SOCIAL LANDSCAPES OF THE EGYPTIAN DESERTS, 3000-1100BCE

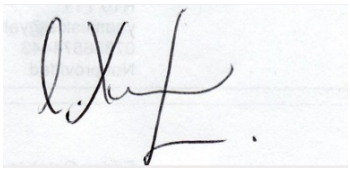
A DISSERTATION
SUBMITTED TO THE FACULTY OF THE JOUKOWSKY INSTITUTE FOR
ARCHAEOLOGY AND THE ANCIENT WORLD
OF BROWN UNIVERSITY
IN PARTIAL FULFILLMENT OF THE REQUIREMENTS
FOR THE DEGREE OF
DOCTOR OF PHILOSOPHY

LAUREL DARCY HACKLEY
MAY 2020

© Copyright 2020 by Laurel Darcy Hackley

This dissertation by Laurel Darcy Hackley is accepted in its present form by the Joukowsky Institute of Archaeology and the Ancient World as satisfying the dissertation requirement for the degree of Doctor of Philosophy.

Date April 30 2020



Yannis Hamilakis, Advisor

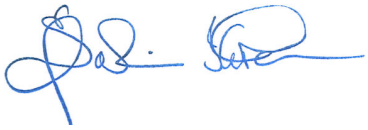
Recommended to the Graduate Council

Date 1 May 2020



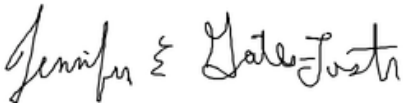
Laurel Bestock, Reader

Date 1 May 2020



Salima Ikram, Reader

Date May 1 2020



Jennifer Gates-Foster, Reader

Approved by the Graduate Council

Date_____

_____

Andrew Campbell, Dean of the Graduate School

LAUREL DARCY HACKLEY
Curriculum Vitae

Ph.D. Candidate, Joukowsky Institute for Archaeology and the Ancient World
Brown University, Providence, Rhode Island
Laurel_Hackley@brown.edu

EDUCATION

2020	Ph.D., Archaeology, Brown University, Providence, RI Thesis "Social Landscapes of the Egyptian Deserts, 3000-1100 BCE" Supervisor Dr. Yannis Hamilakis
2014	M.A., Egyptology, American University in Cairo, Cairo, Egypt Thesis "Amethyst, Apotropaia, and the Eye of Re" Supervisor Dr. Salima Ikram
2007	B.A., Wellesley College, Wellesley, Massachusetts Classical and Near Eastern Archaeology, Egyptology focus Minor in Middle Eastern Studies

RESEARCH INTERESTS & SPECIALIZATIONS

Egypt, Arid Landscapes, Prehistory, Social Memory, Multi-Sensory Engagements
Anatolia, Chalcolithic, Bronze Age
Archaeological Illustrator

TEACHING, MENTORING, AND OUTREACH

2020	Instructor, Brown University ARCH 0250 Intimate Stories, Imagined Landscapes: Landscape, Literature, and Archaeology
2015-2019	Teaching Assistant, Brown University ARCH1870 Environmental Archaeology ARCH0730 The Secrets of Ancient DNA ARCH0676 Pirates of the Caribbean: Scalawags, Sailors, and Slaves ARCH1105 The Face of Power: Representing Roman Emperors
2017-2019	Joukowsky Institute Mentor Program Graduate Mentor
2017	Instructor: Think Like an Archaeologist 6th grade outreach program
2012- 2014	Teaching Assistant, American University in Cairo EGPT 2020 Ancient Egypt: An Introduction HIST 299 Core Curriculum: Introduction to the Ancient Near East EGPT 5100 Culture and Society of Ancient Egypt EGPT 3201 Art and Architecture of Ancient Egypt
2009-2012	English tutor, freelance, Cairo, Egypt

FIELDWORK

Çadir Höyük, Peniryemez, Turkey	2020 Co-Director for Prehistory 2019

	Director, Çadir Höyük Intensive Survey Project 2008, 2012-2018 Archaeologist and Illustrator Directors Dr. Greg McMahon, Dr. Sharon Steadman
Lesvos Migration Survey, Greece	2017 Archaeologist and Surveyor Director Dr. Yannis Hamilakis
Uronarti Regional Archaeology Project, Sudan	2015 Archaeologist and Illustrator Director Dr. Laurel Bestock
Hierakonpolis, Egypt	2015 Illustrator Director Dr. Renee Friedman
North Kharga Oasis Survey, Egypt	2011- 2015 Surveyor and Illustrator Director Dr. Salima Ikram
Mut Temple Precinct, Luxor, Egypt	2012, 2014 Illustrator, Instructor of Illustration Director Dr. Betsy Bryan
Abydos, Egypt	2013 Illustrator (Lithics) Supervisor Elizabeth Hart
Red Monastery Project, Sohag, Egypt	2008- 2012 Assistant to the Director Director Dr. Elizabeth Bolman 2009, 2010 Archaeologist Archaeological Director Dr. Michael Jones
Amenmesse Project (KV11/63), Luxor, Egypt	2010, 2011 Illustrator Director Dr. Otto Schaden

PUBLICATIONS

Sharon R. Steadman, Gregory McMahon, T. Emre Şerifoğlu, Marica Cassis, Anthony J. Lauricella, **Laurel D. Hackley**, Stephanie Selover, Burcu Yıldırım, Benjamin S. Arbuckle, Madelynn von Baeyer, Sarah Adcock, Katie Tardio, Emrah Dinç, Gonca Ozger, Stephanie Offutt, Bengi Selvi. 2019. "The 2017 and 2018 Seasons at Çadır Höyük on the North Central Plateau." *Anatolica* 45. 77-119.

Sharon R. Steadman, **Laurel D. Hackley**, Stephanie Selover, Burcu Yıldırım, Madelynn von Baeyer, and Benjamin Arbuckle. "Early Lives: The Late Chalcolithic to the Early Bronze Age at Çadır Höyük." 2019. In Sharon R. Steadman, Gregory McMahon, T. Emre Şerifoğlu, eds., *5000 Years of Transition and Endurance at Çadır Höyük in Central Anatolia.* Journal of Eastern Mediterranean Archaeology and Heritage Studies Theme Issue 7.3. The Pennsylvania State University Press. 271-298.

Steadman, Sharon, Gregory McMahon, Benjamin Arbuckle, Madelyn von Baeyer, A. Smith, Burcu Yıldırım, **Laurel D. Hackley**, Stephanie Selover, and Stefano Spagni. 2019. "Stability and Change at Çadır Höyük in Central Anatolia: a Case of Late Chalcolithic Globalisation?" *Anatolian Studies* 69.

Hackley, Laurel D. 2019. "Amulets," "Childbirth," "Demons," and "Mining" in L. Sabbahy, ed., *All Things Ancient Egypt: An Encyclopedia of the Ancient Egyptian World*. Santa Barbara: Greenwood Publishing Group.

Hackley, Laurel D., Stephanie Selover, and Sharon Steadman. 2018. "The Persistence of Social and Spatial Memory at Prehistoric Çadir Höyük." *International Journal of the Constructed Environment*.

Yildirim, Burcu, **Laurel D. Hackley**, and Sharon Steadman. 2018. "Sanctifying the House: Intramural Infant Burials in Prehistoric Anatolia." *Near Eastern Archaeology* 81.3. 164-173.

Sharon R. Steadman, T. Emre Şerifoğlu, Stephanie Selover, **Laurel D. Hackley**, Burcu Yıldırım, Anthony J. Lauricella, Benjamin S. Arbuckle, Sarah E. Adcock, Katie Tardio, Emrah Dinç, Gregory McMahon, and Marica Cassis. 2017. "Recent Discoveries (2015-2016) at Çadir Höyük on the North Central Plateau." *Anatolica* XLIII. 203-250.

Steadman, Sharon, and **Laurel D. Hackley**. 2017. "Social Organization and Spatial Analysis in Prehistoric Anatolia." *Aktuel Arkeoloji*. Temmuz-Ağustos. 104-115.

Matthew C. Reilly and **Laurel D. Hackley**. 2016. "Questioning Drinking, Smoking, Gambling, and Prostitution." *Contexts: The Annual Report of the Haffenreffer Museum of Anthropology* 41. 14.

CONFERENCES & WORKSHOPS

2019	American Schools of Oriental Research Annual Meeting "Social Landscapes of the Egyptian Deserts, 3000-1100 BCE"; "Variability in Work Spaces and Domestic Spaces From Late Chalcolithic Çadir Höyük"
2018	American Schools of Oriental Research Annual Meeting "Memory and the Body in Egyptian Festival Processions"
	European Association of Archaeologists Annual Meeting "Horus on the Crocodiles and Eros on the Goose: Personal Magic and the Control of Wild Things in Roman Egypt."

	American Research Center in Egypt Annual Meeting Student Paper Competition Finalist "The Great Green and the Great Sand Sea: Marine Symbolism in the Egyptian Desert"
	Coordinator, Mellon Dissertation Writing Workshop "Rethinking Humanism in the Anthropocene"
	"State of the Field 2018: Archaeology and Social Justice" Conference Organization Committee Session Chair: "Diversity and Epistemic Justice"
2017	American Research Center in Egypt Annual Meeting Student Poster Contest 2nd place "The Cowrie Shell as a Protective Eye"
	American Schools of Oriental Research Annual Meeting "Sanctifying the House: Intramural Infant Burials in Prehistoric Anatolia"; "You Go To a Place Difficult of Access: Multisensory Dimensions of Ritual Practice"
	"State of the Field 2017: The Archaeology of Egypt" Session Chair: "Breaking Political Boundaries"
2016	American Schools of Oriental Research Annual Meeting "Baboons, Dwarves, and Angry Eyes: Apotropaic Practice and Transmission"
	12th Annual Midwest Historical Archaeology Conference: Archaeology & the Power / Danger of Neighborhoods "Up Against the Wall: Street Art and the Urban Environment in Cairo"
2015	American Research Center in Egypt Annual Meeting "Amethyst, Ivory Wands, and the Eye of Re"

AWARDS

2019	Brown University Doctoral Research Travel Award ($1800) Brown University Middle Eastern Studies Travel Grant ($900) Brown University Program in Early Cultures Top-Up Grant ($500)
2018	Institute at Brown for Environment and Society Research Travel and Training Award ($4500)
2017	American Research Center in Egypt Annual Meeting Student Poster Contest 2nd place ($300)
2015-2019	Brown University Graduate Conference Travel Grant ($650 annually)
2015-2019	Brown University Joukowsky Summer Research Award (various amounts annually, totaling $4450)
2015-2018	Brown University International Travel Fund (various amounts annually, totaling $3125)

2015, 2016	Brown University Doctoral Research Travel Grant ($500 annually)

MUSEUM WORK

2019-2020	Co-curator, "Transient Matter" Haffenreffer Museum of Anthropology, Brown University
2016, 2018	Haffenreffer Museum of Anthropology, Brown University Graduate Proctor for Collections Research
2017	Co-curator, "Bad Things? Colonialism and Vice in the Americas" Joukowsky Institute for Archaeology and the Ancient World, Haffenreffer Museum of Anthropology, Brown University
2008	Exhibitions Coordinator El-Sawy CultureWheel, Cairo, Egypt
2007	Egyptian Museum Registry Project Egyptian Museum, Cairo, Egypt
2006	Assistant, Agha Khan Program for Islamic Art and Architecture Harvard University Fine Arts Library, Cambridge, MA, USA
2005-2006	Assistant, Giza Archives Project Museum of Fine Arts, Boston

LANGUAGES

Egyptian Colloquial Arabic (Advanced)
French (Reading)
German (Reading)

Akkadian (Exam competency)
Hittite (Exam competency)
Middle Egyptian (Exam competency)

ACKNOWLEDGEMENTS

I would like to express my sincere thanks to my committee, Drs. Yannis Hamilakis, Laurel Bestock, Jennifer Gates-Foster, and Salima Ikram, all of whom have been instrumental in me seeing this project to completion. Some of them have been my teachers and mentors for a very long time now, and others I haven't known as long, but I hope these are relationships that will span the length of a career.

I also owe thanks to the people who supported and facilitated my fieldwork in Egypt, especially the staff at the Amun Hotel in Luxor, and the drivers I worked with in the Eastern desert, in particular Hamdi Mahdi, whose experience I greatly benefited from.

Jess Porter and Sarah Sharpe were also critical in me finishing this project, especially in regard to their help in arranging the final stages in the face of unexpected and challenging circumstances.

I'd also like to thank the community of graduate students here at the Joukowsky who have always been there when I needed them. In particular, I want to thank my roommate Sam Lash, who has been an excellent and sympathetic friend through this whole process.

And I want to thank Tony Lauricella, who has been extremely patient and supportive and has always been ready to read and talk through my work, or make me a map at the drop of a hat.

TABLE OF CONTENTS

Introduction 1

Chapter 1. The Landscape Concept: Theoretical Approaches 12

- Introduction 12
- Capitalism, Romanticism, and Environmentalism: Contemporary Context for the Landscape Concept 14
- Space and Place: Theorizing the Landscape 27
- Archaeological Approaches to Landscape 34
- The Egyptian Landscape: History of Research 42
- Toward an Egyptian Landscape Methodology 52

Chapter 2. Methodologies 56

- Introduction 56
- Where I Went And When 57
- Desert Sensoria and Phenomenology in Place 59
- Spatial Data and Documentation 63
- Representation and Communication 69
  - Texts 69
  - Visual Representations 71
- Conclusion 73

Chapter 3. Environmental and Cultural History of the Sahara (9500-3000 BCE) 75

- Climate 77
- The Holocene Peopling of the Sahara 81
- Populations of the Sahara: A Case Study from Niger 84
- The Eastern Sahara 86
- The Other Side of the Nile: The Eastern Egyptian Desert 93
- The Desert and the Egyptian Neolithic: Proto-Dynastic Cultures of the Nile Valley 95
- Saharan Legacies in the Nile Valley: Culture and Cult 101
- Conclusion 105

Chapter 4. Making Place in the Red Land: Rock Art, Wayfinding, and the Socialization of Landscape 109

- Introduction 109
- A Note on Terminology 110
- Theories About Rock Art, Myths About Rock Art 111
- Rock Art in Time 114

Rock Art in Place: Landscape Approaches 117
Rock Art in The Egyptian Deserts 123
Interpretation of Rock Art in The Egyptian Deserts 126
Thinking about People, Space, and Rock Art 129
Environment 134
Human Action 138
Inscribing Social and Divine Order 139
Hunting, Balance-Keeping, and Being With Animals 142
Cattle and Pastoralism 145
Travel and Wayfinding 149
Conclusion 152

Chapter 4. Case Study: Rock Art of the Eastern Desert 154

Introduction 154
Data and Fieldwork 158
The Desert RATS Survey 158
Problems with Survey and Legacy Data 160
Rock Art Waymarking in the Desert RATS Survey Area 161
Identifying Routes 162
Rock Art and Waymarking 166
Waymarking and Placemaking in Wadi Barramiya 172
Rock Art that Does Not Mark Routes 184
Wadi Umm Salaam 184
Wadi Atwani 187
Case Study Conclusions 188

Chapter 5. Roads and Oases: Connectivity, Ambiguity, and Spectrums of Familiarity 191

Introduction 191
The Oases 186
Prehistory and Native Populations 196
Egyptian Administration of the Oases 199
Old Kingdom 199
First Intermediate Period and Middle Kingdom 201
New Kingdom 203
The "Libyan Tribes" 207
The Situational Spectrum of Foreignness in the Egyptian Deserts 211
Roads, Networks, and Trade 214
Case Study: The Abu Ballas Trail 217
Early History 219
Abu Ballas in the Old Kingdom 220

Cairns 221
Water Depots and Resupply Stations 224
Use in Later Periods 227
Middle Kingdom 227
Second Intermediate Period and New Kingdom 229
Thoughts and Implications 230
The Eastern Desert Roads to the Red Sea 232
Case Study: Wadi Hammamat Inscription of the Great Steward Henu 234
The Aim of the Expedition 235
The Route of the Expedition 236
The Personnel 237
Arrival at the Red Sea Harbor 239
How the Desert is Like the Sea 241
Conclusions 246

Chapter 6. Social Dynamics of Resource Extraction 251

Introduction 251
Mining and Quarrying 254
Resources and Exploitation 254
Getting There: Quarry Roads 256
Commissioning and Consuming Mined Materials 259
Mining and the Military 263
Old Kingdom 263
Middle Kingdom 266
Case Study: Wadi el Hudi 268
New Kingdom 271
Material and Meaning 273
Hathor and Mining 276
Anatomy of a Mining Camp 278
Conclusion 283

Chapter 7. Cult, Ritual, and Landscape Imaginaries 286

Introduction 286
Memories of a Green Sahara and Predynastic Conceptions of the Cosmos 289
Predynastic Iconography 290
The Desert in a Predynastic Ritual Context 293
The Desert as Abstract and Otherworldly 295
The Geography of the Egyptian Cosmos 296
Liminality and Ambiguous Landscape Imaginaries 298
Seth, Hathor, and the Supernatural Koiné 303

Seth 303
Seth as a Protector and Preserver of Order 307
Seth as a God of Foreigners 308
Hathor 311
Hathor and Foreigners 312
Hathor as the Eye of Re 312
Performance and Re-Enactment: The Festival of the Return of the Solar Eye 314
Landscape and Experience: The Festival of the Returning Goddess at el Kab 315
Landscape Functions of Hathor and Seth 318
The Desert as the Realm of the Dead 319
Early Associations 319
The Pharaonic Necropolis and Underworld Texts 321
Desert Geography of the Netherworld 325
The Western Horizon 325
The Eastern Horizon 328
Landscape Layers: Real and Imagined Places 328
How the Desert is Like the Sea Part II: Abstractions 329
Conclusion 331

Conclusion 334
Social Landscapes and Human Geography 335
Arid Landscapes Require Unique Modalities of Perception 336
Phenomenology in Place 337
Spatial Methodologies 338
Rock Art as a Waymarking Technology 339
Time and Place 341
Ambiguity and "Reality Bleed" 343
Contributions and Moving Forward 344

References 347

LIST OF ILLUSTRATIONS

Chapter 1.

1.1. Thomas Cole, 1836. "View from Mount Holyoke, Northampton, Massachusetts, After a Thunderstorm–The Oxbow." Oil on canvas, 130.8x193cm. Metropolitan Museum of Art. 14.

1.2. Landscape painting as a view of land possession. Unknown artist, c. 1685. "Yester House, East Lothian (View of the policies, including the canal and cascades)." Oil on canvas. 111x87cm. National Galleries Scotland. 16.

1.3. Albert Bierstadt. 1868. "Among the Sierra Nevada Mountains, California." Oil on canvas. Smithsonian American Art Museum. 19.

1.4. A modern songline by Aboriginal artist Maisie Campbell. Japingka Aboriginal Art Gallery. 20.

1.5. Romantic man alienated from nature. Caspar David Friedrich. c. 1817. "Wanderer Above a Sea of Fog." Oil on canvas, 98x74cm. Kunsthall Hamburg. 22.

1.6. Print ad from the "Crying Indian" campaign. 1971. 25.

Chapter 2.

2.1. Sketches from a trip to el Kab, April 2019. Ballpoint pen on paper. 61.

Chapter 3.

3.1. Northern half of the African continent, showing modern extent of the Sahara. Image Rainer Lesniewski. 75.

3.2. Milankovitch Cycles. 77.

3.3. Drying of the Sahara. Kuper and Kröpelin 2006. 80.

3.4. Manning and Timpson's demographic results showing population movement over time. Manning and Timpson 2014. 83.

3.5. Map of Egypt showing locations of sites mentioned in this chapter. 86.

3.6. Reconstruction of a standing stone circle from Nabta Playa. Aswan Nubia Museum. 90.

3.7. Tomb HK 100. 102.

Chapter 4a.

4a.1. Geologic Survey of Egypt Mineral Map. 1:2,000,000. 1981. The yellow and pale red areas are sedimentary stones on which most rock art is found. 135.

4a.2. Schematic diagram of geologic bedding of Egypt. Barnard 2012. 136.

4a.3. Cattle Imagery. 1. Narmer Palette, Dyn. 1, Hierakonpolis. Egyptian Museum.. 2. Detail of rim of Hathor Bowl, Hierakonpolis, Petrie Museum. 3. Gerzeh Palette, Naqada IIc-d, Gerzeh. Cairo Museum. 4. Female Figurine, Naqada IIa, Brookyln Museum. 145.

4a.4. Human figures interacting with cattle. Judd 2006. 147.

4a.5. Putative maps from the Eastern desert, matched with important wadis. Cherry 2000. 151-152.

Chapter 4b.

4b.1. A blaze and cairn on the Lycian way, Turkey. 155.

4b.2. Aggregation of rock art representing at least three episodes of carving. Wadi Umm Hajalij. Photo Frank Lankester. 157.

4b.3. Targeted and Systematic areas of the RATS project in context. Points that display outside the survey area are relocated by RATS from older surveys. 159.

4b.4. The RATS area on normal satellite imagery, and with a superimposed DEM accentuating the dendritic structure of the wadi system and highlighting areas of similar elevation. 163.

4b.5. Modern, historical, and possible tracks following the deepest wadis. 164.

4b.6. Surface Drainages modeled using an SRTM DEM. 165.

4b.7. General view of the RATS area, showing tracks, terrain, and rock art. 167.

4b. 8. The SW corner of the "Systematic" survey area. An example of through-wadi (road-bearing) entrances being marked at the approach from the Nile Valley. Note that dead-end wadi entrances are not decorated. 168.

4b.9. Systematic survey area, with routes. 169.

4b.10. Detail from the central part of the systematic survey area, showing

positions of rock art at route junctions, entrances, and turns. 170.

4b.11. Detail of rock art and wadi junctions in the Wadi Barramiya. Numbers refer to descriptions in text. 173.

4b.12. Two boat panels at 1. 174.

4b.13. General view of 1. 174.

4b.14. Landscape situation of site 3, indicating possible water collection. 175.

4b.15. Late and prehistoric groupings at Site 3. 176.

4b.16. General view of the rock shelter at Site 4. 177.

4b.17. Panel at Site 4 showing Arabic inscriptions superimposed on prehistoric boats. 177.

4b.18. Prehistoric animals, hunters, and boats; a camel. 178.

4b.19. Prehistoric boats and quadrupeds, including ibex. 178.

4b.20. Hieroglyphic inscription. 179.

4b.21. Cattle. 179.

4b.22. Prehistoric boats and animals; a camel. 180.

4b.23. Pharaonic stela. 180.

4b.24. General view of the eastern mouth of Wadi Barramiya. 181.

4b.25. Wadi Umm Salaam, the the center of the southern half of the study area. 185.

4b.26. The "Jacuzzi" at RATS site 14 in Wadi Umm Salaam. Photo F. Lankester. 186.

4b.27. Wadi Atwani. 187.

4b.28. RATS vehicles confronted by impassable terrain in the Wadi Atwani. Photo Frank Lankaster. 188.

Chapter 5.

5.1. The Egyptian Oases, highlighted by modern vegetation index (Normalized Difference Vegetation Index, month of January, Global Land Cover Characterization Dataset (1993)). Map Anthony Lauricella. 194.

5.2. Clayton ring from el Kharafish north of Dakhla oasis (Riemer 2013). 198.

5.3. Route through the Western Desert Oases, showing the towns mentioned in the Kamose texts. Simpson, W. 2003. *The Literature of Ancient Egypt.* Yale University Press. 347. 203.

5.4. Map of the main desert routes, showing connections with oases and cities in the Nile Vall**ey.** Pantalacci 2013b. 215.

5.5. Abu Ballas trail. From Förster, F. "Beyond Dakhla: The Abu Ballas Trail in the Libyan Desert (SW Egypt)." In F. Förster and H. Riemer, eds., *Desert Road Archaeology in Ancient Egypt and Beyond.* Köln: Heinrich-Barth-Institut. 298. 217.

5.6. Registration of African trade goods in the Nile Valley. Tomb of Rekhmire, 18th Dynasty (TT100). 219.

5.7. The Abu Ballas trail in context with the Girga road, and possible direction of onward travel (Förster 2013). 221.

5.8. Resupply stations on the Abu Ballas trail (Förster 2007). 225.

5.9. Instription of Mentuhotep II at Jebel Ouenat (Pantalacci 2013). 227.

5.10. Routes from Qena bend to Wadi Gawasis (Bard, Fattovich, and Manzo 2013). 237.

Chapter 6.

6.1. Locations of resources, after Baines and Malek (2005). Map Anthony Lauricella. 255.

6.2. Major mines and quarries and their periods of use (Shaw 1994). 262.

6.3. Reign of Akhenaten/Tutankhamun: Nubian Tribute Presented to the King, Tomb of Huy (detail). Copy made by Charles Wilkinson, tempera on paper. Metropolitan Museum of Art. 272.

6.4. Stones used for sculpture. After Lyvia Morgan (2011). 274.

Chapter 7.

7.1. Barbary sheep among the desert hills. Naqada Ic (c. 3700 BCE). Ashmolean Museum of Art and Archaeology AN1895.482 (Patch 2011). 289.

7.2. Detail from the desert hunt scene of Sahure from his pyramid temple at Abusir. 5th Dynasty. From Borchardt, 1913. Pl. 17. Note the wavy ground-lines (painted red) on which the animals stand, and the nets (depicted as vertical barriers, crossing registers) at either side. 291.

7.3. Boats in a desert landscape. Naqada II (c. 3450-3300 BCE). Metropolitan Museum of Art 20.2.10 (Patch 2011). 292.

7.4. Naqada III. Ashmolean Museum of Art and Archaeology AN1896-1908.E.2832 (Patch 2011). 293.

7.5. Naqada I plate depicting the passage of sun through day and night worlds. Egyptian Museum, Cairo. 297.

7.6. “Two Dog Palette." Note the mix of gazelle, lion, giraffe, etc., with griffins, serpopards, and other fantastic animals. Hierakonpolis. 3300-3100 BCE. Ashmolean Museum. 299.

7.7. A tamed griffin. 12th Dynasty. Tomb of Khety I, Beni Hassan. Facsimilie Painting, Metropolitan Museum of Art. 300.

7.8. Fantastical animals, including the Seth animal on the far right, from Beni Hassan. Velde 1957:15. 306.

7.9. Annotated map of the Afterlife from the Book of Two Ways (Robinson 2003: 147). 322.

7.10. Turin Papyrus map of the Wadi Hammamat, c. 1150 BCE. 324.

INTRODUCTION

This dissertation investigates the ancient Egyptian deserts (c. 3000-1100 BCE) as social landscapes by integrating landscape and survey studies with textual sources and material culture. Traditionally, the Egyptian deserts have been viewed by Egyptologists as either wild, dangerous places subject to the forces of chaos, or as a source of valuable mineral resources to be exploited by official expeditions. This project seeks a more nuanced approach to the arid landscapes that bound the Nile Valley by looking at the role the deserts played in the way people constructed ideas about both physical and supernatural geographies. This can be accessed in many ways: through archaeological evidence of human activity in the deserts, through material practices with desert resources, and through texts relating to desert environments. Representations of the desert in various media will provide important evidence for the analogic links that people formed with the landscape.

This dissertation explores three major questions:

How did the landscapes of the Egyptian deserts influence ancient understandings of the physical and supernatural worlds?

How were desert regions constructed as socially potent, mnemonic landscapes?

How can the dimensions of this influence be accessed in the archaeological record?

Geographically, the project will consider Egypt's Eastern and Western deserts, bounded by the 'necklace' of Libyan oases to the west, the Red Sea to the east. Due to the nature of the evidence, the perspective will mostly be that of people living in the Nile Valley, but where possible the view of people in the oases and outer regions will be examined.

It should be noted that when I use the term "Egypt" I am referring to the settlement inside the flood-irrigated Nile Valley, the part of the landscape generally referred to by the Egyptians themselves as *Kmt* (the Black Land), *t3-mrˀ* or *ỉḏbỉy* (the Two Banks). Different desert landscapes are referred to with the terms (as listed in Faulkner's *A Concise Dictionary of Middle Egyptian* (1976)):

dšrt, "the Red Land"

w'rt, "desert plateau"

h3st, "hill country," "foreign land," "desert region"

bỉ3w, "mining region" or Sinai; this is spelled with the "hill country" determinative

mrw, "desert," also spelled with the "hill country" determinative

š3sw, the Northeastern desert of Egypt, and also its inhabitants

smyt, "desert;" also can be used to refer to the necropolis

The dissertation is primarily centered on Pharaonic Egypt, from the Old Kingdom to the end of the New Kingdom, although evidence from the Protodynastic to the Graeco-Roman periods will be considered. A diachronic study is important because landscapes

are constantly being re-formed and re-negotiated (Knapp and Ashmore 1999; Ingold 1993). The climate and ecology of the Sahara changed considerably in the millennia of Egyptian antiquity, and so did the cultural context of those traversing it. A wide diachronic approach will help to highlight the important role of memory in shaping and engaging with Egypt's desert landscapes, even as their form and use changed.

Following Kosiba and Bauer (2013), I will use "environment" to refer to the physical attributes of a given area (geology, topography, ecology, etc.), and the term "landscape" to refer to the cultural product of human action (dwelling, traversing, imagining, and representing) on that environment. Chapter 1 lays out the theoretical framework through which I approach landscapes in general and the Egyptian landscape in particular. Essentially, I am interested in the cultural production of the desert landscape through centuries of engagements with the people of the Nile Valley: how are Egyptian experiences in the desert recorded and transmitted? Do they transform into widely-held ideas or narratives? How are these narratives re-inscribed on the landscape, in terms of human experience, behavior and physical landscape interventions like architecture? How is this influenced by environmental change, and what is the role of landscape memory in a changing environment?

By asking these questions, I am challenging an established view of desert environments as static, empty, and culturally unproductive. Despite anthropological literature on arid landscapes and the considerable work that has been done on the Egyptian desert environment in the last twenty years, a prevailing assumption about the sterility of the deserts remains embedded in much general Egyptological literature, even that being produced currently. The Saharan origin of the ancient Egyptian population is

now widely accepted, but the study of the ongoing, dynamic cultural relationship with the desert environment as it continued to dry throughout the Dynastic period still holds the potential for considerable research. In Dynastic and later contexts, the deserts are often viewed as primarily a location of resources, and not as landscapes in their own right. A result of this is the casting of research on desert landscapes in terms of procurement or economy, most often in the context of state-imposed expeditions into desert zones. This eclipses questions about emotional, conceptual, and embodied experiences of the arid environment, and therefore also obscures important dimensions of the cultural construction of deserts.

Valuable work on the archaeology and anthropology of arid landscapes has been produced in the last two decades. Much of this focuses primarily on questions surrounding subsistence, especially agricultural strategies, and the transition from hunter-gather lifeways to agriculture (see, for instance, Veth et. al. 2005; Barker and Gilbertson 2000; Barker et. al. 1996). Like the economic approach, these questions yield important information about human activity in the desert but leave considerations of the conceptual formation of desert space more or less untouched.

This dissertation seeks to develop methods for accessing abstract ideas about desert landscapes from the archaeological record, in ways that complement and contribute to existing data. By applying questions about how desert space is constituted, experienced, and imagined I hope to highlight ancient experiences of space that are relevant at the scale of the individual or the body, but which inform more broadly-held ideas about the desert environment and the suites of references and associations that give it cultural meaning.

As scholars in other regional subfields have begun to do, I turn to frameworks from human geography and landscape archaeology, which foreground physical space as an active participant in the formation of human culture and behavior. In particular, I argue that experience of landscape is an embodied engagement, and that the study of any landscape requires methods that take the physical experiences of the human body into account. Elements of embodied landscape include sensory perceptions. This takes in view, smell- and sound-scapes, as well as other physical sensations and impressions about the spatial relationships of landscape elements with one another. In Chapter 2, I discuss some of the ways in which these parts of landscape experience may be, at least to some extent, incorporated into field research. I argue that the desert landscape requires modalities of perception that are attuned to its subtleties, and that researchers who are not themselves from arid landscapes must be particularly aware of this in order to avoid biased readings of desert landscapes as empty or homogeneous. I advocate research methods that include sustained sitting in the landscape, in order to adjust and recalibrate perception. I found sitting and drawing to be a productive technique for becoming comfortable and aware in place, and allaying to some degree anxiety about use of limited research time. Staying in place allows a researcher to take in, by degrees, information about terrain, geology, and environmental factors that affect physical experience. It also accustoms the eye to differentiating natural and archaeological features in the landscape: anthropogenic traces become far more noticeable with sustained looking. This is in part due to remaining in place in different sun angles, which can throw different kinds of archaeological features into greater relief.

In Chapter 3, I focus on the environmental history of the Sahara before the rise of

what can be called an Egyptian "State." This is important for understanding the context in which prehistoric landscape interventions were made, which was in a savannah-type environment watered by monsoonal rainfall. This climate supported a mobile hunter-gather population who were responsible for the creation of the earliest rock art.

The rapid drying of the Saharan region c. 5000- 3000 BCE has been correlated with the rise of Egyptian statehood, because it almost certainly forced the hunter-gatherer population to concentrate in the Nile Valley. I do not wish to enter into the discussion on the dynamics of early Egyptian state formation, but am instead interested in the social position of the drying grasslands during the transition from Saharan pastoralism to Nile Valley agriculturalism. Like the drying event itself, it now seems that this transition in lifeway was more gradual than we formerly supposed. Additionally, it was mediated by a number of social and cultural factors, among them memory of a greener environment. I suggest that these landscape memories played an important role in sustaining certain cultural behaviors, particularly in the registers of Early Dynastic artistic vocabulary and cult performance.

In Chapter 4, I focus on the prehistoric rock art corpus, particularly of the southern part of the Eastern desert. Both deserts contain rock art of all periods, although the Eastern desert provides more rock faces to be decorated. The documentation of Egyptian rock art is an ongoing project being taken on by several survey projects, although permitting procedures and the demands of the environment mean that a comprehensive picture of Egyptian rock art is probably some ways off. Nevertheless, enough material has been documented and published to permit a discussion of its motives and meaning.

Unlike many other rock art studies, which focus primarily on techniques for dating and interpretation of the motifs, I argue for a spatial approach to rock art analysis. Following a few other scholars (e.g., Jones and Diaz-Guardamino 2015; Fahlander 2013), I suggest that what is represented in individual instances of rock art is less a part of their meaning and function than how they alter their makers' and viewers' relationships with a place. This is an approach that allows for a consideration of the ongoing lives of rock art, some of which is extremely ancient. The presence and effect of prehistoric rock art in the desert landscape throughout the Pharaonic and later periods is discussed, as well as the social dynamics that relate prehistoric rock art to newer examples. Chapter 4 concludes with a case study in which I propose an interpretation of rock art in the Eastern desert as a waymarking technology developed in the prehistoric period and continually used and interacted with until the present day. In this chapter, I consider the idea that rock art and other human interventions in the desert serve to domesticate, order, and socialize the terrain by creating a physical layer of visible human activity.

I develop the argument about socialization of landscape in Chapter 5, where I look at the evidence for travel, exchange, and encounter in the deserts. This encompasses activity on the desert road networks and in the oases. In this chapter, I suggest that there is no hard binary relationship between *Kmt* and *dšrt*, and that the desert landscapes and the oases should instead be seen as liminal zones which enable negotiated interactions with non-Egyptian people, terrain, and materials. The deserts are a source of valuable commodities, both traded and mined, that are not available within the Nile Valley, and this contributes to their status as exceptional areas. In this chapter, I explore the position of the desert landscape and its inhabitants, especially in the Western desert, as

ambiguously foreign. I consider the ways in which technologies of landscape marking and state-supported infrastructure, such as cairns, waystations, outposts, and inscriptions, not to mention Egyptian administration of the oases, socialize and domesticate these regions. This socialization makes the deserts more "legible," in the sense of James C. Scott's *Seeing Like a State*: the organizational systems of route creation, waymarking, and provisioning employed by Egyptian administrators in the oases and the Nile Valley enabled a mode of travel and social operation that was intelligible to people who were not native to the desert landscape.

Chapter 5 considers issues of cultural and material exchange, as well as the dynamics of movement between the desert regions and the Nile Valley. These themes are picked up again in Chapter 6, in which I focus on the activities of mining and quarrying. These activities are responsible for a considerable proportion of the archaeological remains in the desert, and historical records and landscape inscriptions, especially in the Sinai and Eastern desert, make it clear that mining was an important activity in all periods. In Chapter 6 I focus on the social dynamics of mining expeditions, and the ways in which the experience of mining must have differed from other kinds of activity in the desert. As in Chapter 5, mining camps as spaces of negotiation with non-Egyptian people and materials will be considered. Mining as a social activity transported large, diverse groups of people into the desert environment, where they worked and lived in community for a period of time. I also discuss the changes in these dynamics that may be observed over time, as the requirements and administrative structures of the Nile Valley elite changed.

An important aspect of mining expeditions is their para-military organization and

rhetoric. This can be seen as a function of state involvement in the organization of large-scale mining efforts, but is also relevant to the interpretation of mining as an exercise in territorial control and the imperial project more generally. I explore the extraction of materials from the landscape itself as a component of landscape "domestication," as discussed in the earlier chapters. The affective dimensions of mining as an embodied landscape practice will also be considered.

Mining camps provide evidence for unique forms of cult activity. Inscriptions, chapels, and other landscape interventions made by the miners themselves demonstrate a bottom-up approach to devotional practice that is largely invisible in the Nile Valley. The religious and symbolic aspects of mining activity and mined materials will be briefly considered here, and taken up again in Chapter 7.

Chapter 7 is concerned with the cultic and cosmological associations of the desert landscapes. This is where the critical analogic links between experience of the desert and communicated ideas about the desert are made. In this chapter, I will discuss the permeability of the desert fringes to supernatural influences. I characterize this as a blurry barrier between worlds, creating a liminal space that is analogous to the space of ambiguity that I argue for in the earlier chapters. In the context of the deserts being locations of encounter between Egyptian and non-Egyptian entities, I will consider the koine of fantastic animals and gods and goddesses with foreign aspects, such as Seth and Hathor.

The liminality of the desert landscape is also compatible with its significance as the location of the necropolis and the gateway to the next world. I discuss the associations of the desert with the afterlife, as expressed in the various underworld texts,

and with the waters of Nun, and with the cults of both Osiris and Re. I also investigate the significance of the god Seth in relation to both of these cult contexts.

The importance of the desert landscape to certain cycles of ritual performance is an important component of this discussion. Using the Wadi Hallel east of the city of el Kab as a case study, I suggest that the physical movement of festival processions into desert landscapes was critical to their efficacy. I argue that desert processions and festivals are concerned with the domestication and socialization of the arid landscape and its population of ambiguous entities. In this respect, they can be seen as a ritual extension of the other processes of landscape socialization, seen in the previous chapters.

Thematically, these chapters are united by two parallel threads: the ambiguity or liminality of desert landscapes, and the use of landscape marking and other interventions as a technique for creating legible human space in the deserts. Both of these concepts point toward processes of making sense of landscapes that were difficult but rewarding to exist in. The action of memory on conceptual and experiential constructions of the landscape is also important, especially where the traces of earlier activity were re-encountered, reinterpreted or reused. In this dissertation, I see the persistent presence of these traces in the landscape as a powerful influence on later activity. Viewing the desert landscape as mnemonic and culturally active is possible through the methodologies and theoretical framework I advocate. This goes beyond the study of the actual arid zones and contributes to our understanding of cultural practices within the Nile Valley. The influence of the desert landscape on the culture of the Nile Valley has been, I show, underrepresented. Here, I argue for an understanding of arid and agricultural landscapes as participating in active and dynamic dialog with one another. This project is a step

toward integrating the influence of valued, utilized, conceptualized, and constantly changing desert landscapes into our study of the culture of the Nile Valley.

Most essentially, throughout this dissertation I am concerned with demonstrating that the ancient Egyptian experience of the desert landscape was not characterized by wholly negative feelings, nor were the deserts considered the opposite of the Nile Valley. Rather, they were exceptional zones that operated differently from the Nile Valley, in ways that produced both uncertainty and opportunity. This operation, furthermore, was not static, but changed as the desert landscapes and the Egyptian engagement with them altered over the millennia of this study's focus. As ongoing processes of desertification continued through the Pharaonic period, desert landscapes also became spaces where memory of a greener environment slowly passed into the realms of mythology, creating a sense of deep-time that heightened the desert's ambiguity, exceptional nature, and cultural power.

CHAPTER 1. THE LANDSCAPE CONCEPT: THEORETICAL APPROACHES

Introduction

This chapter introduces the theoretical context that informs my dissertation, as well as the theoretical approach that I intend to apply to the desert landscapes of ancient Egypt. I begin with a discussion of the ways in which we think about landscape in a modern Western context, because this is important for understanding the inherent cultural biases that influence assumptions about landscape in the English-speaking world and the history of scholarship on the subject. Whether or not the assumptions we make about landscape are applicable to the ancient past, they affect the way we approach the subject and the language we use to explore it. Because this dissertation deals in large part with understanding personal, emotional, affective responses to landscape in the past, it is relevant to explore the mechanisms of this process in the present, and in our own cultural context.

Landscape as a theoretical concept, and its effect on human culture and behavior, has been explored by philosophers, anthropologists, and archaeologists. A robust body of theory has been built up around it. This chapter discusses some of the essential threads in landscape theory, and the ways in which they have been used to consider human experience in the ancient past.

The discipline of archaeology has built its own approaches to landscape. Until recently, these approaches predominantly used methodologies that were honed on the

particular situation of the English countryside; the development of archaeological landscape analyses for other regional and cultural contexts is very much an evolving area. It is only in the last twenty years that the arid zones of the Middle East and northern Africa are being systematically explored.

This is especially true in Egyptology, where the development of landscape-level work has been delayed by logistical considerations and by the culture of scholarship in the field. This dissertation seeks to lay out a novel theoretical approach that is appropriate for the investigation of Egyptian landscapes. These landscapes are unique in their aridity, in their tendency to harbor microclimates of startling variety, and in their long history of human activity but relative paucity of permanent human settlement (Chapter 3). They are also unique in their relation the Nile Valley, home to one of the most intensively studied cultures of the ancient world. Egyptology, however, has long regarded the arid regions to either side of the valley as kept separate from Egyptian civilization, and the deserts are often considered an empty, sterile opposite or foil for the florescence of Egyptian culture, or even as an impassable border land that allowed Egypt to develop in isolation. The last two decades have seen a change in this attitude as researchers increasingly turn to the desert landscape. The priority has been exploration and documentation, and the field is now at a point where formulating a theoretical landscape perspective can be productive. Here, I propose viewing desert landscapes not as empty spaces, but as cultural actors that exerted strong influence on the lives and imaginations of ancient Egyptians both in the deserts themselves and in the Nile Valley.

Capitalism, Romanticism, and Environmentalism: Contemporary Context for the Landscape Concept



Figure 1. Thomas Cole, 1836. "View from Mount Holyoke, Northampton, Massachusetts, After a Thunderstorm–The Oxbow." Oil on canvas, 130.8x193cm. Metropolitan Museum of Art.

This section discusses some of the ways in which our reflexive responses to landscape are influenced by our own cultural context. Although our experience of physical space is in many ways determined by the attributes and capabilities of our physical bodies, this is not the only factor in how we think about place. Cultural placement having to do with history, positionality, epistemology, and aesthetics governs our experience of the physical world on both personal and social levels. These factors can affect us in ways so natural that we take them for granted, which, in the case of archaeological research, can profoundly (and problematically!) shape our assumptions

about the past. Therefore, for an archaeologist operating within a Western, English-speaking framework, it is important to examine some of the ways in which we are primed to consider and to study landscape before we can discuss whether it is appropriate to apply these assumptions to the cultures we study. Here, I review some of the Western approaches, sometimes contradictory, to defining the landscape concept.

"Landscape" is a capacious term, and one that means different things to different people. In English, we use the term to refer variously to terrain, to the natural environment, to space that is manipulated for aesthetic reasons, to a genre of painting, and metaphorically to describe the intricacies of a situation or an emotional state (Meinig 1979). What these uses of the word have in common is that they describe a space, complete and bounded, that one encounters. These landscapes are expressed as somehow total before we arrive in them, and contain elements of the non-human, the inevitable, and even the obstacle. Thus, a mountain landscape may rise up before a traveler, and loom over them. A wooded landscape may invite a visitor to enjoy glimpsing wild flora and fauna, or even to forage and hunt, but in our cultural framework *living* in the forest is an entirely different matter, characterized by oppositional activities of clearance, construction, and cultivation. Painterly landscapes, often, show spaces empty of recognizable human activity or use small figures or buildings to accentuate nature's grand scale.

Likewise, our metaphorical landscapes are presented as finished places we are obliged to traverse: the landscape of a social situation, for instance, is populated with

others' personalities occupying space like landforms, and an emotional landscape is most frequently evoked to explain mental struggles in terms of existence in a changeable, sometimes dangerous, interior environment.

Each of these examples contains a sense of landscape as an imposition on personal agency, a force greater than the individual, or even greater than humanity writ large, that must be contended with. The remove from, or immunity to, human interference is one of the principal factors in modern, capitalist conceptions of landscape.



Figure 2. Landscape painting as a view of land possession. Unknown artist, c. 1685. "Yester House, East Lothian (View of the policies, including the canal and cascades)." Oil on canvas. 111x87cm. National Galleries Scotland.

The "land" in landscape–land in terms of raw, potential but un-commoditized space–is what sets it apart from, for instance, cityscape: a terrain that is created according to

human principles. However, the distinction between "human" and "non-human" environments is complicated and subjective, as will be discussed below.

The "-scape" in landscape, cityscape, seascape, hellscape, etc., is borrowed through Middle Dutch, Proto-Germanic, and Old English suffixes *–schap, -skapiz,* and *–sceap,* meaning "shape" or "form." Each of these also has an active, infinitive sense of "create," "cut," "dig," or "shape." In modern English, this has given us the word "shape," as well as the suffix "-ship.". The English suffix "-ship" may also carry the sense of mastery over something, as in "ownership" or "craftsmanship;" words like these connote both a state and a sense of something created or achieved.

