian Royal Monuments on the Periphery: Ritual and the Making of Imperial Space. In *Ancient Near Eastern Art in Context: Studies in Honor of Irene J. Winter by her Students,* edited by Jack Cheng and Marian H. Feldman, pp. 133-159. Brill, Leiden.

Sherwood, Sarah C. and Tristram R. Kidder

2011 The DaVincis of Dirt: Geoarchaeological Perspectives on Native American Mound Building in the Mississippi River Basin. *Journal of Anthropological Archaeology* 30:69-87.

Shnirelman, Victor
2001. *The value of the past : myths, identity and politics in Transcaucasia.* National Museum of Ethnology, Osaka, Japan.

Simonyan, Hakob and Mitchell Rothman
2015 Regarding Ritual Behaviour at Shengavit, Armenia. *Ancient Near Eastern Studies* 52:1-46.

Sinopoli, Carla
2001 On the edge of empire: form and substance in the Satavahana dynasty. In *Empires: Perspectives from Archaeology and History,* edited by Susan E. Alcock Terence N. D'Altroy Kathleen D. Morrison Carla M, pp. 155-178. Cambridge University Press, Cambridge.

Smith, Adam
2015 *The Political Machine.* Princeton University Press.
2012 The Prehistory of an Urartian Landscape. In *Biainili-Urartu* edited by S. Kroll, P. Zimansky, U. Hellwag, C. Gruber, M. Roaf, pp. 39-52. Peeters, Leuven.
2005 Prometheus Unbound: Southern Caucasia in Prehistory. *Journal of World Prehistory,* 19:229-279.
2003. *The Political Landscape.* University of California Press.
2000 Rendering the Political Aesthetic: Political Legitimacy in Urartian Representations of the Built Environment. *Journal of Anthropological Archaeology*
1999. The Making of an Urartian landscape. *American Journal of Archaeology* 103:45-71.
1996 Imperial archipelago: The making of the Urartian landscape in southern Transcaucasia. PhD Dissertation, the University of Arizona.

Smith, Adam T., R.S. Badalyan and P. Avetisyan
2009 *The Archaeology and Geography of Ancient Transcaucasian Societies I: The Foundations of Research and Regional Survey in the Tsaghkahovit Plain, Armenia.* Oriental Institute, Chicago.

Smith, E. A.
1983 Archaeological Applications of Optimal Foraging Theory: A Review. *Current Anthropology* 24:625–651.

Smith, Monica L.
2005. Networks, Territories, and the Cartography of Ancient States. *Annals of the Association of American Geographers* 95(4):832–849.

Snead, James, Clark Erickson, and Andrew Darling.
2009 Making Human Space: The Archaeology of Trails, Paths, and Roads. In *Landscapes of Movement: Trails, Paths, and Roads in Anthropological Perspective*, edited by James Snead, Clark Erickson, and Andy Darling, pp. 1-19. Penn Museum Press and the University of Pennsylvania Press, Philadelphia.

Spikins, P., C. Conneller, H. Ayestaran, and B. Scaife
2002 GIS Based Interpolation Applied to Distinguishing Occupation Phases of Early Prehistoric Sites. *Journal of Archaeological Science* 29: 1235–1245.

Stafford, C. Russell
1995 Geoarchaeological Perspectives on Paleolandscapes and Regional Subsurface Archaeology. *Journal of Archaeological Method and Theory* 2(1):69-104.

Steadman, S.R
2005 Reliquaries on the Landscape: Mounds as matrices of Human Cognition. In *Archaeologies of the Middle East*, edited by S. Pollock, R. Bernbeck, Oxford, pp. 286-307.

Steinsapir, A.I.
2005 *Rural sanctuaries in Roman Syria: the creation of a sacred landscape.* British Archaeological Reports, International Series 1431. John and Ericka Hedges Ltd., Oxford.

Stokkel, Peter J.
2005 A New Perspective on Hittite Rock Reliefs. *Anatolica* 31: 171–188.