In most of the contexts in which we use the suffix, however, it has been abstracted directly from the (English) term landscape, which itself was borrowed from Dutch *lantscap* in the late 16th century. Until 1886, the word was used exclusively to describe a popular genre of painting that relied on an expansive view of a natural environment. Although the deeper etymology of the term presents a temptation to see linguistic roots for the landscape concept as a "created" or "mastered" thing, it seems more likely that the sense of the term, at least in English, has always been more related to "shape:" a visual, perceived relationship with land.

The connection between landscape and artistic depiction is a critical one, and will re-emerge throughout this dissertation. The development of landscape painting in sixteenth century Europe has been cited as the point at which the Western landscape concept is born (Cosgrove 1984). A prevailing thread in scholarship on landscape suggests that both the interest in landscape painting and the idea of landscape itself are products of the Renaissance, in reaction to "new approaches to production on the

land…the moulding of land by human labor into visibly distinct regions we call landscapes" (Cosgrove 1984). In this formulation, landscape is a product of the framing device of view: a painter's or a landowner's (Thomas 2001; Ingold 1993; Goldstein 1988; Berger 1972). As opposed to the schematic, iconographic, representational style of earlier centuries, the technical innovation of linear perspective in drawing connected representations of land with individual vision and experience, placing the viewer at the center of the composition (Tally 2013; Goldstein 1988). The bounds of a landscape are the rectangular sides of the frame and the viewer's vanishing-point on the horizon.

This conception of landscape has been presented as inherently capitalist, collecting space as a commodity and organizing it into survey-able, controllable economic units bounded by the limits of an individual's vision (Mitchell 1994, Cosgrove 1984). Landscape paintings, then, evoked the possession of land itself, land as a product to be viewed for pleasure and from a position of ownership and security (Figure 2). John Berger, in *Ways of Seeing* (1972), famously describes landscape painting as "…not so much a framed window open on to the world as a safe let into the wall, a safe in which the visible has been deposited." The circulation of landscape paintings aestheticized land and "taught" people how to see it, creating a conceptual vocabulary for space as both a commodity and an aesthetic product. These influences can be seen re-inscribed on land, with the construction of formal parks and gardens arranged to maximize long, painterly vistas (Thomas 2001; Hirsch 1995; Cosgrove 1984). This phenomenon of modifying land to make it look *more like it should* will be discussed at length below.

The notions of capital, control, and individual perspective inherent in the above analysis of landscape have led to the idea that landscape itself–construed as a viewable

locale–is a product of capitalist modernity. This is difficult to reconcile, however, with our contemporary, multivalent, colloquial use of the term (Meinig 1979). As discussed briefly above, "landscape" frequently connotes space that is *not* under control, space that, in fact, impinges on human enterprise. The power of landscape to inspire awe, even fear, can also be found in landscape painting, for example in the works of the Hudson River School. These pieces arguably depict a landscape full of capitalist potential for an expanding America, but their power lies in showing places that are hyperbolically, even supernaturally, wild, foreboding, and intimidating (Figure 3).



Figure 3. Albert Bierstadt. 1868. "Among the Sierra Nevada Mountains, California." Oil on canvas. Smithsonian American Art Museum.

It is additionally difficult to reconcile a purely modern, capitalist view of landscape with the long relationship of humanity to the world around us. As long as humans have been human we have possessed sensing bodies with which we explore the

world; these bodies must always have been perceptive of differences in terrain, flora, fauna, and so forth. A sensing body experiencing space also perceives the passage of time. This allows a variety of different experiences in the same place, mediated by seasonality, shifting social status, or ecological changes. These memories, of and about places, are communicated between people, aggregated, and become sedimented in locations, in traditions, and in communities. This is a sense of landscape that is not about control and production, but about existing in and with a place, with its own meaningful particulars.



Figure 4. A modern songline by Aboriginal artist Maisie Campbell. Japingka Aboriginal Art Gallery.

Knowledge of these particulars connects people to one another and to the world around them, utilizing landscape as a scaffold for a host of cultural products such as mythologies, subsistence strategies, and navigation. Ethnographic evidence for such non-capitalist cultural connections to landscape abounds. One oft-cited example is the relationship of Aboriginal people to the land and landscape of Australia, in which places serve as reminders of a cosmic Dreaming, a time-out-of-time that is at once ancestral, mythological, and present in the physical landscape. Ethnographers and anthropologists have repeatedly observed that in Aboriginal conceptions of history, space takes precedence over time (Morphy 1995). The landscape itself holds information about the

Dreaming, which is legible to individuals who understand how to read it (Morphy 1995). Aboriginal art employs a complex system of coding to communicate spatial, ecological, cultural, and mythological information together in the same image, in pieces that may be created upon the physical landscape (Sutton 1998; Faulstich 1997; Tonkinson 1979). These pieces, called songlines (Figure 4), are also mnemonics for actual songs that, when sung, tell stories and guide navigation across large areas (Milroy and Revell 2013). Aboriginal moieties consider it important to periodically walk the itineraries mapped by their songlines as a way of maintaining group knowledge about the land, thereby preserving their right to occupy it.

In Arizona, the Western Apache view their tribal lands as a fabric of mnemonic places that hold personal memories, cultural histories, and moral lessons (Basso 1996). The names of Apache places refer to stories that are both history and parable; visiting a place and speaking its name provides an occasion to tell and discuss the story. The Apache argue that if they were to leave their land, their entire history and culture would be lost, so entwined is it with place and landscape.

These two examples could be followed by many more from ethnographic and anthropological studies from around the world. These multivalent, mnemonic, emotional attachments to landscapes are often considered in the context of indigeneity, being explicitly or implicitly offered as examples of wiser, more natural, and more connected approaches to land. The drawing of the dichotomy between indigenous and modern is both unproductively othering and obscures the very real emotional factors that produce meaningful landscapes in capitalist cultures. Even in Western, modern, economically-

oriented cultures, the relationship between place, culture, memory, and identity is a governing factor in how people interact with the idea of landscape.



Figure 5. Romantic man alienated from nature. Caspar David Friedrich. c. 1817. "Wanderer Above a Sea of Fog." Oil on canvas, 98x74cm. Kunsthall Hamburg.

Consider the influential work of the Romantic school of painters and writers, most active in the 18th century, for whom the natural landscape contained spiritual lessons in human morality, as well as a wellspring of personal and national identity. The work of the Romantics, especially English Romantics like William Wordsworth, takes as a major theme the purifying power of unspoiled nature. This idea is an influential contributor to our common colloquial equation of "landscape" with "wilderness," discussed in more detail below. In order for landscapes to exert their purifying and sometimes sublime power over people, they had to be untouched, unspoiled, and "natural." This idea was slightly disingenuous, as the "wild" British landscapes described by writers like Wordsworth (for instance, in poems such as "Lines Composed a Few Miles above Tintern Abbey (1798)) were in fact the product of many centuries of human activity. In this case "wildness" was temporal: placed in a landscape moment distant enough from the present to evoke innocence, purity, and nature's agency. The idea that "wild" landscapes retained a moral and aesthetic integrity, for which people

should hold a nostalgic appreciation, can be seen as a reaction the rapid landscape changes of the Industrial Revolution in Britain. The Industrial Revolution itself followed on the long, drawn-out process of Enclosure, in which the English countryside was, over a period of several centuries, parceled up and entered into private control of a landholding elite (Hoskins 1955). Both Enclosure and the Industrial Revolution profoundly altered human relationships with the land: its appearance, productivity, and the economic and social relationships that tied people in place (Overton 1996; Hoskins 1955). Enclosure decoupled populations from the land, creating a labor supply that enabled the rapid growth of factories (Johnson 2007; Marx 1867). The factories in turn catalyzed the expansion of cities, concentrating the immediate ecological effects of industrial production in urban centers and deepening the aesthetic divide between dirty, cramped, "modernity" and a bucolic past. For many Romantics, whose work dominated the arts at this time, modernity and its Enlightentment-era counterpart scientific rationalism were seen as a wedge alienating humankind from its intuitive, natural, state, with disastrous moral consequences. In this climate, and as British colonialism reached its acme, encounters with non-modern Others gave birth to the concept of the Noble Savage, an individual in tune with nature and uncorrupted by the devil's bargain of modernity (Ellingson 2001). As a result, indigenous peoples were aestheticized as essentially landscape elements, natural features of their places of origin (Johnson 2007; Radford and Hilton 1995).

The cultural influence of Romanticism runs throughout the modern Western approach to landscape. This maintains a parallel, countering thread to the capitalist, production-driven framework discussed above. Proof of the Western emotional

attachment to a pristine natural world can be seen in the strategies used by environmentalists and conservationists to solicit support for environmental initiatives. In the United States, the conservation movement grew directly out of Romantic soil. Ralph Waldo Emerson's 1836 essay "Nature" argued that rather than thinking of using land, Americans should make a national trait of appreciating landscape. The novelist and naturalist Susan Fenimore Cooper, daughter of the Romantic novelist Fenimore Cooper, published *Rural Hours* in 1850. The book anticipated, influenced, and for many years outsold Thoreau's *Walden* (1854), and interleaves detailed naturalist's observations with meditations on the moral superiority of rural life and the importance of knowledge of place for humble, civil society. In the 1860s, the influential landscape architect Frederick Law Olmsted vigorously lobbied for the federal protection of "aesthetically exceptional" American landscapes, with the first of these protectorates, Yosemite, being legislated in 1864 (Green 2017). By 1876, the Appalachian Mountain Club was formed to advocate that mountain and forest lands be treated as historic sites and protected as national cultural assets (Gilman 1905). The Sierra Club was founded in 1892 on the idea that time in nature heals and strengthens people worn down by the demands of modern life. In 1908, President Theodore Roosevelt delivered a speech entitled "Conservation as a National Duty," in which he delivered a prescient warning of the dangers posed by overuse of natural resources, but also meditated on the respective moral responsibilities of "the primitive man," "the pioneer," and the modern American (Roosevelt 1908).

Rachel Carson's 1962 book *Silent Spring*, often cited as the seminal work of modern American environmentalism, utilized the familiar and widely accepted emotional currents of nineteenth century nature writing to mobilize her readers' personal sense of

care for the land and ecosystem (Lockwood 2012). This has been the tone of environmentalist writing for public audiences ever since, as in Bill McKibben's *The End of Nature* (1989) and Amy Siedl's *Early Spring* (2009). Both texts, like *Silent Spring*, use affective prose to make large-scale environmental change a personal, emotional issue; this is generally thought by activists to be the most effective way to get the public invested in supporting environmental initiatives (Dietrich 2013; Searles 2010). Popular appeals make use of sentiment, guilt, or anger with authorities to encourage people to make more responsible personal decisions. An anti-littering PSA from the 1970s depicted a Native American shedding a stoic tear as uncaring passerby toss trash at his feet (Figure 6). In reality, the add was problematic in almost every particular: the actor was Italian-American and the sponsors behind the Keep America Beautiful initiative were food-packaging corporations, themselves major polluters (Dunaway 2017). Despite being complicit in erasing actual, agentive Native people from the land and foisting responsibility for pollution from corporations onto consumers, the "Crying Indian" ads provided a popular touchstone for social pressure against casual littering.

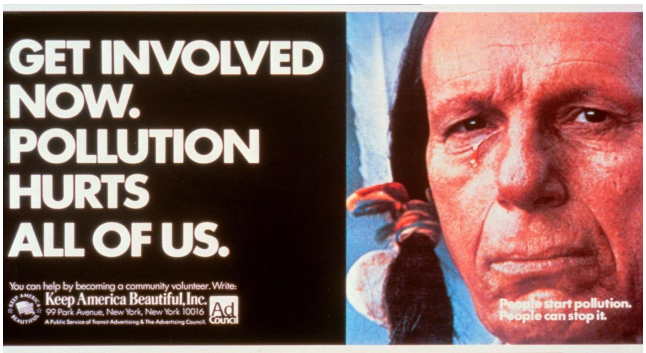


Figure 6. Print ad from the "Crying Indian" campaign. 1971.

The ad was effective because it played on personal guilt, deeply embedded stereotypes about Native Americans' innate affinity with nature, and a commonly held American landscape aesthetic of visibly unspoiled wilderness. However, the ad, and the activist literature discussed above, work on an additional level: fear that

the landscape around us will change. This fear, which is essentially a fear of the unknown, highlights how highly people value security and familiarity in the environment around them. This is a security born of memories that tell us how the land will behave and how we may behave upon it. This is a subtle, intergenerational knowledge, intimately and innately sensed, that accrues in a society as a function of passing time.

It is the sensed and subtle aspects of human-landscape relationships that are the subject of this dissertation. I take for granted that any society, whether it is capitalist, pre-industrialist, ancient, or modern, develops ideas about space over time from the communicated personal experiences of many individuals. These ideas shape the way people inhabit a landscape, the way they act on it, and the way they allow it to act upon them. Therefore, the conception of landscape must be seen as a cultural process. The results of this process are not universal and may vary greatly across space and time, to say nothing of differences in individual experience. This is true of the ancient populations that we study as archaeologists, but it is also important to acknowledge how our own cultural context may inform our approach as scholars. In a landscape analysis of the ancient Egyptian deserts or any other archaeological context, it is critical to remember that ancient people may have had very different approaches to and aesthetics of land than the ones we take for granted. Nevertheless, with sensitivity to many different kinds of evidence, I suggest that it is possible to access these different frameworks. The pursuit of ancient landscape frameworks constitutes a direction of research in and of itself, but it also has the potential to inform many different kinds of archaeological questions.

Space and Place: Theorizing the Landscape

The relationship between people and place has engendered a large body of theory, mostly not strictly archaeological, only some of which I will review here. Different disciplines have developed their own distinct frameworks, but one of the uniting concerns of theoretical approaches to landscape is the way in which humans constitute "place" from "space," that is to say, how abstract space accumulates distinguishing meaning (Casey 1996; Tuan 1977). This necessarily implies a human action, whether through direct, embodied experience, or through communication with other humans in the form of speech, art, literature, cartography, etc. (Tuan 1977). Place is processed space; the process is cultural. Places, then, are cultural products, and their formation and meaning can only be studied through the cultures that build them.

But what is the relationship between place, space, and landscape? At first glance, "landscape" appears to be the overarching concept that connects space and place, a fabric on which "places" pop out from the background of abstract, undifferentiated "space." A few moments' thought, however, critically endangers this idea, as the boundaries between the three categories reveal themselves to be flimsy at best. "Space" is virtually unidentifiable, because we can never be outside of it looking in, and so we have nothing to define it against (Tuan 1977). Additionally, as soon as space comes under the lens of particular investigation it begins its transformation into "place." "Places," in turn, present challenges because their boundaries prove difficult to draw, lest we look at the adjacent "space" too closely and make more "place" out of it. "Landscape," then, dissolves into a property that is both intrinsic to and removed from "place," a zone that has been

conceptualized out of the abstraction of "space," accessible from but not fully incorporated into the particularity of "place."

Scholarship on this question similarly prevaricates, and the distinctions drawn between these categories seem mainly dependent on the discipline of the researcher. Many works on landscape consider how places are made, and what that means for people. W.G. Hoskins' revered *The Making of the English Landscape* (1955) meditates, perhaps un-self-consciously, on the tension between Romantic aesthetics and the demands of industrialization in the creation of English landscape and national identity. D.W. Meinig's *The Interpretation of Ordinary Landscapes: Geographical Essays* (1979) is an early collection of essays on the anthropological use of the landscape concept, many of which deal with nuancing the historical primacy of vision and view in the construction of place. Denis Cosgrove's (1984) *Social Formation and Symbolic Landscape*, cited above, explores landscape as a product of social stratification and modernity. In 1988, Cosgrove and Stephen Daniels produced *The Iconography of Landscape*, a volume considering the interplay between places and symbols. Landscapes have been considered as aesthetic products in books such as Steven Bourassa's *The Aesthetics of Landscape* (1991). These texts are foundational in landscape studies, and many are cited in the preceding section. They are valuable, but they are also deeply rooted in English history and the English landscape, and are recognizably marked by the tension between Capitalist and Romantic approaches discussed above. It is within this tradition and heritage that much landscape thinking has been carried out, although recent works have made a more concerted effort to recognize this and move beyond it.

Among these, Eric Hirsch and Michael O'Hanlon's *The Anthropology of Landscape* (1995) considers the differences between modern Western and other frameworks for viewing landscape. Steven Feld and Keith Basso's *Senses of Place* (1995) explores the emotional relationships formed by individuals and communities with the landscape around them. Following on the heels of Keith Basso's *Wisdom Sits in Places* (1996), which argued for deep and abiding connections between people and landscape, Karen Fog Olwig and Kirsten Hastrup's 1997 volume *Siting Culture: the Shifting Anthropological Object* considers how important this relationship really is for the maintenance of culture, especially in diaspora and blended communities which are alienated from traditional spaces. Akhil Gupta and James Ferguson's volume *Culture, Power, Place: Explorations in Critical Anthropology*, published the same year, similarly explores the techniques of place-making employed by re-located communities.

These works, mostly collections of essays, all explore the dialog between humans and places. Although they vary in their approaches, they agree that places are anywhere people are. Throughout these books, however, the terms "place," "space," and "landscape" are often used interchangeably, suggesting that there is no clear consensus on the boundaries of each, let alone their relationship to one another. It has been suggested that the triad "'remains relatively under-analyzed,' and that so far as … space, place and landscape are concerned, 'no one has really attempted to think the three terms together (Mitchell 2002, Malpas 2011).'"

I suspect that this may be because of the difficulty, or perhaps impossibility, of separating out three terms that overlap in shifting, kaleidoscopic configurations. In this dissertation, I will treat landscape as place: fully conceptualized and characterized, and

subject to the same various, compounding, and contradicting processes of meaning-making. In some ways, my use of "landscape" is similar to the Yanyuwa (Australian Aboriginal) use of the English word "country," a term that encompasses topography, ecology, sky, a sense of home, a place of heritage, a sense of spirituality, and personal possessions (Bradley 2011). Even in American English, the word means many of these things. The scale of country is telescopic, from a dwelling to a nation or beyond, and it is the framework of conception that is important, not a physical boundary. All different sorts of landscapes-- rural, urban, uninhabited, or even imagined-- are "country." It is not necessary to inhabit or even experience every acre of country individually in order to know it and incorporate it into a worldview, especially when much of that knowledge can be communicated by people who actually have direct experience.

This communication takes many forms, including speech, writing, performance, music, and visual arts. These communications are the medium in which knowledge and memories about landscape are disseminated. In a contemporary American cultural context, consider how much of what people "know" about the American Southwest is learned from Western films. While these bodies of knowledge may not be gathered from personal experience, or even accurate representation, they nevertheless influence how large segments of the population respond to the idea of particular landscapes. Representations of landscape such as those found in films, novels, and paintings are enduring, reproducible, widely accessible, and extremely influential. Representations in enduring media hold and reiterate ideas about landscape, which people can learn from even without a living, knowledgeable interlocutor.

Regardless of how information about a landscape is conveyed, once people have learned it they re-inscribe it on space conceptually. This may be through their own actions and memories, through creating representations of their own in art, literature, or other media; or even physically, through interventions on the landscape such as architecture or management practices. The literal inscription of landscape knowledge, in the form of rock art, as a method of making place in the Egyptian deserts is the subject of Chapter 4. Memories, actions, and interventions are themselves communications about landscape, many of which will reinforce and add to the body of representations that already exists. Multiple, even contradictory representations can exist at the same time, mirroring the ways in which people with differing perspectives can inhabit the same space in overlapping but very different ways. Official, subaltern, and personal representations of landscape may converge, diverge, or not resemble one another at all. Because of this, a careful study of representations can tease out positionality among and within communities, identify relative salience of a landscape's characteristics to different communities, and help to show how landscape, as a cultural product, can vary even in one place.

Media that are used to represent landscapes can also be used to represent landscape imaginaries. These fictions, fantasies, myths, and cosmologies use the vocabulary of landscape representation to make places that do not exist in the physical world plausible and relatable. Thus Tolkien's hobbits live in something like the English countryside, and the arid, canyon-carved sci-fi worlds of inhospitable planets owe much to the American southwest. Frequently, these fantasies, myths, and cosmologies are inscribed on the corresponding physical landscape, using it as a substrate for layers of

other meanings. This inscription can be achieved by means of graffiti or other alterations, like the installation of a sign for Harry Potter's Platform 9 ¾ at King's Cross Station, or the continuing preservation of the Tatooine set from Star Wars in the Algerian desert. Inscription may take the form of monumental marking like rock reliefs or architecture, or may simply be the aggregate effects of increased human visitation. Spatial imaginaries, when overlaid on landscapes, can create tourist and pilgrimage sites that take on their own reality through the physical medium of landscape. This is especially true of places connected to religious or mythological events, but even the settings of novels and film-shooting locations become destinations (Joliveau 2009).

The memorialization of events– fictional, historical, or personal– in physical places is a good example of how the physical world can be made to hold and communicate legible narratives. Alison Landsberg (2004) refers to this phenomenon as "prosthetic memory." She is mainly discussing the ability of objects and images to communicate feelings, messages, and behaviors from person to person, but the argument may be extended to architecture, and to physical space generally. Although the idea of prosthetic memory, as conceived by Landsberg, relies on mass culture and the particular anxieties of modernity, the concept is a valuable one for the study of the ancient past. In many ways, a belief in objects as interlocutors and memory holders is already implicit in material-culture-focused archaeological practice. As archaeologists, we take for granted that the objects we study allow us to interpolate broader histories; we perhaps simultaneously underestimate the extent to which they did the same when they were "in use." Even practical, everyday objects communicate something beyond their function: tradition, identity, or a way of thinking about work. This is part of their design, and we

should not disregard the intention and awareness of their designers. Recognition of the power of the physical world to communicate with other people, even in the absence of a human informant, underlies essentially all media. The message is invariably entrusted to materials. The longevity, portability, and adaptability of materials encourage people to experiment with different manipulations, and to innovate in their methods of messaging.

In this dissertation, landscape, as a cultural product, is viewed as possessing the same prosthetic powers as objects. In this I follow several scholars (among them Harrison 2004; Darby 2000; Morphy 1995; Bender 1993), who view landscape as a medium that holds and communicates memory, as well as possessing the potential to foster and enable processes of forgetting. Messages left in the landscape, either intentionally or passively through the continual deposition of human traces, can be powerful and present reminders of the past. Likewise, the eradication of these traces can erase the memory of whole episodes in history (Harrison 2004).

Landscape, accordingly, is a powerful medium for storytelling. Physical interventions on a landscape are uniquely unlimited in scale, both spatially and temporally. Environments naturally produce landmarks that can become sites for the attachment of meaning. Local landscapes are viewed daily, ensuring that whatever messages they encode will be constantly reinforced through the activation of memory.

A meaningful landscape can be reproduced through depiction or description. Critically, these representations will likely foreground the features of the landscape that are most important to its interpreter. The approach to landscape through representation, therefore, is a valuable one for understanding the multiple and complicated ways in which people relate to the world around them. This is a widely applicable method for

viewing the complex interaction of people with their environment and with each other even in the distant past, because the durability of material representations means that both real and imagined landscapes are often present and accessible in the archaeological record. In the Egyptian case, these may include artistic depictions of desert environments, animals, and people; literature that describes the desert in documentary or fantastic terms; and re-inscriptions on the actual desert landscape in the form of rock art, architecture, and other physical interventions. Researchers may not understand all of the references and antecedents that inform these representations, but this is the case with any archaeological dataset. The matter of landscape in archaeological contexts is not going to be "solved," but the attentive and integrated reading of many kinds of evidence can lead us to robust interpretations.

Archaeological Approaches to Landscape

Within the field of archaeology, different approaches to space, place, and landscape have been tested. These range from an environmentally determinist framework, in which space determines the lives of people, to the opposite, in which landscape is the culturally produced product of people's embodied day-to-day lives. As I have already stated, I firmly take the latter position. Nevertheless I feel that it is important to briefly discuss other approaches here by way of contrast, and to consider the frameworks that have implicitly or explicitly informed other work on archaeological landscapes.

Archaeologists have always been concerned with, or at least aware of, the effect of physical space on culture, but the landscape as an object of study came into real focus only after the Second World War. The field of landscape archaeology fluoresced in the

1990s, with a flood of foundational work including that of Barbara Bender (1993), Christopher Tilley (1994), Stephen Feld and Keith Basso (1996), Peter Ucko and Robert Layton (1999), and Bernard Knapp and Wendy Ashmore (1999). Tony Wilkinson's book *Archaeological Landscapes of the Near East* (2003) expanded landscape archaeology beyond Europe and first applied it to arid landscapes.

The rapid development of landscape archaeology in the 1990s was influenced by new technological methods for measuring and surveying large areas (satellite remote sensing, and Geographic Information Systems (GIS)), but also by a theoretical shift away from quantitative analyses, and toward more holistic, experiential ways of characterizing ancient experiences (Smith 2003; Anscheutz 2001). This shift was representative of the move away from traditional processual approaches in archaeology generally. As a result, the field began to incorporate the work of philosophers such as Heidegger, Lefebvre, Foucault, and Merleau-Ponty, all of whom put forward different frameworks for understanding the human engagement with space. The work of Human Geographers such as Yi-Fu Tuan, Denis Cosgrove, and David Harvey also began to find traction within archaeology. These scholars, writing during the late 1970s and early 1980s, were all concerned with the role of people in constituting meaningful landscapes from their surroundings.

This prompted archaeologists to seek a middle approach to landscape, a way to combine quantitative and interpretative methods (Kosiba and Bauer 2013; Anscheutz et. al. 2001). It also led to a range of different archaeological definitions for the term landscape: "the material manifestation of the relation between humans and the environment" (Crumley 1994); "the entire surface over which people moved and within

which they congregated" (Barrett 1991); "a cultural image, a pictorial way of representing or symbolizing surroundings" (Daniels and Cosgrove 1988); "the impersonal forces that fashion human existence" (Braudel 1972); and so forth. Although these definitions vary in their particulars, they all foreground the human relationship with space. That is to say, landscape is not synonymous with natural environment, nor is it a matter of space and distance of points relative to one another. Instead, it refers to the synthetic action of cultural systems upon the environment (Deetz 1990; Ingold 1993; Tuan 1977). Put another way, landscape "denotes the external world mediated through subjective human experience"(Cosgrove 1985). Human ideation, most agree, is critical to transforming an environment into a landscape (Johnson 2008).

This still leaves the matter of the relationship between landscape and "space," however. Where the boundaries are drawn between cultural (i.e., landscape) space and absolute (i.e., isotropic) space varies considerably. In some readings, human activity is essentially modeled on a flat plane, with the outcomes of political or economic processes determining how and where meaningful landscapes are constructed (Smith 2003). In other readings, the relationship between people and space is presented as one of constraint. The physical realities of the landscape, such as rivers, mountain ranges, and fertile soils, are seen to place restrictions on some groups and provide advantages to others, providing a determinist explanation for cultural differences (Horden and Purcell 2000; Braudel 1972). When people move from landscape to landscape within this model, it is due to politico-economic motives: the desire to occupy and control the advantageous or "valuable" territory. In this formulation, time also becomes less important: the presence of landforms is the governing factor, and will present the same challenges or

advantages to human civilizations over the ages. This model isolates space from the temporal and the social, denying the feedback effect of human culture on the environment (Smith 2003).

In contrast to these determinist views is the concept of a landscape that dynamically mediates between environmental, social, and political realms of human experience. This directly applies Lefebvre's (1991) assertion that space is a product, and by extension applies his triad of perceived, conceived, and lived space. Briefly put, "perceived" space denotes the physical reality that we negotiate through everyday, embodied practices. "Conceived" space is the reproduction or representation of that space on a political or schematic level, an "official" culturally held idea about what space looks like, or how it is arranged. "Lived" space, on the other hand, integrates perceived and conceived space with social space: spaces of interaction, myth, memory, and ideology. Knapp and Ashmore, in the introduction to *Archaeologies of Landscape* (1999), echo this tripartite division in their categories of "constructed," "conceptualized," and "ideational" space and suggest that "landscape is a process yielding a foregrounded, everyday social life from a background range of potential social existence."

Following this definition, a landscape cannot be absolute and must vary based upon the experiences of the people engaging with it. This presents a methodological problem for the archaeologist, as access to the "lived" or "ideational" aspects of ancient experience are likely to be significantly hampered by their subjective nature, which exists not only on axes of space but also of time and of culture. In the last quarter-century, there has been a great deal of experimentation with methods that allow an analysis of ideational landscapes, sometimes also called "sacred" landscapes (Knapp and Ashmore

1999; Thomas 2001; Alcock 2002).

The phenomenological approach, most famously articulated in Christopher Tilley's 1994 *A Phenomenology of Landscape*, is rooted in Heidegger's "emphasis on the affective ties between people and place and the role played by spatial phenomena in organizing meaning" (Smith 2003). It takes for granted that the experience of space is a physical, embodied, sensual practice, and uses the human body, in this case Tilley's body, as an instrument of analysis. By physically exploring the modern British landscape and attentively noting his own bodily and perceptive responses, Tilley attempts to make claims about the intentional siting of Mesolithic monuments, and the spatial logics of Mesolithic people.

Despite the book's popularity, Tilley's method has been widely critiqued for a lack of rigor and objectivity, and for a bias toward modern ways of perceiving (Hamilakis 2013; Johnson 2012; Brück 2005; Fleming 1999). He produces an affective, embodied reading of the landscape on a human scale, but with little assurance that it resembles the Mesolithic person's experience in a meaningful way. He also, despite his emphasis on physical presence and embodied experience, gives precedence to the visual: much of his discussion centers on what can be seen from where, and the evocative power of visual perception. This hearkens to the long painterly tradition, discussed above, of representing landscapes as total objects to be viewed from a privileged vantage point (Johnson 2008). Tim Ingold's (1993, 2000) famous discussion of Bruegel the Elder's painting *The Harvesters* highlights both the Western tendency toward sight as the primary sense and the need to give equal consideration to other physical, cultural, temporal, and spatial relationships of people to their environment.

The biggest failing of the phenomenological approach is that it considers the lasting effects of human social engagement with the environment but not the processes that create them, moving directly from modern landscape to "mythopoeia" (Smith 2003). The assumption is that the motivating processes of social landscape formation, if they originate in embodied experience, are universal or intrinsic to the human body and psyche, rather than culturally mediated. And in fact, particular nodes in the landscape, such as peaks, unusual geological formations, or water sources, may be universally noticeable. However, the assignment of specific significance to these nodes is a cultural, rather than universal, phenomenon and must be studied as such (Hirsch 1995).

Many archaeologists have considered the need to strike a balance between quantitative and interpretative methodologies (Kosiba and Bauer 2013; Anscheutz 2001). Both certainly have value; if we accept that (quantitative) space and (qualitative) culture produce landscape in dialog, then it stands to reason that quantitative and qualitative methods must be combined in order to study it. This is the "middle path" that this dissertation attempts to follow, which should not be confused with the Middle Range Theory of New Archaeology.

Because landscapes "incorporate aspects of mythic, past, and current histories concurrently" (Anscheutz 2001), it is necessary to incorporate a more robust dataset into the analysis of an archaeological landscape in order to access the spatial imagination, which is composed of embodied experiences but also of culturally held signs, symbols, and codes, as well as histories, aesthetics, and memories (Harvey 1989). These evocative dimensions of the spatial imagination, not always perceivable in the modern landscape, are nevertheless echoed in the realms of representation: maps, artistic representations,

literature, ritual performance, and architecture (Smith 2003).

It is at this intersection of landscape and representation that archaeology has the power to access the spatial imagination of the ancient past. Through a close reading of this evidence, projects like the present dissertation can re-insert the social, affective, experiential, and mnemonic into ancient landscapes, and even chart the way particular landscapes change over time in the spatial imagination. Furthermore, when there is enough evidence available, study of representations in context can help to illuminate how members of the same culture—women, children, men, elites and non-elites, members of different professions, and so on—might have experienced the same landscapes differently. This can be instrumental in highlighting positionality within societies, and avoiding the Romantic, reductionist idea that there is a uniting "collective spirit or genius rooted in the landscape" (Smith 2003).

At the same time, landscapes may hold memories, myths, and narratives that almost all members of a society participate in, and being aware of these is key in understanding the force of the landscape on the people living in it. Simon Schama's (1995) *Landscape and Memory* explores the tendency to make landscapes into agents into that inspire, catalyze, or challenge, and the social and political effects of this phenomenon in the contemporary West. Keith Basso's (1996) *Wisdom Sits in Places* teases out the parables embedded in the land by the Western Apache in order to contextualize the landscape as a fabric of memory, a moral compass, and a space of belonging. Howard Morphy (1995) examines the way in which, for Aboriginal Australians, time becomes subordinate to space through the sedimentation of history and sentiment in the landscape, articulated through physically fixed memories of ancestors. These ethnographic studies

suggest what to look for in the archaeological record, where accessing narratives is more difficult. In all three of these examples, the landscape is a medium that is made to hold important information about cultural history, memory, mythology, and identity, and physical experience of the landscape is a crucial element of learning and internalizing these narratives.

In some cases cultural meaning is intentionally inscribed directly onto the landscape through architecture or other interventions. Modifying space to more closely represent the cosmos is a widely identified and much-discussed phenomenon. Normally, investigations of the phenomenon focus on ritual architecture that mimics the land or sky (Magli 2013; Scully 1989; Urton 1981). These examples tend to be found in ancient towns or cities. There has been less attention to the physical inscriptions of meaning--monuments, graffiti, and other traces-- in off-site landscapes, although this has been changing in recent years (Harmansah 2014; Herb and Derchain 2009; Ullman 2007; Richards 1999).

I argue that a real archaeological analysis of an ancient landscape requires the full integration of phenomenological, experiential research with archaeological spatial data, particularly to understand change over time. It also requires a thorough study of representations of that landscape, through art, ritual, literature, and architecture, in order to access the culturally mediated and socially maintained narratives that produced the landscape. The study of representations along with other archaeological data allows landscape archaeology to take stock of imagined space, a powerful cultural actor. The relationships that then become apparent, rather than being offered as phenomena in themselves, should be used as frameworks for developing reasonable, testable ideas about

the human relationship with the landscape (Anscheutz 2001; Wylie 1985). This is the methodological approach that I will take in the following chapters.

The Egyptian Landscape: History of Research

The preceding section discusses landscape research in archaeology generally. In this section, I provide a brief overview of approaches that have been taken in Egyptology particularly. Ancient Egypt is most often described as a narrow green valley constrained by towering desert cliffs. The stark contrast between the alluvial farmland and the desert plateau is invariably noted; many popular books nod to this with subtitles along the lines of "Land of Contradictions." The dichotomy permeates Egyptological scholarship, with the result that Egyptian landscape has been largely essentialized into two categories: arid desert and lush valley. This dual nature of the Egyptian landscape has been cited as antecedent to everything from religious beliefs to a preference for symmetrical artistic compositions, so frequently that it underlies, implicit and unremarked, the majority of assumptions about ancient Egyptian thought. Unfortunately, this obscures variety within both arid and arable regions in Egypt, and removes the possibility of changing notions throughout time. Most importantly for this dissertation, it casts the desert as the negative side of the equation: a homogenously infertile, inhospitable zone, a dangerous wasteland that was home to disease, death, and misfortune (Aldred 1987, Silverman 1991, Lesko 1991). This is in spite of the Sahara's history of dramatic environmental changes, and ignores the fact that for much of the Pharaonic period, the desert landscapes were arid but considerably greener than we see them today.

As a consequence of this tradition in the field, the significance of Egyptian

landscape in general and the desert landscape in particular has been systematically under-explored. Only lately has this begun to change, opening the door to new research questions that promise to productively nuance our ideas about life in ancient Egypt. Even so, much of the landscape-scale investigation of Egypt has been geomorphological or focused on ecological changes affecting the Nile Valley, as can be seen in the geology-focused program of a conference recently held in Cairo (Tristant and Ghilardi 2010). While these studies are designed to answer archaeological questions, they are not landscape archaeology projects in the usual sense of the term. Archaeology in the Nile Valley continues to be primarily site-based, although this is arguably because dense modern settlement covers the entirety of the area that would have been inhabited in antiquity, making a survey-style methodology such as that applied in Mesopotamia (Adams 1981), impractical. There has been limited exploration beyond ancient urban centers; the assumption is that there will be little trace of sub-monumental off-site architecture in the Nile's intensively developed and thoroughly cultivated floodplain. Forays have been made into the study of the social landscape of Egypt (Richards 1991; Aufrere 2001; Dorman and Bryan 2007). These studies primarily focus on the cultic valences of built landscapes, and their references to specific natural land features. This work is valuable, but reflects the approaches of a field dominated by a deep structuralist tradition with a tendency to reduce landscapes to symbols. Within this framework, specific features like peaks and valleys are individualized and singled out for analysis, essentially being treated as singular sites. In this dissertation I argue for a more holistic approach to Egyptian desert landscapes, in which these features are integrated into a fabric of meaningful environment.

In recent decades, there has been increasing interest in archaeological investigation in the deserts to either side of the Nile Valley. As in other arid regions, such as the Libyan desert (Mattingly 2004), sparse habitation and good preservation in these regions make them a better candidate for regional surveys than the Nile Valley. In the Western Desert in particular, several survey expeditions, such as the Theban Desert Road Survey and the North Kharga Oasis Survey, have recorded numerous, interconnecting routes with histories extending from the prehistoric to the present (see also Förster and Reimer 2013); the eastern side of the Nile is likewise laced with routes that lead to the Red Sea, to mining sites, or south into Nubia (Gates-Foster 2012). These survey and remote sensing projects in the Egyptian deserts focus on plotting and mapping routes, irrigation systems, and artifact scatters. Others, such as the El Kab Desert Survey Project (Yale University), the Wadi Hammamat Quarryscapes Project (Supreme Council of Antiquities), and the Wadi el-Hudi Expedition (California State University San Bernardino), are concerned with documenting graffiti and inscriptions, architecture, and taskscapes. Survey projects record architectural remains as well as other traces, but many buildings in the desert have been published on their own (such as Derchain 1971 at Wadi Hallal). Numerous mining and quarrying sites were published in the first half of the nineteenth century, often as part of geological surveys (for instance, Engelbach 1938 at Toshka; Rowe 1939 at Wadi el-Hudi). Supplemental publications considering their environs have appeared in the last two decades, allowing the consideration of the sites within their taskscapes (i.e., Darnell 2016; Shaw 2002). There is also some archaeological evidence, just enough to tantalize and frustrate, for the activities of nomadic groups on both sides of the Nile (Barnard and Wendrich 2008).

Together, these projects are providing a wealth of valuable data that is nevertheless still mostly unpeopled, in the sense that little work has been done on the social or cultural aspects of Egyptian desert landscapes. Additionally, even many landscape-scale projects do not prioritize spatial questions or situate archaeological material relative to topography, geology, or ecology, all meaningful factors in the human relationship with land. In part, this may be due to a perception of "sameness" in desert landscapes that is bred of unfamiliarity. Existence in these environments may be well beyond the "normal" threshold for many researchers, many of whom are from European backgrounds, with the result that meaningful nuances go unnoticed. An emphasis on the study of trade and mining exposes an assumption that humans in the desert were primarily traveling, essentially trying to get *out* or *through* as quickly as possible in order to maximize return on effort.

Activities that required other kinds of engagements with desert landscapes may not be as immediately comprehensible for people raised in green places. In only one example, David Silverman (1991), acknowledges that the deserts were a "visible constant" in ancient Egyptian life but states that they were never "elevated to cult status." This is a resounding dismissal in a field of scholarship obsessed with cultic activity, and is also almost certainly untrue (see Bremont 2018; Richter 2008; Tait 2003; Quirke 2003; Robinson 2003; Derchain 1971). The cult status of the desert is indicated by numerous references in religious and ritual texts, as well as archaeological evidence for festivals and other observances specifically referring to or actually occurring in arid zones. These will be discussed in detail in the following chapters.

The recent archaeological work on the Egyptian deserts, which I hope to build on

in this dissertation, suggests that the ancient human relationship with the arid parts of the landscape was more complex than has previously been acknowledged. People were traversing the deserts on hundreds of well-worn tracks for all of Pharaonic history. The deserts were the source of many important materials—metals and minerals including gems and building stones, but also organic materials or live animals sourced from the deserts or carried across them from sub-Saharan Africa (Linseele 2009; Germond and Livet 2001). Inscriptions and graffiti left in desert landscapes suggests that participation in desert expeditions was a source of personal and public pride from the earliest periods of Dynastic history (Sweeny 2017). Later texts, from the New Kingdom, indicate that the Western Desert was in the hands of a network of bureaucrats closely connected with the central administration (Esposito 2014). Evidence for cultic activity exists at mining sites, along desert tracks, and in built temple landscapes in the desert (Osypiński and Osypińska 2014; Richter 2008; Ayedi 2007; Derchain 1971).

There is also the question of the reception of desert landscapes within the Nile Valley. The deserts were represented in literary, artistic, and performative genres of expression, such as myths and tomb inscriptions, decoration of objects and architecture, and religious hymns and rituals. These representations tell us about the features of desert landscapes that ancient Egyptians found striking or significant, and the ways that desert landscapes were integrated into religious and ritual practices. They give clues to the role that cosmological ideas played in the construction of cultural landscapes in the desert, and to how these ideas motivated people to modify, mark, or interact with the natural environment. They can also suggest how these attitudes influenced political or economic engagements with the desert landscape. It is important to note that we should not consider

these dynamics stable. As discussed in Chapter 3, the Sahara of the prehistoric period was a considerably greener environment than the landscape we see today, or even the one that existed in the New Kingdom. The gradual drying of the Saharan landscape through the course of Egyptian history would have altered the sorts of relationships that were possible with the desert regions, perhaps putting activity in the environment into tension with memory about the place in the past, especially for segments of society that interacted closely with the Saharan landscape.

From much of the agricultural region, the desert is plainly visible, and the transition from arable to arid land is generally sudden and distinct. This proximity must have meant that forays into the near desert were common, with the result that many people could have had at least a limited personal experience with the desert landscape. Likewise, fauna from desert fringes frequently cross into the farmland of the valley, meaning that people could easily have had brushes with desert creatures even in their own gardens. The probability of these encounters raises questions about the canonical idea that the deserts were taboo. Even if they were understood as frightening and foreign to people in the valley, this is not a reason to assume that they were avoided. People enter frightening situations all the time: for material gain, to prove strength or bravery, or simply out of thrill-seeking or curiosity. In many cases around the world, frightening or dangerous work is undertaken by specialists, whose particular knowledge keeps them safe and comfortable in contexts where other members of the same culture would be petrified.

Even if only a very few people entered the deserts to hunt, trade, or mine, however, the physical produce of the deserts would have been known. The Egyptians

associated desert products like gold and turquoise with their desert origins. Although it is widely acknowledged that many of these materials had specific uses or powers, the environmental dimensions of these associations have not been fully explored (Ritner 1993). This also applies to materials like ivory and ostrich feathers, which were traded across the deserts from the savannah regions to the south. Were these materials ever used or referred to in ways that acknowledged their sources? What about the lions, hyenas, gazelle, and other animals that were either hunted or captured in the deserts and brought back to the Nile Valley?

Images of desert animals are common in the Nile Valley, perhaps because distinctive desert species were animating characters that easily evoked desert environments. There is a long history in Egyptian art of showing hunters or rulers marshaling real and imagined desert animals as a shorthand for maintaining control over chaos (Lesur 2015; Raffaele 2010; Reimer 2009; Germond and Livet 2001). Perhaps for this reason, desert animals are sometimes portrayed in tombs, such as those at Beni Hassan (Kanawati 2010; Kamrin 1999), or in temples like Dendera (Darnell 2005). However, as in most instances where the order/chaos dichotomy is invoked, more nuance may be lurking beneath the surface, and a closer investigation is called for. In addition to animals, desert landforms are sometimes represented, as are desert deities and mythological or festival events taking place in the desert (Darnell, Klotz, and Manassa 2013; Darnell 2005; Richter 2008). The context and details of these representations can be used to build ideas about the religious and mythological significance of desert environments.

Finally, texts can provide explicit insights into the way people viewed the deserts and their place in them. An argument against a monolithic, static conception of the desert is suggested by the variety of words Egyptian uses to describe different desert environments: in addition to *dšrt,* "desert," we can also find *mrw*; *ḫ3st,* "hill-country" or "foreign land," *š3sw,* the northeastern Egyptian desert; *ḏw,* "mountain;" *bi3w,* "mining region;" *t3-nṯr,* god's land;" *smyt* and *ḥrt-nṯr,* "desert" or "necropolis;" and, euphemistically, *imnt,* "the west." The distinct but overlapping valences of each of these terms carry associations that position the desert environments described in different domains of thinking: geographical, environmental, political, religious, and so forth.

As mentioned above, many desert routes and mining sites are inscribed with biographical or dedicatory texts ranging from personal names to official narratives. The inscriptions from many of these areas are systematically anthologized (for instance, Couyat and Montet 1912), with new discoveries published in supplemental papers. In addition to personal names and biographical information, inscriptions also frequently mention gods, providing information about which deities people understood to have dominion in the desert regions. Analysis of these inscriptions is important in understanding ancient people's attitudes toward the desert (Lazaridis 2012, 2015, 2017; Goedicke 1964). This evidence is especially valuable because literary inscriptions are often possible to date, hinting at the possibility of assessing general attitude changes over time.

Magical papyri, spells, hymns, and descriptions of religious festivals sometimes mention the desert and its inhabitants, or liken it to supernatural realms such as the netherworld (Lebedev 2014; Darnell 2005; Strudwick 2005; Ritner 1993; Erman 1901).

In underworld texts, the *ikheru* or ghosts roam on desert tracks and may be encountered there just as the *djinn* are today (Strudwick 2005). However, many magical spells and hymns invoke desert animals for the protection of people (Erman 1901). Considering how the deserts are recalled in symbolically potent contexts like the performance of magic and ritual sheds light on their perceived agentive, protective, positive power.