Stone, Elizabeth
2012 Social differentiation within Urartian settlements. In *Biainili-Urartu* edited by S. Kroll, P. Zimansky, U. Hellwag, C. Gruber, M. Roaf, pp. 89-99. Peeters, Leuven.

Stone, Elizabeth and Paul Zimansky
2001 Survey and soundings in the Outer Town of Ayanis 1996-1998, in *Ayanis I: Ten Years' Excavations at Rusahinili Eiduru-kai 1989-1998*, edited by Altan Çilingiroglu & Mirjo Salvini Documenta Asiana 6, pp. 355-375. Rome.
2003 The Urartian Transformation in the Outer Town of Ayanis. In *Archaeology in the Borderlands: Investigations in the Cauacasus and Beyond*, edited by A. Smith and K. Rubinson, pp. 213-228. Cotsen Institute, Los Angeles.

Strang, Veronica
2008. The Social Construction of Water. In *Handbook of Landscape Archaeology,* edited by Bruno David and Julian Thomas, pp. 123-130. Left Coast Press, Walnut Creek.

Subrahmanyam, Sanjay
2001 Written on water: designs and dynamics in the Portuguese *Estado da India.* In *Empires: Perspectives from Archaeology and History,* edited by Susan E. Alcock Terence N. D'Altroy Kathleen D. Morrison Carla M, pp. 42-69. Cambridge University Press, Cambridge.

Taliaferro, Matthew S., Bernard A. Schriever and M. Steven Shackley
2010 Obsidian procurement, least cost path analysis, and social interaction in the Mimbres area of southwestern New Mexico. *Journal of Archaeological Science* 37: 536-548.

Tanyeri-Erdemir, Tugba
2007 The Temple and the King: Urartian Ritual Spaces and their Role in Royal Ideology. In *Ancient Near Eastern Art in Context: Studies in Honor of Irene J. Winter by Her Students,* edited by Jack Cheng and Marian H. Feldman, pp. 205-225. Brill, Leiden.

Tarhan, Taner
2005 Uc Kale: The Mysterious Building of Cavustepe-Sadurihinili “Temple of the Royal Cult”. *Anadolu Arastirmalari* 18(2):115-136.
1994 Recent Research at the Urartian Capital Tushpa. *Tel Aviv* 21:22-57.
1986. *The Old City of Van and the Van Fortress.* (For UNESCO- The World Heritage List) Istanbul.

Tarhan, Taner. and Veli Sevin
1990 Van Kalesi ve Eski Van Sehri KazIlan, 1988. *KST* 11/ 1 (Antalya 1989):355-375.
1991. Van Kalesi ve Eski Van Sehri KazIlan, 1989. *KST* 12/2 (Ankara 1990):429-456.
1992.Van Kalesi ve Eski Van Sehri KazIlan 1990.Yili Çalişmalari. *Belleten* 56(217):1081-1099.

Ter-Martirosov, F.I.
2007 La forteresse d‘Erebouni, *Les Dossiers d‘Archéologie* 321(mai-juin 2007-2008):54-67
2005a Raskopki na severnom sklone kreposti Erebuni [The excavations on the north slope of Erebuni fortress], *in* A. Kalantaryan (ed.), *Kul΄tjura drevnej Armenii* 13 [*The culture of ancient Armenia. The publication of text of republican scientific conference*, 13], Yerevan: 147-153 (in Russian)
2005b Freski Erebuni Urartskogo i Achemenidskogo periodov [The frescoes of Erebuni of the Urartian and Achaemenid periods], *Vestnik Obscestvennych Nauk Akademii Nauk Armjanskoj SSR* 1: 40-65 (in Russian)

Therborn, Göran
2014 Modern Monumentality: European Experiences. In *Approaching Monumentality in Archaeology,* edited by James F. Osborne, pp. 333-351.

Albany: State University of New York Press.

Thomas, John
2013 Mounds, memories and myths: ancient monuments and place in the Leicestershire landscape. In *Memory, Myth and Long-term Landscape Inhabitation*, edited by Adrian M. Chadwick and Catriona D. Gibson, pp. 76-98. Oakville: Oxbow Books.

Thomas, Julian
2008 Landscape, Archaeology and Dwelling. In *Handbook of Landscape Archaeology,* edited by Bruno David and Julian Thomas, pp. 300-306. Left Coast Press, Walnut Creek.

Thompson, Emma
2008 Composition and Continuity in Sasanian Rock Reliefs. *Iranica Antiqua* 43: 2 99-358.

Tilley, Christopher
2010 Outline of a Phenomenological Perspective. In *Interpreting Landscapes: Geologies, Topographies, Identities*, pp. 25-40. Walnut Creek: Left Coast Press
2008 Landscape Phenomenology. In *Handbook of Landscape Archaeology*, edited by David Bruno and Julian Thomas, pp. 271-276. Left Coast Press, Walnut Creek, CA.
2004 *The Materiality of Stone.* Berg, New York.
1994 *A Phenomenology of Landscape: Places, Paths and Monuments*. Berg, Oxford.

Torres-Rouff, Christina
2012. Commemorating bodies and lives at Kish's 'A Cemetery': (Re)presenting social memory. *Journal of Social Archaeology* 12(2):193–219

Trigger, Bruce
1990 Monumental Architecture: A Thermodynamic Explanation of Symbolic Behaviour *World Archaeology* 22(2):119-132.

Tsetskhladze, Gocha
2003 The Culture of Ancient Georgia in the First Millennium BCE and Greater Anatolia: Diffusion or Migration? In *Archaeology in the Borderlands,* edited by Adam Smith and Karen Rubinson, pp. 229-245. Cotsen Institute of Archaeology, Los Angeles.

Tumanyan, G. S.
1997 Late Bronze age burials of Khojabagher of Ashtarak. *IFJ* 2, p. 249-262 (in Armenian).
1991 Excavations of the burials of Khojabagher of Ashtarak in 1989. *ARCDAFR in RA in 1989-1990,* p. 47-48 (in Armenian).

1989 Burials of Khojabagher of Ashtarak. *ARCDAFR in Arm. SSR in 1987-1988,* p. 12-13 (in Armenian).

Ur, Jason
2010 *Urbanism and Cultural Landscapes in Northeastern Syria: The Tell Hamoukar Survey, 1999-2001*. Oriental Institute Publications 137. Chicago: Oriental Institute of the University of Chicago.
2003 CORONA satellite photography and ancient road networks: A northern Mesopotamian case study. *Antiquity* 77(295):102-115.

Ur, Jason, and Emily Hammer
2009. Pastoral Nomads of the Second and Third Millennia AD on the Upper Tigris River, Turkey: Archaeological Evidence from the Hirbemerdon Tepe Survey. Journal of Field Archaeology 34:37-56.

Van Dyke, Ruth
2007 Chapter 9: Lived Landscapes. In *The Chaco Experience Landscape and Ideology at the Center Place*. School of American Research, Santa Fe, pp. 237-253.

Van Dyke, Ruth M. and Susan E. Alcock
2003. Archaeologies of Memory: an Introduction. In *Archaeologies of Memory*, edited by Ruth M. Van Dyke and Susan E. Alcock, pp. 1 – 14. Blackwell,Oxford & Malden, Mass.

Van Leusen, P. Martijn
1995 GIS and Archaeological Resource Management: A European Agenda. *In Archaeology and Geographic Information Systems: A European Perspective*, edited by G. Lock and Z. Stancic, pp. 27-42. Taylor and Francis, London.

VanValkenburgh, Parker and James Osborne
2013 Home Turf: Archaeology, Territoriality, and Politics. Pp. 1-27 in *Territoriality in Archaeology*. Ed. J. F. Osborne and P. VanValkenburgh. Archeological Papers of the American Anthropological Association, Vol. 22. Arlington, VA: Wiley-Blackwell.