In this dissertation, I address the peopling of desert landscapes by integrating spatial data with other archaeological evidence--texts, objects, and architecture--in order to answer questions about the social landscapes of the deserts, and their resonance in the Nile Valley. Drawing from this wide pool of available data, I will explore evidence for human engagements with desert environments in the physical, social, and spiritual realms. The goal is to investigate how these realms interface with and influence one another, and how the resulting impression of the desert affects both its physical and cultural landscape.

Did Egyptians in the deserts have a sense of being inside Egypt, or outside of it, or in a place that was still Egypt, but distinct? Were these distinctions based on biota, on surface moisture, on distance from the Nile, or on something else altogether? Where did the oases, which were in sustained contact with the Valley, fall on this continuum? Did Egyptian travelers in the desert feel that they were under the influence of different deities than in the Valley? How did this affect their everyday, and their devotional, behavior? How frequent were encounters with nomadic groups, oasis populations, and other travelers, and how were these encounters negotiated and understood? How did these, and many other, social aspects of being present in the desert overlay onto people's experience of the physical environment? Did this vary from desert to desert? Anyone who has been

to the Egyptian deserts knows that they differ greatly in their geology and appearance, although this is often not reflected in the literature about the significance of the deserts to the ancient Egyptians. Is there evidence that distinctions were made in the ancient past?

In answering these questions, I will examine not just the physical traces of human activity in the Egyptian deserts, but the multivalent ways in which people projected meaning into these landscapes. No unified study of this process has yet been undertaken for the Egyptian context. This project asserts that desert landscapes can be socially potent, mnemonic constructions and seeks to develop a methodology for reconstructing the social processes that create them. In Egyptology this has the potential to break down long-standing ideas about the binary nature of ancient Egyptian thought, in which the deserts stood in stark, negative contrast to the Nile Valley. The framework can be applied more broadly to understand the ways in which deserts can be social spaces, holding and reifying specific ideas about the world. Desert regions are often dismissed as culturally sterile, because the evidence of human activity in them can be more subtle than in other environments. This subtlety, which people unfamiliar with the landscape may read as homogeneity or absence, requires attentive and creative approaches. Perhaps more than other environments, arid regions demand attention to multiple modalities of perception.

Understanding how Egyptians viewed the deserts socially and emotionally helps to illuminate the motivations and ramifications of significant political, economic, and cultural developments with lasting impacts on Egyptian history. It also highlights the role of social memory in creating landscape-based mythologies and narratives, even as those landscapes changed. On a more individual scale, this analysis hopes to highlight how different segments of Egyptian society experienced the deserts differently, and how those

experiences contradicted or conformed to overarching cultural ideas about the Red Land.

Toward an Egyptian Landscape Methodology

In this dissertation, my aim is to set out a methodology for a "middle path" approach to ancient landscapes, particularly ancient Egyptian desert landscapes. By this I mean not the Middle Range Theory of the New Archaeology, but a compromise between qualitative (i.e., phenomenological) and traditional Egyptological methods (art historical, historical), within the framework of archaeological research that is informed by spatial questions and the insights of human geography. The preceding sections lay out some of the theoretical concepts that have been brought to bear on the archaeological study of landscapes, and they provide the foundation that this project builds on. However, as discussed above, many of these frameworks were developed for and out of the study of the English countryside, and in the Western cultural context. It stands to reason that these approaches must be altered or overhauled in order to be appropriate for other scenarios, both culturally and geographically. Ethnographic work (Basso 1996; Morphy 1995) shows that human perceptions of landscape vary culturally; in order to be sensitive to this in the archaeological record a good methodology must simultaneously consider several lines of evidence.

The following chapter discusses this dissertation's methods in detail, but in concluding the present section I will briefly summarize what I consider to be the major interventions of my project. The first of these is the explicit assertion that the landscapes of the Egyptian deserts should be viewed as cultural products and social domains. This implies repeated, compounding human interaction with these environments, which means

that an analysis of desert landscapes must take temporality into account. This is especially true when considering the change in the perception of these landscapes over time, and the changing ways in which the landscape holds and transmits memories as it undergoes radical environmental change. The reciprocal action of desert landscapes upon Egyptian culture has not been fully theorized; this is one of the major goals of this project.

The aim of this research is to break down long-standing ideas about the binary nature of ancient Egyptian thought, in which the deserts stand in stark, negative contrast to the cultivated Nile Valley. I argue that this is chiefly a product of the impulses of Egyptologists, rather than ancient Egyptians, and is but one of the ways that an insistence on interpreting Egyptian thought in terms of dualities and symmetrical opposites has obscured the nuance of the evidence in favor of an unproblematized structuralism. The fact that many Egyptologists (unaware or uncritical of their own culture of landscape imagination) view the desert as hostile, dangerous, or wasteland, makes it easy for many scholars to accept that the ancient Egyptians probably did too. In a modern Western intellectual context, desert regions are too often dismissed as culturally sterile, because the evidence of human activity in them is subtler and less relatable than in other environments. I argue that overcoming what essentially amounts to a bias against the cultural potential of desert landscapes needs to be overcome through sensitive, perceptive scholarship.

This need for sensitivity is what makes the application of a "middle path" methodology, which combines quantitative and qualitative data, especially critical. Although such methods are often described as desirable, they are seldom successfully

implemented (Anscheutz 2001, Kosiba and Bauer 2013). This is in part a problem of integration. Quantitative archaeological data records many different human activities, even many different temporalities, and plots them in aggregates that obscure the range of individual experiences. Conversely, phenomenological investigations are intensely interested in individual, sensory, perceptive experiences, but are confined to the present and struggle to extrapolate meaningful experience in the ancient past. The gap between the results of these two methods is often too great to bridge constructively; the data may be displayed side-by-side but are difficult to interleave.

In this project, I seek to bridge the gap with the study of representations. How exactly this can be done will be discussed in detail in the next chapter, but the general idea is that representations are useful as a filter or lens for identifying what ancient people felt was important to communicate about landscapes. In the case of the Egyptian deserts, these representations include but are not limited to artistic depictions of desert environments, animals, and people; literature that describes the desert in documentary or fantastic terms, and re-inscriptions on the actual desert landscape in the form of rock art, architecture, and other physical interventions. Thinking critically about representations, which extract landscape elements that their creators find salient (for depicting or communicating about the desert environment) is a way to identify some of the cultural touchstones that informed the ancient Egyptian desert landscape imaginary.

In conclusion: the contention of this project is that the arid zones of ancient Egypt were socially potent landscapes that formed part of the landscape imaginary in flexible, dynamic ways. This pushes back against a history of scholarship that has characterized desert landscapes as static, unproductive, and anathema to ancient Egyptian cultural

values. Accessing desert landscape imaginaries requires the integration of phenomenological, spatial, site-based, and artistic evidence in order to re-insert the social, affective, experiential, and mnemonic into the ancient desert landscapes and chart the it changes over time physically and in the spatial imagination. Viewing landscape this way helps avoid positivist, determinist, and processual pitfalls while fully incorporating valuable quantitative archaeological data. The results of this analysis, in addition to being offered as phenomena in themselves, can be used as frameworks for developing reasonable, testable ideas about human relationships with landscapes in and beyond Egypt.

CHAPTER 2. METHODOLOGIES

Introduction

At the heart of this dissertation is the idea that the desert landscape is more vibrant, more complicated, and far more socially active than has generally been supposed. Our common failure, as researchers and across fields, to recognize this is a result of several factors, working in concert. The first is simple unfamiliarity. Desert landscapes are so unlike the terrain that most researchers are accustomed to that it can be difficult to know what to look for. The strangeness of the desert can be, at least at first, overwhelming. The second hurdle is unexamined assumptions about the arid environment. In the Anglophone context, at least, "desert" is so frequently paired with negative adjectives-- barren, hostile, empty, blistering, lifeless—that these ideas of place underpin our initial approaches and reactions to the landscape. This biases us against fully considering the willingness and capability of other people to operate in the desert.

This bias is reinforced by the very real difficulties of doing scientific research in an arid environment. The logistics of arranging sufficient food, water, and petrol for even a small team complicate planning and inflate budgets, and place constraints on the amount of time that can be spent in the desert without returning to a more developed area for resupply. The environment complicates survey and exploration in other ways. Instrument over-heating, battery drain, and laptop ports filling with magnetic grit are

frustrating inconveniences. Heat and sun exposure can limit the amount of hours personnel may effectively work; glare from high-angle sun in the midday hours can significantly impact visibility of archaeological traces such as petroglyphs and even architecture.

Together, the logistical and environmental stresses on research teams mean that time in the field is at a premium and work must proceed quickly and efficiently. However, this speed and focus may, paradoxically, obscure the clues that the desert yields about ancient human experiences, which may have been conducted at a very different pace. Throughout this chapter, I argue that the particularity of desert landscapes, their (only apparent) homogeneity and relative emptiness, and their strangeness at first encounter, require alternative modalities of perception and observation.

In Chapter 1 of this project, in which I introduced the theoretical frameworks that are shaping my approach, I argued for the need to continue developing methodologies geared toward the experiential dimensions of ancient landscapes in general and ancient desert landscapes in particular. In this chapter, I will provide a more detailed look at what that can mean for the Egyptian case. I will discuss my own fieldwork for this project, with its successes, problems, and limitations, as well suggesting methods that a study of this type, but with greater scope, might productively employ.

Where I Went and When

My own fieldwork for this project was conducted in two month-long trips to Egypt: one in March and April of 2019, and one in August of the same year. Both trips built on my now nearly fifteen years of experience and fieldwork in Egypt, and in some

cases I was revisiting places with which I was already familiar. After three seasons in the Western desert with the North Kharga Oasis Project I felt that I needed to concentrate on the Eastern desert landscape, with which I was less familiar. My original itinerary included the Wadi Baramiyya and Kanais, Wadi Um Salaam, Wadi Hammamat and Wadi Kash. This would have been ideal as it would have taken in many Pharaonic and petroglyph sites as well as two major ancient routes from the Nile to the Red Sea and the ancient town of Quseir on the Red Sea coast.

Unfortunately, on my first trip in the spring of 2019, the permissions and security clearances to visit these sites could not be made in time. Instead, I established a base of operations in Luxor from which I was able to visit and spend considerable time at el Kab, in the Theban hills west of Luxor, at the site of Naqada/Nubt and its desert environs, and in the library of Chicago House. This work turned out to be especially profitable for understanding the close relationship of ancient cities in the Nile Valley to the desert wadis and roads.

For my second trip, I arranged the same itinerary that I had hoped to complete during the spring. However, when I arrived in Cairo I found that it would be impossible to secure the necessary security permissions for many of the sites I had been hoping to visit, the Wadi Hammamat being recently entirely closed to tourist traffic. I therefore focused on the Wadi Baramiyya and its petroglyphs along the Edfu-Marsa Alam road, and the temple of Kanais.

On both trips, my objectives were to experience different landscapes physically, to record spatial information with a handheld GPS unit, and to document sites and landscapes with drawing and photography. I was curious about the different impressions

offered by different desert landscapes, which are so frequently considered uniform by scholars who have little experience in arid environments. Despite the geographical extent of my research being unfortunately curtailed, I was still able to visit a variety of different kinds of sites and landscapes, which afforded interesting insights into working, traveling, and living in the desert.

Desert Sensoria and Phenomenology in Place

In the biological sciences, the term "sensorium" refers to the complete sensing apparatus of an organism. More broadly, however, it can be used to take in the "sensory circumference" of that animal's perceptive range, the full spectrum of what the animal is able to sense (Howes 2019). This is how it is used in terms of sensorial archaeology, which seeks to understand how perception of surroundings influenced human experience and action in the past. However, we know that the human sensorium is culturally determined, based not just on the physical abilities of the human organism to perceive, but on how members of different societies learn to sense (Hamilakis 2013: 114). Therefore what is notable, perceivable, and important to a member of one society may not be any of those things to a member of another.

One of the tasks of sensorial archaeology is for the researcher to be perceptive to the sensorial possibilities of a context or landscape. This is a bodily practice that, in the process of opening a person's awareness to the sensorial and experiential dimensions of a contemporary landscape, can lead to productive and informed questions about the ancient one. In landscape archaeology, research of this kind has often focused on walking and looking in the manner of Christopher Tilley (1994). As discussed in Chapter 1, this way

of working gives precedence to the visual, which many scholars have identified as a modern, rather than intrinsic, aspect of the human sensorium. Additionally, Tilley's focus on walking takes for granted that human experience of "off site" landscapes is focused on walking, rather than other embodied practices such as sitting, waiting, working, and so forth.

I argue that the ancient experience of the Egyptian desert landscape may have involved a great deal more sitting around. While travel was no doubt an important component of landscape experience in this and other ancient landscapes, we should not discount time spent staying still—resting, waiting, watching—as important for landscape learning. I suggest that this may be especially true in the desert. To an outsider, desert landscapes can seem homogeneous: an endless stretch of sand, or rock, or mountain. As one's perception becomes attuned these homogenous expanses resolve into something more variable, with subtle differences of geology or terrain springing into relief. Likewise sounds become more distinct and more recognizable in the relative silence the desert, and slight variations in breeze and sun angle produce a more noticeable effect. This adjustment requires some time, and some boredom, and the opportunity to observe changes in the same location throughout the day. Given the budget and time constraints mentioned above, most archaeological survey teams cannot set aside time for lingering all day in one spot. Under the parameters of my research design, however, I had a great deal more flexibility.

In order to spend time sitting still, and to quell to some extent my own anxiety about using my research time efficiently, I adopted a practice of drawing. While drawing is a visual practice, it is also a physical one, haptic and tactile. Even more importantly, it

discourages haste, encourages close observation, and forces the artist to remain in one spot, calmly, for a certain amount of time. It is critical to note here that I was not making drawings as a primary form of documentation, but as a crutch to slow me down sufficiently to tune into what was happening in the landscape around me. The quality of the drawing is not important, and this is not a technique limited to artists. Plausibly, several alternative activities could be found. The important thing is remaining in place for what, to a survey archaeologist, is an excruciatingly long time. Each of my landscape sketches kept me at a vantage point for 45 minutes to an hour.

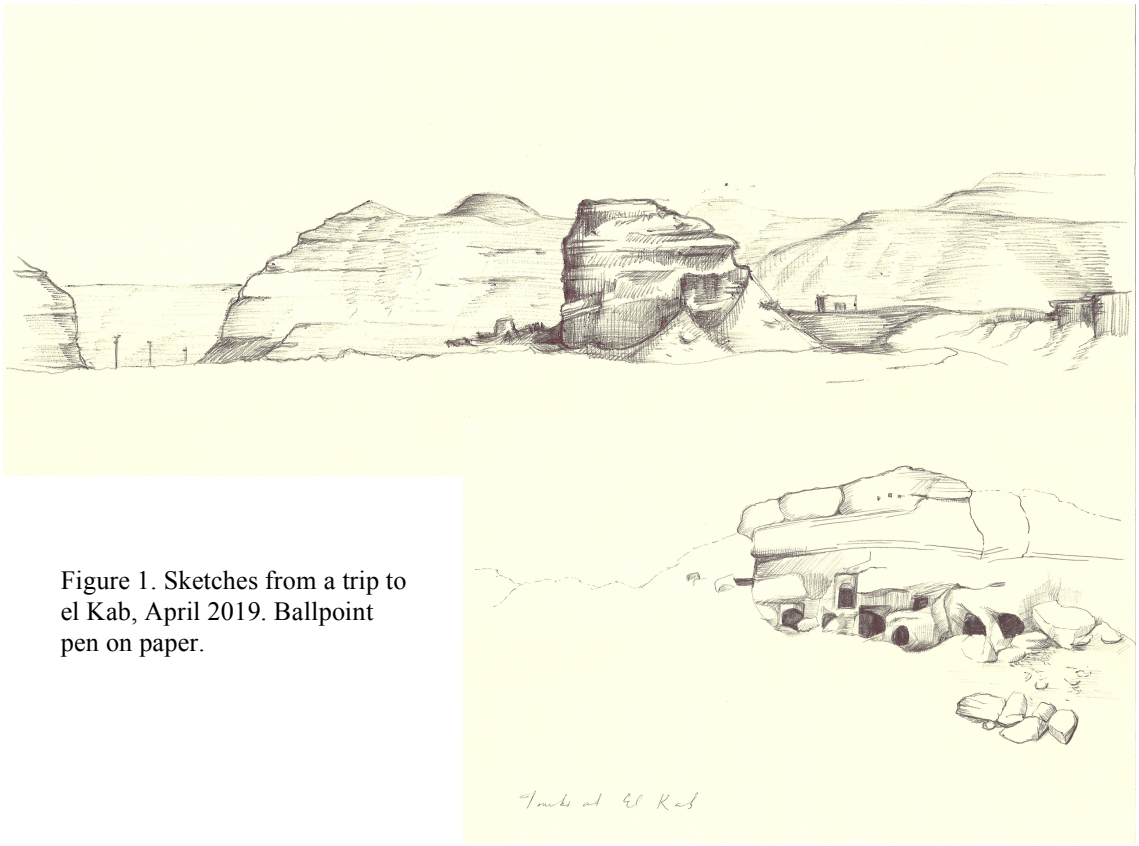


Figure 1. Sketches from a trip to el Kab, April 2019. Ballpoint pen on paper.

I spent the most time drawing at the sites of el Kab, Deir el Medina, and Kanais. I found the practice productive in several ways, some of which can be articulated as

sensorial-archaeological, and others as corollary dividends. When sitting and drawing in areas where there are people, you become very approachable, and people are likely to express an interest in what you are doing. This can be leveraged into a conversation about landscape, and, with the right questions, is an interesting way to be exposed to local knowledge about a place. When you are relatively isolated, however, the benefits of the exercise lean more toward the observational and phenomenological. I found that, as I settled in and stopped worrying about my use of time, I became more attuned to the intensity and variety of colors and textures in the landscape, and my eye became more sensitive to the differences between geological and anthropogenic forms, even very subtle ones such as faint paths, low windbreak walls, and filled-in pits. Even while drawing a fairly focused part of a scene, my spatial awareness of the features around me was heightened. At the sites where I spent time drawing, I have a much better sense and memory of the layout and spatial relationships of the things that I noticed.

Choosing a place to sit to make a drawing forces you to consider the comfort and ergonomics of a place as well, focusing in ways you might not otherwise on sun angle, wind direction, shelter, and surface. Overhangs that are solar ovens in the morning hours may be pleasant in the afternoon and warm in the evening, when temperatures plummet abruptly. This would also have been a concern for people in the ancient landscape. I often found, once I sat down, small pieces of pottery and other traces, ancient and modern, that showed that the same spot had been selected by others before me, probably on the same criteria. The landscape of where-to-sit, an important part of the composition of ephemeral sites, would have been largely overlooked by me if I had not also been looking for a place to stay still for a short while.

The ways in which the practice of drawing helped me create an understanding of these landscapes were numerous, and it may be that some are even too subtle to fully grasp and articulate. Among these benefits, however, are: the visual acuity that develops when you look beyond the "sameness" of the landscape and allow your eye to refocus its scale of "difference;" a different appreciation of color and texture which is as much a physical as a visual perception; the exposure and subsequent sensitivity to the variation of environmental factors in a place like heat, sun, wind, and odor, changes which you might otherwise attribute to moving around; a sensitivity to sound, which also contributes to your understanding of animal life, wind movement and surface textures; spatial awareness of your surroundings; and an awareness of places in the landscape which, in their minute particulars, might make more comfortable spots to rest.

This is not a perfect phenomenology of ancient life in the landscape, of course. It does not take into account the different experiences of traveling in a large caravan or working at desert sites. The impression to a lone Western sketcher is one of solitude and serenity; I was not accompanied, as were many travelers in the past, by fifty or a hundred braying donkeys. What this practice does allow, however, is a fast-track introduction to the desert sensorium of the present-day desert landscape, which is an important foundation for thinking about embodied experience in the past.

Spatial Data and Documentation

In addition to sitting and sketching, I was also moving, exploring, and documenting. I took detailed notes and made documentary sketches in addition to the phenomenological ones. I used a Canon Powershot G9 II camera to document sites I

visited. I also recorded locations of anthropogenic and landscape features with a Garmin Oregon 650t handheld GPS, achieving consistent 1-3 meter accuracy. Where applicable, I used geo-rectified map sheets from the Survey of Egypt series, available through the CAMEL lab at the University of Chicago, or from archaeological surveys, overlaid on the GPS's relatively undetailed imagery from Open Street Map. The points I collected were later mapped using GoogleEarth, QGIS, or ArcMap, depending on the level of analysis required.

I was most attentive to spatial recording in the Wadi Baramiyya, where I was surveying for petroglyphs along the Edfu-Marsa Alam road. This area had been surveyed before, by the Desert RATS team (see Chapter 4), but Baramiyya itself was only given "targeted," rather than comprehensive, coverage. My security permissions prohibited off-road travel, but the Edfu-Marsa Alam road runs along the course of the ancient route and is heavily decorated. I was also able to explore subsidiary wadis on foot. I was accompanied in the field by the extremely knowledgeable safari driver Hamdi Mahdi, who has worked with several archaeological expeditions and helped me locate many of the petroglyph panels, not all of them visible from the road.

I took GPS points on panels of petroglyph decoration and attempted to photograph them to the best of my ability. Because of sun and glare, photography in the desert is especially challenging. The shallow relief of many petroglyphs is especially difficult to capture except in the low-angle light of the dusk and dawn hours. Unfortunately, my permissions on this trip did not allow overnight desert camping, so I was unable to take advantage of these times of day. Photography is further complicated by the position of many of the petroglyph panels, which cannot be photographed from the

ground except at a fairly severe angle. In some cases I was able to climb safely to panels in order to document them, but in other cases this was impossible.

Because my primary interest in the petroglyphs in Wadi Baramiyya was their spatial distribution, I will focus on that here (see also Chapter 4). Several interesting problems arise when trying to record the locations and spatial relationships of petroglyph panels, not all of which I was able to solve during this fieldwork. For me, this centered mostly around the issue of *aggregation.* In Chapter 4, I argue that the multi-temporal aggregation of densely concentrated and superimposed petroglyphs in certain places is an important part of their function in placemaking and waymarking. Aggregation is difficult to define. It can be seen partly as a simple index of density, i.e., a ratio of coverage to surface area. However, it is not always easy to judge precisely where a panel of related petroglyphs begins and ends. Likewise, the density may be the result of a few large or several small individual drawings, meaning that a simple measurement of coverage would obscure important information about frequency of action. Furthermore, a powerful part of the impact of aggregation is the visual impression of a cluster of petroglyphs, and this is significantly affected by factors determined by siting in the topography: height, sightlines, sun exposure, and so forth. Balancing these factors in creating a useful index of aggregation is important, but difficult, and will probably necessarily involve a certain amount of subjectivity.

In my analysis of petroglyphs in the Eastern desert wadis, I use the published RATS dataset (Morrow and Morrow 2000). This extremely thorough and valuable data is also an example of some of the difficulties in recording rock art, and especially in recording aggregation. As I discuss in Chapter 4, the RATS survey design recorded

points on petroglyphs (or aggregations of petroglyphs) that had "center-points" more than 50 meters apart. As a result, the points taken by the survey team may represent a single instance of rock art, or a concentration of dozens of overlapping and articulated drawings. The accompanying photographs help with this to a certain extent, but are not entirely comprehensive. The published photography largely focuses on individual drawings and does not show entire related panels (and indeed this is a difficult task given the challenges of photography in this environment). As a result, in many cases it is difficult to understand the boundaries of individual panels as identified by the surveyors.

In addition to the interpretative uncertainty that the spatial ambiguity creates, it also adds to difficulties of reproducibility and re-identification. This is already challenging in rock-art surveys, as weathering and other damage, as well as the simple low visibility of many of the pieces, can make re-identification very difficult year-to-year. I was able to re-locate many of the RATS sites in Baramiyya, but not all of them. I also recorded numerous sites not published by RATS, which is unsurprising considering that this area was a focus of targeted, rather than comprehensive, survey by the RATS team. However, because of the uncertainty in identification caused by the problems just enumerated, it is unclear which of my sites are additional to the RATS set and which are actually RATS recordings that I could not accurately locate or identify. I am reluctant to combine my own dataset with the RATS survey that I use for the large-scale analysis, because of the danger of double-coverage. I will present my own dataset separately alongside the RATS material in Chapter 4.

To me, these sorts of difficulties underscore the need for drawn documentation that can clearly identify recognizable details in the petroglyphs themselves AND in the

rock substrate on which they are carved, which should be supported if at all possible by geo-located photography. Publishing rock art divorced from its rock obscures important interpretative information as well as diminishing the possibility that the pieces can be securely re-located. Decisions regarding the boundaries of panels should be explained. Even if the justification is (necessarily) subjective, it helps other researchers understand the spatial relationships of the documented rock art to its neighbors and its substrate: does the panel end in a hard edge, at a natural break in the rock? Does it end in space, at a boundary determined by some other logic? Are natural cracks and pitting in the rock incorporated into the composition, a phenomenon that has proven critical to rock art meaning in other contexts (Taçon and Ouzman 2004)? Does it taper off into a series of smaller, worn, or "incomplete" drawings that were not a priority to copy? This information is important not only because it communicates what was done by the artist, and preserves data that can be later used to assess location and track condition, but because it holds to potential to communicate the creator's *impressions* of the material. The surveyor's judgments about what is central to a panel, what is on the edge, what is older and what is newer, and which drawings are the focal point of a group are important. Making these justifications explicit both guards against invisible interpretative bias in the documentary record, and opens the door to phenomenological assessment of the art in question. What aspects of a panel or aggregation are most visible? Is there an apparent theme or reiteration among the drawings? Is the panel difficult to access? If it is difficult to copy, would it also have been difficult to carve? Can that account for summary or idiosyncratic carvings? Is it in full sun, or is the spot sheltered and comfortable? These impressions raise questions that are important for holistic thinking about rock art in

space, which is necessary for analyses of the material that goes beyond iconographic or art-historical.

Notwithstanding the difficulties outlined here, I used the point-based data set generated by the RATS to perform my analysis in Chapter 4. This spatial case study is focused on the hypothesis that petroglyphs in the Eastern desert wadis operate as a technology for waymarking, and that they signpost entrances and turns in the major wadi systems. In order to do this, I digitized the list of GPS points given in the RATS publication, and mapped them in ArcMap. The resulting distribution correlates well with the wadi systems as shown on high-quality satellite imagery, indicating that the accuracy of the points is acceptable. In order to demonstrate the relationship of petroglyphs to wadi junctions, I used simple proximity and calculated the percentage of overall points that are within 100 meters (28%) and 500 meters (79%) of a wadi junction or wadi entrance from the low desert, as identified from satellite imagery. This means that four out of five petroglyphs and petroglyphs panels in the Eastern desert wadi system are within about a six-minute walk of a turning point or junction.

Waymarking is only one of the ways in which I propose that rock art "works," and there are always problems inherent in attempting to model cultural experience with mathematical calculations. However, the waymarking hypothesis is interesting because, unlike art-historical analyses of rock art, it is genuinely testable. That is to say, a model of traversable terrain and possible routes in the Eastern desert wadi system can be produced, and cross-checked against the locations of rock art. Many petroglyphs have doubtless been lost to erosion, defacement, or road construction, or simply been overlooked by survey teams, but enough remain to provide confirmation that waymarking

was their possible function. Surveyed outliers that are not marking through wadis and important junctions can be re-located and ground-checked for evidence of other important cultural material such as wells, shrines, shelters, mines, or other stopping-off points that would have provided a reason to detour into a blind wadi.

In addition to allowing this and other hypotheses to be tested, spatial data can and should be integrated with phenomenological data in recording systems that allow for the explicit inclusion of researcher impressions. Petroglyphs, by nature of their location and medium, are landscape art and should be contextualized within a framework of landscape experience. This is a vital component of their interpretation.

Representation and Communication

The third area of data collection that I should discuss in this chapter is my selection of "representations" of the desert. As outlined in Chapter 1, representations of landscape in artistic media act as filters for their culturally salient associations, forming the archaeological record of "ideational" space as described by Ashmore and Knapp (1999). These representations can be seen as holders and communicators of cultural landscape knowledge.

In this project, I used two main categories of representational evidence: texts and visual representations. In Chapter 7 I also discuss representation of and allusion to the desert in ritual practice and performance, but here I will briefly discuss how I selected the textual and artistic evidence that makes up the bulk of my "representational" corpus.

Texts

The genres of text that I used can be roughly divided into two categories: "documentary" inscriptions that describe mining or trade activity (Chapter 6), or the dynamics of contact with desert populations (Chapter 5); and magical, ritual, or mythological texts that describe the desert as a borderland with the netherworld (Chapter 7). I selected the documentary texts from the anthologies of translations by Breasted (*Ancient Records of Egypt,* 1906), Couyat and Montet (*Les inscriptions hieroglyphiques et hieratiques du Ouadi Hammamat*, 1912-1913), and especially from Gardiner et. al. (*The Inscriptions of Sinai*, 1955), and Lichtheim (*Ancient Egyptian Literature*, 1973). These are mostly biographical inscriptions from tombs in the Nile Valley and mining and quarrying areas in the deserts. The tone is generally self-aggrandizing, and the facts they relate should probably be taken with the proverbial grain of salt. Nevertheless, they provide valuable context for the motivation and social situation of desert expeditions. Even accounting for exaggeration, these texts suggest engagements with the desert landscape that were undertaken on a significant scale and required complicated planning and organization.

The religious texts came primarily from funerary writings, primarily underworld books. This study relies on the translations of Allen (*The Ancient Egyptian Pyramid Texts*, 2005), Darnell and Manassa (*The Ancient Egyptian Netherworld Books*, 2018), Hornung (*The Ancient Egyptian Books of the Afterlife*, 1999), and Faulkner (*The Ancient Egyptian Coffin Texts*, 1973-8). These texts are more veiled in their references to the desert, with very few explicit mentions, and therefore some of the comparisons are interpretations (Chapter 7). As I read these major collections through, however, I learned that descriptions of desert-like environments, especially those imagined as existing in the

netherworld, are consistently euphemized as “the West” or “the land of the Westerners.” Interestingly, references to water often also turned up these associations, and provided me with another suite of search terms.

Visual Representations

The earliest artistic depictions that Egyptologists interpret as representing desert landscapes appear on the pottery and stone palettes of the Naqada periods (see Chapter 7 for illustrations). The elements that seem to signify the desert environment are apparently codified early and can be recognized in art throughout the Pharaonic period. These include: triangular “mountains” and the related double-mountain *akhet* sign that denotes either horizon; the wavy ground line, often rendered in red and speckled with pebbles, that represents the desert surface (or, when angling upwards, the cliffs of the desert steppe); and a collection of realistically-rendered desert fauna, often accompanied by mythological beasts identified as griffins, serpopards, and Seth-animals and sometimes pursued by hunters and dogs. These elements, found singly or together, allude to a desert setting, or at the very least a foreign or exceptional one (the animals appear to be initially borrowed from contemporary Near Eastern imagery). After the Predynastic, desert scenes are found mainly on tomb walls, particularly of the Middle Kingdom. This may be because of the association between the desert and the afterlife (Chapter 7), or simply because funerary contexts have best preserved elaborate painted scenes in the archaeological record. I spent considerable time with the publications of Newberry (1893) and Kanawati (2010), which illustrate the detailed desert depictions in the Middle Kingdom tombs at Beni Hassan.

Desert environments are also represented, through a filter of allusion, in the illustrations that accompany the underworld books mentioned above. These texts, particularly the Middle Kingdom *Coffin Texts* from Deir el-Bersha and the New Kingdom *Amduat*, most completely elaborated in the tomb of Seti I, show itineraries that can be identified as crossing desert landscapes through the analysis of the accompanying text. The "Book of Two Ways" portion of the *Coffin Texts,* in particular, includes a spatial diagram that relates a fantasy desert environment to other areas of the Netherworld. This is especially interesting in terms of understanding the relationship of the desert to its otherworldly analog. The familiar fantasy animals, the griffins and serpopards, appear here too, along with other knife-wielding, snake-spitting genii of an ambiguous nature.

An analysis of these images helps to identify what must have been a commonly-held understanding, at least among some segments of society, about what existed in the real and the imagined deserts. The frequent association of naturalistic with fantastical fauna raises important questions about the perceived permeability of the desert to otherworldly influence. The characters of the fantasy animals and genii depicted in the deserts are certainly frightening in appearance, but they appear in magical, even protective contexts. In addition to the appearance of captive griffins and serpopards, tethered and wearing collars, in apparently quotidian hunting scenes in the Beni Hassan tombs, these animals and the monsters from the Book of Two Ways appear on apotropaic objects meant for the protection of children. I have previously proposed (Hackley 2014) that the desert fauna, real and imagined, that appear on the "magical wands" children's furniture, clothes, and feeding cups during the Middle Kingdom are a reference to the mythological cycle of the "Return of the Wandering Goddess." I return to that theory in

Chapter 7, as an example of the ambivalent and sometimes protective nature of desert fauna and, by extension, desert environments.

The approach to landscape through representation, is a valuable one for understanding the multiple and complicated ways in which people relate to the world around them. This is a widely applicable method for viewing the complex interaction of people with their environment and with each other even in the distant past, because the durability of material representations means that both real and imagined landscapes are often present and accessible in the archaeological record. Theoretically, the comparison of the two highlights landscape elements that have particular cultural salience, allowing us to access, on some level, the "ideational" landscapes of the past.

Conclusion

In this chapter, I have only briefly outlined the major categories of data (phenomenological, spatial, and representational) with which I contribute to what is already known about the ancient Egyptian experience of the desert landscape. Further elaborations of these ideas are found throughout the project, where they can be more fully supported by examples and evidence. In essence, the central assertion of this study is that deserts require modified methodologies that can simultaneously consider exceptional and intense embodied experiences (travel, mining, long-distance trade) and the conceptual potency of a landscape that was at once both real and fantastic, saturated with ideas about foreign lands, ambivalent gods, and the netherworld. This interpretative framework must be able to contain contradictions, as indeed landscapes hold and communicate conflicting experiences and narratives. I suggest that the only way to begin to understand the

complexity of the ancient Egyptan relationship with the desert is to develop methods of analysis that cross-cut and combine these several categories of evidence, highlighting the harmonies and contradictions that must have characterized the ancient experience of the landscape.

CHAPTER 3. ENVIRONMENTAL AND CULTURAL HISTORY OF THE SAHARA (9500-3000 BCE)



Figure 1. Northern half of the African continent, showing modern extent of the Sahara. Image Rainer Lesniewski.

The early history of the Northern edge of the African plate is poorly understood when compared to the relative wealth of information about the adjacent northern Mediterranean. Likewise, it has been divided from scholarship on central and southern Africa by the presence of the Sahara desert, which neatly delineates about the top third of the continent from the rest. Partly, this poor understanding is a result of the difficulty of conducting scientific research in the arid Sahara, but it is also a result of an old and persistent assumption: that the presence of the Sahara restricted human activity to the point that there simply is not much to look for.

However, archaeological traces in the desert have always suggested otherwise, in the form of routes, sites, artifact scatters, and especially the petroglyphs depicting savannah and aquatic life. We now understand that the presence of the Sahara desert is not a constant, and is in fact a somewhat recent development relative to human history. Even today, at its most arid, the desert is home to pastoralists taking advantage of seasonal water, prospectors exploiting the region's plentiful mineral and oil resources, and communities of varying sizes occupying the numerous oases. Climate data shows that, throughout the Holocene, North Africa has usually been moister than it is now, and archaeological evidence indicates that humans took full advantage of a greener Sahara.

This chapter gives an outline of climate developments in the Holocene Sahara, and of human responses to them. The emphasis is on the Eastern Sahara, which is geographically most relevant to what follows in the Nile Valley, but broader trends are discussed in order to suggest how the Eastern Sahara fit into a climate system that spanned most of North Africa. The Holocene was not the first time the Sahara was green, nor was it the first time humans had inhabited it. However, for the purposes of this project, which is chiefly concerned with the desert in Pharaonic Egypt, the mid-Holocene African Humid Period is a logical place to jump into the story. Human activity in the Sahara in the roughly six millennia immediately preceding the rise of Pharaonic Egypt establishes patterns and, I hope to demonstrate, sets the scene for some of what is to come. Social, economic, aesthetic, and religious precedents are set that govern how Dynastic Egyptians viewed and interacted with the arid Sahara and the green pockets that persisted within it throughout Pharaonic history.

Some scholars have speculated that the Egyptians settling in the Nile Valley as the Sahara dried inherited an *already formed* system of iconography and cult from the pastoralist herders who moved into the Nile at the end of the African Humid Period, and persisting throughout the Dynastic era (i.e., Barta 2018; Hendrickx and Eyckerman 2010, 2012; Darnell 2009). I should state at the outset that this is not my position. The chronological extent of this chapter is 3000 BCE; while I draw out some parallels between the Predynastic and Proto-Dynastic and later periods, my over-arching argument, throughout this dissertation, is that relationships with the Egyptian deserts are constantly renewed and revised, and mediated by reinterpretations of earlier material.

Climate

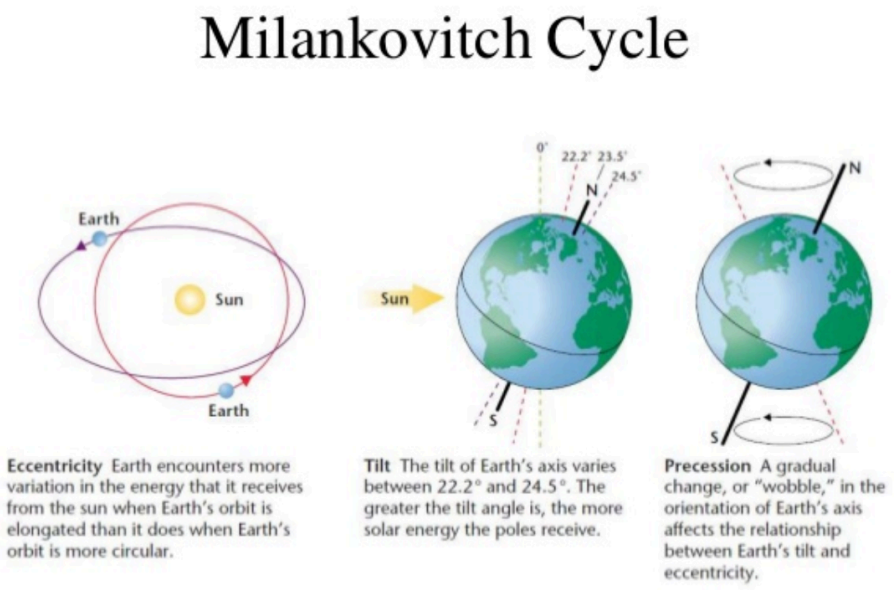


Figure 2. Milankovitch Cycles.

The climate of North Africa is primarily controlled by Milankovitch cycles: phased variations in the position of the earth as it orbits around the sun. The most important of these Milankovitch cycles for the Sahara is precession, or the "wobble" in the tilt of the earth's axis over a period of about 20,000 years (deMenocal and Tierney 2012). Precession changes annual surface temperatures by altering the amount of solar radiation the continent receives as the planet tilts toward or away from the sun. With increasing solar radiation, the landmass warms up faster than the adjacent Atlantic ocean, which has greater thermal mass. This differential heating creates a low-pressure center that draws warm, moist, coastal air into the interior, where it condenses into monsoonal rains (Kutzbach, 1981; Liu *et al*., 2006). With decreasing solar radiation, as the earth's axis wobbles back in the other direction, the monsoon effect is less and less pronounced.

Precession has been controlling North African rainfall in slow cycles since at least the late Miocene (deMenocal 1995). The most recent wet phase or Green Sahara occurred about 11,000-5000 BP (Tierney et. al. 2017). Referred to as the Early Holocene African Humid Period (AHP), or the Neolithic Subpluvial, this phase is documented by a variety of proxies (deMenocal and Tierney 2012). These proxies not only provide evidence for the timing, duration, and geographical extent of the humid period, but also, in themselves, suggest the character of the North African environment during this time.

Stratified geological deposits from the Sahara indicate the presence of numerous, persistent lakes. Some of these paleolakes were notably large, essentially inland seas: lake Megachad, for instance, was once larger than the modern Caspian. The geological record shows these lakes persisted for millennia, indicating that annual rainfall consistently exceeded evaporation (Bunbury, Ikram, and Roughley 2020; deMenocal and

Tierney 2012; Tierney et al., 2011, Gasse 2000, Street-Perrott et al., 1989, COHMAP Members, 1988).

The humid conditions that sustained the lakes also sustained vegetation, which mitigated erosion and the creation of aerosol dust. This effect can be seen in coring studies of off-shore sediment deposits, which recognize the African Humid Period as an interval of low dust flux between 11,500 and 5,500 years ago (Adkins et. al. 2006). Studies of fossil pollen and leaf wax preserved in these sediments offer species and plant-adaptation data: increasing leaf wax incidences toward the end of the AHP correlate to increasing aridity, and the pollen record shows shifting schema of tropical, wooded-grassland, and savannah species (Tierney et. al. 2017, Hély and Lézine 2014, Ritchie et. al. 1985). An interesting commonality of the paleolake, dust, leaf wax, and pollen proxies is that they all indicate an abrupt transition to arid conditions, taking place over only a few centuries, at the end of the AHP (deMenocal and Tierney 2012). The precise timing of this transition, however, differs from region to region. Generally humid conditions began later and ended earlier in the northern zones than in the southern ones, but even within this pattern there is strong regional variation (Tierney et. al. 2017, Wendorf and Schild 2001).

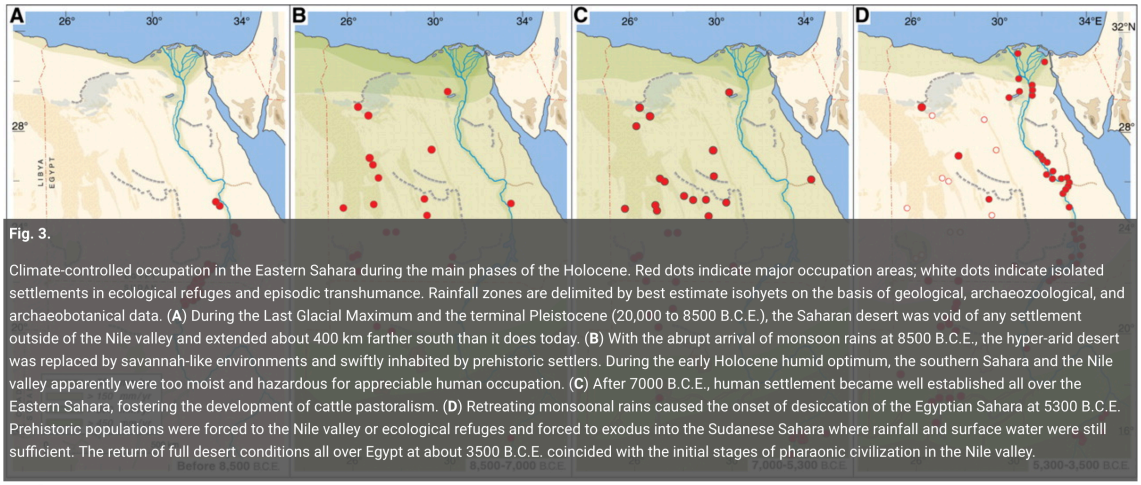


Figure 3. Drying of the Sahara. Kuper and Kröpelin 2006.

Even during the AHP, humid conditions were not entirely consistent. Notably, southern latitudes experienced a return to aridity around 8,000 years ago, at which time proxies indicate that rain and groundwater disappeared for roughly a millennium (Tierney et. al. 2017, Neidermeyer et. al. 2010). This dry period is seen to a lesser extent at northern latitudes, or not at all. The precise mechanism guiding the uneven ecological response to the 8KYA drying event is not well understood, but seems to be a combination of varying winter rainfall, species of vegetation cover, and feedbacks of atmospheric dust which were compounded once drying set in, and created a regional system that delayed a return of humidity (Tierney et. al. 2017). Feedback-creating factors like atmospheric dust and vegetative cover have been historically overlooked in many climate models, and new science demonstrates that these models may have drastically underestimated both the amount and the extent of rainfall during the AHP, while missing more nuanced dynamics of regional variation (Tierney et. al. 2017, McGee and deMenocal 2017, Schulz 1991). This is critically important when considering the history of human habitation in the Sahara.

The Holocene Peopling of the Sahara

The inception of the AHP allowed for the expansion of numerous species across the northern part of the African continent. Increased humidity created a network of interlinked hydrological systems, permitting flora and fauna, including humans, to disperse quickly across the entire landmass (Drake et. al. 2011). It is theorized that human populations in the Nile Valley, focused on a riverine skillset, spread eastward across the southern Sahara, while savannah-adapted hunters from the northwestern Africa spread southward (Drake et. al. 2011, Sutton 1977). This is supported by the presence of an "aqualithic" material culture complex characterized by bone fishing implements, distributed along interlinked river systems across the southern Sahara (Yellen 1998, Sutton 1977). These riverine connections are weaker in the northern Saharan landscape, making an eastward rather than northward diffusion more attractive for aqualithic pioneers from the Nile Valley (Drake et. al 2011), although no barrier would have been posed to savannah hunters making their way northward. At the same time, a north African "Ounanian" population, whose toolkit focused on lithic projectile points and bow-and-arrow technology, spread southward in order to pursue the large game, such as elephant and giraffe, that were beginning to appear in the greening Sahara (Drake et. al. 2011). The six millennia of the AHP allowed adequate time for these dispersals, as well as allowing human groups to encounter and adapt to the variable lacustrine, riparian, savannah, tropical, and arid environments that the Green Sahara had to offer. Archaeological remains in the form of settlements, cemeteries, and other material traces are found throughout the desert. A vast corpus of petroglyphs show humans engaged in

hunting and other activities, as well as animal species such as giraffes, ostrich, elephants, gazelles, and fish. These remains show that human presence in the Sahara was robust and extended, and that a variety of subsistence strategies were pursued.

A recent study assesses Saharan demographics during the AHP by charting thousands of archaeological ^{14}C dates and dividing them by region (Manning and Timpson 2014). This statistical analysis returns results that take broadly the same shape as the climate proxy data, although the authors are not satisfied by the strength of the correlation. Manning and Timpson find an initial increase in population in the Sahara between 14,000 and 11,000 BP and an extremely rapid growth between 10,900 and 10,600 BP. This correlates roughly to the onset of the AHP. After an additional 3,000 years of diminished but steady increase, the model indicates a sharp decline between 7,600 and 7,100 years BP –the 8KA drying event– and then another surge between 6,700 and 6,100 BP: the recovery and return to humid conditions. After this point, the model indicates a steady decline, correlating to the gradual drying of the Sahara.

The model is intriguing because it matches the theorized pattern of settlement well, but lags behind the climate proxies by half a millennium or more. This could be indicative of a phase, scale, or resolution issue between the two datasets, or of a delay between climate change and environmental impact (Walther 2010, Kuper and Kröpelin 2006), but it also raises the possibility of a considerable period of adaptive delay between climate change and human response. Long-duration adaptive delays to environmental changes have been proposed by other authors (Jones et. al. 2009), and this phenomenon has interesting cultural implications that will be revisited in later chapters.

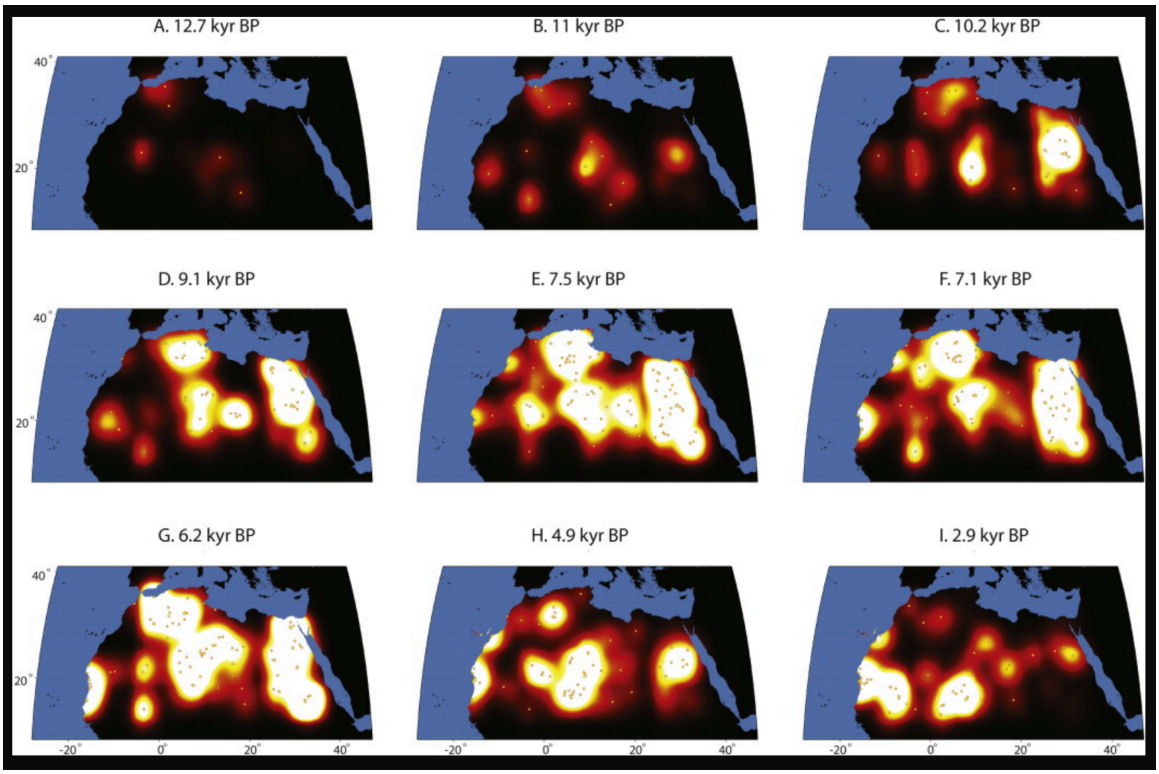


Figure 4. Manning and Timpson's demographic results showing population movement over time. Manning and Timpson 2014.

Manning and Timpson's demographic model also shows the effect of regional environmental variation. Population collapse is more pronounced in areas (such as the eastern Sahara) where desertification was abrupt; regions that dried more slowly, such as the central Saharan lowlands, were better able to sustain a population even if they ultimately became equally arid. This is probably due to the temporal buffer allowing local groups to adapt to sustainable strategies such as pastoralism.

Regions where dependable, perennially watered refuges could be found supported human populations best, by creating loci around which the population could contract and expand. Data from the deserts around Kharga, Egypt's southernmost oasis, suggest repeated occupation of the outlying regions during periods of moister weather and

expanded paleolakes and abandonment in favor of the oasis proper during drier periods (Bunbury, Ikram, and Roughley 2020).

Populations of the Sahara: a case study from Niger

The eastern Sahara, particularly the strip of desert to the west of the Nile to the modern Egyptian border, has been best studied, and is also the focus of this chapter and dissertation. However, a few sites elsewhere present intriguing evidence as well as helping form a picture of human occupation in the Sahara during the AHP.

The sites around Gobero, on the northwestern edge of the Chad basin in Niger, have provided some of the earliest habitation sequences for the Sahara. Scattered traces dated from 14000 to 7700 BCE indicate the presence of hunter-gatherers, but there is no evidence for habitation or infrastructure investment at this time (Sereno et. al. 2008, MacDonald 1999, Tillet 1985, McIntosh 1986). In the following millennium, however, a cemetery is established. This is not evidence of settlement at this site, but rather of consistent return in the course of seasonal movements. Seventeen complete skeletons have been dated to this early phase (Sereno et. al. 2008, Kobusiewicz and Kobusiewicz 2004). Craniometric data suggests a close affinity with West African populations from Mali, Mauritania, and the Maghreb (Sereno et. al. 2008). Material culture associated with the burials is mostly made up of ceramics and bone fishing implements associated with the Kiffian technocomplex, which takes its name from a type-site some 500 kilometers north of Gobero (Sereno et. al. 2008). The remains of fish, soft-shell turtles, and crocodiles, indicating a subsistence focus on aquatic environments, dominate the middens of this phase.

Following about 6300 BCE, there is a hiatus in the use of the cemetery. This corresponds to the 8KYA drying event discussed above, and probably represents an abandonment of the site as it became too arid to sustain the community of hunter-fisher-gathers who had been exploiting the lacustrine environment of the previous millennia (deMenocal and Tierney 2012, Sereno et. al. 2008). When humid conditions return, the area is revisited and the cemeteries are put back into use. The new population, however, differs from the previous one in several particulars. The skeletons of this period do not closely resemble any other contemporary sampled population, indicating relative genetic isolation (Sereno et. al. 2008). The toolkit relies more on knapped lithic projectile points than bone harpoons and hooks, and does not discernably belong to a known technocomplex (Sereno et. al. 2008). Middens contain a considerably greater number of species, including savannah mammals and birds, although aquatic taxa are still slightly dominant. Domestic cattle are present but scarce. All in all, this population seems to be intent on diversifying food sources, a strategy widely adopted in response to uncertain climatic conditions (Jousse 2006, Marshall 2002, Hassan 2002).

The cemeteries at Gobero fall out of use again about 2500 BCE, which coincides with the intense aridification of the Sahara at the end of the AHP. Material culture dated between 2500 and 300 BCE supports the occasional presence of transient groups, probably cattle-herders, but there is no indication of settlement or a reliable water-source at the site (Sereno et. al. 2008). This is compatible with evidence for a shift to pastoralism more generally for those who remained in the Sahara after the end of the AHP (Barich 2002).

Despite being geographically and culturally distant from Egypt, the Gobero case is useful because its deep and well-dated stratigraphic sequence provides an example of responsive human adaptations to environmental change. Chief among them are the adoption of diversified food strategies, flexibility between sedentary and transhumant lifestyles, and the abandonment and reoccupation of sites.

The Eastern Sahara



Figure 5. Map of Egypt showing locations of sites mentioned in this chapter.

These traits can also be seen in the Eastern Sahara, although, unlike at Gobero, the story must be pulled together from a patchwork of sites with much briefer chronologies. Archaeological evidence from the Nile Valley itself at the height of the

AHP is largely lacking, probably because the humid conditions that greened the Sahara had rendered the Nile dangerously unpredictable and un-inhabitably marshy (Kruper and Kröpelin 2006, Vermeersch 2002, Wendorf 1968). The notable exception to this is the high-ground site of el-Kab, to which we will return later (Kuper and Kröpelin 2006). Although filling the Nile's southern headwaters, the monsoon never penetrated quite far enough north and east to entirely humidify the eastern Sahara, much of which remained semi-arid in the AHP. It was also one of the first regions to dry as the monsoon retreated (Manning and Timpson 2014, Bubenzer and Reimer 2007, Kruper and Kröpelin 2006). Nevertheless, it was substantially peopled by hunter-gather-pastoralist communities who utilized paleolakes, oases, and seasonal water sources. The eastern Sahara was populated at the very onset of humid conditions (around 8500 BCE), although this was one of the last Saharan zones to be reached by the monsoon. Kruper and Kröpelin (2006) divide the population of the Eastern Sahara into four phases: Reoccupation (8500 to 7000 BCE), when populations surge in the Eastern Sahara at the onset of humidity; Formation (7000 to 5300 BCE), ending abruptly in all areas without permanent water; Regionalization (5300 to 3500 BCE), featuring retreat to highland refuges with continuing rains and temporary lakes; and Marginalization (3500 to 1500 BCE), with only transient human activities in the Egyptian Sahara and occupation restricted to Northern Sudan.

During the Reoccupation phase (8500 to 7000 BCE), groups moving away from the increasingly uninhabitable Nile corridor quickly dispersed over the new semi-humid to semi-arid savannah lands, bringing with them the "aqualithic" toolkit discussed above. They were probably met by groups from the south, already adapted to savannah conditions, who were following migrating game north in the wake of the monsoon

(Kruper and Kröpelin 2006). By the Formation phase, settlements had been established in a variety of local environmental conditions (Gehlen et. al. 2002), each utilizing a portfolio of adaptive technologies and subsistence strategies. Tool technologies and domestic goats from the Levant are present, Sudanese ceramic technologies are widely dispersed, and locally domesticated cattle appear at many sites (Linseele et. al. 2014; Kruper and Kröpelin 2006; Kindermann 2004; Gehlen et. al. 2002; Close 2002). This is in addition to the original aqualithic toolkit of the hunter-gatherers, and demonstrates that the inhabitants of the eastern Sahara were both highly mobile and interested in exploiting a variety of resources (Kruper and Kröpelin 2006).

An Eastern Saharan settlement that exemplifies this well is Nabta Playa, in the Western Egyptian desert south of the oases. Nabta Playa is a broad basin to the south of a desert escarpment and an unusually good place for collecting seasonal drainage. Although the surrounding land was semi-arid even at the height of the AHP, the basin presented both seasonal lakes and the availability of some groundwater. This made it attractive to hunter-gatherers as early as 10,800 BP (8850 BCE) (Wendorf and Schild 1998). Shortly thereafter, these groups began building structures, digging wells, and creating other infrastructure suggesting that they spent at least part of each year at Nabta. The site seems to have been primarily occupied in the dry season: many of the excavated structures were actually built on the lakebed and inundated by lake waters every year. Furthermore, the botanical remains on the house floors are mostly from dry-season plants (Wendorf and Schild 1998). There is little to no evidence of the cultivation of plant species, but many wild species were collected, processed, and stored at Nabta annually. Cattle are present in small numbers at an early date, but the herding of both cattle and

caprovids is added to the Nabta portfolio around 8000 BP (6500 BCE) (Linseele et. al. 2014; Wendorf and Schild 1998). Herd animals, especially cattle, were probably used more for blood and milk than for meat, as is the case among Saharan herders today (Dunne et. al. 2012, di Lernia 2006, Wendorf and Schild 1998). Taken together, the evidence from Nabta strongly suggests a split dependence on wild plant resources and herding. To maximize such a strategy, communities would need to travel seasonally. The wet season at Nabta Playa would have provided neither mature wild plants nor good pasture for animals, so it seems likely that inhabitants would have adopted a hybrid sedentary/nomadic seasonal lifestyle (Wendorf and Schild 1998).

As elsewhere in the Sahara, humans at Nabta Playa become increasingly dependent on cattle with increasing aridity, and the animals begin to take on particular social significance. Burials of cattle, in many cases covered by monumental tumuli and coupled with monoliths, appear at Nabta Playa at about 7500 BP (5550 BCE) (Wendorf and Schild 1998). These mainly appear at a part of the site that excavators have identified as an "aggregation" or "meeting" area, separate from the dispersed collections of dwellings around the basin. This area is dotted with tumuli, stone circles, and monoliths, many of them intentionally carved.

At least one of the stone circles has been interpreted as an astronomical installation, suggesting that astronomical observation and calendrical calculations were practiced (Malville 2015; Brophy 2005). Taken as a whole, the monumental installations at Nabta Playa have been interpreted as early evidence of complex society and cult activity, with Nabta serving as a regional ceremonial center (Wendorf and Schild 1998). Similar, roughly contemporary arrangements of cattle burial, tumuli, and monoliths have

been discovered in Libya, and, somewhat later, in Niger, tracking an expansion out of the Eastern Sahara (di Lernia 2006).



Figure 6. Reconstruction of a standing stone circle from Nabta Playa. Aswan Nubia Museum.

Unlike hunter-gatherers, who opportunistically track exploitable resources, pastoralists pursue dependable grazing land in relatively fixed annual rounds (Wendrich and Barnard 2008; Cribb 1991). The pattern of annual return to particular localities encourages community investment in infrastructure in these places, and the cyclical, repeating nature of occupation lends itself to the rhythms of ceremonial observance. The installations at Nabta provide good evidence of this tendency. In later chapters, evidence for the ongoing influence of Saharan-pastoralist cult focused on cattle, the construction of monuments, and perhaps astronomy will be discussed in more detail.

The interest in multi-resource subsistence, like that practiced at Nabta Playa, suggests that even during the Formation phase, inhabitants of the eastern Sahara anticipated climate instability and were diversifying as insurance against drier years. Many of the available water sources were ephemeral collections of runoff rainfall, which were highly seasonal and not guaranteed to appear (Bubenzer and Hilgers 2003; Embabi 1999; Neumann 1989; Kröpelin 1987). This precarity demanded a lifestyle that was mobile and flexible, as populations would have needed to move from water source to water source in a seasonal cycle (Bubenzer and Reimer 2007). Faunal and botanical remains from this period are mostly of desert taxa, rather than savannah species, indicating that arid conditions were widespread (Berke 2001; Van Neer and Uerpmann 1989).

By the end of this period, around 5300 BCE, most Saharan communities were practicing drought-adapted cattle pastoralism, while the first farming settlements were established in the dependably watered Fayoum depression (Kruper and Kröpelin 2006). The end of the Formation phase corresponds with the southward retreat of the monsoon from the eastern Sahara, which was already at the monsoon's furthest reaches (Manning and Timpson 2014). At this point, the population begins to retreat into ground-watered refuges such as the Gilf Kebir, the Egyptian oases, and the West Nubian paleolake and Wadi Howar, and most communities seem to focus primarily on cattle-herding (Bunbury, Ikram, and Roughley 2020; Linseele et. al. 2014; McDonald 2009; Kruper and Kröpelin 2006; Wendorf and Schild 2001; Hoelzmann et. al. 2001). The underlying geology of the eastern Sahara supported watered refuges, both seasonal and perennial, as it still does today (Bubenzer and Reimer 2007). The relative density of these refuges, and their

delayed response to the sudden decrease in annual rainfall, mitigated the human toll of an otherwise rapid desertification and allowed human populations time to shift strategies as the environment deteriorated.

Nevertheless, dependence on perennial water sources during the Marginalization phase created population pressure as the carrying capacity of the eastern Sahara declined. In this period, there is significant population transfer toward the Nile Valley, and settlements appear at sites like Merimda (Beni Salama), and el Omari (Wengrow 2003; Köhler 2011; Fekri 1985). Although these settlements are agricultural, their material culture has also been interpreted as displaying the influence of a Saharan pastoralist origin (Wengrow 2003). The Nile Valley was also well within pastoralist range of Saharan water sources such as Nabta Playa, and herders probably interacted with Nile Valley communities annually (Wendrich and Barnard 2008; Wendorf and Schild 1998; Cribb 1991). Pastoralism and sedentism have been shown to blend with surprising ease. In modern ethnographic examples, it is common for agriculturalists to trade with pastoralists, for families to be mixed between the two strategies, and for individuals or communities to switch strategies based on any number of factors (Kuznar and Sedlmeyer 2008; Avni 1996). There is no reason to believe that this was not the case in the Nile Valley, perhaps even for much of Pharaonic history.

On local scales, the drying of the eastern Sahara was abrupt, probably occurring over only a few generations in each place (Manning and Timpson 2014). Regionally, it was also one of the first Saharan zones to become arid, meaning that other groups were still practicing a hunter-gather lifestyle in the Sahara while the population of the eastern reaches was retreating into refuges and toward the Nile Valley. This early and rapid

desiccation could perhaps have meant that individuals born in the growing villages along the river would have access to cultural memories about a greener desert, and probably also to people who were still managing to survive outside of the valley (di Lernia 2006). These new communities could easily have been aware of an origin to the west, and were probably still benefiting from what was left of the shrinking grasslands. The material culture of early Nile valley settlements supports this notion, especially where it indicates a cattle-oriented cult.

The Other Side of the Nile: The Eastern Egyptian Desert

Compared to the Eastern Sahara (Egypt's Western desert), the prehistory of the Egyptian Eastern desert between the Nile and the Red Sea has received relatively little attention. Tracks, petroglyphs, lithic scatters, and other prehistoric traces have been frequently noted, but are usually corollary discoveries made by expeditions recording Ptolemaic remains (Gatto 2012; Sidebotham et. al. 2008). Both the Eastern desert and the Red Sea coast were inhabited as early as 10,000 BCE, but at present too little evidence exists to create a very detailed history of this occupation (Gatto 2012; Sidebotham et. al. 2008).

We do know that the same climate fluctuations that affected the Western desert affected the Eastern, with roughly the same demographic consequences. After scattered Paleolithic occupation, human activity apparently ceases, probably as a result of arid conditions. In the 8th millennium, greening desert highlands attract human activity again, with an emphasis on hunting and, later, herding (Vermeersch 2012; Nicoll 2004). Although initially remaining close to the Nile Valley, over the course of the AHP these

groups expanded further east and reoccupied many Paleolithic sites in the Red Sea mountains (Barnard 2012; Gatto 2012; Vermeersch 2012). As the monsoon retreated, aridity returned to the Eastern Desert, and its human groups followed the same trajectories familiar from the Eastern Sahara: some adopted pastoralism, while others moved into the Nile Valley and started to cultivate cereals (Barnard 2012).

Evidence for pastoralist strategies in the Eastern Desert is the earliest in Egypt, with domestic ovicaprid remains appearing at the Sodmein Cave and Tree Shelter sites around 5000 BCE (Linseele et. al. 2014; Vermeersch 2012; Sidebotham et. al. 2008). The lithic assemblages from these sites show a strong Nile Valley influence, while the animals are assumed to have been introduced directly from the Levant, as they appear here before reaching the Nile (Vermeersch 2012, 2006). This suggests that the inhabitants of the Eastern desert had strong connections over a wide geographical range. The most important prehistoric sites in the Eastern desert are located along wadi routes, such as the Wadi Hammamat, between the Nile and the Red Sea. This further supports the idea that populations of the Eastern desert were participating in inter-regional trade and travel.

Although pottery and lithic types indicate cultural commonalities with the Nile Valley and Western desert, it is significant that there is no evidence for dependence on cattle on the eastern side of the Nile (Vermeersch 2012). This may simply be due to the mountainous topography of the Eastern desert, which did not foster grassland like that found on the Western desert plateau. There is some evidence for the use of marine resources, particularly Red Sea shellfish, but the population seems overwhelmingly to have relied on goat herding (Vermeersch 2012).

The mineral deposits of the Eastern desert were extensively worked in the Pharaonic and Roman periods, but evidence from mining sites and materials excavated in the Nile Valley indicate that the acquisition of minerals through surface collection and open-pit mining was already established by the Predynastic period (Klemm et. al. 2001; Klemm and Klemm 1994; Castel and Mathieu 1992). It is probable that the mineral resources of the Eastern desert, including gold and copper and gemstones like amethyst, turquoise, and carnelian, were a focus of trade between the Nile Valley and the herders of the Red Sea mountains. Sources of minerals that began to be exploited in the Predynastic continued to be worked through the Roman period (Harrell 2004, Shaw 2002, Aston 2000). This suggests a continuity of knowledge about the location and extraction of these materials, and continuing forays into the desert even after it became extremely arid. Access to these mining resources and to the Red Sea ensured that the Eastern desert was being traversed throughout the Pharaonic period, and its wadis provided conduits for exchange between the Nile Valley and the Levant, the Red Sea, and Nubia. This Pharaonic activity, and its prehistoric antecedents, will be discussed in more detail in the following chapters.

The Desert and the Egyptian Neolithic: Proto-Dynastic Cultures of the Nile Valley

The deserts on both sides of the Nile were largely uninhabitable outside of ground-watered refuges after about 3500 BCE. Desert populations dropped significantly (Manning and Timpson 2014). Communities in the Nile Valley were quickly growing, and increasingly relying on agriculture for subsistence (Linseele et. al. 2014; Bard 1994; Fekri 1985). This period has been referred to as the Neolithic in the Nile Delta (because it

has been frequently considered in the context of the Levantine and Near Eastern Neolithic), and as the Predynastic in Upper Egypt. Many sites of this period, especially in Upper Egypt, were excavated at the turn of the twentieth century or even earlier. As a result, the waters of documentation, terminology, and dating have been muddied by political, theoretical, and technical shifts within the discipline of Egyptology over the last century (Dee et. al. 2014; Stevenson 2016).

Regardless of these confusions, it is widely assumed that desertification, which became profound in the Egyptian Sahara at about 3000 BCE, was a major factor in the formation of a proto-pharaonic Egyptian culture and the rise of the Egyptian state (McGee and De Menocal 2017, deMenocal and Tierney 2012, Kruper and Kröpelin 2006). The question of state formation in Egypt is a complicated and much-discussed one (see Stevenson 2016 for a recent review), and I do not intend to enter into these debates, although it is important to note here that the formation of an Egyptian state seems to have taken place more rapidly than was long supposed, occurring mostly at the very end of the 4th Millennium (Dee et. al. 2014). The question that concerns me for this particular project is how, during the rapid changes taking place in the 4th millennium BCE, inhabitants of the Nile Valley viewed and interacted with the desert from which many of them had come only a few generations earlier.

The markers of the new lifestyle were agriculture and at least partial sedentism, which seem to have been adopted first in Lower Egypt (Wendorf & Schild 1976). As mentioned briefly above, agriculture appeared in the Fayoum at a very early date (around 5300 BCE), almost at the inception of the drying trend, but had not intensified (Kruper and Kröpelin 2006, Bard 1994, Fekri 1985). This could be due to the lingering Saharan

habit of diversifying diet: communities in the Fayoum had access to both plentiful aquatic resources and the seasonal savannah grasslands (Linseele et. al. 2014). Therefore they did not need to develop a primary reliance on cultivated cereals, and may have consciously avoided such a focused dependence (Bard 1994). Additionally, much evidence points to them practicing stock-keeping and maintaining a relatively mobile lifestyle, at least at first (Linseele et. al. 2014; Holdaway et al. 2010; Shirai 2010; Wendrich and Cappers 2005).

Nevertheless, the occupation sites in the Fayoum are distinguished by areas for the processing and storage of grain, and the development of lithic sickle blades (Köhler 2011, Wendrich & Cappers 2005, Wenke, Long & Buck 1988). Storage and processing appears to have been undertaken in a communal fashion, suggesting organized labor (Vermeersch 2002). Settlements are of both camp and village types, although even in the villages the structures seem to have been relatively ephemeral post-and-reed constructions (Köhler 2011, Midant-Reyes 2000, Kozlowski & Ginter 1989, Caton-Thompson & Gardner 1934).

A similar strategy is seen at the Delta site of Merimda, established slightly later, around 4800 BCE (Hawass et. al. 1988, Fekri 1985). Here, grain storage is equally important, and the material culture shows relationships to contemporary assemblages in the Levant and in the Fayoum (Köhler 2011). Although agriculture was only one facet of a diversified subsistence strategy, both the Fayoum and Merimda cultures are considered Neolithic, and some scholars attribute the adoption of cereal cropping to Near Eastern influence (see Shirai 2006). In sum, the Lower Egyptian Neolithic, although taking some advantage of arid grassland fauna, diverges culturally from the desert pastoralist lifestyle.

Incorporating cereal cultivation and fishing into its subsistence strategy, it turns toward the Nile and Delta environments and toward relationships to the Levant (Bertini and Ikram 2014). Significantly, it does not appear to rely on cattle or incorporate them into its cult, at least as evidenced by a lack of cattle burials and representations.

In Upper Egypt, the transition to agriculture is later and more cautious. While a "Neolithic" culture emerges, it does not bear the same marks of Near Eastern influence seen in Lower Egypt (McDonald 2016). One of the few Upper Egyptian sites with dates comparable to Fayoum or Merimda is el Kab, which will be discussed in far greater detail in the following chapters. At 6550-5550 BCE, though, el Kab only hosts seasonal hunters and fishermen. There is no sign of even incipient agriculture or wild cereal processing, and el Kab was probably only a campsite for Saharan hunter-gatherers on annual rounds (Vermeersch 2002). The lithic toolkit shows similarities to sites in the Western desert but also in the Eastern, suggesting either that these groups were in contact or that the attractive high ground of the riverbank site was used by numerous transient groups (Vermeersch 2002, 1996).

The earliest sedentary culture-complex identified in Upper Egypt is the Badarian, found in southern Middle and northern Upper Egypt. It should be noted that designations such as Badarian are not ethnonyms, but toponyms that refer to type-sites for material culture assemblages. These should be seen as local, distinguishing material traditions, but not as evidence of distinct ethnic groups. The Badarian culture demonstrates material connections to Merimda and the Fayoum but also to Nabta Playa and the Eastern desert, suggesting that the Badarian region is at a nexus of movement and communication between many groups at this time (Brass 2003; Nelson 2001; Midant-Reynes 2000; Majer

1992). The people of this region simultaneously engaged in pastoralism, cultivation, and fishing, much like the contemporary communities in the Delta (Brass 2003).

Notwithstanding these few exceptions, there is little evidence for settlements in the Upper Egyptian Nile Valley until around 4000 BCE, although this could be due to taphonomic biases, including burial by alluvial silt and later settlements (Bard 1994). Even acknowledging the possibility of bias, the date corresponds well with the beginning of precariously arid conditions in the Saharan grasslands, which would have begun to force pastoralists eastward toward the Nile's perennial water. The early sites that have garnered the most attention are the large Predynastic cemeteries at the desert's edge, skewing attention somewhat away from what settlement archaeology may exist. Of the valley settlements that do survive in Upper Egypt, the earliest sites are small, and widely spaced in the mouths of desert wadis (Bard 1994). Situated thus, they have access to both the river and the desert, and might even collect rainwater in wetter years. Most are in the style of camps, with hearths and expedient animal pens but little permanent architecture (Bard 1994). This supports the idea that early Nile Valley settlements in Upper Egypt were seasonal habitations for pastoralist groups who were making increasingly constricted annual rounds as the Sahara dried.

The idea that the first "settlers" in the Predynastic Nile Valley were not particularly settled at all, and were instead a loose affiliation of part-time herders, has been gaining ground in recent decades (Wengrow 2014; Gatto 2011; Fowler 2004). As these groups cycled annually through the Nile Valley, they buried their dead in the same places year after year and gradually created landscapes of memory and meaning, much as they had at seasonal sites like Nabta Playa. In this way, they created communities of

"living people, the dead, things, and places," and natural nodes to return to annually and when climate deterioration ultimately forced an end to Saharan pasturage (Fowler 2004). Viewed this way, the presence of Predynastic cemeteries at the desert's edge becomes an integral part of cultural formation in this period. Cemeteries were more permanent than the dwellings of the semi-nomadic living, and it was these perennial communities of the dead that anchored mobile groups to a place. In this way, the Predynastic cemeteries of the Nile Valley functioned just like those at Nabta Playa and other Saharan sites, and were probably created within the same cultural framework. It is possible that, as with cemeteries at Nabta Playa and the nearby, somewhat later Gebel Ramlah, human remains were brought to the Nile Valley cemeteries for seasonal interments, large social events that would have featured communal feasting and ritual activities (Stevenson 2016; Kobusiewicz et. al. 2010; Wengrow 2006; Di Lernia 2006).

Some scholars have suggested that "urbanisation of the dead may have been more important than the urbanisation of the living, the density of social memory more vital than the massing of permanent dwellings" (Wengrow 2006). Certainly the famous Predynastic cemeteries at Naqada, Hierakonpolis, and Abydos meet the definition of cities as "'forests of artifacts' in which new densities of human relations are mediated by a density and a diversity of things" (Stevenson 2016; Moltoch 2011).

At any rate, the cities of the living gradually also became cemented in place around the cities of the dead. The dating of the Predynastic phases, initially based on ceramic seriation (Petrie 1899), is still a matter of some confusion due to a low sample size and the difficulty of processing ^{14}C samples (Stevenson 2016; Dee et. al. 2014; Fekri 1985). What matters here is that the middle stage Naqada culture slowly diffuses

northward. Naqada II material overtakes the Lower Egyptian traditions until most of what will become Egypt is in at least material contact with the political system taking shape in Middle and Upper Egypt.

At the same time, the pastoral economy shifted to a mainly agricultural one, and the cemeteries begin to show differentiation in burials that has been correlated to the rise of social inequality and a ruling class (Bard 1989). The best-appointed tombs at Hierakonpolis and Abydos begin to display the hallmarks of the Dynastic symbolism of power, although many of these symbols arguably have their antecedents in the green Sahara. This symbolic grammar consistently refers to themes of hunting and capturing wild animals, borrowed from the pastoralist system and imposed by metaphor onto the concerns of the agrarian one. Many of the compositions of Naqada art are recognizably similar to the petroglyphs and rock-paintings of the Sahara, except that in the Nile Valley they have been transferred to the media of vessels, implements, and tomb walls.

In the last section of this chapter, I will very briefly set out some of the ways in which the visual grammar of a Saharan population influenced the aesthetic of an ascendant ruling class at the very inception of the Egyptian state.

Saharan Legacies in the Nile Valley: Culture and Cult

Continuously occupied since 4500 BCE, the site of Hierakonpolis, or Nekhen, is one of the most impressive Predynastic centers in Upper Egypt. During the Naqada periods, it consisted of a town in the Nile's floodplain, surrounding a monumental cult building, and a large cemetery on the desert's edge (Friedman 2011a). Excavations of this

cemetery have revealed similarities between Predynastic funerary and Saharan pastoralist cult practices, which in turn are codified and reiterated throughout the Pharaonic period.

The custom of the sacrifice and burial of complete animals, and their internment among the human dead, can be seen at Saharan ritual centers (Applegate et. al. 2011; di Lernia 2006; Brass 2003; Wengrow 2001; Hassan 1988). Although in the Saharan cases cemeteries mainly include herd animals, at Hierakonpolis the message seems to be in the variety, and a number of species are included. These include many wild and desert animals. Tomb HK 16, a tomb of the Naqada I-II period (c. 3650 BCE), included an elephant, and aurochs, a hartebeest, a hippo, three baboons, three domestic cattle, two goats, twenty-seven dogs, and six cats (Friedman 2011a). The mix of wild, domestic, and commensal species is open to interpretation, and will be returned to in Chapter 7. The emphasis on bovids continues a Saharan tradition of cattle as companions in high-status burials. It is worth mentioning, although this tradition is not continued, that HK 16 and other elite tombs at Hierakonpolis have elaborate post-and-reed superstructures, even after domestic architecture has transitioned to mud-brick (Friedman 2011a). It is entirely possible to imagine them evoking the seasonal constructions of pastoralists at ritual gathering-places, calling to mind a cultural mythology of chiefdom.



Figure 7. Tomb HK 100

Tomb 100, also at Hierakonpolis, is an elaborately painted subterranean chamber (Figure 7). The meaning of the scenes has been the subject of considerable speculation, most of it focusing on warfare and conquest (Gautier 1993, Monnet-Salah 1983, Case and Payne 1962). In separated vignettes, figures contend with animals and with one another; boats float through the composition unconstrained by any represented watercourse. Scenes of hunting, trapping, and trussing of desert animals may depict the acquisition of animals like those buried at HK 16; they have been interpreted as ciphers for the cosmic control over the forces of chaos (Friedman 2011b). These vignettes, of figures confronting beasts or standing over seated figures, as if to strike them, have been considered as presaging standard items of Dynastic royal iconography. But the decorated walls of the tomb chamber also share, compellingly, both their style and their subject matter with scenes from the Cave of the Swimmers and the Cave of the Beasts in the Gilf Kebir (Barta 2018). The paintings in these caves, which are difficult to date but seem to contain several episodes of decoration in both pre-pastoralist and pastoralist modes, show human figures engaged in a number of mysterious activities, including "swimming" parallel to the groundline as though suspended in air. Miroslav Barta has identified several figures in these compositions that bear striking similarities to later canonical images: a running "chieftan" figure evocative of the king running of the Sed Festival, the physical domination of enemies as in later smiting scenes, and even perhaps an early analog for the common image of Nut, the sky goddess, being supported by Geb (Barta 2018). This analysis has been firmly disputed by other scholars working on the caves, on the basis that there are no clear cultural connections between these remote desert sites and the Nile Valley (Zboray 2013). As demonstrated above, however, evidence for those

connections is mounting, and the stylistic and thematic similarities are great enough to merit consideration. Again, however, drawing direct, linear connections between this distant (temporally and geographically) material and the iconography familiar from the height of the Pharaonic period obscures the possibility of a process of memory, encounter, and reinterpretation that imagery like that found in the Gilf Kebir may have gone through.

These are particulars, threads of evidence that can be used to draw out conceptual connections between Saharan and Nilotic spheres. More will appear in the following chapters. So will the broader implications of the influence of a desert-pastoralist cultural formation and aesthetic on the conceptual life of the Nile Valley, and the ways in which that influence affected the Valley's view of the desert. I am by no means the first scholar to call attention to the prehistoric antecedents of the canonical Dynastic repertoire, but I wish to propose my own framework in which to consider the relationship. Some scholars have interpreted these examples as signs of a linear evolution in the formation of the Egyptian state, evidence of direct continuity of a grammar of leadership and power (Hendrickx and Eyckerman 2010, 2012; Darnell 2009). Throughout this dissertation, I will instead explore this phenomenon as one dimension of a continual process of re-encountering, re-interpreting, and re-articulating legible traces of the past. In this paradigm, the deserts accrue significance as spaces of memory, where mythological and ancestral temporalities could exist simultaneously with the present.

Conclusion

Egyptian prehistory could generate numerous dissertations by itself; this chapter is meant to sketch in very broad strokes the environmental and cultural relationships between the Nile Valley and the drying Sahara at the dawn of the Pharaonic period. Of necessity, some intricacies have been glossed over, some have been left out entirely, and others will be revisited in greater detail in the following chapters.

Of greatest salience in this chapter is the Sahara's climate. Hospitably humid in the mid-Holocene, the vast expanse of northern Africa invited groups of hunter-gatherers into its interior from the south, the north, and the east. The groups from the north and south were primarily game-hunters and foragers; the groups diffusing from the Nile Valley in the east possessed this skillset along with technology for fishing. The green Sahara offered enough variety of environment, even during its humid maximum, to encourage these mobile bands of hunter-fisher-foragers to develop strategies for exploiting a wide selection of micro-climates. They pursued numerous species of wild game, which they also reproduced in petroglyphs. The domestication of native cattle and the introduction of sheep and goats from the Levant added herd animals to this portfolio, in terms of both diet and art.

As the Sahara began to dry circa 6000 BCE, these herd animals, especially cattle, became more important as a food source. Different areas of the Sahara began to dry at different times, but the evidence we have indicates that once drying began in a given area it proceeded rapidly, on a generational rather than a geological scale. Both the rapidity and the unevenness of aridification are important for understanding cultural responses to the environmental trend. The drying process is often modeled, crudely, as linear, but the

nuance introduced by local variation helps to explain the persistence of many communities in the desert after it had reached conditions not much wetter than today's.

Variation notwithstanding, hunter-foragers became more vulnerable as rainfall became undependable; some early adopters took up cereal cultivation in the Fayoum circa 5300 BCE, and those who remained in the Sahara became increasingly dependent on pastoralism. Diminishing water sources constricted the annual range of pastoralist groups, confining them to repeating annual itineraries where water and pasture were best assured. As communities returned to the same locations year after year, they engaged in place-making, investing group labor in the creation of monumental landscape interventions such as those found at Nabta Playa. As drying continued, these processes of place-making moved closer to the dependable water source of the Nile Valley.

What has been termed an "exodus" (deMenocal and Tierney 2012) from the Sahara into the Nile Valley at the end of the AHP, then, was less of a stampede and more of a gradual, carefully mediated transition, with pastoralists making ever more constricted seasonal rounds. An existing cultural tendency to hedge bets against climate instability by diversifying diet, coupled with an established habit of exploiting wild grains, probably made the addition of agricultural strategies attractive. Cemeteries and the observance of communal rituals near them created nodes of cultural focus, where memory and identity were rooted in place. These nodes created natural places for settlement in the Nile Valley as the Sahara became unable to support a large population of pastoralists.

Across the board, the history of human movement into the Nile Valley at the end of the AHP seems to be characterized by flexibility and adaptation in the face of real, abrupt, climate change. These changes happened quickly enough that social and

individual memory would probably preserve ideas about different ecological conditions, and in fact there was probably drastic year-to-year variation for much of the Predynastic period. This would have encouraged communities to continue diversification by herding outside the Nile Valley in good years, meaning that at least some members of many families would have contact with more arid landscapes. Ethnographic evidence shows that this is often the case in modern marginal climates, where pastoralists and agriculturalists live in semi-blended, mutually dependent groups.

The survival of pastoralist activities, even in an increasingly agricultural society, probably contributed to the conceptual persistence of pastoralist-oriented cult practices. In the Saharan case these were focused on herd animals, mainly cattle; the construction of monuments to mark meeting and burial places; and probably astronomical events and observation. These elements permeate later Egyptian ritual practice, and use an iconography that developed very early, probably in the Prehistoric Sahara. It is apparent that the desert regions were very much a part of the cultural sphere of the Nile Valley during the fourth millennium. That a blended pastoralist/sedentary lifeway was still common at the time of state formation in Egypt may partly account for the inclusion of these motifs in the symbolic grammar of Egyptian ritual and kingship, although the tendency toward this conclusion in Egyptological scholarship, that is, the projecting backwards of Pharaonic inconography onto the earlier material, should be viewed cautiously.

However, the durability of these icons should also be ascribed to continuing encounters with prehistoric material in the Sahara, and the repeated re-interpretation and re-articulation of its meaning. This can be seen as a cultural process through which

memory and lived experience, in dialog with material traces, created a multi-layered landscape that was rich with meanings, histories, mythologies, and temporalities. In the following chapters, I will explore the ways in which experience of the Sahara continued to affect Egyptian life and thought.

CHAPTER 4. MAKING PLACE IN THE RED LAND: ROCK ART, WAYFINDING, AND THE SOCIALIZATION OF LANDSCAPE

Introduction

In this chapter, I will discuss some of the functions, actions, and meanings of the rock art of the Egyptian deserts. This rock art constitutes a large part of our evidence for human activity in the ancient Sahara, especially in the prehistoric period. This is an enormous corpus, and I cannot address the whole of it here. This chapter and especially its associated case study focus primarily on the rock art of the Eastern desert wadis, but this is not for lack of evidence on the western side of the Nile, or in Sinai, or in Nubia, and is not meant to ignore the significance of those examples.

The first part of this chapter reviews some of the theoretical frameworks that have been brought to bear on rock art generally, in several different regions. I highlight the tension between Eurocentric approaches, informed by movements in Western art history and the astonishing Pleistocene cave art of southern Europe, and attempts to interpret rock art with ethnographic and anthropological techniques. The majority of rock art studies focus on motif, that is to say, on identifying what the rock art represents. I point to studies of rock art relationships−with landscape, people, and other rock art−as an ultimately more interesting and more effective way to understand the creation, meaning, and function of rock art.

In my own approach to the Egyptian material, I ground the analysis of rock art in a spatial, landscape-based framework. I examine the effect of the multi-temporal nature of landscapes, especially landscapes affected by environmental change, and the function of rock art as a persistent landscape feature that is accessible to a variety of audiences. These audiences may modify or add to existing rock art, or reinterpret it in frameworks that suit their own cultural context. A landscape-based study like the one that I am advocating therefore requires an approach to rock art that is attentive to the action of the pieces themselves on generations of viewers.

A critical action of rock art is its ability to create place: to humanize or socialize "natural" space. Situating recognizably human art in the landscape overthrows the nature/culture divide and causes land to participate in culture, even in the absence of people. In my reading, rock art holds and communicates human memories: of presence, place, and activity, and even of environmental change. This is especially potent in the desert landscape, where visible human traces are subtle and few.

A Note on Terminology

The term "rock art" is controversial, because it implies that paintings and engravings on rock faces were made with an aesthetic or decorative intent, or are evidence of an intrinsic human impulse for creative production (Chippendale and Nash 2004; Conkey 1987). Many scholars object to the term "art" on the grounds that it assumes a "cognitive modernity" on the part of its ancient creators (Bednarik 2013; Conkey 1987, Davis 1986), or that it predisposes the researcher to view these works through a lens that is too biased by a modern Western aesthetic (Conkey 1987). I will use

the term “rock art” in its vernacular sense, for lack of a good alternative, and because the instances of marking on rock that I am considering in this chapter are too diverse for terms such as “marks,” “petroglyphs,” “inscriptions,” or “motifs.” I ask the reader to be aware that the word “art” is a loaded one, and to accept that in using it I mean not “art” as we would expect to see it in a gallery, but something more along the lines of “craft:” a mode of production that requires skill and knowledge, and that straddles the line between technology and aesthetic, and that adheres to certain genre norms while still allowing for individual innovation and creativity.

Theories About Rock Art, Myths About Rock Art

Rock art occurs in many places and at many different times, and yet there is a tendency to generalize its intention and meaning, or to look for intrinsic human impulses that drive the creation of rock art globally. Furthermore, the generalization is influenced by theoretical fashions, as I will discuss in this section. In only a very few cases, mostly in South Africa and Australia, is ethnographic information available; the necessarily etic approach of rock art research carries with it its own challenges that need to be addressed.

A great deal of the interest in and scholarship on rock art can be traced to the extraordinary Pleistocene paintings preserved in western European caves like Altamira, Lascaux, and Chauvet. For reasons of date, context, and medium these paintings can only be compared to a few other instances of image-making on rock around the world, but they have created a legacy in the sorts of questions and assumptions that are applied to other rock art sites.

One of the most prevalent of these is the idea that rock art is intended to function as a kind of sympathetic magic, ensuring the success of the hunt. The anthropological concept of sympathetic magic is articulated in James Frazer's *The Golden Bough* (1933) and began being applied to rock art shortly afterward, mostly famously by Henri Breuil (1952; see also Grant 1968; Heizer and Baumhoff 1962). Although sympathetic hunting magic as a motivation for rock art was largely out of fashion and widely critiqued by the mid-eighties (Bahn 1991; Lewis-Williams 1983), it still has traction in recent studies (e.g. Keyser and Whitley 2006; Kehoe 1996; Nissen 1994). The idea of hunters' "sympathetic magic" has been used to explain the presence, in many corpuses, of images of large mammals. However, this analysis does not account for the presence of many other genres of motifs, often in the same compositions. It also does not fit with ethnographic evidence, which usually does not suggest a link between magic and rock art and suggests that the symbolic systems of hunter-gather groups are far more complex than simple hunting-magic (Keyser and Whitley 2006). There are some exceptions to this (i.e., York et. al. 1993), but the ethnographic evidence overwhelmingly indicates a variety of other motivations. Furthermore, the animals portrayed in rock art often do not correlate in a significant way with contemporary archaeological faunal assemblages (Keyser and Whitley 2006).

As sympathetic hunting magic as an interpretive frame for rock art was losing traction, many scholars instead suggested that rock art was the material product of shamanistic ritual. This has been applied to the Pleistocene cave art of Western Europe (Conkey 1987) and to rock-art research elsewhere. The theory is most fully articulated by David Lewis-Williams and Thomas Dowson (1990), who applied it to the rock art of the

San people in South Africa. It has also been suggested as an interpretation for rock art in the Americas (Keyser and Whitley 2006). While the idea of shamanistic rock art is better-supported than sympathetic magic by ethnographic explanations, the blanket application of shamanism as the root of rock art betrays misconceptions about the nuanced mechanisms of shamanism as they operate in different cultural contexts (Bednarik 2016; 1990). Futhermore, it has been applied in contexts where there is no ethnographic or archaeological evidence for a shamanistic tradition. For a full discussion of the shortcomings of the shamanism interpretation, see Robert Bednarik's passionate *Myths About Rock Art* (2016).

Other interpretive frameworks can be mentioned briefly here, only to emphasize the tendency for scholars to seek out exceptional narratives for rock art. There is Leroi-Gourhan's complicated and highly structuralist parsing of European Pleistocene cave art into a system of symbols primarily divided by whether they appeared in "male" or "female" zones of a cave (1968, 1965). Leroi-Gourhan and others have sought narratives that prove the "modernity" of the ancient mind and the universality of mythology. Tilman Lennsen-Erz (2012) explores the applicability of Maslow's (1970) pyramidal hierarchy of "human needs," framing the creation of rock art as an expression of a universal human urge for aesthetic production.