Verhagen, Philip
2013. On the road to nowhere? Least cost paths, accessibility and the predictive modelling perspective. In Proceedings of the 38th Annual Conference on Computer Applications and Quantitative Methods in Archaeology, edited by F. Contreras, M. Farjas, and F.J. Melero, pp. 384–390. Archaeopress, Oxford.
2007 *Case Studies in Archaeological Predictive Modeling.* Leiden University Press.

Villamil, Laura P.
2007 Creating, Transforming, Rejecting and Reinterpreting Ancient Maya Urban Landscapes. In *Negotiating the Past in the Past: Identity, Memory, and Landscape*

in Archaeological Research, edited by Norm Yoffee, pp 183-214. The University of Arizona Press, Tucson.

Watson, Aaron
2001 Composing Avebury, *World archaeology* 33:296–314.

Webley, L
2007 Archaeological evidence for pastoralist land-use and settlement in Namaqualand over the last 2000 years. *Journal of Arid Environments* 70:629-640.

Wernke, Steven
2012 Spatial network analysis of terminal prehispanic and early colonial settlements in Highland Peru. *Journal of Archaeological Science* 39:1111-1122.

Wescott, Konnie
2006 One Step Beyond: Adaptive Sampling and Analysis Techniques to Increase the Value of Predictive Models. In *GIS and Archaeological Site Location Modeling,* edited by Mark Mehrer and Konnie Wescott, pp. 56-65. Taylor and Francis, Boca Raton.

Wheatley, David
2012 Connecting landscapes with built environments: visibility, scale and the senses. In *Spatial Analysis and Social Spaces: Interdisciplinary Approaches to the Interpretation of Historic and Prehistoric Built Environments*, edited by E. Paliou, U. Liebewirth and S. Polla, pp. 1–16. De Gruyter, Berlin
2000 Spatial Technology and Archaeological Theory Revisited. In *Computer Applications and Quantitative Methods in Archaeology (BAR International Series 845), CAA96,* edited by K. Lockyear, T.J.T. Sly and V. Mihăilescu-Bîrliba, , pp. 123-132. Archaeopress, Oxford
1995 Cumulative viewshed analysis: a GIS-based method for investigating intervisibility, and its archaeological application. In *Archaeology and Geographic Information Systems: A European Perspective*, edited by G. Lock and Z. Stancic, pp.171-186. Taylor and Francis, London
1993 Going over Old Ground: GIS, Archaeological Theory and the Act of Perception. In *Computing the Past: Computing Applications and Quantitative Methods in Archaeology Caa92*, edited by J. Andresen, I. Scollar, and T. Madsen, pp. 133–138. Aarhus University Press, Aarhus.

Wheatley, David and Mark Gillings
2002 *Spatial Technology and Archaeology: The Archaeological Applications of GIS.* Taylor and Francis, London.
Visual perception and GIS: developing enriched approaches to the study of archaeological visibility. In *Beyond the map: Archaeology and Spatial Technologies,* edited by Gary Lock, pp. 1-27. Amsterdam, The Netherlands, IOS Press.. (NATO Science Series: Life Sciences, 321).

White, Devin A. and Sarah B. Barber
2012 Geospatial modeling of pedestrian transportation networks: a case study from precolumbian Oaxaca, Mexico. *Journal of Archaeological Science* 39(8): 2684-2696.

Whittlesey, Stephanie
2009 Mountains, Mounds, and Meaning: Metaphor in the Hohokam Cultural Landscape. *In The Archaeology of Meaningful Places*, edited by Maria Nieves Zedeño and Brenda Bowser, pp. 73-98. University of Utah Press, Salt Lake City.

Wilkinson, Tony
2004 The archaeology of landscape. In *The Blackwell Companion to Archaeology*. Edited by John Bintliff, pp. 334-356. Blackwell, Oxford.
2003 *Archaeological Landscapes of the Near East.* The Arizona Board of Regents: The University of Arizona Press.

Wilkinson, Tony and Louise Rayne
2010 Hydraulic landscapes and imperial power in the Near East. *Water History* 2(2): 114-144.