It is interesting that among these explanations, very little attention is given to what, to me, would seem to be the null hypothesis: that most rock art is pragmatic, expedient, and un-exceptional to its audience. I do not intend to argue that the above assertions about rock art are wholly inappropriate, but to suggest, as many others have (i.e., Bednarik 2016, 2013), that they cannot be applied globally, or in the absence of

other information about the people who made the images in question. Rock art can be made wherever and whenever people and rock co-exist, and no one explanation will fit all of the examples. The Eurocentric history of the study of rock art, influenced by early work on Pleistocene cave art, continues to color research in other contexts. It risks leaning too heavily on an old anthropological fascination with the "primitive" other, even as it seeks interpretations that allow rock art to be parsed in a familiar, Western, system of mythology and iconographic production.

Therefore the study of rock art must be integrated, to the extent possible, with the archaeology and ethnography of the people who made it in order to fully understand the concerns and context surrounding its creation. Thus far, the interpretive frames applied to rock art corpuses have been contemporary with anthropological theoretical vogues, and perhaps the landscape-based approach that I will advocate in this chapter is no exception. I suggest, nevertheless, that a landscape framework for contextualizing rock art has the potential to be more productive than other approaches because of its concern with the very substrate on which rock art is made.

Rock Art in Time

Before turning to questions of landscape and substrate, though, I will briefly address the issue of time. Rock art is notoriously difficult to date, although technology is constantly improving. When rock art is made in an organic medium like beeswax or charcoal, good dates can be obtained from radiocarbon (i.e., Clottes 1997; Nelson et. al. 1995); however, the vast majority of rock art, especially in this study, is engraved directly into the rock with no organic components. Engraved art is usually dated by patination,

superimposition, or stylistically, but these techniques are subjective and produce uncertain results (Chippendale and Nash 2004). Attempts have been made in many places to assign rough dates through an identification of what rock art depicts, especially fauna, but correct identification is an extremely difficult task, especially in corpora that favor schematic, composite, or fantastical creatures (Bednarik 2013).

Although I will engage to some extent with dating (mostly stylistic, or by paleography) in my analysis of Egyptian rock-art, for a project of this nature I suggest that date is subordinate in significance to place and to palimpsest. Like the rest of the physical world, all landscapes are multi-temporal (Hamilakis 2013; Roymans et. al. 2009; Lucas 2008; Holtorf and Williams 2006; Olivier 2004; Lynch 1972). When a landscape intervention like rock art is made, it becomes part of the multi-temporality of place. As Omür Harmanşah (2015) points out, rock inscriptions operate with "hybrid temporalities." They are created in a particular moment, but with the intention that they be durable, and that they participate from the moment of their creation in geological processes. Whether it is intended by their original creators or not, these inscriptions also exert a "poetic and mysterious aura" as ruins (Harmanşah 2015). I'm extending this notion into the multiple temporalities of audience and the companionship that a single instance of rock art shares with newer and older inscriptions, lending some of its "mysterious aura" to the other traces around itself. In this way, rock art becomes part of the "unbelievable mess of the past" (Holtorf 2015), a past in which traces of many temporalities commune and mingle inseparably, as well as functioning as "cargo to the present" (Denig 1996). As Denig states: "Relics of the past cross all the cultural

boundaries that lie between past and present, and when they do they are reconstituted in the relations and means of production of each cultural zone they enter."

Multi-temporality, or the human perception of multi-temporality, may also be expressed in terms of memory. Memories are constituted in the present, but are assembled from traces of the past (Hamilakis 2013; Jones 2007; Olivier 2004). In a landscape, these traces are manifold, and can range from explicitly memorial installations (tombs, monuments, plaques), through interpretable remains of human activity like architecture, field boundaries, and other infrastructure, to materials that have been left behind (abandoned tools, pottery, dropped objects), and even to noticeable or more subtle erasures (Harrison 2004). Rock art is a noticeable human intervention on the landscape (which can already be seen as a human product, as I have argued above), and therefore provides a location for the creation, or rather materialization, of memory. These memories need not be constant; they can be flexibly constituted through reinterpretation and new encounters.

When considering rock art, some of which is extremely ancient, it is difficult to deny that by far the majority of people who have seen and interacted with a given engraving were not contemporary with its creators. This process of communicating across time in a given place, of interpreting, reinterpreting, and interacting with recognizably human signs left in the landscape, is central to my ideas about the function and study of rock art. This is a process that continues into the present. In the Egyptian case, a combination of dating techniques means that a substantial proportion of rock drawings can be more or less accurately assigned to prehistoric, Pharaonic, Late, and modern periods. I focus on examples that were most likely created in the prehistoric and

Pharaonic periods, but it is important to note that, because of their persistence, their meanings and actions are not fixed at the time of their creation. The earlier carvings have active afterlives in their communication with later rock art, later audiences, and changed landscapes. These afterlives are critical, but difficult to access. My analysis focuses on the fixity of rock art in place, and the importance of its landscape context.

Rock Art in Place: Landscape Approaches

One of the most interesting things about rock art, from an archaeological perspective, is its provenance. Parietal art is absolutely fixed in place, and always has been. It was created precisely where we find it today, and its entire life history has occurred in one spot. This makes it almost unique among the genera of material evidence used in archaeology, a field necessarily obsessed with provenance. Given this, it is surprising that the spatial dimensions of rock art research are not more fully developed. Studies considering rock-art in its landscape context certainly exist, but they are relatively few and produce uneven results. This is due largely to the challenges in identification and interpretation that any rock art research faces, a tendency toward art historical preoccupation with the image, and the difficulty of creating appropriate survey methodologies to answer productive questions about the material.

An early study focusing on the landscape dimensions of the rock art phenomenon is that of Robert Heizer and Martin Baumhoff (1962), which painstakingly located every instance of rock art in a study area in Nevada and California and sought larger patterns in the placement of paintings and engravings. This study found that the engravings clustered in places where large game could be hunted, but the investigators extrapolated from this

that the engravings were intended to activate sympathetic magic ensuring the success of the hunt. The study has been criticized as an example of landscape approaches to rock art adhering to processual questions and falling short of an understanding of landscape as a product of human ideation, where points of significance are determined by complex cultural factors (Smith and Blundell 2004). More recent studies encounter the same sorts of difficulties between spatial data and interpretation, suggesting that the methodology for landscape-level analysis of rock art has not yet fully developed.

In the introduction to *The Archaeology of Rock Art* (Chippendale and Taçon 1998), Paul Taçon and Chris Chippendale suggest two approaches to interpreting rock art: *informed* methods, which are supported by ethnographic information, and *formal* methods, which permit interpretation through "the information…immanent in the images themselves, or which we can discern from their relations to each other and to the landscape, or by relation to whatever archaeological context is available." Taçon and Chippendale imply that informed methods are preferable to formal methods, and that formal methods are essentially limited to assessing what the rock art *represents*, because secure knowledge about its meaning (its relationship with people and landscape) requires an emic perspective. Fortunately, this position has been somewhat nuanced over the last two decades, and there is now greater confidence in the usefulness of formal approaches to interpreting rock art.

The volume *Pictures in Place* (Chippendale and Nash 2004) gathers papers addressing landscape in rock-art studies. Without dropping the formal versus informed dichotomy, it outlines problems and approaches to landscape-based rock-art analysis, meaning that the context or substrate of land is integrated into the interpretation of the

pieces. Many of the ideas in this chapter have been inspired by the discussions in this book. Although it is now fifteen years old, the suggestions for landscape approaches to rock art have not been broadly implemented. A more recent collection, edited by George Nash and Aron Mazel (2018), does not focus explicitly on landscape studies in rock art but nevertheless raises many of the same ideas as the 2004 volume.

Andy Jones and Marta Díaz-Guardamino (2015) seek to reframe the hierarchy between formal and informed methods. They note the fallibility of ethnographic research for understanding the distant past, citing studies which found a "lack of congruence" between ethnographic and empirical conclusions (Nicholas and Markey 2015). This can be attributed to the logical limits of analogical reasoning, but also to the flexibility of memory and reinterpretation discussed above. Modern communities form active, legitimate, and complex relationships with rock art that may simultaneously be entirely unlike relationships that existed in the past. Ethnographic analogies can be informative, but forcing equivalencies undermines both our confidence in archaeological interpretation of material and the power of modern communities to form novel interpretations.

Jones and Díaz-Guardamino re-center formal approaches to rock art by incorporating ontological questions into their framework. This allows the theoretical scope of formal rock art research to dilate well beyond the identification of what rock art symbols represent, and to penetrate into human-landscape-rock art relationships. Jones and Díaz-Guardamino advocate the study of material processes of making rock art, and suggest that researchers reject the nature-culture divide between materials and socio-cultural phenomena. They argue that rock art goes beyond visual, symbolic

communication and is a manifested result of a relationship between material, land, and processes of making. Simply put, this removes rock art research questions from the realm of "what?" and places them in the domains of "why?" and "how?" Fredrik Fahlander (2013) adopts a similar approach to the Scandinavian context by defining rock art not as "objects of recognition" but as "objects of encounter." As such, rock drawings act not as a representation of things already present in the landscape (i.e., elk, boats) but as a force to act on how people think about the landscape and their place in it. That is to say, the salience of rock art is not in what it shows, but in its impact on human relationships with material, making, and place. Like Jones and Díaz-Guardamino's, Fahlander's approach is an ontological one because it focuses on how rock art affects people's material and psychological realities.

Finally, it should be mentioned that several attempts have been made recently to interpret rock art in sensescapes beyond the visual. The aural properties of rock art landscapes have been the subject of several of these sensorial investigations. Some (i.e., Rainbird 2002) focus on the aural aspects of the creation of the rock art itself, while others are attentive to sounds produced by "points of resonance" in caves and rock art landscapes (Mattioli and Díaz-Andreu 2017; Scarre 1989), or nearby "lithophones," natural or anthropogenic rock forms that produce certain sounds when struck (Boivin 2003; Dams 1984; Goodwin 1957). Areas in the rock-art landscape around Tombos, Sudan, have been proposed as lithophones or "rock gongs" (Kleinitz and Koenitz 2006). Like the ontological approaches mentioned above, rock art interpretations that attend to sensescapes beyond the visual are concerned with processes of the art's making and action, and its relationship with it makers and viewers. These approaches have the

methodological advantage of being receptive to the landscape as an integrated and active part of rock art's context and function.

As discussed in Chapter 1, any landscape should be seen as a cultural product, built up over time from the aggregated experiences, memories, beliefs, and actions of humans in and on the land. One of the main challenges of the landscape-based analysis of rock art, or indeed any material, is to identify how it engages with the many layers of cultural meaning that exist around it. From an archaeologist's position the primary difficulty is the researcher's etic perspective, the lack of emic interlocutors, and the danger of imposing inappropriate landscape assumptions upon the research area (Bednarik 2013; Smith and Blundell 2004; Conkey 1987). Rather than abandoning the landscape approach, the present project (like several others) seeks to find ways to use archaeological analyses to re-project some of these motivating layers of human ideation onto the ancient landscape. While there is unfortunately no dependable solution for the problem of etic perspective (not even ethnography!), careful integration of rock art with other archaeological data can hopefully help avoid the most egregious errors.

This chapter considers a few of the cultural layers of meaning we can see in the rock engravings of the Egyptian desert. The first of these is the physical substrate of land that is a pre-requisite for rock art. The surface on which rock art is made is significant and already carries its own potency—although ethnographic work reminds us that this potency is culturally specific and not universally knowable, especially when we are considering cultures with very different methods of subsistence (Smith and Blundell 2004). Nevertheless, something about a surface that bears rock art inspired its creator.

Even if that inspiration was as simple as availability, it says something about the relationship of people to land, and the impulse to mark the surface of the earth.

Of course, not all rock art has the same purpose, not even in the same time and place (Lewis-Williams 2006). Different groups may exist simultaneously in the same landscape, and the same group may use different places in the landscape in different ways. For instance, living sites, camps, landmark sites, religious sites, boundary markers, and way-markers will all produce different themes and spatial distributions (Lenssen-Erz 2012). There is a noted distinction between rock art in traversed and in settled landscapes: for instance, farmers will create different kinds of rock art than hunters, even if they belong to contemporary groups or even the same cultural group (Hyder 2004; Sognnes 1998). For this reason, it is critical to be attentive to the other clues about the context in which the rock art was created, and to accept that different interpretive frames may be appropriate for pieces in the same region and of the same era.

Ethnographic examples often show rock art to be composed of elements that evoke a "complex set of related associations" rather than a particular episode, narrative, or "meaning" (Lewis-Williams 2006). Again, this indicates that in interpreting this material, we should do the best we can to be aware of the cultural context, and how rock art might participate in other suites of associations. The rest of this chapter, and indeed this dissertation, explores ways in which this might most productively be brought to bear on the Egyptian deserts.

Drawing on the sources above, I have attempted to frame an approach to Egyptian rock art that is primarily spatial and landscape-oriented. This is the framework in which this entire dissertation is operating, but in the case of rock art particularly has the

potential to make a contribution to what is already known. This is because the majority of research done on Egyptian rock art thus far is primarily concerned with "representation" (Fahlander's "recognition"), that is, with analyzing what the images may show, and how they fit in to the other corpora of Egyptian art (see next section). This approach, like those taken to rock art in many parts of the world, obscures the relationships of the rock art to the landscape around it, and its relationship to its creators and audiences.

I find the ontologically-oriented methodologies of Fahlander (2013) and Jones and Díaz-Guardamino (2017) both appealing and applicable, and I attempt to follow them in my approach to the Egyptian material. The spatial and phenomenological aspects of my research (Chapter 2) are geared toward ontological understanding of the "whys" of making rock art and the "hows" of its action on the landscape and on people. In my analysis, these questions supersede the "what" of rock art motifs and the "when" of rock art creation, although it is necessary to address these questions as well, to the extent possible.

Rock Art in the Egyptian Deserts

> "Various travelers have observed rock-drawings in the deserts. But in spite of the growing interest in prehistory they received little attention. It seems that most of the explorers found excavation in the Nile valley so productive of results that it occupied their whole attention. No one expected important archaeological information from the rock-drawings in the deserts."
>
> Hans Winkler, 1938

Though Winkler made this comment more than eighty years ago, it is quite possible to argue that very little has changed. There has been sustained interest in the rock art of the deserts, and many sites have been discovered, re-discovered, recorded, and

published, but these efforts have not resulted in the rock-art of the deserts influencing very strongly our understanding of ancient Egyptian life. I suggest that this is not because the material is irrelevant, but because, as discussed in Chapter 3, the field of Egyptology has long been subject to the idea that Egyptian civilization was contained within the Nile valley, and this mindset is difficult to break.

In the past three decades, considerable work has been done to locate, record, and analyze the archaeological remains in the Egyptian deserts. However, given the speed at which archaeological research is conducted and published, and the logistical challenges of desert survey (especially in the last five years, when permit applications and desert travel have been greatly complicated by a changing political situation), the information that is currently available is still incompletely synthesized. In large part this is due to the relative novelty of research in the desert, especially when compared to the centuries-long tradition of Egyptological scholarship, and can simply be seen as an indication that there is a great deal of data, and scope for considerable work in the coming decades.

In the following sections I briefly, and not at all comprehensively, address some of the studies and analysis that have been made on rock art from the deserts to both sides of the Nile. For a complete bibliography of the earlier corpus of this material I refer the reader to Hendrickx's *Analytical Bibliography of the Prehistory and the Early Dynastic Period of Egypt and Northern Sudan* (1995) with its annual updates in *Archaeo-Nil,* as well Cervicek's (1974) review of scholarship in the area. My goal is to highlight some of the major threads in scholarship on Egyptian rock art, in order to contextualize my own contribution.

In 1936 and 1937, Hans Winkler located and photographed a number of rock art sites in the Eastern desert wadis, and in the Western desert in the vicinity of Luxor (Winkler 1938). Many rock art sites from Winkler's notes that were not included in his publication were later published by Pavel Červíček (1986). Winkler's is the most famous of the early rock-art surveys, although other interested and adventurous scholars were beginning to document petroglyphs at this time (i.e, Morgan et. al. 1894). Others were undertaken some fifty years later (Fuchs 1989; Redford and Redford 1989), and then starting in the 2000s surveying of the desert began in earnest (Rossi and Ikram 2018; Darnell 2009, 2002a, 2002b; Storemyr 2008; Storemyr et. al. 2008; Morrow and Morrow 2002; Kaper and Willems 2002; Rohl 2000; Friedman 1999; in particular see issue 19 of the series *Archéo-Nil* (2009)). In the surveys of the 2000s, the influence of archaeology's spatial turn is evident, with far more attention being given by surveyors to the location of rock art and its relationships with other human and natural landscape features. The primary objective of these projects was to locate and document sites of archaeological interest in the deserts, however, and so some of the data required for a fully landscape-based analysis were not taken, or at least not included in publication. In most publications, rock art of artistic or historic interest is shown at the motif or "scene" or "panel" level, without comprehensive description of its surroundings or often even the substrate on which the art is made. This is appropriate for an art-historical approach to individual instances of rock art, but obscures information that is necessary to answer more holistic, landscape-based questions. In the case study accompanying this chapter I will explore ways in which field methodologies can be optimized for landscape-level

questions, and explore the applicability of different interpretations of the Egyptian desert rock-art.

This is not to say that analysis of Egyptian rock art based on spatial and landscape questions is entirely novel. Winkler, working in 1938, made many observations on the rock art and its distribution which hold true. He notes that the engravings which appear earlier are often on exposed boulders in high places, in full sun, whereas later rock art is more frequently found in sheltered and shady spots. He attributes this to chronological environmental change, as the environment dried and seeking shelter from the elements became a more prominent aspect of human behavior. He acknowledges the presence of a prehistoric desert-dwelling population, identified by a different style than the Nilotic culture's, and points out that their rock art can be found spread throughout the desert but especially in wadis and other wetter microclimates. He notes that the stylistically Dynastic engravings made by travelers from the Nile valley are primarily found along the corridors of roads. He asserts that the presence of later dedicatory or biographical inscriptions made by Nile-dwellers can be the best indication of the existence of ancient routes, no longer used. Despite this spatial sensibility, however, his publication locates rock-art sites in only the vaguest of terms, to the extent that later survey expeditions have made a project of re-discovering sites that he published (Rohl 2000).

Interpretation of Rock Art in the Egyptian Deserts

The interpretation of rock art in the Egyptian deserts is necessarily etic. Our best opportunity for ethnography comes from the modern practices of marking, often in the same places as the very ancient petroglyphs, but this modern practice cannot be directly

associated with ancient behavior. Nevertheless I will take it into account below, because some of the impulses driving the creation of this traveler "graffiti" are the same, or at least in dialog with the ancient examples. There is also the practice of making *wusum*: schematic tribal insignia produced by Bedouin groups of the modern period. Winkler relates that Bedouin of the 1930s would "idly" carve these tribal marks, also used as camel brands, but also sometimes include an arrow indicating the direction they traveled onward. He also mentions a modern sign which depicts a leather bucket and rope, and is made to indicate where water has been found by digging, indicating the use of modern "idle" rock art for pragmatic, communicative purposes.

The interpretation of the ancient rock art, however, has largely been characterized by a desire to parse the corpus image by image, and suggest meanings for each of the recurring motifs. Generally speaking, these meanings have been connected to the interpretation of the visual culture of the Nile valley, which is often problematically viewed as fixed and canonical. The historical impulse in the interpretation of the rock art has also inspired many scholars to attempt to separate rock art into discreet chronological horizons (i.e., Huyge 2002) in order to better contextualize the material in the body of Egyptological knowledge.

The chronological divisions applied to Egyptian rock art are usually made on the basis of style, which is probably the most useful approach for the material in the Egyptian corpus. However, it must be used cautiously, because of strong evidence for a trend, visible even in the formal art of the Nile Valley, toward anachronism and emulation. A few exceptions exist, for instance, images of camels, which were not introduced into the Egyptian deserts until c. 300BCE (Midant-Reynes and Braunstein-Silvestre 1977; Casson

1974). Even these exceptions, however, can be somewhat subjective due to ambiguous forms and the experience of the researcher. Where texts exist, paleography can give an idea of date, but it can be difficult to extrapolate these dates to nearby figural or abstract work, because they are often not contemporary. Dating by patination or superimposition is also sometimes used (see, for instance: Judd 2008; Huyge 2001; Cervicek 1973; Winkler 1939), although the general consensus is that this technique works only for relative dating within one panel and even then only in particular circumstances. The combination of these techniques means that a substantial proportion of rock drawings can be more or less accurately assigned to prehistoric, Dynastic, Late, and modern periods. But the science is inexact, and there will always be errors and outliers.

In interpreting Egyptian rock art, most scholars have focused first on what the images represent, and then either on the religious significance of the inscriptions, or on their political message (and this distinction is often blurry). Other evidence for both political and religious behavior in the Egyptian desert will be explored in the following chapters, and the rock inscriptions that provide explicit textual evidence for cult activity, state presence, or both will be discussed in more depth there. In this chapter I will focus more closely on non-textual engravings, and on the sub-textual significance of inscriptions. Specifically, I will review some of the ways in which Predynastic and early Dynastic petroglyphs have been interpreted as examples of "pre-state" hunter-gather sympathetic magic, and then as evidence of the early instantiation of the artistic vocabulary familiar from religious contexts in the Nile valley. Many scholars have viewed Predynastic art, including the rock art of the deserts, as the earliest examples of the artistic vocabulary familiar from Pharaonic Egypt. In this scheme the depiction of

wild animals, either at bay or in orderly rows, ciphers for the control of chaos (Hendrickx 2011; Raffaele 2010; Baines 2001,1995; Kemp 1989); depictions of cattle invoke the antecedents of the goddess Hathor or the royal bull (Jensen 2017; Hendrickx 2002; Hassan 1998, 1992); the prehistoric boats engraved in the Eastern desert may already be seen as the royal or solar barque (Hendrickx and Eyckerman 2008; Lankester 2007; Darnell 2009); and interpersonal violence (as well as violence toward animals) prefigures familiar scenes of royal smiting and therefore indicates early conceptions of kingship (Hendrickx and Eyckerman 2008; for a discussion of early Egyptian depictions of violence, see Bestock 2018, Chapter 2).

I argue that many of these connections are very real, but that the straightforward correlation, the idea that "extrapolating backwards in time is an entirely admissible procedure for ancient Egyptian rock art" (Huyge 2002), does not adequately consider context and processes of transmission and reinterpretation. These sorts of interpretations, by allowing later iconographic analogs to eclipse possible earlier meanings, obscure the significance of rock art to its original cultural and landscape contexts and the possibility that the function, meaning, and associations of Egyptian rock art might have changed in response to changing environmental and cultural situations. In discussing rock art in the desert and the various human activities to which it relates, I will also attempt to propose interpretations that go beyond representation and consider the kinds of active relationships that have been suggested above.

Thinking About People, Space, and Rock art

As I have argued, the task of understanding rock art is not so much the interpretation of individual images and inscriptions as it is the assessment of a landscape that is, in some places, heavily marked and molded by millennia of rock art production. The comparison of rock art motifs with the visual vocabulary of the Nile Valley is an important piece of the interpretive puzzle, but needs to be fully contextualized by the other cultural and environmental factors governing the creation and viewing of rock art in the deserts. I advocate an approach that is rooted less in interpretation and more in a consideration of the complicated dynamics of rock art: less what it means, and more what it *does*.

Rock art creates place out of space. To people accustomed to a lush and crowded Nile Valley, the desert landscape may have seemed devoid of human landmarks, signs of habitation and society, much as it does to people unfamiliar with it today. The features of the desert, mountains and wadis, are on a different scale than the palm trees, canals, and agricultural fields of the Nile Valley. The desert cliffs, visible from most of Upper Egypt's agricultural land, only increase in size as they are approached, become more imposing with proximity. The desert wadis, once entered, are a confusing labyrinth of twists, turns, and stony dead ends. By marking this landscape with recognizably human signs, however, it is possible to reduce the scale of noticeable features, and to intimate the possibility of safe activity through the suggestion of a community of other humans who have gone before. In this way, particular human space is marked out from homogenous desert space, "taming" or "socializing" the landscape (Ikram 2019; Darnell 2009; Chippendale and Nash 2004; Bender 1993).

The most ancient modifications to the landscape were made when it was greener, supported more animal species, and the stakes of getting lost were presumably somewhat less serious. Hunter-gatherers, and, somewhat later, pastoralists, inscribed the landscape with things they saw, that perhaps pleased them, and that they wanted to ensure remained in the area when they themselves were not present to view them. Re-iterating in a permanent medium what was important or notable about a space—the presence of a particular animal species, or of pastureland that would feed cattle well, divides that place from space, making it a place "of" whatever has been recorded. This marking and dividing holds the space, conceptually, for that particular desired thing. Additionally, the rock art communicates the place-ness of its surroundings, ideally in perpetuity.

Once created, rock art has a way of inspiring its viewers to try to make their own. Thus begins a phenomenon that can be seen throughout the desert, of separate rock art events clustering together. In many cases, the motifs are copied, emulated, or updated by later artists, resulting in panels of say, giraffes, or of boats, derivative of one another in style or size but clearly executed by many different hands. John Darnell (2009) refers to this as "iconographic attraction." Although the reiteration of one particular motif is common, it is just as frequently the case that a variety of motifs, of different periods, cluster together. My interpretation of this phenomenon is that each addition to a panel reconfirms its function as an active, current, signifier of human space in the desert landscape. The antiquity of some desert rock art must have been apparent to those encountering it in the Pharaonic past, just as it is to us today. Under these circumstances, the emulation of an archaic style might be interpreted as a sign of respect for the

intentions of the ancient artist, maintenance of their work, and an exploration of memories about the past.

The permanence and durability of rock art means that it is an excellent medium for holding and transmitting memories. For instance, rock art depicting savannah animals like elephant and giraffe could serve to remind viewers from the Pharaonic periods of a time when the landscape was more hospitable. There could easily have been a memory of this, codified as the remaining grasslands slowly disappeared during the Old Kingdom. A Pharaonic audience would certainly be aware of the reality and morphology of elephant and giraffe, but they would have been understood as a foreign or exotic animal. Encountering their images in the Sahara would have been, perhaps, a startling reminder of a known but distant time when the animals were found in Egypt.

The reuse of an ancient motif, and even the embodied experience of copying it in stone, is an exercise in memory. So too is adding new figures to an older tableau, in a sense "reopening" a scene to interact with it and contribute to it. Darnell (2009) and Ikram (2009) have both noted the addition of later elements to rock art panels in order to create tableaus; Huyge (2014) suggests that Naqada II and III compostions, such as that in Hierakonpolis tomb 100 and the rock art at el Kab, were modified, sometimes over the course of centuries, to update the style of boats and to add figures. This "dynamic" rather than "static" creation of art generally and rock art specifically is a process of maintaining memory by bringing the past into the present. As Denig (1996) states, "Relics of the past cross all the cultural boundaries that lie between past and present, and when they do they are reconstituted in the relations and means of production of each cultural zone they enter." The practice of continuing to modify ancient rock art both creates an occasion to

consider the time during which it was originally created, and muddies the waters of chronology, ensuring that the rock art becomes part of the multi-temporality of the landscape or the "incredible mess of the past" (Holtorf 2015). This both lengthens and flattens time, by being sure that the oldest traces are continually folded in to the new and the current. The result is a co-existence of temporalities that defies linear interpretation and essentially produces a sense of the timelessness or simultaneity of pasts and present, a mechanism reminiscent of Australia's Dreamtime rock art, one of the few corpora for which we have emic explanations. One of the most salient characteristics of Dreamtime is its timelessness, its sense of a mythic present that coexists easily with all human and non-human chronologies, in which *where* something occurs is much more important than *when* (Morphy 1995). Rock art is of course uniquely suited to expressions of timelessness, because its medium—rock--participates in geologic, rather than human, time.

One of the most important things to take into account in this approach, however, is that the landscape varies across both space and time, and that different groups of people will be creating and interacting with rock art differently in different places and times. A basic understanding of the scenarios in which rock art may be created is critical for thinking about why it is made and what it does. Here, I divide this understanding into two intersecting questions: first, what does the environment allow, and second, what are people doing in it? Environmental factors might dictate the range of possible human activity in a landscape, but it is cultural factors that will determine which activities are actually pursued.

Environment

The environment of the Egyptian deserts is the subject of Chapter 3 of this dissertation, but I revisit it here because of its pertinence to human activity and the presence of rock art. Of necessity for the creation of rock art is the presence of inscribable geology: rock faces are not guarantors of rock art, but there is no rock art in the absence of rock faces. This seems a fairly obvious statement, but needs to be taken into consideration when asking spatial questions of the evidence, especially remotely. Geologic maps are often not created at archaeologically useful scales, and the variability of terrain in the deserts would be difficult to represent with even the highest-resolution maps. Some areas of the desert are dunefields or expanses of sandy gravel, entirely unsuitable for making inscriptions. The majority of rock art is made on softer limestones and sandstones, which are easier to inscribe with other stones. For instance, eighty-five to ninety percent of surveyed rock art sites in the Eastern Desert are on the Nubian Sandstone, a smooth and relatively soft material exposed by erosion in wadi courses (Fuchs 1989). However, some of these substrates may be avoided because they are *too* soft—crumbly, friable, sedimentary stone that will not preserve an inscription or even stand up to the processes of carving. Harder stones that also occur in the desert, such as basalt, are painstakingly difficult to inscribe without metal tools, and are likely to bear fewer images or to skew toward the later periods. Therefore the absence of rock art in a particular area should first be attributed to lack of suitable rock, not lack of artists!

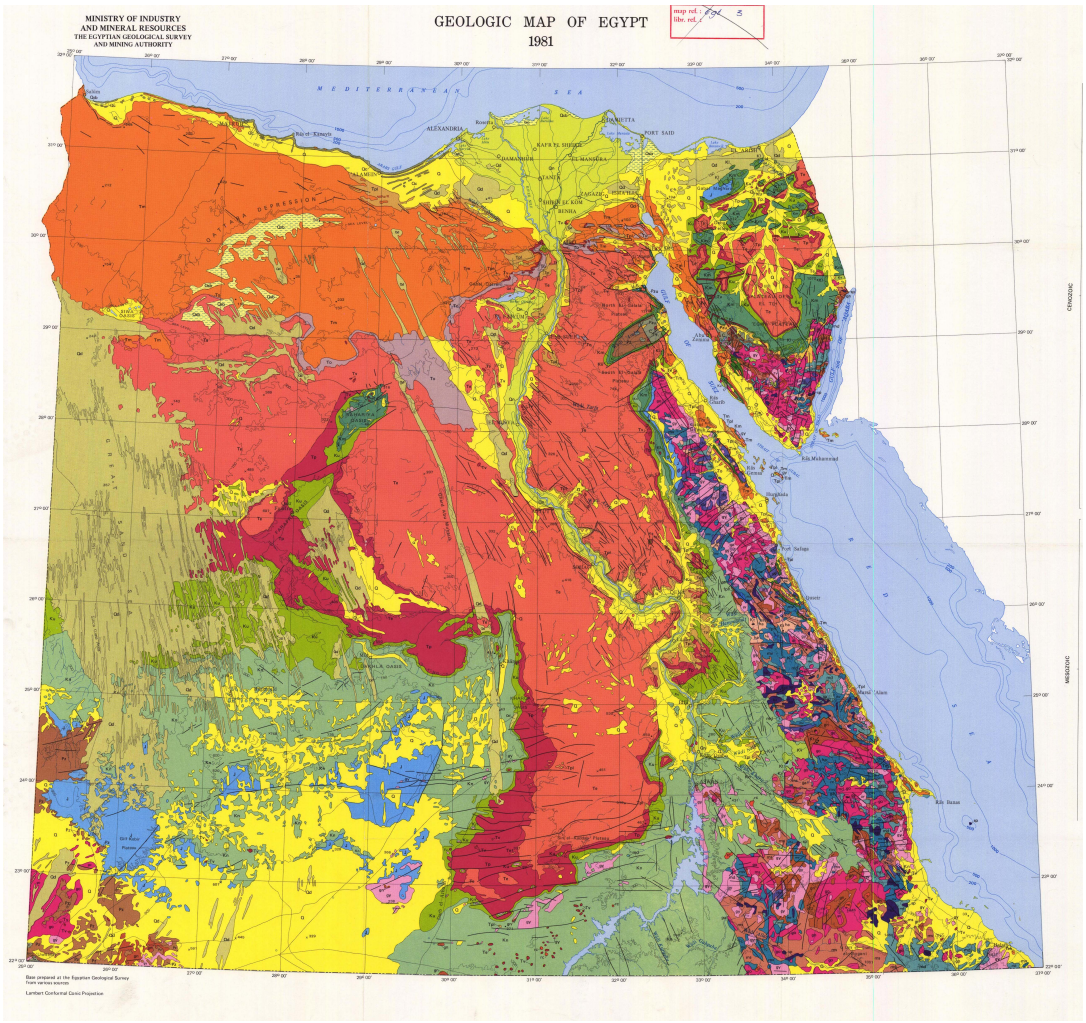


Figure 1. Geologic Survey of Egypt Mineral Map. 1:2,000,000. 1981. The yellow and pale red areas are sedimentary stones on which most rock art is found.

Date	Eon	Period	Epoch	Prominent Layers
Present	Cenozoic	Quaternary	Holocene	Upper alluvium (Nile and *wadi* sediments)
			Pleistocene	Lower alluvium (Nile sediments)
2.8 Ma		Tertiary	Pliocene	Dolerite
			Miocene	Gypsum
			Oligocene	Sandstone
			Eocene	Limestone
			Paleocene	Shale
65 Ma	Mesozoic	Cretaceous	Nubian sandstone and "Aswan clay" (paleosol)	
		Jurassic		
		Triassic		
248 Ma	Paleozoic	Permian		
		Carboniferous		
		Devonian		
		Silurian		
		Ordovician		
		Cambrian		
[illegible]5 Ma	Precambrian	Basement complex (diorite, gneiss, granite, schist)		

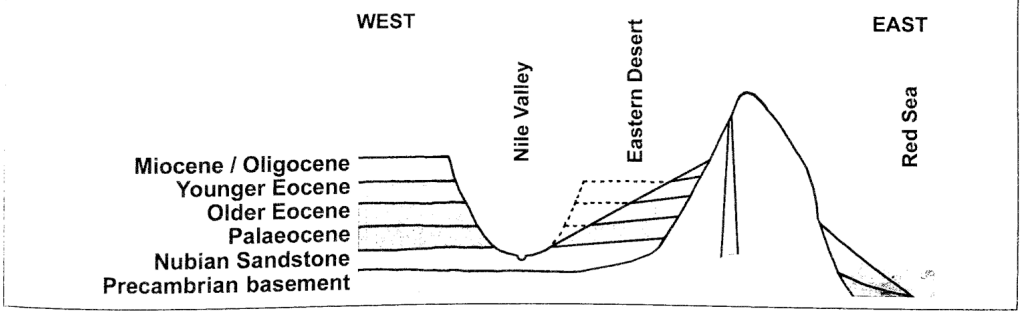


Figure 2. Schematic diagram of geologic bedding of Egypt (Barnard 2012).

Geology also determines hydrology, both in the paths that surface water will take and in the location of aquifers. Here, too, the sedimentary rocks are more amenable to human activity because they are more permeable to water, channeling and storing it in shallow aquifers that can be dug into by wells (Barnard 2012). In some cases these aquifers are sufficient to create large, permanent oases such as Kharga, Dakhla, Farafra, and Bahariyya; in other cases they support tiny pockets of greenery capable of supporting a few households, or are indicated by only a few struggling shrubs. Valleys formed by wadis tend to collect more runoff from seasonal rains, supporting vegetation and collecting thin soils of vegetable decay, creating slightly more hospitable microclimates.

Moisture and its counterpart, salinity, are a prime determiner of the flora and fauna that inhabit an area, making it more or less attractive to humans seeking food sources, and also dictating the distance humans can range without carrying their own water supply. As discussed in Chapter 3, the environment of the deserts changed considerably over the millennia under investigation here, and the relative moisture was a significant factor in human access to certain parts of the landscape, allowing different activities and resulting in different distributions of rock art. Although the general trend of environmental change through Pharaonic history and into the present was toward drier and drier conditions, this change was not absolutely linear, nor was the willingness and ability of people to operate in arid conditions constant. Therefore, although distributions of archaeological material are certainly influenced by climatic conditions, they can not necessarily be seen as a proxy for climate.

Another important environmental factor is access, or in other words, ease of movement. Geology in this case translates into terrain, being sometimes flat and sandy and sometimes steep, rocky, and impassable. The sandy plains of both eastern and western deserts are relatively traversable, but rock outcrops suitable for inscriptions are rare. Where stone inselbergs do exist on desert plains, however, they are often heavily inscribed (e.g., Ikram 2009, 2019). Flat, sandy, terrain can also be found in the wadis in the desert interior, the bedrock walls of which abound in rock art. Ninety-eight percent of surveyed rock art sites in the Eastern Desert are along wadis or on the Nile scarp (Fuchs 1989), suggesting that the majority of human activity was taking place in the Nilotic hinterland and in the relatively flatter and wetter wadis.

Human Action

Environmental factors determine the range of possible human activity in a landscape, but cultural factors will determine which activities are actually pursued. Different activity patterns should produce different themes and distributions of rock art, just as they produce different archaeological signatures. Not only will the spaces explored and marked by, say, a prehistoric hunter-gatherer and a New Kingdom miner perhaps be different, but the concerns, perception, and communicative syntax of those individuals will be different too. However, as we shall see in the case study, spatial overlap in different human activities can be an important factor in the reinterpretation and continued meaningfulness of rock art. Below, I discuss some of the domains of activity in Egyptian desert landscapes. It is important to note that I am not expressing these as chronological or evolutionary "phases" of human activity, as many may have been occurring simultaneously, and individuals could easily have been participating in more than one.

Most of the activities sketched out below will receive more detailed attention elsewhere in this dissertation. I assemble them here in order to argue that people enter and spend time in the Egyptian deserts for a variety of reasons, but that each of them has the potential to result in the creation of rock art. This rock art has a diversity of motives, themes, and distributions, which may or may not be completely decipherable to later audiences. In struggling with our etic approach to rock art, though, it is important to remember that the Predynastic images may have been even more obscure to their New Kingdom audience than the New Kingdom material is to us. And this is, perhaps, one of the most interesting and powerful aspects of rock art: in its durability and its incorporation into the land, much rock art has ample opportunity to communicate with

millennia of viewers, all of whom will make their own readings and take away a message informed by the context of their own time. In this way, rock art is subject to a process of continual renewal that renders it uniquely resistant to an interpretation fixed at the time of its creation.

Inscribing Social and Divine Order on Landscape

The shared visual vocabulary of art in the deserts and art in Nile Valley has led many scholars to look to the rock art corpora for evidence about developments in social structure during the Predynastic and Early Dynastic periods. In most cases, this has taken the form of framing the motifs shared between rock art and the pottery, palettes, and other objects of the Nile Valley as the antecedents of canonical Egyptian themes, particularly the control of the king over the natural and supernatural worlds (Lankaster 2017; Hendrickx, Darnell, and Gatto 2012; Darnell 2009; Huyge 2002).

Dirk Huyge (2002) suggests that "All rock art images ultimately serve the same purpose: they externalize and proclaim symbolically the dominion, triumph, and power of the ruler. In all probability the societal motivation underlying these figures is popular royalism and the growing recognition of the ruler as the upholder of the universe." He goes on to unequivocally state that the scheme of the rock art is "directly inspired by the standardized, elitist imagery of the terminal Predynastic and Early Dynastic periods. While the images he is considering may absolutely be seen as in relation to the "official" imagery of these periods, it is possible that he is drawing the correlation in the wrong direction. While pointing out that variation in skill and execution of the rock art indicates a personal, rather than official, origin, Huyge also suggests that its presence in the desert

is a result of increasing official control of cosmological ideas during the "state formation" period. "As a consequence," he states,

> "certain fundamental religious practices, such as the concern for the cosmological order, became less and less a public affair and increasingly a royal prerogative. In the light of these developments, it is perfectly understandable that ideologically motivated drawings entered the rock art repertoire. Corresponding to a profoundly modified mental attitude in society, these images are basically graphical manifestations of loyalty to the ruler and glorification of his worldly and divine power."

While Huyge is basing his analysis specifically on the rock art in the Wadi Hillal east of el Kab, his ideas exemplify a standard approach to Egyptian rock art, which relies upon the obvious stylistic similarities of Predynastic petroglyphs and the images on pottery and tomb walls from the same period. And while it is easy to identify many of these images as antecedents to familiar, canonical Pharaonic imagery, I argue that this does not necessarily indicate an ideological origin point from which the rest develops in a linear progression. It is also worth mentioning, as a cautionary note, that the same image on a pot and on a rock wall need not convey the same meaning.

Instead, I suggest a process of reinterpretation and reuse of this iconography, some of which might have been quite ancient already by the "state formation" period. In this process, the concerns of a pastoralist society are "encountered" and reframed and abstracted as the concerns of governance. The iconography is already familiar as a visual system that is engraved on landscape—a medium that holds and communicates memory--as well as on moveable objects. As it is re-applied as a system of political messaging, it takes on a new layer of symbolic meaning, and a remove from its original context that must have been intelligible to its viewers. Hendrickx and Eyckerman (2012), though not writing specifically about rock art, articulate a similar idea about the reformulation of

familiar imagery throughout the social changes of the Naqada periods. They argue that during this process, the elements of Predynastic visual culture were recombined and stylized in order to become "icons" that express new meanings about social organization, the function of the elite, and the maintenance of "order." While I am cautious of this interpretation, I cite their paper here because of its attention to iconography as a process rather than a static aspect of Egyptian culture. This allows space for a development of meaning that is projected back onto older imagery, rather than requiring that early examples of familiar "icons" already held canonical meanings at the moment of their creation.

The interpretation of Predynastic art as being concerned with royal control and the maintenance of order also implies the early development of the art's recognizably religious or ritual significance (Darnell 2011, 2009; Huyge 2002; Baines 1995; see also Hornung 1971, 91-101; Silverman 1991, 10-14; Traunecker 1993; 31-33). Many papers suggesting the ritual-religious nature of Predynastic rock art have focused on the Nile's desert hinterland: areas like the Thebaid (Darnell 2011, 2009) or the Wadi Hillal to the east of the ancient city of Nekheb (el Kab) (Huyge 2002; Darnell 2009). I will discuss these sites at greater length in Chapter 7, in the context of the cultic and ritual activity that took place in desert environments. Wadi Hillal, for instance, is adjacent to a major ancient urban center, accessible to the Nile Valley, and was one of the first areas of Egyptian rock art to be recorded (Green 1903). Its proximity to the valley, as well as the long tradition of traditional Egyptological approaches to the site, suggest to me that assertions about the dynamics and function of rock art in the Wadi Hillal and other urban hinterlands should not be uncritically applied to sites deeper in the desert. Indeed, the

assumption should be that rock art made by participants in religious activities (see Chapter 7), miners and other expeditionaries (see Chapter 6), prehistoric populations, and desert travelers (this chapter) should be distinct in its motivation, siting, execution, and subject. The case study section of this chapter addresses this problem of distinction and interpretation more fully, by analyzing the rock art of the Eastern desert in its landscape context and considering its function as a waymarking system for hunters, repurposed by later travelers. Here, I turn to the animals which have been interpreted as symbols of the "chaotic" forces that developing royal power was thought to keep at bay.

Hunting, Balance-Keeping, and Being with Animals

As discussed in Chapter 3, for much of the Holocene, and until about six thousand years ago, the deserts of Egypt were considerably greener than they are today. Archaeological evidence shows that this savannah-like environment supported a population mainly pursuing a mobile hunter-gather lifestyle. In general, hunter-gathers tend to pursue complex annual rounds, in which they seek different animal and plant resources at different times of year (Wendrich and Barnard 2008; Barnard 2012). This entices hunter-gatherer communities into a range of different ecosystems, where they stay for short time. Much of the prehistoric rock art of the deserts should be attributed to these hunter-gatherer groups (Ikram 2009; Barnard 2012, Churcher 1999), based on its broad distribution and the naturalistic depictions of fauna (giraffes, fish) that would have departed the area shortly after it began to aridify.

The vast majority of Egyptian rock art depicts animals: elephants, giraffes, lions, leopards, wild asses, birds, fish, Barbary sheep, gazelle, ibex, ostrich, oryx, addax,

hartebeest, wild oxen, and domesticated cattle and dogs, as well as many other composite or indeterminate beasts (Redford and Redford 1989). As discussed above, sympathetic hunting magic is a common interpretation of rock art in prehistoric hunter-gather contexts, and the idea has been advanced by several scholars of the Egyptian material as well (Capart 1904; Wilkinson 2000). We have very little conclusive evidence that this is the intent of the images, but the idea fits well with prevalent Egyptological ideas about controlling the natural world through representing it, and so is often accepted without debate. And indeed, many of the rock-art scenes show game animals and hunting, in the form of human figures with bows and dogs following gazelle, ibex, and ostrich. However, many of animals shown in the rock art, such as lions, giraffe, and elephant, were unlikely to be the quarry of subsistence hunters working alone or in small groups. This has called into question that the depiction of animals in Prehistoric rock art was a form of "hunting magic" or "symbolic control" over game animals.

Ethnographies of hunter-gatherer societies indicate that notions of dominance or control are seldom at the heart of conceptions of the human relationship with the natural world (Nelson 1983; Ingold 1986, 1994). Instead, a relationship of "interdependence," "trust," or "respect" prevails, in which humans and animals are cooperating to keep their world in balance, animal species have distinct and agentive personalities, and the killing of prey is regarded as a consensual expression of the natural order rather than violent or dominating (Ingold 1994). Although based on modern ethnographies, these notions of balance, respect, horizontal relations, and animal agency (Overton and Hamilakis 2013) provide a constructive lens through which to view Prehistoric rock art, which may be

more concerned with celebration of animal characters and preservation of ecological balance than with control and domination.

In the Predynastic period, as food is increasingly produced rather than collected, the character of hunting changes. In the archaeological faunal record, the overall proportion of wild animal remains decreases, suggesting that hunting was increasingly a venue for trophy-taking, sport, and social performance rather than necessary for subsistence (Bertini and Ikram 2014; Hendrickx 2011; Pöllath 2009; Linseele and Van Neer 2009). The tendency to transform hunting from a negotiation with the animal world to an exercise of dominion over it has been noted in other societies at the transition to agricultural subsistence (Hamilakis 2003; Ingold 1994), and it characterizes our modern assumptions about hunting as an activity. This has been the lens through which we have traditionally viewed even the Prehistoric rock art showing animals, with and without hunters and dogs. While it may be an appropriate framework for viewing rock art with animals and hunters from the Predynastic onward, the ethnographic evidence suggests that it should be applied only very cautiously to the earlier material.

Prehistoric and even pre- and proto-Dynastic depictions of animals have also been seen as totemic, or as examples of an already-canonized Egyptian theriomorphism (Huyge 2002; Ries 1975). However, the majority of animals depicted in the early rock-art (elephants, giraffes, antelopes) do not take on later divine significance. This has unfortunately been seen to undermine the idea of totemic significance of these animals in the prehistoric period (Huyge 2002), simply because it cannot be recognized in Pharaonic Egypt.

Cattle and Pastoralism

A notable exception is the prevalence of cattle, which are common in Late Predynastic rock art (though earlier examples are rare) and do become an important animal in Pharaonic Egyptian cult. Early depictions of cattle, accordingly, have been interpreted as prefiguring the ritual associations of cattle, and particularly the association with the goddess Hathor, articulated explicitly during the Early Dynastic period (Hassan 1992). Based on formal cattle burials at Hierakonpolis (Brass 2003), the appearance of cow heads on objects like the Narmer Palette and other terminal Predynastic palettes (Baumgartel 1960) and the Hathor Bowl (Burgess and Arkell 1958), and the interpretation of Predynastic female figurines with a raised-arm pose as cattle emulators (Hendrickx and Eyckerman 2012, 2010; Hedrickx 2002), some scholars have hypothesized the existence of a cattle-women-fertility ritual complex (i.e., Hassan 1992).



Figure 3. Cattle Imagery. 1. Narmer Palette, Dyn. 1, Hierakonpolis. Egyptian Museum.. 2. Detail of rim of Hathor Bowl, Hierakonpolis, Petrie Museum. 3. Gerzeh Palette, Naqada IIc-d, Gerzeh. Cairo Museum. 4. Female Figurine, Naqada IIa, Brookyln Museum.

The juxtaposition of cattle imagery with early royal imagery has been interpreted as an indication that the first Upper Egyptian kings drew their legitimacy from association with powerful "priestesses" who embodied the mother/nursing cow principle. This symbolic complex has been used to explain the later identification of royal women with the goddess Hathor. However, this interpretation should be handled carefully as it leans heavily on the trope of universal transition from "mother-goddess" matriarchy (rooted in "natural" lifeways) to "god-king" patriarchy ("political" lifeways) at the dawn of statehood (Stuckey 2005).

It is, however, undeniable that cattle played an important role in Predynastic Egyptian society. As discussed in Chapter 3, there is evidence of a transition from hunter-gathering to cattle pastoralism that occurred as the environmental conditions of the Sahara became less reliable and more perilous. This seems to have occurred earlier on the western side of the Nile than on the eastern, probably because the Red Sea Mountains of the Eastern Desert have historically received more rain than the areas to the west of the Nile (Wendrich 2008; Barnard 2012).

Pastoralism has been well-studied ethnographically (see in particular Godfrey Leonhardt's *Divinity and Experience* (1961) on Dinka culture and religion). Ethnographic evidence suggests that the attitude of pastoralists toward their cattle is best characterized as a "being-with" (Ingold 1994) rather than a fixation with controlling, capturing, or worshipping animals. As Tony Judd (2006) notes, "In suggesting that cattle were 'sacred' creatures, in Durkheim's sense of things set apart from temporal affairs and approachable only through acts of ritual and religious observance, we risk mystifying their place in the cultural development of the Old World during pre- and early historic times."

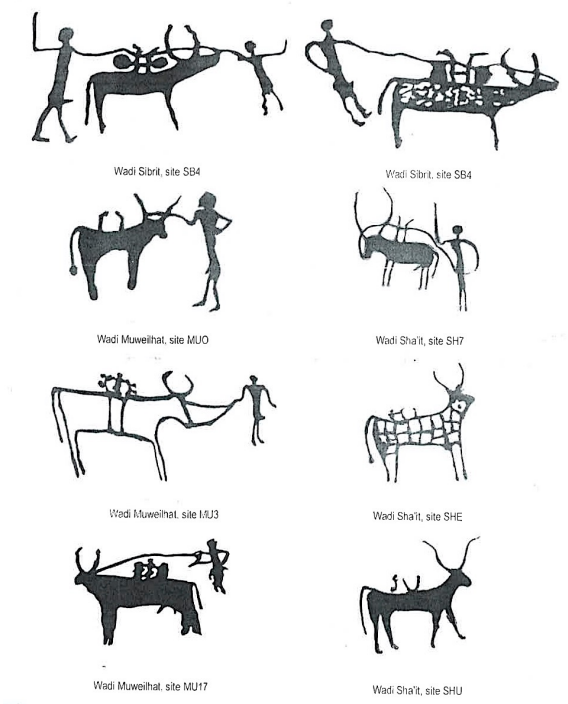


Figure 4. Human figures interacting with cattle. Judd 2006.

In my view, the "de-mystified" interpretation of prehistoric through Early Dynastic cattle petroglyphs is that they are the work of a pastoralist or part-pastoralist population that was grazing their herds in the seasonal grasslands that still existed at the desert margins. Where humans are seen interacting with cattle in these depictions, it is often intimately: human figures pull the tails of cows, and miniature humans—perhaps children?--even ride them (Judd 2006).

Seen through the lens of "being-with" animals, the urge to depict cattle in petroglyphs can be characterized as something between documentary and iterative: "we have been here with cattle, we have drawn cattle here because with-cattle is the feeling of the place, and by drawing cattle here we have confirmed this as a cattle-place." This is less a formal magical or ritual practice and more an iterative task of confirming the use and spirit of the landscape by documenting human experience within it. The rock art simultaneously records the good experience of grazing in a place, identifies it as pasture land when herds are not present, and identifies it as pasture, possibly claimed, to other herders looking for places to graze their herds. One audience of this act is human: the artists and the herders who return to the same pasture in subsequent seasons. The other audience, arguably, is time: the depictions of cows and herders are present even at times

of year when the living cows and herders are not, holding the surrounding space as a useful and used cattle-place even in the absence of cattle.

If this is the case, the rock art is comparable in function to the *wusum* of the Greco-Roman, Coptic, and modern periods. The modern pastoralist inhabitants of the Eastern Desert employ *wusum,* which are small tribal identity emblems, to brand livestock but also to mark on the landscape tracks, landmarks they have passed, and boundaries of land right, that is to say areas a group claims for pasturage (Wendrich 2008; Barnard 2012). The broad distribution of identifiable *wusum* and other, similar marks from the Greco-Roman and Coptic periods suggests that even in these arid periods a population of mobile pastoralists was accessing the remote watered wadis of the Eastern and Western deserts, as well as using the roads that travelers passing back and forth from the Nile valley were utilizing (Winkler 1939). It is important to note, however, the greater potential range of these later pastoralists, who were primarily reliant on water-efficient camels rather than on donkeys or goats. Rock art associated with the Naqada period does not occur on the eastern, or Red Sea, side of the Eastern Desert wadis, suggesting that pastoralists of this period found sufficient pasture on the Nile side of the Red Sea mountains (Fuchs 1989). Given the ethnographic evidence for blended pastoralist/agriculturalist societies, and the mutual reliance of agriculturalists and pastoralists for important trade items (Haiman 1995; Avni 1996; Barnard 2012, others), as well as the similarity between rock art styles and the decoration of Naqada-period movable objects, it seems likely that these pastoralist groups were integrated into or at least in close contact with Nilotic society.

Stylistically, rock art of cattle and other themes indicates that the artists were people who shared artistic conventions with the Nile Valley, in both Predynastic and Early Dynastic times (Judd 2006; Hendrickx et. al. 2009; Hardtke 2013). This is consistent with the evidence, presented in Chapter 3, that the population of Upper Egypt at this time was pursuing a partially mobile subsistence strategy, focused to some extent on cattle herding. The Predynastic human burials at Hierakonpolis, which include bucrania and in many areas intermingle with the interments of cattle, display what David Wengrow (2001) has characterized as a "mobile habitus," in that the burial goods are optimized for portability by being wearable or perforated for suspension from a human or animal body. The creators of the rock-art, therefore, can be seen as operating within the cultural and artistic tradition of Nilotic Upper Egypt.

In the later periods desert pastoralists seem to have been a separate cultural group with roots on the Red Sea coast and deeper into Nubia (Wendrich 2008). Even so, their *wusum* indicate their presence in the Eastern Desert wadis that were being used by mining and Red Sea expeditions. The spatial overlap suggests contact, probably negotiations over wells and the provisioning of animals, and exchange of goods and ideas.

Travel and Wayfinding

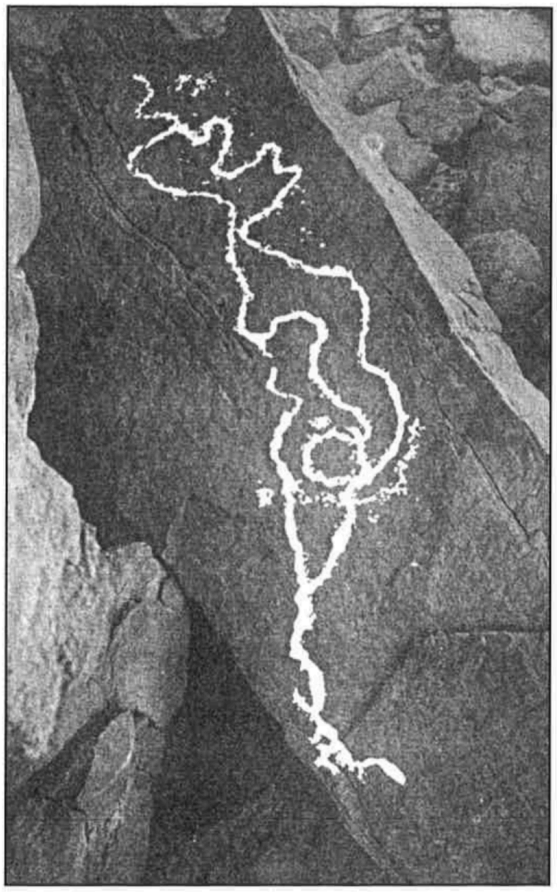
Pastoralists were not the only groups moving in the arid landscape. The motives and mechanisms of desert travel will be more fully discussed in Chapters 5 and 6, as well as in the case study section of the present chapter. It is important to mention in this section on human activity, though, because for the vast majority of the study period of

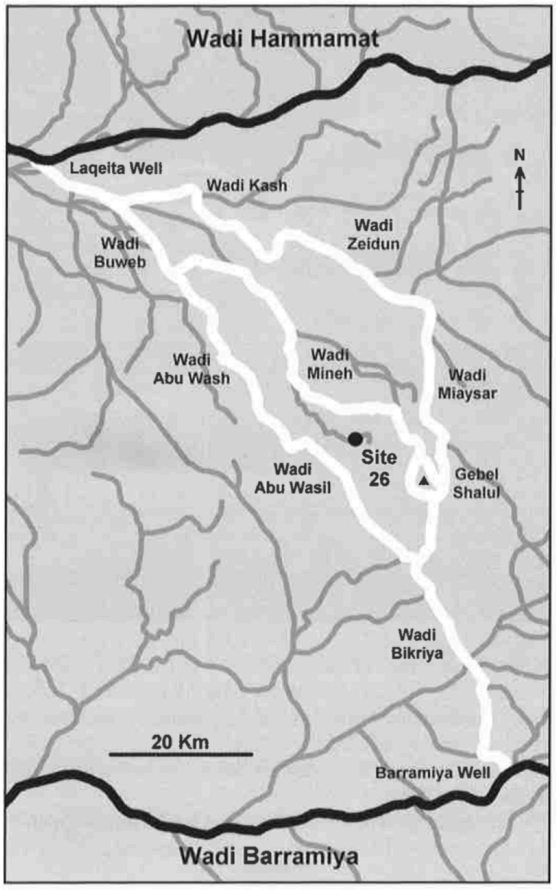
this project—the period after the Sahara became too dry to reliably support hunter-gatherers ranging at will—most human activity in the desert regions can be characterized as travel. Travelers would have been departing the Nile Valley on their way to destinations: in the Eastern Desert, most likely mining areas or the Red Sea coast, and in the Western Desert the oases or the roads that led further west or south into Nubia. Many would have hoped to return by a similar route. Given the environmental challenges, it was imperative for travelers to know their way, and not waste time or water in the potentially dangerous landscape. The major concerns of rock art made by travelers, it follows, would be waymarking for navigational purposes and pieces made to convey a sense of security by functioning as landmarks.

The socialization of landscape through rock art is a means of creating human space with recognizable marks, signaling that another human being has found a place inhabitable, if only for a short time, and that therefore you may, also. This same socialization and sense of encouragement and security may be applied to corridors, the paths taken in journeys, when it is especially important not to become lost or isolated in the unfamiliar landscape. The rock of the wadi wall is being made to hold and transmit a memory of place that is technological as much as it is emotional, but the mechanism means that two are entangled. Causing the desert wadis to communicate information about safe passage through them is the ultimate socialization of the landscape, making the landscape an ally in the journey.

Another, more explicit indication that at least some rock art is a navigational technology can be found in the suggestion that some of the “snakelike” motifs seen in the Eastern Desert are actually schematic representations of the wadi systems in which they

occur. Peter Cherry (2000) attempted to match the shapes of these putative maps with actual wadis in the Eastern Desert, with compelling success, although his sample set is small, the "maps" are abstract, and the organic form of the wadi systems lends itself to interpretation.





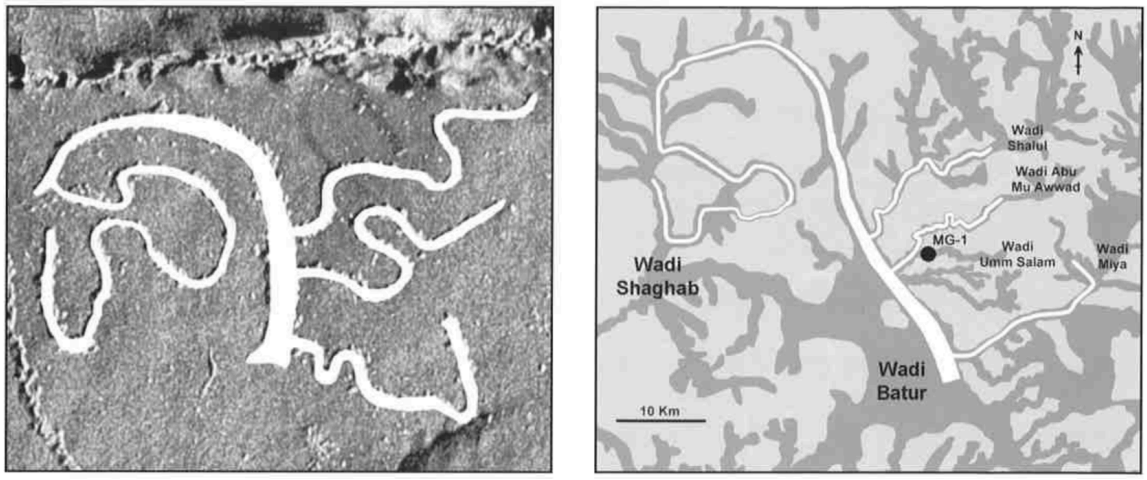


Figure 5. Putative maps from the Eastern desert, matched with important wadis. Cherry 2000.

In the case study that constitutes the second half of this chapter, I take a much deeper look at the mechanics of rock art surveyed in the Eastern desert by the Desert RATS (Morrow and Morrow 2002), specifically investigating its potential as a technology of waymarking.

CONCLUSION

This chapter and the accompanying case study deal mostly with the non-inscriptional rock art of the Egyptian deserts. Other rock art and inscriptional evidence will be discussed more fully in following chapters, on state and cult activities in the desert, which will also revisit some of the examples shown here.

The most important argument in this chapter is the power of rock art to create place, as opposed to its date or even the interpretation of what it portrays. As I have argued, the "meaning" of pieces of rock art may change over time, as they are viewed and reinterpreted by generations of audiences with different cultural backgrounds or frames of reference. This process of reinterpretation, coupled with practices of modification and

addition, means that rock art is not fixed in meaning or in time, but only in space. Therefore I argue that an investigation of what rock art does in space, how it acts upon landscape and informs human action within it, has the potential to be more productive than attempting to date rock art and parse its iconography.

Because of its incision into the very surface of the earth, rock art becomes part of the landscape in a way that is immovable, geological, and appears almost "natural." At the same time, because of its recognizable humanity, rock art "socializes" landscapes, providing landmarks within them at a noticeable, describable, human scale. Human traces are especially noticeable in the desert, where much of what is visible is organic and, within a region, repetitive: the limited palette of stone, sand, and mountain. Increasing densities of human traces show a traveler that they are on the right track, and maybe even that they will soon come to a stopping place where they can shelter, drink, and rest. Rock art provides security in a desert landscape by suggesting the presence of other human beings who have successfully passed the same place. It suggests where to safely go next, through the aggregation of marks that essentially build consensus that a certain path is the "right way." Rock art landmarks become locations of memory about the past, about people who have previously existed in or traveled through the landscape. They become magnets for more rock art, as people engage with these histories and the presumed audience of future travelers by leaving intentional, physical, legible traces of themselves in the land. The strength of this impulse can still be seen, in the numerous instances of modern tourist and traveler graffiti that "deface" the ancient examples.

CHAPTER 4 CASE STUDY: ROCK ART OF THE EASTERN DESERT

Introduction

Right before the final stage of my dissertation fieldwork, a friend and I took a week off for a hiking trip along the Lycian coast of Turkey. The Lycian way is a popular hiking trail, but it is deserted in the summer months, when it is generally considered too hot to be enjoyable for recreational hikers. Although it passes through many busy beach towns, long stretches of the trail lie in remote, unpopulated areas. Advance planning is necessary to ensure that you are carrying enough food and water: although there are water sources along the trail, many of them are seasonal and unreliable. Hiking a ten-kilometer, uphill leg to a reported water source, you are likely to find a dry creekbed or defunct well.

Where it passes through larger towns, the Lycian way is often marked with official-looking signposts, but most of the trail is identified only by small cairns or a red-and-white blaze painted at intervals. A hiker quickly becomes accustomed to scanning the immovable surfaces along the trail for these marks, which should always occur at turning points and junctions, but which are also made at intervals along straight sections of trail in order to allay anxiety that you have somehow taken a wrong turn and are wasting energy and water traveling in the wrong direction. On the Lycian way, these blazes are maintained on an unofficial basis by the hiking community and are subject to a

certain amount of deterioration and error. In several places we lost the trail, and any hiker traveling without a GPS knows what a frustrating, time-consuming, tiring, and sometimes even frightening proposition it can be to find your way again.



Figure 1. A blaze and cairn on the Lycian way, Turkey.

Perhaps because I was still in the habit of scanning for trail blazes when I visited Wadi Baramiyya in the Eastern Desert, I noticed that rock art seemed to exist in high concentrations, or aggregations, at places where the wadi turned or was joined by a subsidiary valley, that is to say, in places where a traveler needs to make a decision about which path to take. This was not universally the case, but the wadis marked by aggregations of petroglyphs also tended to be marked by stone cairns at the top of the wadi walls. Cairns are a wayfinding and navigational technology found throughout the

deserts (Reimer 2013). Many are thought to be of considerable antiquity, but they are impossible to date and are consistently rebuilt and maintained by safari drivers and others who still use them to locate tracks. The driver who was with me on my trip to Baramiyya, Hamdi Mahdi, is a highly experienced desert driver who has also accompanied several archeological survey missions into the Eastern Desert. He explained to me that drivers see the ancient cairns at wadi junctions as an indication that the wadis will go "through," that is to say, that the wadis they mark will connect with other wadis in the system rather than becoming impassably narrow or dead-ending. Unfortunately time and security permissions did not allow me to record the positions of the cairns along the Wadi Baramiyya, but I believe that the cairns work in conjunction with the rock art in the wadi systems of the Eastern desert. The combination of cairns and rock art should be seen as a technology of wayfinding and navigation, designed to assist travelers passing from Red Sea to Nile Valley or vice versa. Morrow and Morrow (2002) also noted that the junctions of through wadis correlate with the presence of rock art, but they do not propose that rock art situated at wadi junctions has a waymarking function. Studying the relationship of the cairn and rock art systems in the wadi network is an important next step in our understanding ancient dynamics of travel in the Eastern Desert.

Unlike trail blazes, which modern hikers would not modify in order to avoid obscuring the message for subsequent travelers, the message of the navigational rock art is bolstered by aggregation, superimposition, and over-carving. The more people have made a mark at a turning-place, the more noticeable the landmark and the more "correct" it is as a path. This helps to explain the phenomenon, remarked upon by the Desert RATS surveyors (Morrow and Morrow 2002) of crowded, over-carved panels in places where

perfectly suitable adjacent rock-faces are untouched. The aggregation of rock art in one spot impresses the viewer with its density, not its individual images, and the density proclaims that this is, in fact, a significant place.



Figure 2. Aggregation of rock art representing at least three episodes of carving. Wadi Umm Hajalij. Photo Frank Lankester.

As discussed above, aggregation is also a manifestation of memory. In this scenario, the rock of the wadi wall is being made to hold and transmit a memory of place that is technological as much as it is emotional, but the mechanism means that two are entangled. Causing the desert wadis to communicate information about safe passage through them is the ultimate socialization of the landscape, making the landscape an ally in the journey.

Data and Fieldwork

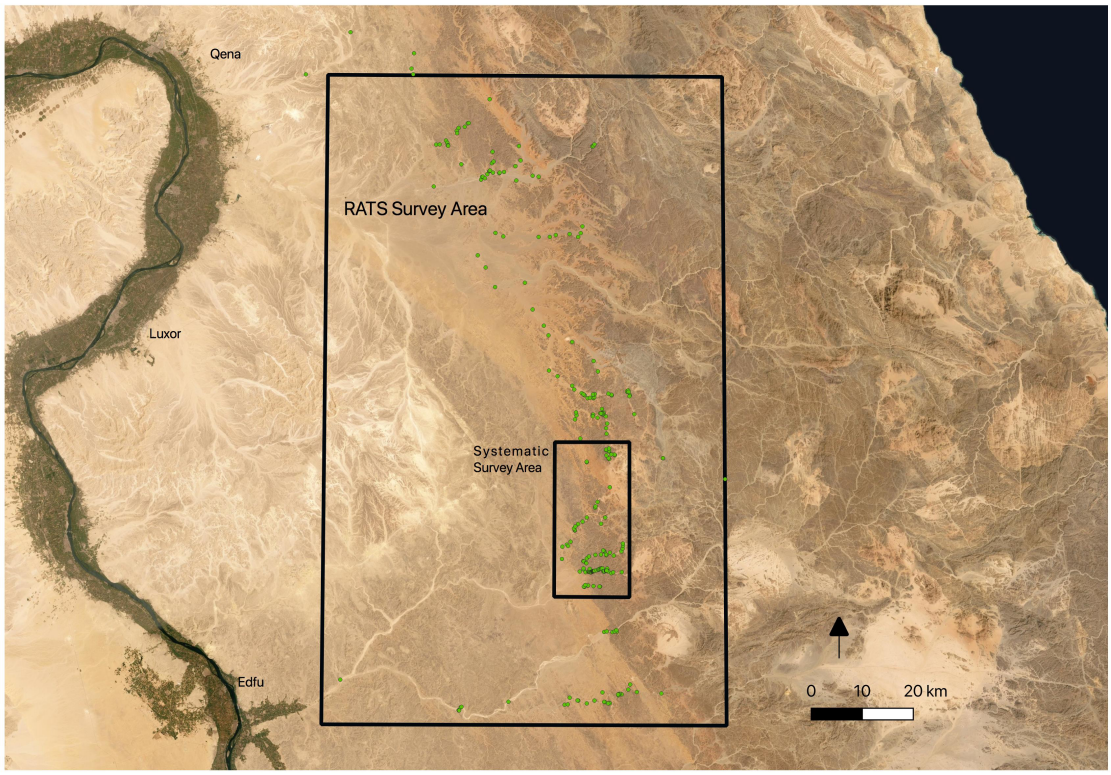
During 2018 and 2019, when I was working on this dissertation project, the possibility of fieldwork in the Egyptian deserts was severely constrained by security measures put in place by the Egyptian government. While I was able to visit many places in the vicinity of the Wadi Baramiyya and Wadi Hillal in 2019, I was not able to spend as much time even at these places as I would have liked. The logistical arrangements that allowed my trip to conform with various security regulations meant that I was limited in the times of day at which I was able to visit sites, and the distance that I could roam on foot from the asphalt road. Therefore I was not able to make a comprehensive investigation, even in a small area, that integrated all the sorts of data that I advocate collecting in the following section and in Chapter 2. In particular, I was not able to record the positions of cairns relative to wadis and rock art, nor was I able to draw or photograph the rock art in the hours of raking light around dawn or dusk.

The bulk of data for the following analyses, therefore, is legacy material, taken from the publication of the Desert RATS survey (Morrow and Morrow 2002). I hope that this will show the untapped potential of much of the survey data that already exists for the Egyptian deserts, as well as highlighting the kinds of information that is missing from older surveys. I will also suggest methodological adjustments that might be made if there is a chance for future work.

The Desert RATS Survey

The data recorded by the Desert RATS survey was collected in three trips into the Eastern Desert in 2000 and 2001. The survey was conducted in the sandstone hills that

Figure 3. Targeted and Systematic areas of the RATS project in context. Points that display outside the survey area are relocated by RATS from older surveys.



rise above the other geologic materials in the middle of the Eastern Desert, and extended from just north of the Wadi Hammamat to the Wadi Barramiya in the south. These two wadis presently carry the main east-west roads between the Nile Valley and the Red Sea, and have been used for desert passage for millennia. The wadis between them form a dense and labyrinthine network: some communicate easily with other wadis, some dead-end, and some lead to destinations such as wells, quarries, or mines. The RATS systematically surveyed the wadis subsidiary to the Wadi Batur, in the southern half of their survey area, and attained partial coverage of the wadis between this area and Hammamat, and of Barramiya in the south. In all, the RATS publication provides

coordinates for 265 rock art sites in this area. This dataset forms the basis for the following case study.

Problems with Survey and Legacy Data

Before looking at the data collected by the RATS survey, I will briefly discuss some of the challenges that will arise from working with any set of legacy survey or spatial data.

The first of these is site definition: what a survey defines as a site, how they record it, and at what resolution that recording ultimately makes it to publication. For the most part, the RATS survey defined a "site" as a groups of petroglyphs separated from other groups by at least 50m of undecorated space (Morrow and Morrow 2002). Each of the GPS points on the following maps, then, represents the midpoint of one of these "sites," not a single instance of rock art or a scene of related figures. From this data, plotted on a map, it is hard to gauge the extent of aggregation at each site. As I have argued, aggregation and density are an important factor in the mechanics of rock art action and its visual impact. Future surveys may want to consider creating an index for aggregation, a task which I touch on in Chapter 2. It is hard to imagine a way to record this information that is not, to some degree, subjective, but this should not necessarily prevent us from trying.

Another consideration is the accuracy of spatial data, especially that recorded with older handheld units in remote areas. Using a Garmin 650t commercial handheld unit in the Eastern desert in 2019, I sometimes needed to wait several minutes for sufficient satellites, and even then my accuracy was consistently less than 5m. Data recorded in

2000—now 20 years ago!—can hardly be better. On most of the maps in this section, I do not display my own GPS data from Barramiya along with the RATS points because of the distinct possibility that, between subjective judgments about the center point of "sites" and the combined error of the two GPS units, single sites could be double-counted.

Even in the most thorough survey, not all archaeological traces will be preserved, discovered, and recorded. Time of day and the experience, abilities, and condition of the surveyor have a real effect on discovery rates, and some rock art is subtle, hidden, or poorly preserved. Many sites have been damaged or destroyed. Surveys of rock art sites in the Eastern Desert will provide proof of the presence, but not proof of the absence of rock art. In the case of the RATS, different areas received different degrees of coverage, described as ranging from "systematic" to "targeted," meaning that not all wadis in the survey area were explored, and even instances of rock art directly adjacent to surveyed points may not have been recorded. There are certainly more instances of rock art within the RATS survey area than are shown on these maps. Nevertheless, within the dataset provided by the RATS, we can see certain patterns emerge.

Rock Art Waymarking in the Desert RATS Survey Area

The wadis of the Eastern desert create a complicated spiderweb of ravines, produced by a combination of bedding in the rock and erosion by wind, airborne sand, and water, that allow passage through the otherwise impassably rocky and hilly terrain in this area. Not all wadis are created equal, however: some are wide, flat, shaded, sandy, and wet, but others are narrow or shallow, offering little protection from the elements.

Some communicate with other wadis in the manner of a system of highways, whereas others pinch off and dead-end, sometimes many kilometers after the last junction. In order to keep one's way and not become lost in the wadi system, it is important to chose the correct branches for a route that balances the needs of time, energy, and water availability. In this case study, I explore the possibility that the rock art in the wadi system served a waymarking function by identifying routes and guiding travelers through the desert network.

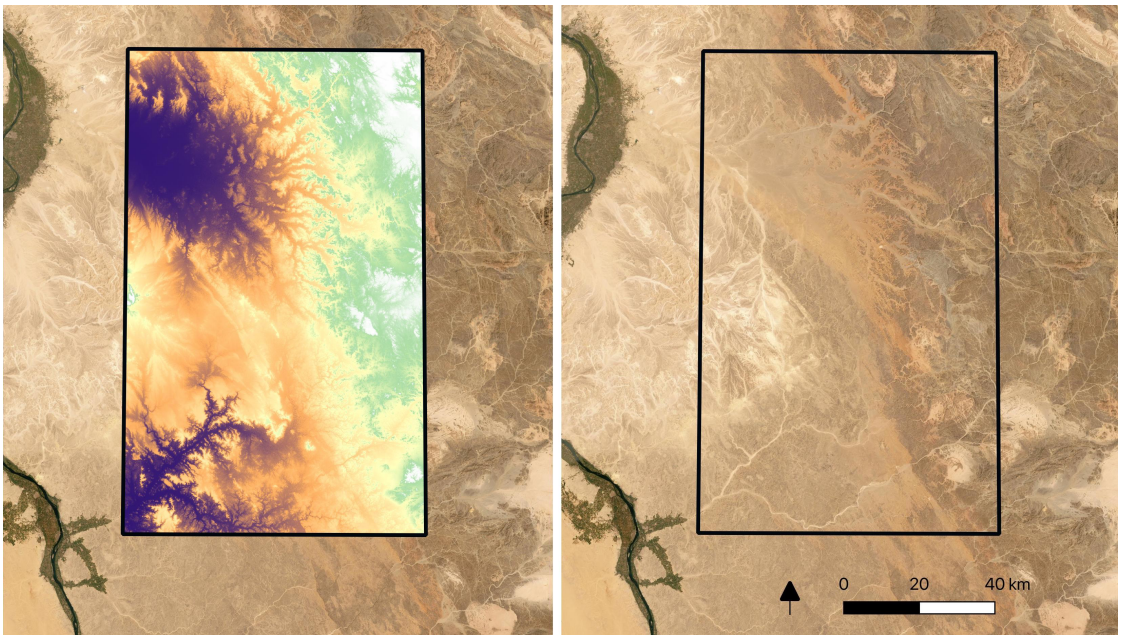
The examination of rock art as a waymarking technology is primarily a spatial question, because it concerns the placement of rock art relative to the topography, not to mention the movement of people through space and through the landscape. In order to assess the spatial relationships of the Eastern desert rock art, I digitized and mapped the locations of the RATS points with QGIS. In addition to satellite imagery (ESRI Basemap), I created layers for a 1 Arcsecond SRTM digital elevation model (DEM) produced by NASA and geo-referenced copies of historical maps, downloaded from the website of the Oriental Institute at the University of Chicago. These belong to the Survey of Egypt (1:100,000; 1932, 1943) and Soviet Union Topographic Maps (1:200,000; 1972) series. These maps show not only the topography but also the locations of historical and modern roads and tracks, as well as mines, wells, Islamic shrines, and some archaeological remains.

Identifying Routes

The topography of the central Eastern desert places limitations on the routes traffic can take. Because of this, the modern and historical paths through the desert

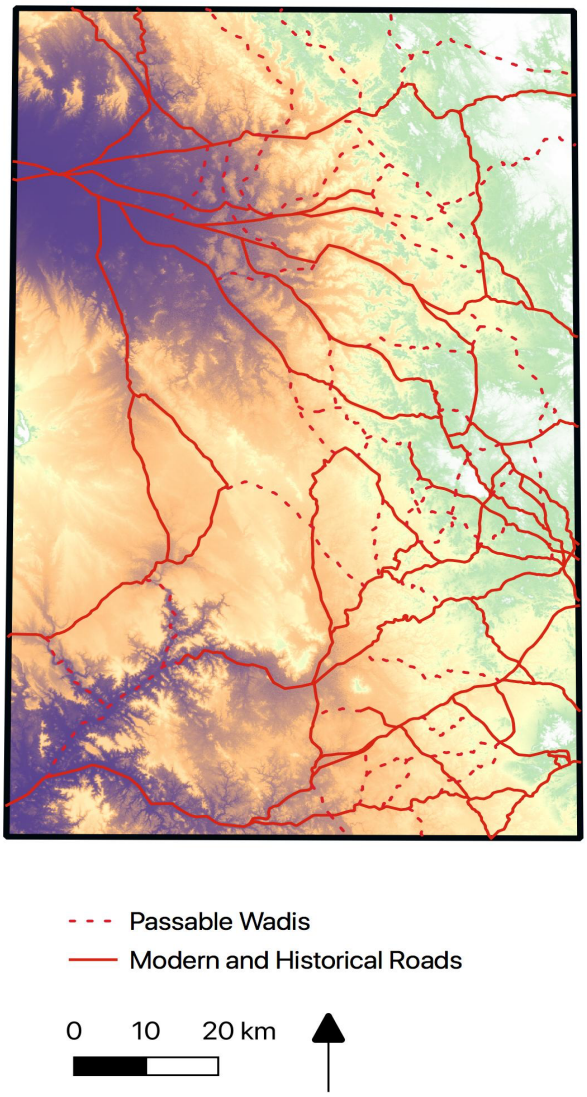
wadis, to a great extent, are superimposed on more ancient routes. The solid lines on the maps in this section represent tracks and roads that appear on the historical maps mentioned above, or, in some instances, modern roads that are clearly visible on satellite imagery. These include both asphalt-paved roads and machine-graded routes. In other words, they are all vehicle or camel tracks that were in use at some point between 1932 and the present. However, vehicle marks and other traces, visible on satellite imagery, show evidence of considerable off-road traffic, mostly along north-south connections between the major east-west routes. This was doubtless also the case in the Pharaonic period, depending on the size, goals, and equipment of a traveling party.

Figure 4. The RATS area on normal satellite imagery, and with a superimposed DEM accentuating the dendritic structure of the wadi system and highlighting areas of similar elevation.



Making a successful shortcut of this nature requires finding passable corridors uninterrupted by sudden elevation change, badly broken ground, or other obstacles. Using

Figure 5. Modern, historical, and possible tracks following the deepest wadis.



satellite imagery and the DEM, I identified wadis that, despite not carrying modern roads (and therefore very likely ancient routes), "go through" (Figure 5). That is to say, they have two open ends, and allow unobstructed passage through the length of the wadi and out the other side. Through wadis tend to be among the deepest in the landscape. Using the DEM allows connected areas of relatively lower elevation to be easily discerned, especially when they are narrow and easier to miss on the natural-color satellite imagery (Figure 4). Tracks through the landscape overwhelmingly follow the natural

routes of the wadis, in order to avoid passing over steep or broken ground. As Figure 4 shows, the deepest wadis extend further into the desert, are more likely to connect with other wadis, and reduce the steepness of the terrain, which rises fairly abruptly into the Red Sea Mountains. The deeper wadis also collect more ground water, in the form of runoff after seasonal rains that fall at the higher elevations. Gravity brings water into the wadis, where it sinks into the sandy floors to the level of the bedrock and is protected from evaporation. In many cases, standing surface water can be found in sheltered spots well after rainfall occurs. The collection of water in wadis creates microclimate ecosystems that often support some vegetation and animal species, as well as permitting travelers to access moisture by digging expedient wells. Figure 6 shows the surface drainages in the study area, which correspond with the deepest wadis and therefore also with the historical routes through the desert.

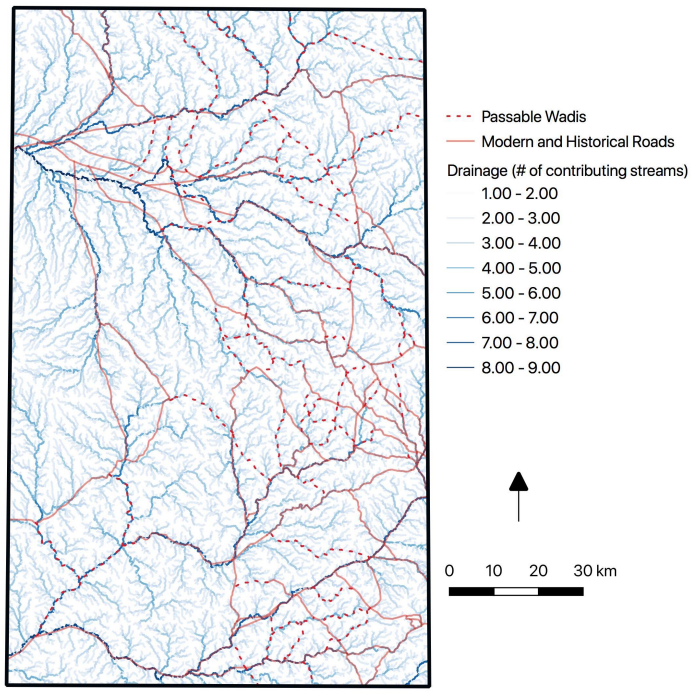


Figure 6. Surface Drainages modeled using an SRTM DEM.

Unsurprisingly, given the accessibility of the terrain and what we understand about the nature of human activity in the Eastern desert, almost all of the rock art located by the RATS falls precisely along these corridors (Figure 7). There are two major exceptions: the Wadi Atwani and the

Wadi Umm Salaam. These will be discussed in detail below. The overwhelming majority, however, cluster in the wadis that carry modern roads and tracks, and in the other through wadis.

Rock Art and Waymarking

That the rock art is in the wadis is not startling: after all, this is where we can imagine the people were, and where most of the suitable rock faces exist. It is possible that the pattern is due to the accessibility of the modern landscape to the RATS team, but a few stray points collected in the rocky hills suggest that they were also surveying outside of the wadis. But the placement of the rock art within the wadis is interesting. Of the two hundred and sixty-five rock art sites recorded by the RATS survey, twenty-eight percent are within one hundred meters of a wadi junction. Seventy-nine percent are within five hundred meters of a major through wadi junction. Five hundred meters, for reference, is roughly a five-minute walk. Furthermore, these numbers were generated using the RATS' criteria for "site," which does not take aggregation into account. My own trip to the Wadi Barramiya suggests that rock art sites that are closer to these major turns are considerably denser than those that are at some distance from wadi junctions. Additionally, major east-west wadis are marked at the points where they exit the wadi system on the sandier plains to either side of the sandstone hills, whereas wadis that dead-end inside the hills are not. That is to say, the entrances to useful wadi routes are signposted with rock art.

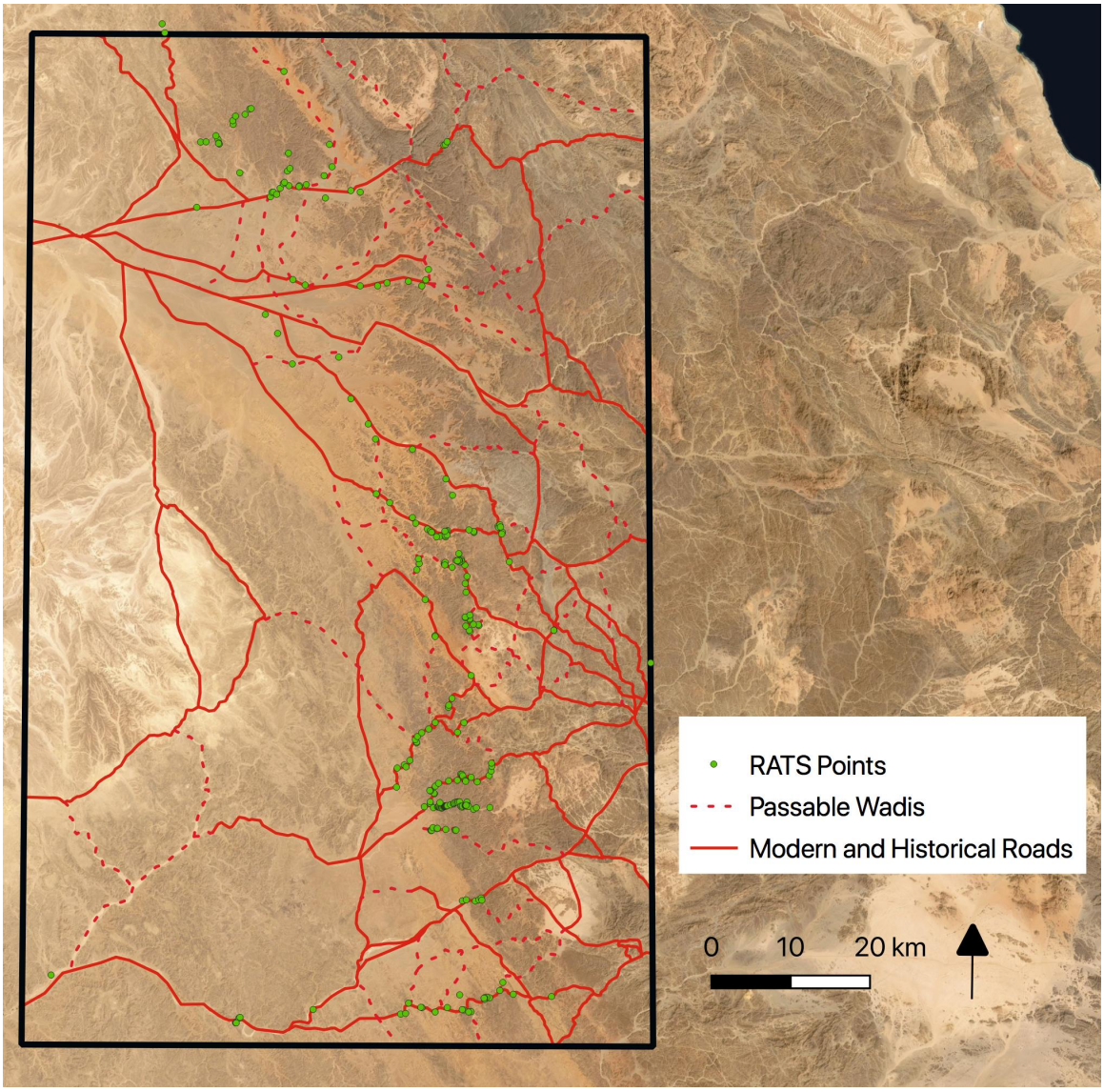


Figure 7. General view of the RATS area, showing tracks, terrain, and rock art.

Figure 8. The SW corner of the "Systematic" survey area. An example of through-wadi (road-bearing) entrances being marked at the approach from the Nile Valley. Note that dead-end wadi entrances are not decorated.

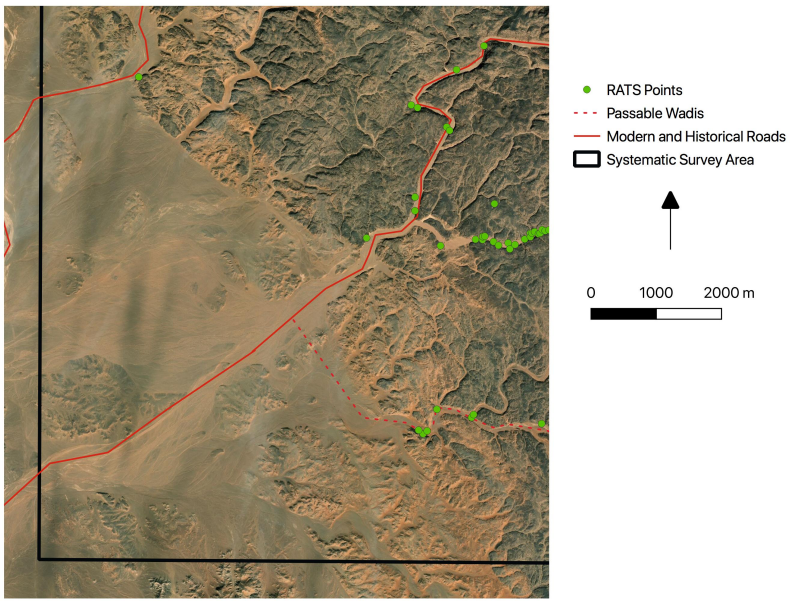


Figure 9. Systematic survey area, with routes.