Williams, Howard M. R.
1999 Placing the dead: investigating the location of wealthy barrow burials in seventh century England. In *Grave Matters: Eight Studies of Burial Data from the first millennium AD from Crimea, Scandinavia and England*. Ed. Martin Rundkvist. Oxford: Archaeopress, pp. 57-86
1998 Monuments and the past in early Anglo-Saxon England. *World Archaeology* 30(1):90-108.

Williams Kimberly D. and Lesley A. Gregoricka
2013 Social, Spatial, and Bioarchaeological Histories of Ancient Oman: The mortuary landscape of Dhank. *Arabian Archaeology and Epigraphy* 24(2):134-150.

Winter, Irene J.
2010 Royal rhetoric and the development of historical narrative in Neo-Assyrian reliefs. In *On Art in the Ancient Near East Volume I,* edited by Irene Winter, pp. 1-70. Brill, Leiden.

Yakar, Jak
2012 The Ethnoarchaeology of the Socio-Economic Structure of East Anatolia in the Urartian Period. In *Urartu: Transformation in the East,* edited by Kemalettin Köroğlu and Erkan Konyar, pp. 126-149. Yapı Kredi Yayınları, Istanbul

Yesayan, S.
1979 "Urartakan gotiov dambaran Zod", *Patma-Banasirakam Handes-Istoriko-Filologicheskiy Zhurnal,* 3:277-283.

Yoffee, Norm
2007. Peering Into the Palimpsest: An Introduction to the Volume. In *Negotiating the Past in the Past: Identity, Memory, and Landscape in Archaeological Research*, edited by Norm Yoffee, pp 1-9. The University of Arizona Press, Tucson

Yoshida, M., T. Aliyev, B. Helwing, and A. Ricci.
2014. A landscape of survival: Towards sustainable preservation of the archaeological heritage in the Mil Steppe, lower Karabakh region (Aghjabedi district, southwestern Azerbaijan). In *ICOM-CC 17th Triennial Conference Preprints, Melbourne, 15–19 September 2014*, ed. J. Bridgland, art. 1518, 9 pp. Paris: International Council of Museums.

Zedeño, María Nieves
2008 Landscape Archaeology of Territory and Territoriality. In *Handbook of Landscape Archaeology*. Edited by Bruno David and Julian Thomas, Left Coast Press, Walnut Creek, pp. 210-217.
1997 Landscapes, Land Use and the History of Territory Formation: An Example from the Puebloan Southwest. *Journal of Archaeological Method and Theory* 4(1):67-103.

Zedeño, Maria Nieves and Brenda Bowser
2009 Archaeology of Meaningful Places. In *The Archaeology of Meaningful Places,* edited by Brenda Bowser and Maria Nieves Zedeño, pp. 1- 14. University of Utah Press, Salt Lake City.

Zimansky, Paul
2012 Urartu as empire: cultural integration in the kingdom of Van. In *Biainili-Urartu* edited by S. Kroll, P. Zimansky, U. Hellwag, C. Gruber, M. Roaf, pp. 101-110. Peeters, Leuven.
2011 Urartu and its Contemporaries. In *Urartu: Transformation in the East,* edited by edited by Kemalettin Köroğlu and Erkan Konyar pp. 106-125. Yapı Kredi Yayınları, Istanbul.
2005 Writing, Writers, and Reading in the Kingdom of Van. Margins of Writing, Origins of Cultures. In *Margins of Writing, Origins of Cultures,* edited by S. Sanders, pp. 257-76. Oriental Institute of the University of Chicago, Chicago.
1995 Urartian Material Culture As State Assemblage: An Anomaly in the Archaeology of Empire. *Bulletin of the American Schools of Oriental Research* No. 299/300:103-115.
1985 *Ecology and Empire: The Structure of the Urartian State.* Studies in Ancient Oriental Civilization No. 41. The Oriental Institute, Chicago, Illinois.

Zubrow, E. B.
2006 Digital archaeology: The historical context. In *Digital Archaeology: Bridging Method and Theory*, edited by T. Evans and P. Daly, pp. 10–31. Routledge, London,