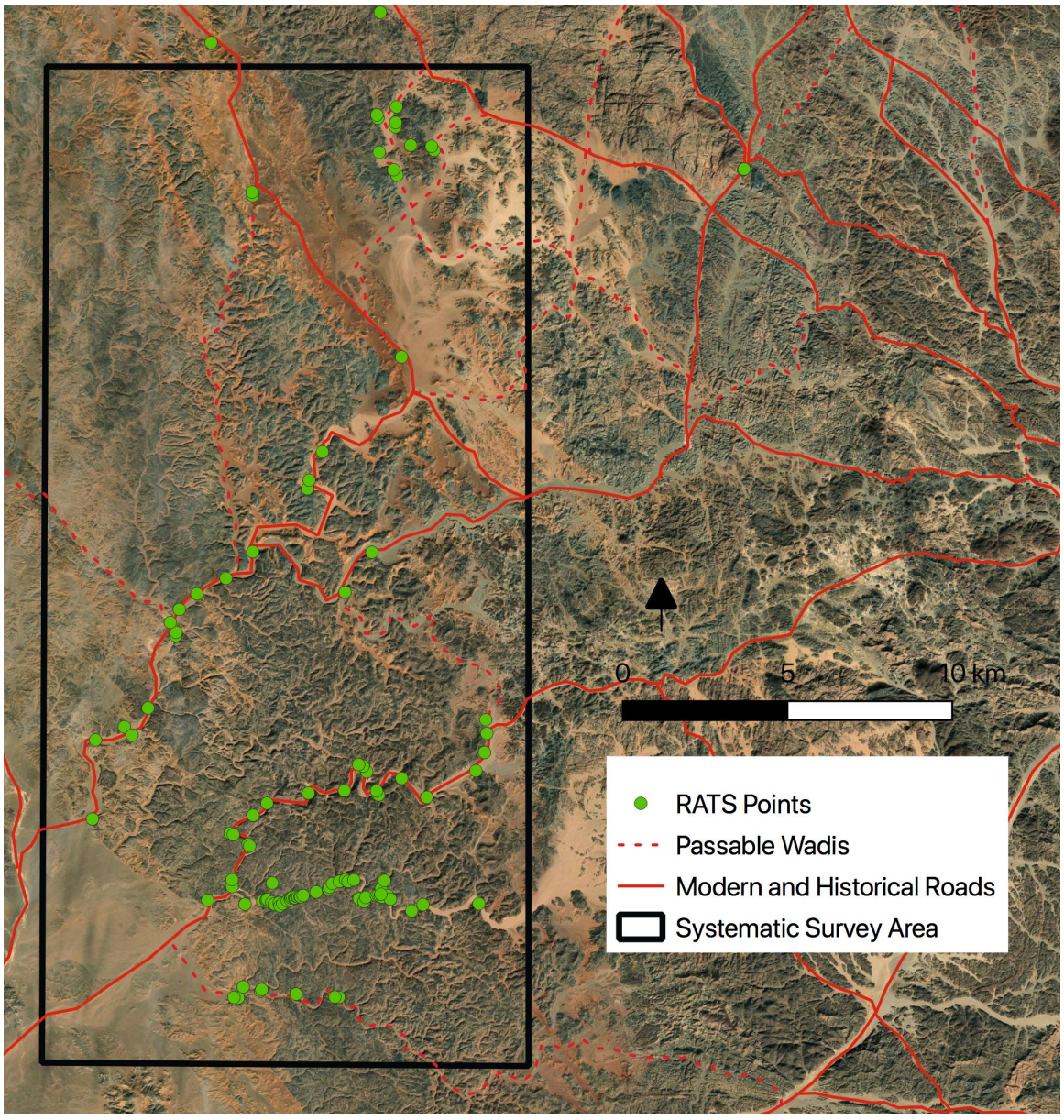


Figure 9 shows the area systematically surveyed by the RATS team. It is in this area that we can expect the most complete coverage and recovery of rock art sites. As in the rest of the survey area, the rock art is found along the walls of the wadis. The survey area includes Wadi Um Salaam, one of the two major rock-art wadis that does not "go

through." Um Salaam will be discussed below. The other decorated wadis in the area are all through wadis; most of them bear modern roads.

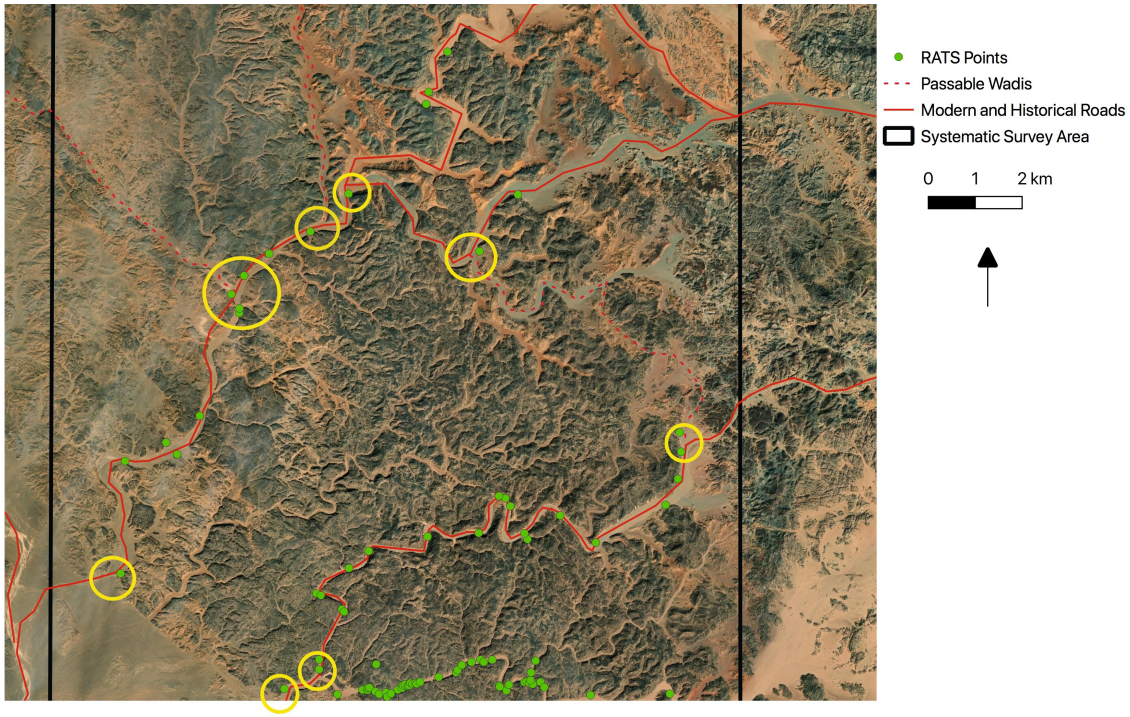


Figure 10. Detail from the central part of the systematic survey area, showing positions of rock art at route junctions, entrances, and turns.

Figure 10 shows a detail from the central part of the area that was systematically surveyed. The two major wadis are Shalul (north) and Abu Mu Awwad (south); Umm Salaam is the southernmost wadi in the frame. Circled in yellow are the petroglyphs that occur at entrances and junctions. All of the through wadis are marked at their entrances by petroglyphs. Rock art that does not occur at a wadi entrance is most likely to be situated at places where the wadi's path makes a sharp turn. Very few rock art panels are along straight sections of the wadis. The placement of rock art on curves and sharp turns might be explained in terms of visibility, waymarking, or both. Pieces in places where the

wadi curves are highly visible to approaching traffic, because they are often close to perpendicular to the approach. Not only are pieces on curving walls visible, but they also can be seen as contributing to the socialization of the wadi. The twists and turns add length to the path and can be irritating or even confusing; decorating them with obviously human traces shows travelers that they are still on the correct path. To return to the trail-blazing analogy, this is similar to the practice of marking hiking trails with turning blazes, even when there are no trail junctions to confuse.

As discussed above, dating rock art is a difficult and relatively subjective endeavor. However, at least some discussion of the probable dates of the rock art is necessary here, because it has a bearing on identifying the periods when these routes were in use. As elsewhere in the Eastern desert, the majority of the petroglyphs in the wadis Shalul and Abu Mu Awwad appear to be prehistoric. These favor motifs such as ibex, hunters, and boats. Intermixed with the prehistoric carvings, however, are discernably Pharaonic examples (including a few hieroglyphic inscriptions) and later engravings (identified by camels, Coptic and Arabic alphabets, and *wusum*). Images can be found in the RATS publication (Morrow and Morrow 2002). The presence of engravings from a range of periods confirms the early and continuing use of these routes, although the predominance of prehistoric examples requires some explanation. It may be as simple as the intersection between climate and activity in the prehistoric period. A combination of a more hospitable climate and an emphasis on hunting and perhaps herding, rather than caravan travel, would have allowed people to spend more time in place in the landscape, instead of being required to conserve time and water in order to efficiently and safely reach a destination. Even in a greener environment, the form of the

terrain and the presence of water and game would likely have meant that people generally moved in the wadi systems. Travelers in the later, drier, periods found these systems already marked out by prehistoric people, and added some of their own pieces. The relatively fewer examples from the later periods may be a function of the wadis already being sufficiently (for wayfinding purposes) marked by very ancient petroglyphs, or of the later travelers having less leisure to pause and make rock art.

Waymarking and Place Making in Wadi Barramiya

Entrances, junctions, and curves are marked throughout the wadi system of the central Eastern desert. Figure 11 shows the Wadi Barramiya, at the southern edge of the RATS' targeted survey area. I include it here because it was one of the few areas in the Eastern desert where I was able to spend much time. As in Figure 10, the through-wadi junctions have been circled; all are decorated. Despite some concerns about double-identification, I have also included points I took during my trip (shown in red) that do not, as far as I can tell, match sites photographed in the RATS publication. Because Barramiya was not included in the comprehensive survey, it is very likely that many of the sites I recorded were not documented by the RATS.

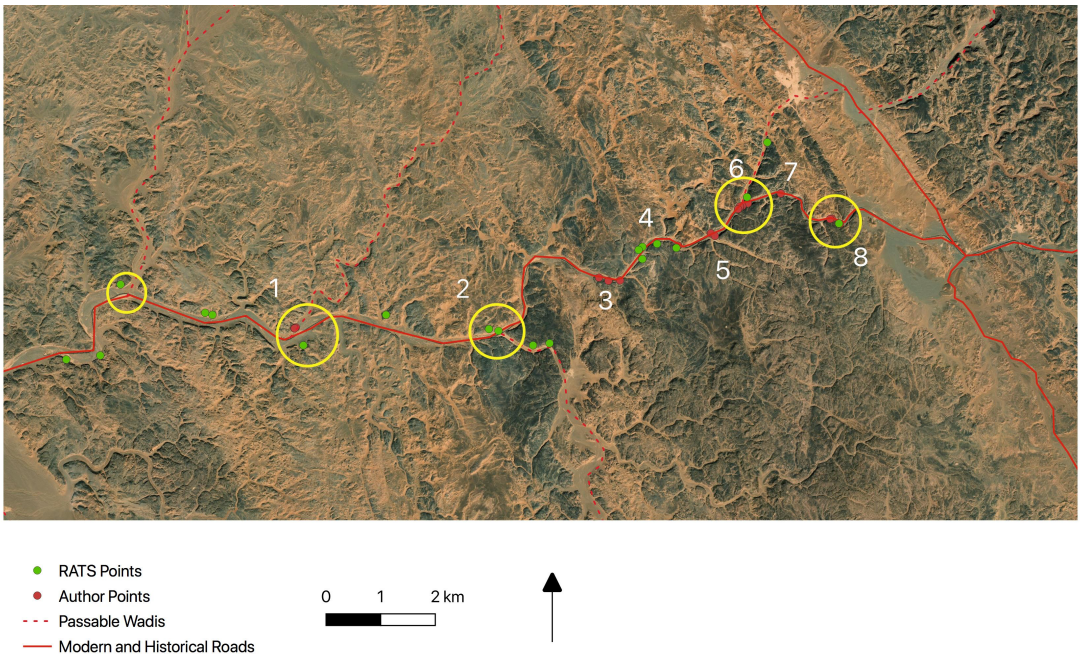


Figure 11. Detail of rock art and wadi junctions in the Wadi Barramiya. Numbers refer to descriptions in text.

As in Figure 10, petroglyphs occur at the entrances, junctions, and curves. When I visited the Wadi Barramiya in August of 2019, I found that much of the rock art along the course of the wadi, that is to say not occurring directly at junctions, also marked notable features.

Many of the points recorded by the RATS in Wadi Barramiya (green dots) are relocated from older surveys, and are not illustrated or described in the Morrows' publication. Accurately identifying them and matching them with descriptions and illustrations in the older survey publications has proved difficult and frankly outside of the time constraints of the present project; the following examples are therefore confined to rock art sites that are described in the RATS volume or my own notes. The following descriptions correspond to the numbers sites in Figure 11.

1. Wadi junction. The easternmost of three passages between Wadi Barramiya and Wadi Miya to the north. Apparently predominantly prehistoric engravings, dominated by many boats in different styles.





Figure 12. Two boat panels at 1.



Figure 13. General view of 1.

2. Wadi junction. RATS site BAR 4. Also a large panel dominated by prehistoric engravings, mostly of boats (Morrow and Morrow 2000; 173).

3. Wadi course. Scattered small animal engravings, mostly camels and horsemen, crosses, Arabic. A few boats and ibex in the prehistoric style, and a scene of ostriches and a human figure with two plumes. All are fairly low to the ground and not extremely visible. Surface scatter of unusual greenish conglomerate. Gazelle droppings and tufts of vegetation indicate available moisture. Although this site is not located in a wadi mouth, the DEM and drainage models indicate the wadi walls are relatively low here and the spot does in fact collect an unusual amount of runoff (Figure 14). Marking of this spot may therefore be intended to indicate possible water availability.

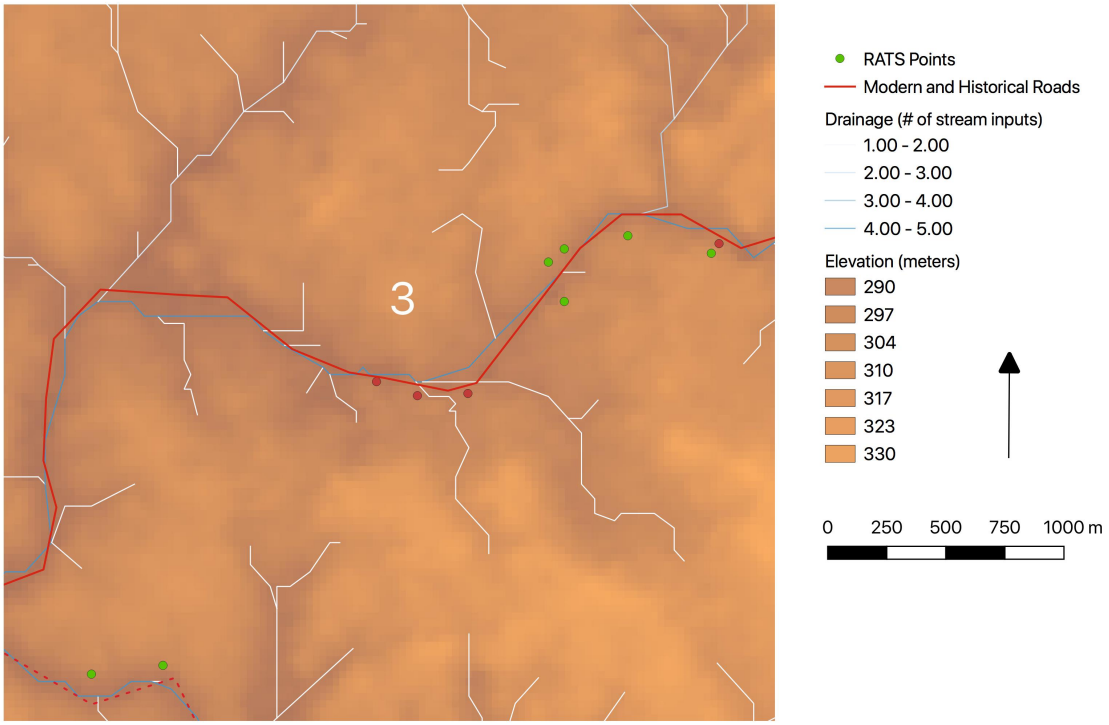


Figure 14. Landscape situation of site 3, indicating possible water collection.



Figure 15. Late and prehistoric groupings at Site 3.

4. Numerous engravings of all periods, densely over-carved. Boats, ibex, camels, considerable Arabic and English. Clustered in and around a sizeable rock shelter that is obviously a popular stopping-place for modern traffic.



Figure 16. General view of the rock shelter at Site 4.

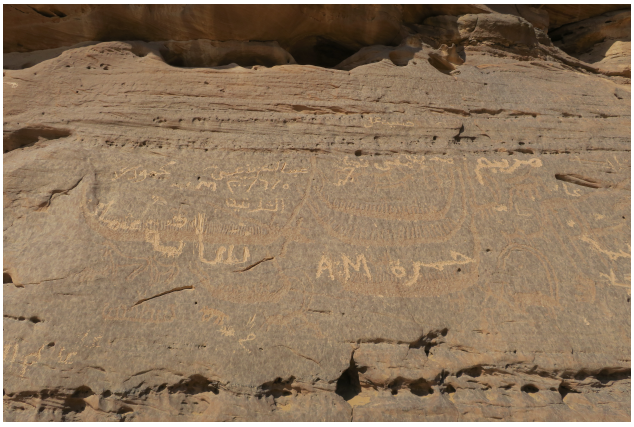


Figure 17. Panel at Site 4 showing Arabic inscriptions superimposed on prehistoric boats.

5. Mouth of a closed wadi. Very high wadi walls, and many of the carvings are at an inaccessible height. Prehistoric boats and human figures; cattle; camels. Flaking mud on wadi floor indicates presence of water; as with Site 3 the drainage model and DEM indicate that water is likely to collect here.



Figure 18. Prehistoric animals, hunters, and boats; a camel.

6. Wadi junction. Numerous prehistoric boats and animals, especially ibex. Horsemen, camels, Arabic.

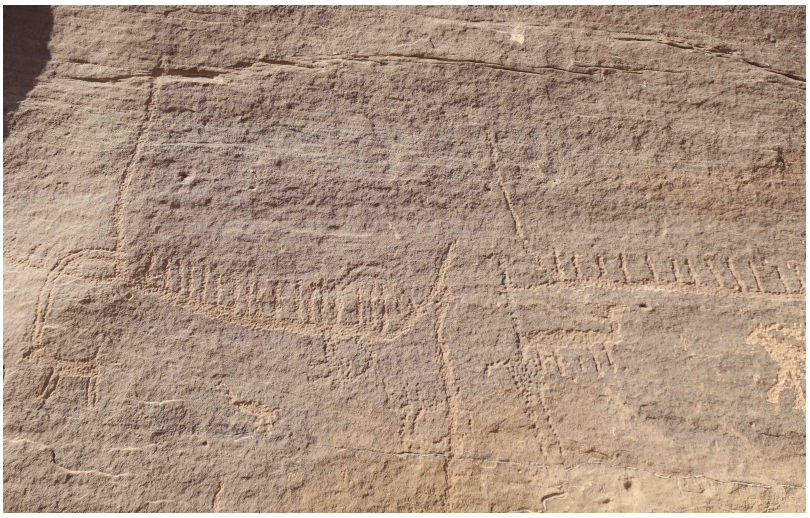


Figure 19. Prehistoric boats and quadrupeds, including ibex.

7. Wadi course. Brief hieroglyphic inscription, Arabic name, cattle. This is a good example of a rock art site that is not particularly highly aggregated, unlike most of the others along the Wadi Barramiya. This is consistent with its position: it is on a curve, but it is not at a wadi junction, entrance, stopping point, or drainage collection.



Figure 20. Hieroglyphic inscription.



Figure 21. Cattle.

8. Wadi entrance. Very high aggregation. Prehistoric boats and variety of animals, including elephant. Donkey? Numerous Pharaonic stelae and hieroglyphic inscriptions. Sandals. Camels and cattle. Vegetation and flaked mud; DEM and drainage model indicate runoff collection.



Figure 22. Prehistoric boats and animals; a camel.



Figure 23. Pharaonic stela.



Figure 24. General view of the eastern mouth of Wadi Barramiya.

These eight sites comprise a very small sample set, too small to extrapolate broadly to the rest of the Eastern desert. Taken together, however, they suggest a number of interesting things that should be investigated in further study of the rock art in this area. The first of these, very simply, is the productivity of a spatial approach. Looking at the rock art in its landscape context leads to insights into its use and function, and the art itself should never be divorced from its substrate when attempting to analyze its function and the motive of its creation. Attention to spatial dimensions of rock art begins in the field, where details like relationships to terrain, evidence of the presence of water, orientation, and visibility can be recorded.

Spatial patterns in the siting of rock art begin to emerge. There is a relationship between rock art and wadi entrances, junctions, and curves. Rock art is more likely to be found in these situations than in straight sections. Likewise, there is a high probability that rock art that is found along the course of a wadi is meaningfully placed to mark special features along the path: stopping places, for instance, or places where water is likely to be found with some digging. Experienced desert travelers would be more likely to identify these features on their own, either through memory of place or by educated "reading" of the landscape, but the existence of petroglyphs in meaningful spots would have served to quickly confirm a traveler's hunches.

This case study also suggests a syntax of motif that distinguishes certain spots from others. A loose pattern has emerged in which the junctions of through wadis are dominated by boat motifs, and spots in the landscape where water collects are marked with animals. The connection between animals and moisture is apparent; places in the landscape that collect water will also produce the vegetation that desert species are drawn to. Even in a wetter, greener prehistory, when most of the carvings were made, the topography would have made these places significantly wetter than their surroundings, drawing both climbing (i.e. ibex) and grazing (gazelle) game and creating important nodes for hunters. And indeed, images of hunters often appear in these spots. The relationship between boats and through wadis is somewhat more obscure. Considerable ink has been spilled over the meaning and interpretation of prehistoric boat petroglyphs in the Egyptian desert, with most of the more credible theories focusing on the images as a precursor to the later icon of a royal or solar barque. I propose here a slightly more pragmatic explanation. We know, from the morphology of the boat images present in the

desert, that the population active in this area in prehistory was familiar with the Nile valley and with navigation on the Nile. The wadis of the Eastern desert were conduits for travel in a landscape that, even in the more hospitable AHP, presented difficult terrain. If we can imagine that the wadis of the Eastern desert were, by analogy, likened to rivers, then the presence of boats in these wadis begins to make a certain amount of sense. The analogy stands not only in the sense of the wadis being conduits for movement, but also because they do occasionally fill with moving water. Even after the water has gone, its passage is made obvious in the landscape by mud, washed out sand, and vegetation. The marking of through wadis with boat images, therefore, may simply mean, "navigable."

Confirming this pattern will require the inclusion of a significantly larger dataset and is a major undertaking beyond the scope of this dissertation, although it is a question that I intend to turn to soon. One pattern that is already clear, however, is the aggregation of later rock art to the earliest examples in the landscape. All of the rock art sites in Wadi Barramiya include prehistoric carvings. In many cases, the prehistoric rock art attracts later additions. This can be as simple as the appearance of a camel in a prehistoric hunter's herd of gazelle, but more often takes the form of significant densities of later carvings adjacent to, among, and superimposed on the older images. As discussed earlier, this is a practice of creating place, interacting with the past, and creating material memories that can be communicated across hundreds or even thousands of years. In a landscape in which most human activity is characterized by movement, travel, and transience, placemaking is also a practice of waymarking. The occurrence and aggregation of rock art at junctions and other nodes meaningful for successful navigation in the landscape can therefore be seen as intentional and significant.

Rock Art that Does Not Mark Routes: Wadi Atwani and Wadi Umm Salaam

I will now briefly discuss Wadi Atwani and Wadi Um Salaam, which, despite being dead-ends, are heavily decorated. The Wadi Atwani is at the northern limit of the RATS study area; Wadi Umm Salaam is in the center of the southern half. Both are subsidiary wadis of major routes, and are fairly deep and narrow. Perhaps most significantly, both seem to be decorated with only prehistoric rock art, and to lack examples from the later periods. This is consistent with a shift, after the end of the AHP, from hunting activity to caravan travel. Travelers concerned with moving across the landscape in order to reach mining sites or the Red Sea would not have had a reason to enter closed wadis, explaining the lack of later rock art.

However, in the prehistoric period, before the landscape had become entirely arid, these sheltered and well-watered blind wadis would have been excellent refuges for game species. Wadi Umm Salaam in particular is relatively short and narrow, and remains well-watered in the present. It opens into a large depression, which today is filled with sand. The DEM suggests one outlet from this depression at the north-eastern extent, but the lack of later the prehistoric rock art (The RATS record a single camel) indicates that Umm Salaam was not frequently used as a through route.

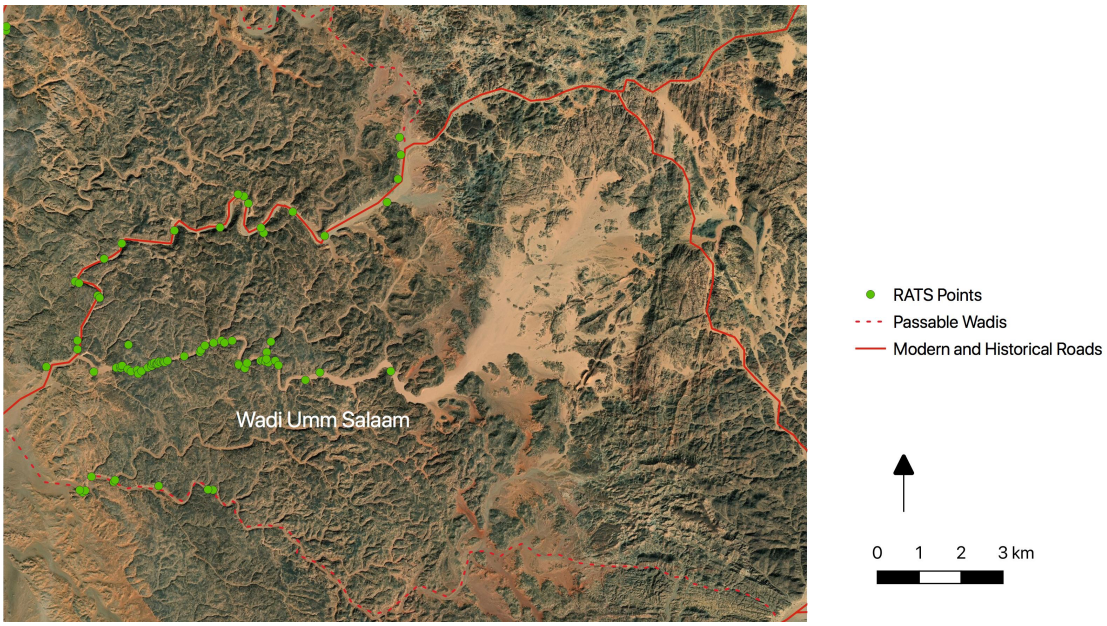


Figure 25. Wadi Umm Salaam, the the center of the southern half of the study area.

The dense decoration of this wadi is dominated by animal motifs, including giraffe, ibex, elephant, lion, and ostrich. Several panels include human figures with bows and dogs. Next in quantity are images of boats, in many styles. There are also abstract symbols, and many sinuous lines (including some of Cherry's (2000) putative maps). The wadi also boasts an unusual natural stone pit about 1 km from the western entrance. Situated in a protected wadi mouth and dubbed "the Jacuzzi" by the RATS team, this pit would have collected a substantial amount of water. The wadi walls around it are densely covered with animal carvings.



Figure 26. The "Jacuzzi" at RATS site 14 in Wadi Umm Salaam. Photo F. Lankester.

This is an exceptional feature in the landscape and may go a long way toward explaining why this wadi is so intensively decorated, although it is strange that this would not also have attracted considerable traffic in later periods. Perhaps the changing environment meant that water was better conserved by sand, where it was protected from evaporation, in the drier climate. The presence of the “Jacuzzi” may also explain the diversity of animal species in the rock art here, including larger animals like lion, which drink from standing water. This would have made Umm Salaam particularly good for hunting; it may even be possible that the entire wadi could have been used for game drives, functioning in the manner of a hunting kite and trapping animals in the depression

to the west. Purpose-built kites have been noted in Sinai and the Negev; examples in Jordan can be dozens of kilometers long (Holzer et. al. 2010). This suggests that the scale and the concept are both plausible here. Game drives and the work of slaughter and butchering that they entail require considerable cooperative effort, making them social events involving large numbers of people. If game drives were occurring in Umm Salaam and bringing large groups into the wadi, this may also provide an explanation for the intensity of petroglyph decoration and the focus on hunting themes. It is possible to imagine that the processing of large kills also entailed camping, feasting, and ritual activity, which could also conceivably resulted in the production of rock art.

Wadi Atwani

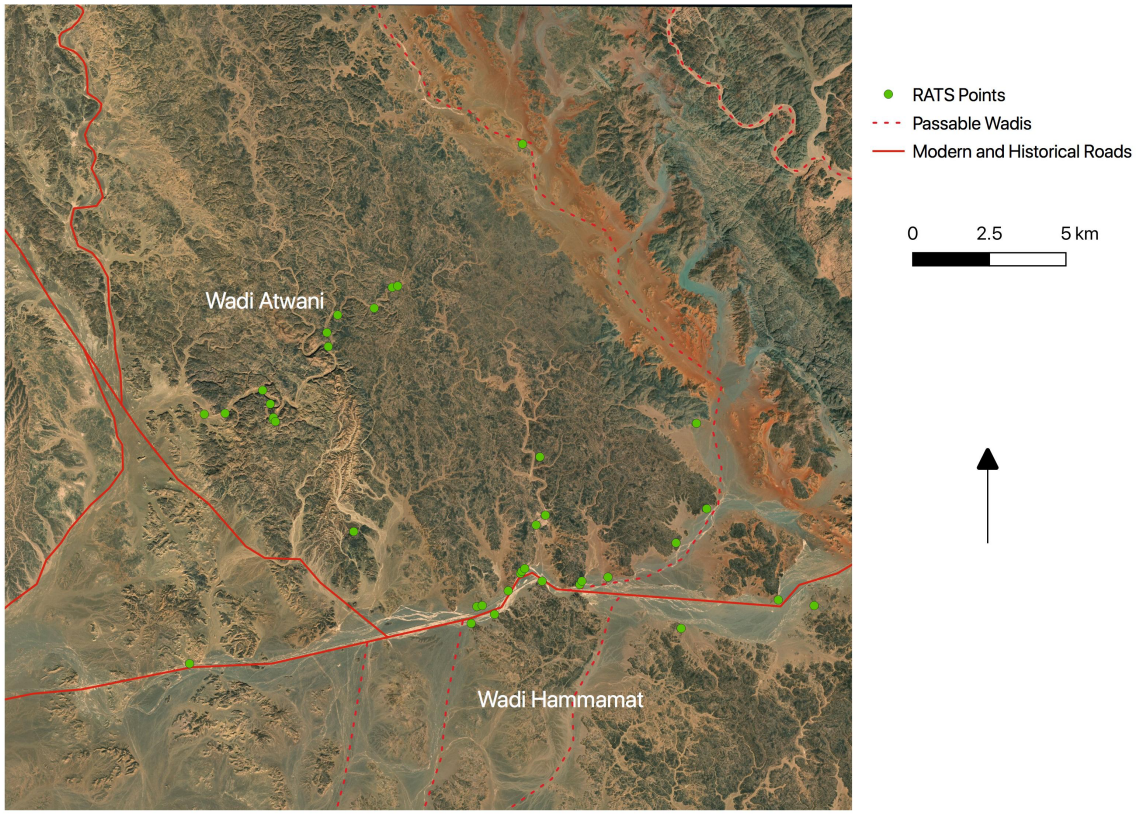


Figure 27. Wadi Atwani

Like Umm Salaam, Atwani is a closed wadi. It also displays predominately prehistoric decoration (save a few camels), although in no way approaching the same densities as Umm Salaam. Atwani lacks the water sources and terminal valley that make Umm Salaam so attractive to hunters and animals, although like all of the wadis it would be relatively wetter and more sheltered than the surrounding terrain. I suspect, however, that (unlike Umm Salaam), Atwani functioned as a through-wadi in the prehistoric period, and was later blocked by the field of small boulders that make it impassable to most types of traffic today.



Figure 28. RATS vehicles confronted by impassable terrain in the Wadi Atwani. Photo Frank Lankaster.

CASE STUDY CONCLUSIONS

This preliminary case study seems to indicate that there is indeed grounds for viewing at least some rock art as a technology for waymarking and navigation. I do not intend to argue that all rock art served a waymarking function, but in this instance there is good reason to believe that this is a plausible explanation for much of the rock art in the Eastern desert wadis. The vast majority of rock art sites in the RATS survey area are found in through wadis, and mark places significant for travelers: entrances, turns, water sources. With the exception of the two examples given above, dead-end wadis do not appear to be marked with rock art. Any rock art that does appear in dead ends should probably be checked carefully to see if they are associated with evidence of wells, mines, or other "destinations."

The study could benefit from the integration of data on the cairn system, because it seems likely that rock art and cairns were functioning together as a powerful technology for waymarking and navigation. The addition of a rubric, however subjective, for assessing density and aggregation could further add to the weight of this analysis. Finally, the study does not systematically take into account the spatial distribution of different motifs, for instance boats, people, and animal species. There is some evidence that a pattern can be discerned. Adding this data into the assessment could productively nuance our understanding of whether the motifs chosen for waymarking had a consistent and meaningful syntax.

The study of rock art in the Eastern desert as a technology of waymarking is attractive because, unlike other theories about rock art and its purpose, *this is a testable hypothesis*. The relationship of the rock art with the topography and with known routes can be modeled, and locations and aggregations can be ground-truthed. Outliers can be

visited on the ground and associated with other archaeological material that contributes to an understanding of their function and position. Techniques similar to the ones briefly outlined in this case study can be applied to other datasets, and new surveys can be developed with this as a specific research question.

A reading of rock art as waymarking is compatible with concepts of landscape socialization, communication, control, and memory that many scholars have already applied to the petroglyph corpus. It is a flexible interpretation that is both highly testable and capacious enough to allow secondary analyses based on period, environment, and culture. It creates a space to study, across time and cultural context, the relationships of human travelers in the desert with environment, landscape, memory, and each other.

CHAPTER 5. ROADS AND OASES: CONNECTIVITY, AMBIGUITY, AND SPECTRUMS OF FAMILIARITY

Introduction

In this chapter, I consider the relationship of the Nile Valley with the desert landscapes on either side of it by taking a look at the Western desert oases and some of the desert road networks. The roads and oases extend Egyptian activity from the Nile into the desert landscape, and have been seen as "narrow bands of control" running through the deserts (Darnell 2013b). I argue that they cannot be considered entirely controlled, or entirely Egyptian. Instead, I think they should been seen as spaces of encounter: with trading partners and political rivals, with indigenous groups in the desert and oases, and with the landscape itself, so unlike the landscape of the Nile Valley.

Throughout this dissertation, I turn to ambiguity as a concept for characterizing the position of the desert landscape in Egyptian thought. Counter to the usual paradigm, I do not think this ambiguity should be construed as necessarily negative (or "chaotic"). Ambiguity is a powerful property that creates space for the negotiation of complex relationships, and allows productive interactions with cultural and geographical "others," that might otherwise be anathema.

Ambiguity as a conceptual property of landscape, here expressed as a neither-here-nor-thereness, shares certain features in common with the "periphery" of the core-periphery pair described in the World Systems theory of Immanuel Wallerstein (1987),

and with the concept shatter zone articulated by James C. Scott (2009). However, it is not really either one of these, for the following reasons. Although archaeologists have applied both concepts to pre-capitalist contexts, they are essentially ways of describing political relationships based on economic extraction from rural hinterlands and the application or evasion of punitive governance. Neither is entirely appropriate for the case of the Egyptian deserts. The desert landscape is not arable and therefore cannot be used to supply urban centers with agricultural produce as in the usual application of core-periphery analysis, although the deserts did provide other valuable resources to central places; in any case, the population is sparse and highly mobile, making it difficult to control with traditional techniques. Military forays and the exaction of tax or tribute from the nomadic and oasis populations will be briefly touched on below; whether these efforts approached the level of systematic extraction is up for debate.

The idea of the shatter zone seems slightly more apt, in that these regions are usually ecologically challenging or remote areas, making it difficult for states to control, exploit, and surveil them. The efforts of the Egyptian bureaucracy to render regions of the desert if not governable then at least legible to regulation and surveillance will be discussed below. Shatter zones, however, tend to be characterized by a population actively resisting or evading a state, and they are often located in contested border areas, caught in conflict between two or more state powers. This description does not seem to apply generally to the Egyptian deserts, except perhaps in the 2nd Intermediate Period and New Kingdom, when they become frontiers in Egypt's conflicts with the Hyksos and the Nubians.

I prefer the concept ambiguity because it is not explicitly political; it allows us to think about relationships in the ancient world without imposing or theorizing modern political analogies. As discussed in Chapter 1, the study of landscape requires frameworks that can account for the fact that contradicting landscape ideas may exist simultaneously in one population, or even in one individual. I argue that the desert landscape in particular attracts these contradicting ideas. It is highly productive (for instance, in valuable mineral resources), but not in ways necessarily legible to an agricultural society; it is very possible to survive in the desert, but it requires a degree of specialist knowledge; and it is composed of a variety of micro-climates, some far more hospitable than others. This last would have been even more the case in the earlier periods of Pharaonic history. For someone accustomed to the Nile Valley, interacting with the desert landscape arguably would have required a series of negotiations between physical and emotional comfort and adaptive strategies.

Viewing this in terms of ambiguity allows us to take in the possibility of ambivalent or inconsistent attitudes. For me, ambiguity exists chiefly in the "lived" segment of Lefebvre's (1991) triad of perceived, conceived, and lived space. This is where negotiations are made, and where received cultural narratives about place are tempered by individual experiences and perceptions in physical space. Throughout this dissertation I argue for the Egyptian deserts as lived spaces that combine, not always neatly, individual human experience with official narratives.

In this chapter, I will explore how the deserts were connected to the Nile Valley, and how desert routes enabled travel and trade well beyond Egyptian territory on both sides of the Nile. In the Western desert, I will focus on the Abu Ballas trail that extends

southwest of Dakhla oasis, and in the Eastern desert I will look at passage through the Wadi Hammamat and its articulation with the Red Sea trade. I will also discuss the dynamics of Nile-desert relations in the Western desert oases, particularly Dakhla. Because of the nature of the evidence that has been preserved, much of what is presented in this chapter is in a state or bureaucratic register, reflecting official or administrative interactions with the desert landscape. Nevertheless, understanding the official narrative of engagement with the desert is important for understanding the lived experience of Egyptians operating in these landscapes during the Pharaonic period.

THE OASES

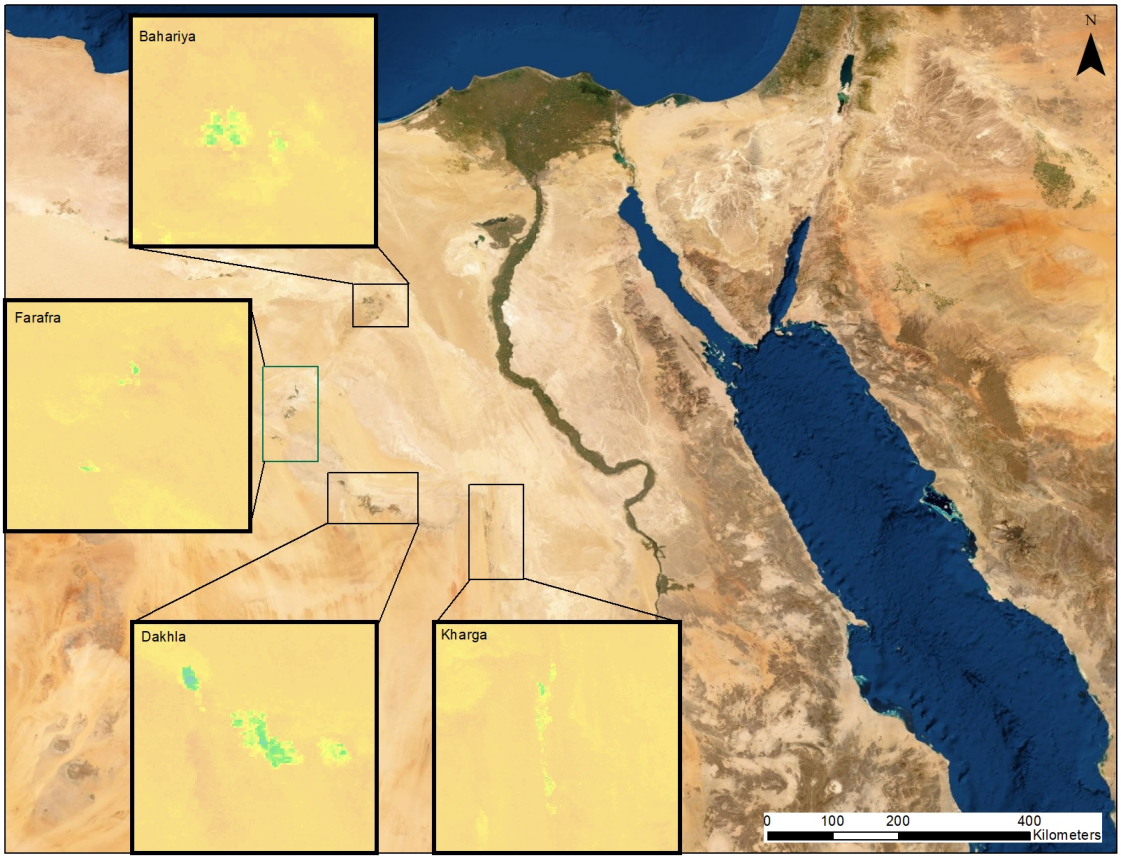


Figure 1. The Egyptian Oases, highlighted by modern vegetation index (Normalized Difference Vegetation Index, month of January, Global Land Cover Characterization Dataset (1993)). Map Anthony Lauricella.

The five Egyptian oases, all located in the Western desert (also sometimes called the Libyan desert) are Siwa, Bahariya, Farafra, Dakhla, and Kharga. Aside from Siwa, which is isolated near the Egyptian border with Libya, the oases are arranged in a north-south arc through the desert.

These four oases doubtless performed as climate refuges as the AHP came to an end, sheltering populations that were retracting to reliable water sources (Chapter 3). The water in the oases is provided by artesian aquifers in the Nubian Taref sandstone (Giddy 1987). The oases are situated in depressions where the water-bearing geological strata are closer to the surface and more easily tapped, by both vegetation and human inhabitants.

Although all four of the oases were known and accessed by people from the Nile Valley during the Pharaonic period, the bulk of archaeological and historical information relates to the southern oases of Kharga and Dakhla, sometimes referred to together as the "Southern" or "Great" oasis (Giddy 1987: 39). Throughout the Pharaonic period, the oases are referred to generally with the term *wḥꜣt*, perhaps etymologically related to the word for "cauldron," which could describe both the topography and the environment of the Western oases (Giddy 1987).

At least as early as the New Kingdom, a differentiation was made between *wḥꜣt rsyt*, the "Southern Oasis," and *wḥꜣt mḥtyt*, the "Upland" or "Northern" oasis (Giddy 1987). Although the latter term is not entirely identified geographically, the former term almost certainly refers to Kharga and Dakhla. The word *Knmt* may be used to mean Kharga specifically. The term *wḥꜣt mḥtyt* may overlap with the region described by the term *Ḏsḏs*, which is attested by the Middle Kingdom (Giddy 1987: 63). *Ḏsḏs* and *Tꜣ-iḥw*,

respectively, may refer to Bahariya and Farafra, although this is a matter of interpretation, especially in the earlier periods (Giddy 1987: 66). When used without a modifier, it is not always clear if *wḥꜣt* refers to Dakhla specifically, to Dakhla and Kharga together (also called *wḥꜣt ỉmntyt,* the "Great Oasis"), or collectively to both the northern and southern oases. The Old Kingdom references seem to primarily describe activity focused on Kharga and Dakhla, although Bahariya and Farafra were certainly within the sphere of Egyptian contact.

Prehistory and Native Populations

As discussed in Chapter 4, our best indication of prehistoric activity in the Sahara is the rock art that shows fauna and human activities from the greener days of the AHP. In addition to the rock art, it is not unusual to find scatters of lithics, or broken shells of ostrich eggs used as water-carriers. The major oases of the Western desert, Kharga, Dakhla, Farafra, and Bahariya, all show evidence of prehistoric habitation (Caton-Thompson 1946; Wendorf and Schild 1980; Marlow and Mills 2000; Barich and Hassan 2000; Reimer 2006; Svoboda 2006; Barich et. el. 2014). As the Sahara dried at the end of the African Humid Period, the oases would have been natural meeting points for Saharan pastoralists and semi-mobile groups based in the Nile Valley, as well as climate refuges for pastoralists of both populations whose traditional pasture was increasingly restricted (Usai 2008; Brois et. al. 2012). Cultural material outside of the oases and desert routes essentially disappears after about 4500BCE, suggesting the deserts were no longer habitable at this time, although later textual evidence suggests that a few nomadic tribes were moving in the desert as part of their seasonal rounds (Riemer 2013).

The population of the Western desert oases, especially Dakhla, has its own indigenous character at this time. Evidence suggests that this culture, referred to as Sheikh Muftah, was comprised of small, mobile units practicing a herding/hunting strategy, mostly within the Dakhla oasis itself. Domestic animals seem to have been kept for blood and milk rather than meat, and there is no evidence for the practice of agriculture before the arrival of Nile Valley settlers during the Old Kingdom. Several long-term seasonal campsites have been excavated, but no permanent structures have been identified (McDonald et. al. 2001). This evidence suggests a group living more or less as they had before the Sahara became uninhabitable, but on a greatly reduced geographical scale. Similar groups, of the same or closely related cultures, inhabited the other oases.

The Sheikh Muftah culture is characterized by ceramics with a local shale temper, as well the distinct and curious objects known as Clayton rings (McDonald et. al. 2001; Reimer 2011). First identified in the 1920s, Clayton rings are one of the few human traces that can be found in the desert beyond the oases and Pharaonic roads (Reimer 2013). A Clayton ring consists of a clay collar and a perforated disk that fits inside it, and their purpose is not agreed-upon (Reimer 2013). Clayton rings often appear in caches in sheltered spots in the desert, sometimes several hundred kilometers from any inhabited area or water source (Reimer 2013). While the examples found in the Egyptian Western desert are made of the same fabric as the Sheikh Muftah pottery from Dakhla, other examples from further south are comparable to the pottery of the Nubian A-Group (Gatto 2001/2002). A group of Clayton rings from Bir Sahara, in the desert some 300 kilometers west of the Nile, was found cached with both Nubian A-Group and Egyptian Naqada III

pottery, suggesting the contact and the geographical range of influence of both cultures (Gatto 2001/2002). A-Group and Predynastic Egyptian pottery are also found in association in several sites in the Nile Valley (Fuscaldo 1998; Gatto 2006), but their association in desert contexts contributes to the evidence for a wide network of connections and trade deep into the Western desert, perhaps through nomadic intermediaries (Lange 2006; Reimer 2011). The Clayton rings themselves are found only in the desert, with a range from Middle Egypt to Northern Sudan and from the Red Sea coast to the Libyan border, and two outlier examples found in Israel (Mills 1999; Reimer 2009; Hendrickx, Förster, and Eyckerman 2013; Reimer 2013). In addition to providing an index for the range of nomadic groups at the beginning of the 3rd millennium, the distribution of Clayton rings indicates that they were an important part of the desert nomad's toolkit, and that their use was a shared technology among several mobile desert groups, including the Sheikh Muftah people, who were trading with settled peoples and with each other (Reimer and Kuper 2000; Reimer 2013).



Figure 2. Clayton ring from el Kharafish north of Dakhla oasis (Riemer 2013).

By the Protodynastic period, evidence suggests movement through the oases of nomadic groups from Sudan and Libya, and people from the Nile Valley, as well as the Sheikh Muftah people who primarily made the Egyptian oases their home (Wilkinson

2001; Baines 2003). Whether or not these movements involved conflict is a matter of debate, but what matters is that there was demonstrable early, sustained contact among cultural groups in the oases, and between them and the people of the Nile Valley (Boozer 2015). This means that the influx of Egyptians from the Nile Valley that occurred in the Old Kingdom was not the result of new exploration and discovery so much as a movement to include the oases and their populations in the same political system that was being developed in the valley.

Egyptian Administration of the Oases

In this section, I briefly review the evidence for administrative relationships between the Nile Valley and the oases: the ways in which the oases and their people and produce were brought within the sphere of Egyptian bureaucracy.

Old Kingdom

The Egyptians of the Nile Valley were certainly aware of the Western desert oases, where they were exploiting some mineral resources and hunting (Förster 2013; Hendrickx et. al. 2009). By the 4th Dynasty, hilltop forts had been established around Dakhla, presumably as watchpoints to control or monitor the traffic through the oasis from east and west (Förster 2013; Kaper and Willems 2002; Bergmann and Kuhlman 2001). There is also evidence of large expeditions arriving from the Nile Valley in order to mine a mineral pigment used in paint (Förster 2013). All this is to say that the area of Dakhla was certainly not terra incognita to the Old Kingdom Egyptians. By the 6th Dynasty, an Egyptian governor was in place in a palatial residence in Ain Asil, then the

principal city of the oasis, heralding Egyptian bureaucratic control (Jeuthe 2018; Bagnall and Kaper 2015). These officials probably oversaw Kharga as well (Giddy 1979).

The primary focus of this presence seems to have been to monitor and control commerce on the desert routes into sub-Saharan Africa, at a time when Nubian polities were closing off the usual avenues of the lucrative Nile trade south (Förster 2013; see Roads section below). The 6th Dynasty inscription of Harkhuf states that he set out for Yam along the *wḥꜣt* road. This is the sole Old Kingdom attestation of the term *wḥꜣt*, and could very probably refer to the routes leading south and west out of the southern oases, although the exact geography of Harkhuf's trip remains a matter of debate (Giddy 1987: 52; O'Connor 1986; Lichtheim 1973). These routes did exist in the Old Kingdom: it is shortly before Harkhuf's expedition that the Abu Ballas trail is created; the Darb el Arba'in road south into Nubia from the oasis of Kharga was another critical route probably utilized by official Egyptian expeditions at this time (see Roads section, below).

The oases of Farafra and Bahariya were likewise within Egyptian influence during the Old Kingdom, and involved in the trade and transportation of goods (Moreno Garcia 2018). Pottery from Bahariya shows frequent contact with Middle Egypt at this time (Marchand 2013). The relatively rare term *tꜣ-iḥw*, first attested in the 5th Dynasty, certainly refers to one of the Western oases, probably Farafra (Giddy 1987: 47). The term appears on a statue of an official named Nḫt-sꜣs, found at Saqqara, and has been taken as evidence that the oasis it refers to was already under Egyptian administration at this time (Giddy 1987: 51). Farafra was commonly referred to as the "Cattle-Country," and Nḫt-sꜣs was an "overseer" or governor specially tasked with herd management. The same

individual bore the title "Administrator of the Bordering Area," suggesting that he was also in control of pasture or routes outside of the oasis proper (Moreno Garcia 2018).

First Intermediate Period and Middle Kingdom

In addition to being gateways for trade goods, during the First Intermediate Period and Middle Kingdom the oases began producing several agricultural products for trade, perhaps most important among them wine. The constant supply of groundwater in the oases provided different agricultural opportunities than the flood-irrigated Nile valley, and viticulture was especially successful (Boozer 2015). Hunting in the vicinity of the oasis was also an important leisure and economic activity for both indigenous and Egyptian parties (Pantalacci and Lesur-Gebremariam 2009).

By the Middle Kingdom, the oases were exporting wine, dates, animal skins, baskets, and textiles of their own manufacture to the Nile valley, as well as continuing to pass on items from the desert trade (Giddy 1980, 1987; Marchand and Tallet 1999). The presence of oasis wine (from *Wḥꜣt* and *Ḏsḏs*) in the Nile Valley, later a popular and prized product, is first attested in the 13th Dynasty Papyrus Bulaq 18 (Giddy 1987: 62). Sources indicate that these resources were traded into the Nile Valley as part of both official and private economies. In Dakhla, for instance, desert and oasis produce was warehoused in and distributed from administrative centers in the cities of Ain Asil and Mut el Kharab (Förster 2013). However, in the well-known literary text of the Eloquent Peasant, the peasant Khunanup, from the desert region of Wadi Natroun, begins his journey to the Egyptian capital with goods that he intends to trade in order to return with food for his children. Among these goods are several items of desert and oasis produce:

natron, staves from the "Cattle-country" of Farafra, leopard skins, and several kinds of precious stones (Lichtheim 1973: 169-183). The Eloquent Peasant text probably dates to the 1st Intermediate Period, although it is set during the reign of Nebkare, and it is unclear whether the economic situation it describes reflects that of the 1st Intermediate Period or the Old Kingdom (Lichtheim 1973). Nevertheless, the text suggests that the administrators of the oases did not always have a monopoly on the desert trade, at least not the oasis to Nile Valley leg, and private individuals were able to participate on their own initiative.

The 1st Intermediate Period may have seen a decline in or refiguring of the Old Kingdom Egyptian administrative control of the oases, because by the 11th Dynasty they had to be "annexed" to Egypt. This is attested by an inscription of Nebhepetre Mentuhotep found at Ballas, in which the king states that the *wḥꜣt* were annexed to Egypt and the "rebellious" were driven out (Giddy 1987: 53; Fischer 1964). The annexation implies that, at least at the beginning of the Middle Kingdom, the oases were considered *outside* of Egypt and had to be brought in, as foreign territories. The use of the word *wḥꜣt* in the inscription also suggests that the term refers to a discreet geographical entity, a known and bounded territory (Giddy 1987: 54). The "driving out" of the "rebellious" indicates the presence of a population or faction not willing to accept Egyptian authority; this population, rather than being conquered or captured, is expelled.

The stela of the steward Henenu details his part in managing the agricultural resources of the oasis region under Nebhepetre Metuhotep, giving at least an idea of what annexation of the *wḥꜣt* might imply (Fischer 1957). Henenu was also responsible for collecting taxes from the Thinite and Lower Aphroditopolite nomes, which in later

periods govern the oases and other desert territories (Giddy 1987: 55; Valloggia 2004; Hayes 1949). It is generally supposed, therefore, that his involvement with the assets of the oases was primarily geared toward assessment and taxation.

In addition to being taxed, it seems that the *wḥꜣt* in the Middle Kingdom were also garrisoned: the stela of Dd-ỉkw (reign of Senwosret I) from Abydos describes setting out from Thebes for the *tꜣ wḥꜣtyw*, the "land of the oasis people." He is accompanied by fresh troops in order to "secure" the oases (Schäfer 1905). The need to bring troops from Thebes to a population identified by its own ethnonym, "oasis people," suggests that the *wḥꜣt* and their inhabitants were still considered outside of Egypt proper, at least to some degree. Another 12th Dynasty stela, of Ỉnw, "Overseer of the army of *wḥꜣt*," contributes to the idea that there was an Egyptian military presence in the oases. However, there is some discussion as to whether "overseer of the army" is a military or a civic title (Giddy 1987: 61). In any case, these references and those cited above seem to suggest that the oases were being viewed more as a controlled territory than as part of Egypt proper.



Figure 3. Route through the Western Desert Oases, showing the towns mentioned in the Kamose texts. Simpson, W. 2003. *The Literature of Ancient Egypt.* Yale University Press. 347.

New Kingdom

The Hyksos upheaval of the 2nd Intermediate period increased the importance of Egyptian consolidation of control in the oases, and

especially control over the north-south oasis route that bypassed the Nile Valley. This can be seen in the 17th Dynasty Kamose Stela, which famously records the capture of a Hyksos messenger making for Nubia on the oasis road (Simpson 2003: 348-350).

By the reign of Amenhotep I, the oases were under the control of officials such as Itefnefer, whose stela gives his title as *ḥꜣty' n wḥꜣt,* "governor of the oasis." While it is unclear precisely what geographical area he was responsible for, the title indicates that *wḥꜣt* was not only a geographically bounded but also a defined administrative area, part of the bureaucratic apparatus of the Egyptian government. A New Kingdom *ḥꜣty'* would be concerned with agricultural production, tax assessment and collection, and provisioning of temples and markets (Giddy 1987). An 18th or 19th Dynasty stela of an individual named Amenhotep gives his titles as *ḥꜣty' n wḥꜣt mḥtyt*: governor of the northern oasis (Giddy 1987: 162; Steindorff 1904). The stela was found in Bahariya, providing some of the only evidence for New Kingdom Egyptian oasis governors found outside the Nile Valley. In his tomb, also in Bahariya, Amenhotep is shown preparing grain and wine for export to the Nile Valley (Fakhry 1942). The role of *ḥꜣty'* differs from that of a Chief Steward like the Middle Kingdom Henenu by being more fully integrated into the administrative system governing the Nile Valley. It suggests that by the early New Kingdom the oases were functioning as an integrated part of the Egyptian system of production, revenue collection, and exchange, rather than being administered as an annexed territory. This is supported by the remains of tax lists naming *wḥꜣt mḥtyt* and *wḥꜣt rsyt* as administrative areas (Giddy 1987: 97). An inscription found in Kharga Oasis of a New Kingdom scribe named Userhat, a "counter of the cattle of Amun," suggests

that officials traveled to the oases in order to collect or audit the temple estates there (Rossi and Ikram 2014).

The collection of goods from the oases is also reflected in the elite tombs of the 18th Dynasty (especially the reign of Thutmosis III) in the Theban area, which in their decoration and the titles and autobiographical texts of the owners illustrate close contact with the oases. These officials also had administrative connections to the cult of Amun, and it seems likely that some of the oasis estates were owned by and producing for the temple treasuries (Giddy 1987: 70). The well-known tombs of Puimre (TT 39), Rekhmire (TT 100), and Ineni (TT 81) all show produce of the northern and southern oases being brought as tribute; several others have administrative roles pertaining to the oases among their lists of titles (Giddy 1987: 68-75). The products that are presented are primarily grapes and wine, baskets and textiles, reeds and grasses, and leather goods and skins, indicating that these perishable organic goods were the chief contribution of the oases to the Egyptian market (Giddy 1987: 156-157).

The selection of goods is not unlike what Khunanup brings from Wadi Natroun to the Nile Valley in the *Eloquent Peasant*; it is also described as the produce of the oases in the *Admonitions of Ipuwer* (Papyrus Leiden 344; Simpson 2003: 188-210). This text is of uncertain date, having been placed in the 1st Intermediate Period (Gardiner 1909) or late Middle Kingdom (Simpson 2003). The surviving copy dates to the 19th Dynasty, and Lichtheim (1973) suggests that the text was also composed at that time. It describes a world turned upside-down, in which valuable trade goods like gold and precious stones, woods, and oils from foreign countries are no longer arriving in Egypt. By contrast, the humble skins, reeds, and bird-grease still arriving from the oases is ironically described

as suddenly valuable and significant. Setting the problematic date of the text aside, it suggests two things: that the oases are sufficiently within the Egyptian sphere to not be isolated by general social and political upheaval; and that the characteristic produce they bring is not seen as particularly valuable until it has become the only goods available for purchase (Giddy 1987: 64).

In light of the apparent administrative closeness of the Nile Valley with the *wḥꜣt*, it is interesting that oasis tribute is shown in the tombs in conjunction with tribute from foreign lands: in the tombs cited above, Oasites, Nubians, Cretans, and Syrians bring the distinctive produce of their own regions in parallel registers. This raises questions about the "foreign-ness" of the *wḥꜣt*, which would in this period appear to be bureaucratically Egyptian but conceptually distinct. The Oasites themselves are shown with distinctive tailed kilts and shaggy hairstyles, although this difference does not seem to reach the level of stereotyped difference from the "Egyptian" character type that the other populations seen in New Kingdom art display (Boozer 2015; Hubschmann 2010; Giddy 1987).

The position of the oases relative to the Nile Valley seems to undergo a subtle shift later in the New Kingdom. The 19th Dynasty documents record the same produce familiar from the 18th Dynasty, but also include precious stones and other ingredients used for medicine and magical recipes (Giddy 1987: 84-85). The term *wḥꜣt* begins to appear in association with the word *ḏw*, "mountains," as in the Merneptah inscription at Karnak. The identification of the oases with the desert mountain-country suggests that the *wḥꜣt* are being conceived of as a frontier-land or barrier, and indeed they are described as being between Egypt and an attack from the west, perhaps from "Libyan" tribes (Giddy

1987: 92). Papyrus Anastasi IV (Reign of Seti II), is a letter (presumably from a supervisor) admonishing an Egyptian treasurer for meddling with the *Ṯktꜣnꜣ*, a group of hunter-scouts who are apparently permitted to range freely in the *Tꜣ wḥꜣt* at this time. The treasurer is sharply rebuked and told that if it happens again he will be removed from his post and put at the mercy of the *Ṯktꜣnꜣ*, who seem to be a separate tribe or ethnic group with whom the Egyptians resident in *wḥꜣt* are at great pains to remain diplomatic relations (Giddy 1987: 91). This could be because they themselves constituted a threat to Egyptian interests in the *wḥꜣt*, or because they where holding a more serious threat, perhaps from another group, at bay.

The "Libyan Tribes"

The term Libyan, or "Tjemehu/Tjehenu," is usually viewed as an ethnonym describing a cultural bloc of nomadic tribes in the Western desert beyond the Egyptian oases, and north to the western Nile delta and Mediterranean coast. While the ancient Egyptians might be excused for applying a blanket epithet to any nomadic group originating from the Western desert, modern Egyptologists should be more careful about collapsing the population of a considerable geographic area and several centuries of possible cultural change into a single ethnic unit. This is amply demonstrated by Juan Carlos Moreno Garcia (2018), who argues for greater attention to the differences between attested tribes from the Western desert; the subject has also been taken up by several other scholars (O'Connor 1990; Snape 2003; Hope 2007; Hubschmann 2010). Untangling the identities of the "Libyan Tribes" is a subject for a different dissertation. What matters here is that there were populations in the desert outside the Great Oasis, distinct in culture and lifeways from both the settled and mobile oasis indigenes; the

Egyptians often referred to these groups simply as “Libyans.” If the people of the oasis were not considered foreigners, these desert nomads seem to have been: they appear as enemies in military inscriptions, and are named in execration texts (Moreno Garcia 2018; Snape 2003).

Nevertheless, the Egyptian administrators operating in the oases collaborated with “Libyan” groups, who may have been functioning as middlemen or even deputies on routes such as the Abu Ballas trail (Förster 2013). Tablets preserved from the Old Kingdom governor’s residence in Ain Asil mention the visit of a “chief” of a place called Demi-iw, not otherwise attested but certainly somewhere to the west, perhaps even in the area of Jebel Ouenat far to the southwest (Förster 2013; Pantalacci 1998). The tablets show that the governor’s palace in Ain Asil was doing everything possible to facilitate the journey of this chief to Dakhla, including the provisioning of water storage jars and grain along his way (Förster 2013). This suggests a diplomatic cast to the meeting, and the existence of friendly relations between Dakhla and the nomadic groups to the west. Considering that the provisions (water jars and grain) called for to “open the way” for the chief of Demi-iw are the same as those supplied to the stations on the Abu Ballas road, it may even be possible that one of the objectives of maintaining this path was to facilitate the travel of “Libyan” traders to the oases.

At the same time, as early as the Old Kingdom and perhaps even before the establishment of a governor there, there is evidence of an Egyptian security apparatus on the borders of the oasis. This is mostly comprised of hilltop watch-posts, from which it would have been possible to survey the roads approaching the oasis from the desert on the southwest and from the road to Kharga on the east (Darnell 2013a; Kaper and

Willems 2002). The surveillance of the deserts around the oasis continues and develops in later periods, taking advantage of the same system of roads and supply stations established for trade (Esposito 2014). The concern with surveillance implies a threat, suggesting that Egyptian relations with groups circulating in the desert were not entirely secure. A 1st Intermediate Period inscription of the nomarch Tefib claims that, "when night falls the one who sleeps on the road praises me; like a man in his house is he, the fear of my army being his protection" (Brunner 1937: 43-44). The need for patrols on the roads indicates a possible danger from highwaymen, suggesting that the surveillance was concerned with protecting the valuable cargo of trade caravans from outlaws, and not just making sure that it was appropriately taxed. Desert road outlaws were theoretically likely to have been nomadic groups who were familiar with the arid terrain and able to operate in it outside of the official infrastructure (for historical instances of Bedouin groups attacking caravans, see, for instance, Seland 2018).

The imprecision of "Libyan" as an ethnic designation obscures a nuanced reading of interactions with different nomadic groups from the Western desert. Occasional references are made to Libyans being put down by Egyptian military missions, such as the report of Sneferu that he brought into Egypt 1,100 live Libyan captives and 23,000 cattle (Wilkinson 2000). For the most part, however, the "Libyan" tribes seem to have coexisted, or even integrated, fairly peacefully with their Egyptian neighbors. Libyans are very seldom depicted before the New Kingdom, although they are occasionally included among other foreigners in the Old Kingdom (Poo 2005; Snape 2003). In some instances stereotypically Asiatic figures will be labeled as Libyans, making their inclusion as enemies or foreigners seem almost an afterthought (Poo 2005). In the court of Akhenaton

at Amarna Libyans are both attested as companions of the king and are shown bringing tribute in the manner of other foreigners (Trigger et. al. 1983).

Like the Nubians, the Libyans were a frequently-encountered other made up of many different groups, almost certainly with internally different languages, customs, subsistence strategies, and political aims (Moreno Garcia 2018). Some Libyan groups were major providers of cattle to the Nile Valley, and were probably entering settled areas as part of their seasonal rounds (Moreno Garcia 2018). Despite this ability to access the Nile Valley, the Libyans posed no recorded territorial threat to Egypt until the very end of the 19th Dynasty, essentially at the limit of study for this dissertation (Snape 2003). They and their herds are depicted in the Middle Kingdom tombs at Beni Hassan, showing their involvement with Middle Egyptian administrators (Newberry 1893; Kanawati 2010). The same tombs depict another group of Libyans bringing African trade goods as tribute, suggesting that some individuals were primarily traders rather than herders. In either case, groups falling under the designation "Libyan" may have been ethnically distinct from Egyptians, but they were not foreign in the sense of unfamiliar. It would have been their seasonal circuits between the center and the outer limits of Egyptian territory, and their unsettled and difficult-to-control way of life, that was discouraged by the rhetoric of the Egyptian state and gave the Libyans their foreign status.

Arguably, the foreign-ness of Libyans was a function of their proximity to the desert. Libyans doing business within the Nile Valley seem to have been largely unremarkable, but the *idea* of roaming Libyan tribes in the desert may have fit the template for propagandistic Egyptian narratives about foreigners. This is an example of the contrast between *topos* and *mimesis* discussed by Antonio Loprieno (1988) in his

work on Egyptian literature about foreign lands and people. The tension between *topos*, or a conceptual system of stereotypes, and *mimesis*, or the patterns of interaction created by pragmatism and individual relationships, characterizes race relations around the world in the modern era, and it is not unreasonable to assume that it was the dominant, if complicated, Egyptian approach to thinking about the inhabitants of the desert lands.

The Situational Spectrum of Foreignness in the Egyptian Deserts

As discussed above, the oases were remote from the Nile valley but not, in any period, particularly isolated from it, as they were connected by established routes and by imperatives of bureaucracy and taxation. Toponyms such as *wḥꜣt mḥtyt* and *wḥꜣt rsyt* are often written with the "foreign lands" or "island" determinatives, enforcing the idea that the oases are separated from the main body of Egypt. The latter has been identified by Pantalacci (2013) as a sign of "foreign-ness," equivalent to the three-hills "foreign lands" determinative. The ways in which oases are practically and conceptually like islands will be discussed more in Chapter 7.

The status of the indigenous oasis inhabitants, such as the Skeikh Muftah population, is ambiguous. The Egyptians reliably made visible distinctions in their depictions of racial and geographical types, and the "oasis-dwellers" do not entirely escape stereotyping: in New Kingdom Theban tombs tribute-bearers from the oases have a distinctive hair color and style of dress, indicating that they were not seen as entirely Egyptian (Boozer 2015; Hubschmann 2010).

However, the integration of the oases into Egyptian administrative units, economic systems, and taxation schemes suggests that, at least officially, the oases and

their population were functionally part of Egyptian territory. The fact that the Old Kingdom Egyptian governors of Dakhla were primarily concerned with trade routes beyond the oasis proper, not subduing the oasis inhabitants, suggests that they were operating not as colonizers but as functionaries, and that their mandate to live in and conduct business from oasis cities was not in dispute. Archaeological evidence indicates that the Sheikh Muftah population in Dakhla mixed or acculturated with Egyptian newcomers during the Old Kingdom, without a noted record of conflict (Mills 1999). This would make it seem that, even in the Old Kingdom, the oases were not being governed under a "foreign land" paradigm, but were accepted as relatively Egyptian: at the frontier, but not beyond it.

This relationship may have lapsed somewhat in the 1st Intermediate period, although the primary evidence for this is the Mentuhotep II inscription that refers to the *wḥꜣt* as newly "annexed." Whether this refers to a genuine military operation or is simply an example of the language of territorial consolidation at the beginning of the Middle Kingdom is up for discussion. It seems to indicate that the oases are brought into a closer relationship of taxation that results in the development of agricultural estates that produce for the Nile Valley. This relationship develops throughout the Middle and New Kingdoms. If the index of Egyptian-ness was, as has been suggested, a willingness to adhere to Egyptian standards of "civilized" behavior (Hubschmann 2010; Baines 1996), then it seems that the oasis-dwellers, agriculturalists who lived cheek-by-jowl with the Egyptian oasis administrators, used the same sort of bowls, and paid their taxes, should have qualified.

Nevertheless, most of the evidence we have for oasis administrators, in the form of tombs, stelae, and statues, comes from the Nile Valley (Giddy 1987: 163). The statue of Nḫt-sꜣs was found at Saqqara, and the tombs of known *ḥꜣty' wḥꜣt* are chiefly in the Theban necropolis. This has been taken as evidence that the oases were not considered Egyptian enough for burial (as Egyptians are supposed to have desired burial in Egyptian soil), but may simply reflect that most *ḥꜣty'* were from prominent Theban families. At the same time, the *ḥꜣty' n wḥꜣt mḥtyt* Amenhotep was buried in Bahariya, where he governed, either indicating that it was Egyptian enough for him or that he was from an Oasite family.

Additional evidence for the conceptual division of the oases from Egypt, however, can be seen in the fact that even in the New Kingdom, when the *wḥꜣt* appear most integrated with the Nile Valley, oasis produce is shown in the "tribute" paradigm and in scenes that are parallel to goods being brought by other, "foreign" territories. This either indicates that the oases can be construed as conceptually distinct from Egypt, or acknowledges the distance that the goods had to travel to be brought into the Nile Valley.

In my view, the ambiguity of the position of the oases *vis a vis* the Nile Valley and the difficulty of pinning down the "Egyptianness" of oasis inhabitants indicates that the hard binary between Egyptian and foreign (which we might view as a parallel of the binary between Nile Valley and desert) may be not a productive framework for thinking about relationships between these territories. The *wḥꜣt* provide an Egyptian borderland, where relationships between the Nile Valley and outlying regions can be more easily negotiated. In Chapter 7, I will explore the ramifications of this ambiguity for the conceptual framing of the desert and its associations, especially in cult. Here, however, I

am more interested in how the oases serve as intermediate spaces between the Nile Valley and desert environment, including the network of roads that traverse it.

ROADS, NETWORKS, AND TRADE

We now understand that the Egyptian deserts were crossed in Pharaonic times by a network of roads and tracks utilized by traders, miners, and military, as well as by foreign and Egyptian scouts and messengers. Especially in the last two decades, a push has been made to develop desert road archaeology as a field of study in Egyptology (Sidebotham, Gates-Foster, and Rivard 2019; Paprocki 2019; Rossi and Ikram 2018; Forster and Reimer 2013; Darnell 2002; others). The study of the road networks has produced a wealth of information, still being collated and analyzed. Due to factors of preservation, much of the road archaeology that has been conducted so far focuses on Roman and later use, but there is also a wealth of information on Pharaonic and even earlier travel in the deserts, especially in the southern part of the Western desert. In this section, I focus on some of that evidence in order to explore the foundation and use of these desert roadways, as well as the social and political situation of the people who were using them.

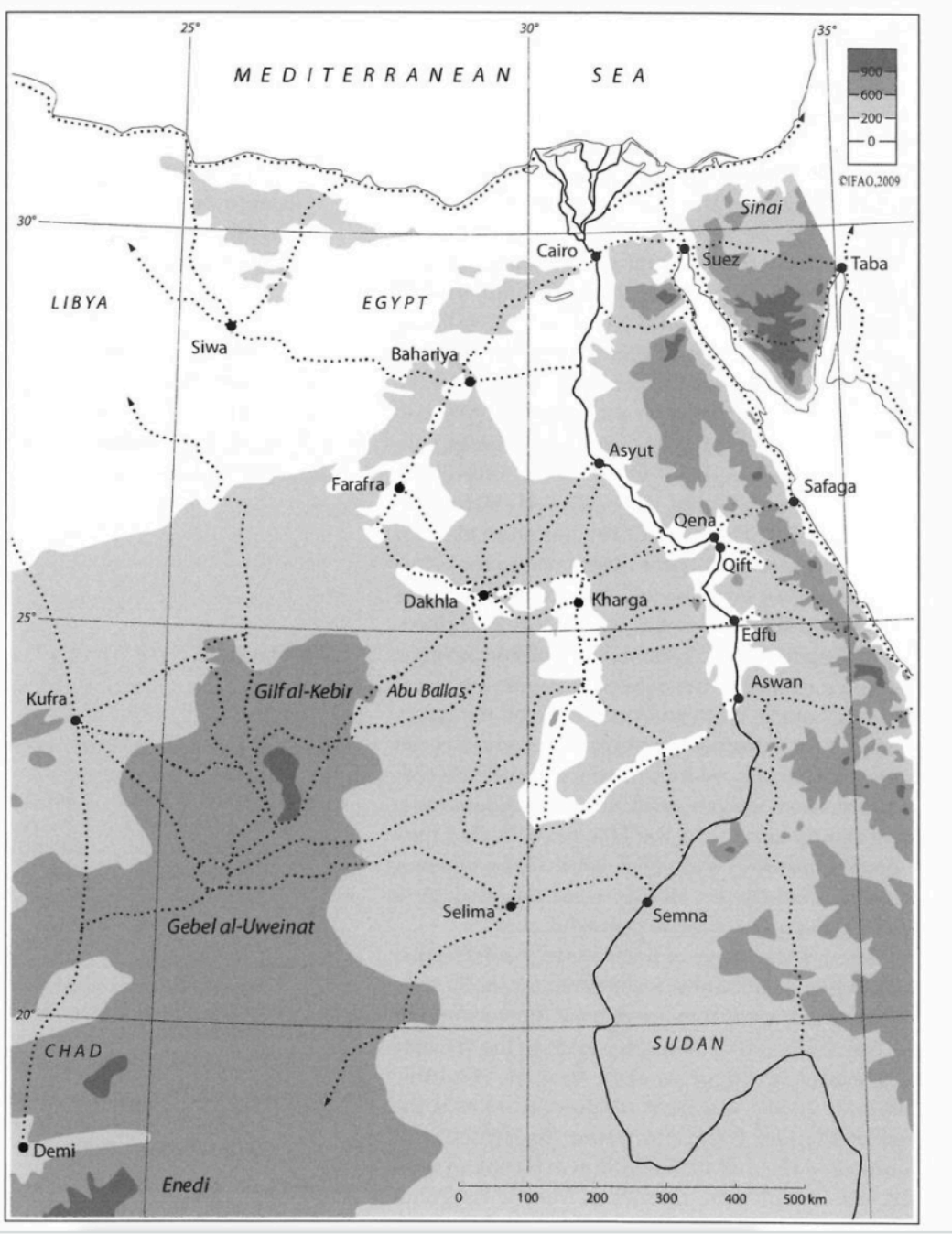


Figure 4. Map of the main desert routes, showing connections with oases and cities in the Nile Vall**ey.** Pantalacci 2013b.

As discussed in the previous chapters, access to what is now the desert was an important factor for early settlements in the Nile Valley. I have argued that this was

because the relatively rapid transition from mobile pastoralist to settled agriculturalist lifeways was characterized by a blended subsistence strategy, in which pastoralism remained important for a segment of the population in years when rainfall and other environmental factors made it possible to graze herds in the arid areas outside of the Nile Valley.

As this style of grazing waned in importance, however, access to the desert remained an important factor in the economic success of many cities. This access allowed population centers to aggregate and control valuable commodities that had to be brought in from the desert: mined materials such as gems, precious metals, and stone; and luxury trade items from Eastern and Sub-Saharan Africa such as aromatic woods, ivory, and ostrich feathers. Being the port of entry for these materials into the Nile Valley contributed to the prestige and political power of many cities. Additionally, the value of mined and traded commodities, and the desire of the administration to control them, created an incentive to create and maintain an infrastructure for acquiring them. This took the form of a network of desert roads along which travel could be made safer and more efficient, but also more readily controlled by the bureaucracy of the central administration. Figure 4 shows some of the major desert routes and their connections to the cities of the Nile Valley. The use and maintenance of these routes waxed and waned through Dynastic history, as will be discussed below, but the major routes largely stayed in use throughout the period of this study, because the topographic, hydrological, and cultural factors that determined their courses in antiquity have remained relevant. Several have been paved in the modern period, and remain the major arteries of travel through the Egyptian deserts. Chapter 4 considered the road networks of the Eastern desert in some

detail. Here, I take as a case study the Abu Ballas trail, which runs southwest out of the Dakhla oasis.

Case study: the Abu Ballas trail

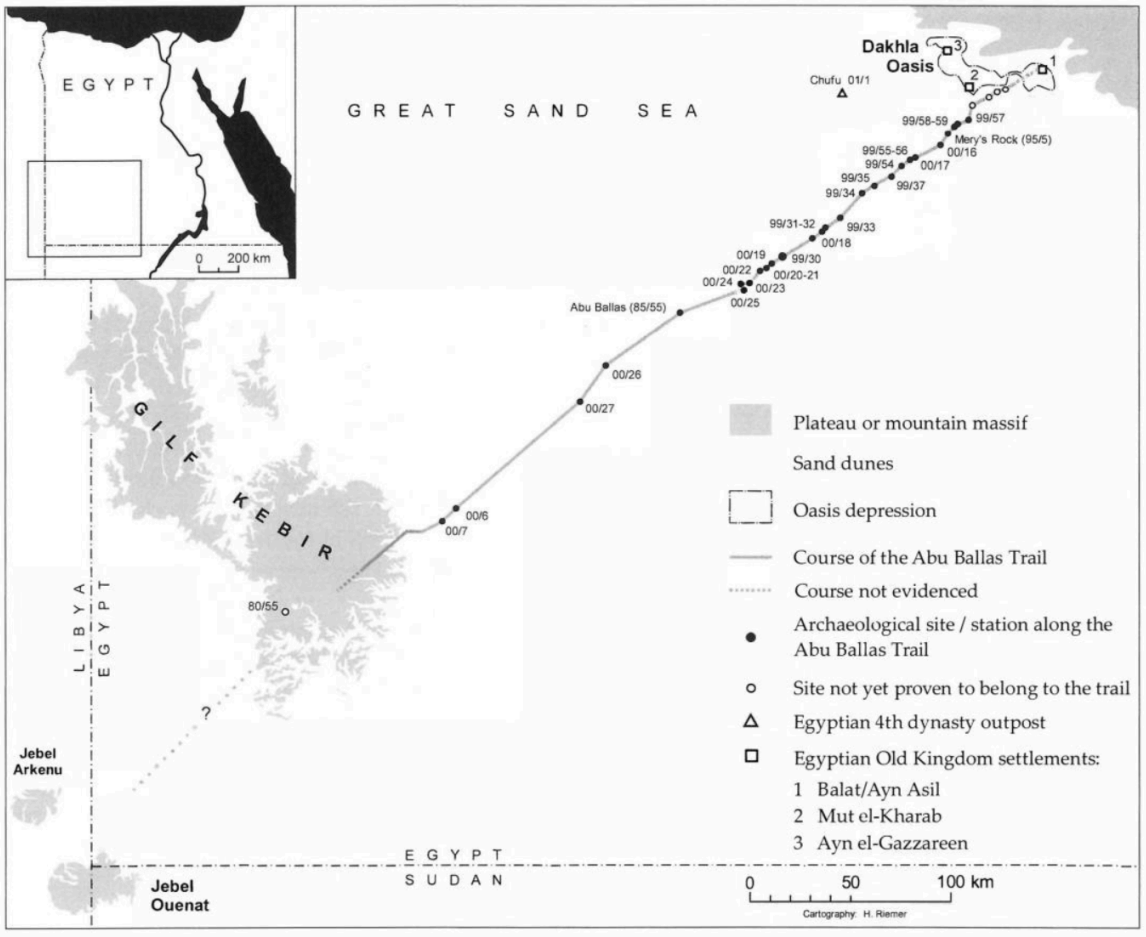


Figure 5. Abu Ballas trail. From Förster, F. "Beyond Dakhla: The Abu Ballas Trail in the Libyan Desert (SW Egypt)." In F. Förster and H. Riemer, eds., *Desert Road Archaeology in Ancient Egypt and Beyond.* Köln: Heinrich-Barth-Institut. 298.

Taken as a whole, the network of Pharaonic roads in the Egyptian desert is overwhelmingly complex, and analysis of it is plagued by chronological uncertainties and

a lack of comprehensive data generally. I will therefore rely on a case study to demonstrate the creation of an official track and the changes in its utilization over several centuries of use. Without suggesting that all desert roads worked the same way, I believe it is constructive to examine the mechanics of travel and logistics on one trail in depth. I have chosen the Abu Ballas trail because it extends deep into the essentially waterless Western desert, illustrating the possibility of large-scale expeditions under extremely difficult conditions, and because it has been extensively surveyed, producing material from roughly 3000 BCE onward (Förster 2013).

The Abu Ballas trail crosses approximately 400 kilometers of desert southwest of Egypt's Dakhla oasis, almost certainly connecting it with the plateau of the Gilf Kebir in Libya. The existence of the route suggests considerable official investment in infrastructure for reaching areas far to the west and south of the Nile Valley, probably for trade with Sub-saharan partners, either directly or through nomadic middlemen. A route of this kind would have allowed Egyptian traders access to valuable products like ivory, ebony, feathers, animal skins, and incense, without having to contend with the Nubian polities on the Nile route into central Africa. The early establishment of the Abu Ballas trail in the late Old Kingdom, (c. 2200 BCE), demonstrates the official concern of Egyptians with desert trade early in Dynastic history.



Figure 6. Registration of African trade goods in the Nile Valley. Tomb of Rekhmire, 18th Dynasty (TT100).

Early History

Prior to the foundation of the Abu Ballas trail, the area of the Dakhla oasis and surrounding desert was, as far as we know, inhabited by people belonging to cultural complex referred to as Sheikh Muftah, briefly discussed above. The Sheikh Muftah people were probably remnants of nomadic Saharan pastoralist groups who retreated into the climate refugia of the oases as the Sahara dried at the end of the African Humid Period. Their presence of these groups is identified by Clayton rings, discussed above. The Clayton rings, which were apparently an important part of a desert traveler's toolkit, are distributed in caches around the Dakhla oasis. It is interesting to note that they normally are cached unobtrusively in discreet places; furthermore, their positions do not correlate to marked road or track systems (Reimer 2013). This suggests that the Sheikh Muftah people were performing their desert navigation either by a fixed, possibly

astronomical, system, or with a learned suite of subtle landmarks and other geographical features (Reimer 2013). In any case they were not, as far as we can tell, reliant on systems of way-marking that required the artificial modification of the landscape. This is unlike the system used by the official Egyptian road-builders.

Abu Ballas in the Old Kingdom

By the 4th Dynasty, the Dakhla oasis was probably already well-connected to the Nile Valley by means of the Girga Road, which led from Thebes in the Nile Valley to the northern end of Kharga oasis and thence onward to Dakhla (Darnell 2013). The Abu Ballas trail was doubtless meant to extend this route further into the Western desert, allowing access to Kerma, Darfur, and beyond (Figure 7).

The trail is a more or less straight shot from its point of departure in the oasis to the Gilf Kebir, probably aiming for the next reliable water source of Jebel Ouenat, some 400 kilometers distant from Dakhla. This "straight-ahead" layout ensures that the trail reaches its destination along the shortest possible path, but may also be evidence of the use of astronomical rather than landmark-based navigation (Reimer 2013). This could mean that it was initially laid out with the assistance of local guides, accustomed to navigating in the desert in this manner. It may also point to the expertise of specialists accustomed to nautical navigation, who would have been versed in wayfinding by astronomical observation. There are several interesting resonances between desert and sea travel in Egypt, which I will return to later in this chapter.

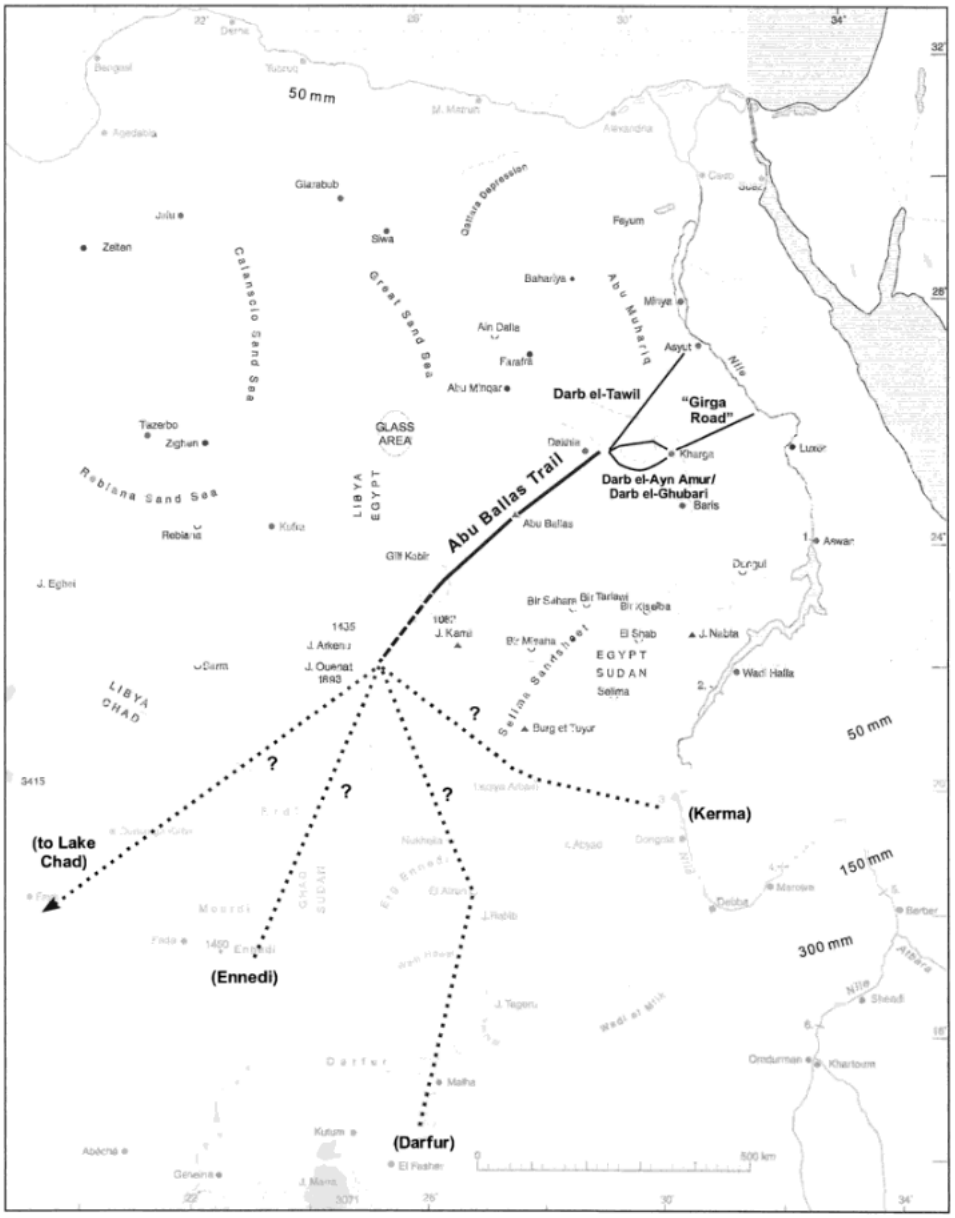


Figure 7. The Abu Ballas trail in context with the Girga road, and possible direction of onward travel (Förster 2013).

Cairns

However the path of the Abu Ballas trail was initially set, the trailblazers took measures to ensure that subsequent travelers would not need to rely on particular navigational technologies. The route was marked by a system of stone cairns, called

alamat (“flags”) in Arabic, carefully placed for maximum visibility. Many of these cairns have remained in place until the present day, and, along with the visible animal tracks connecting them, are one of the main pieces of evidence by which surveyors have located the course of the ancient road. The technology of *alamat* is especially effective on account of its simplicity: most cairns are composed of only a few local stones, positioned on ridges or in other eye-catching spots. No other materials or interventions are required. The trick of *alam*-building is to arrange the stones in an unnatural way. Any traveler with a few days’ experience in the desert landscape develops an instinct for the natural behavior of stone; exceptions, where stone has been forced into postures that it could not naturally assume, are immediately noticeable, even startling. In this way, the trail can be flagged by a serious of inter-visible cairns, a system which can flexibly guide the traveler along long straight passages, around obstacles, through dune fields, or across rough terrain.

It is significant that there is no evidence of the use of cairns for waymarking in this area before the construction of the formal, Pharaonic roads: all of the cairns that have been located are in association with these trails, which in turn have been dated by the pottery, inscriptions, and other cultural detritus found along them (Reimer 2013; Förster 2013; Hendrickx, Förster, and Eyckerman 2013). Of course, the *alamat* themselves are essentially un-dateable, and nothing other than their material associations suggests that the cairns along the Abu Ballas trail are contemporary with the Pharaonic foundation of that path. However, given the evidence we have, it seems likely that this is the case.

If we accept that the cairn system is a Pharaonic innovation, it opens up interesting observations about the nature of desert travel and the relationship of travelers

to the landscape. The consistent and thorough use of *alamat* to mark the Abu Ballas trail suggests "well-equipped and organized large-scale desert expeditions that were only made possible by the socio-economic potential of the centralized administrative and organizational power of the Egyptian state," and indeed we shall see in this case study how labor intensive the maintenance of this route was, in other ways (Riemer 2013). The cairn system opened up use of formal roads to less experienced travelers, or to travelers with experience of desert navigation but without local knowledge. A caravan captain with experience of the cairn system could therefore follow a path that they had not travelled before, without relying on local guides.

In more esoteric terms, this means a shift in landscape knowledge. As Heiko Reimer (2013) points out, the nomadic groups native to the area presumably navigated based on learned information about the landscape, topographical and environmental features that served as mnemonic devices not only for wayfinding, but for creating a sense of place in the phenomenological sense, as articulated by Christopher Tilley (1994). As discussed in Chapter 4, this is a landscape approach frequently adopted by pastoralists and nomads, for whom recognizing landscape features is a critical part of social and economic life (Smith 2005; Chadwick 2007).

The application of the cairn system created an artificial topography that worked not on the logic of the landscape, but on the logic of the central authority. Reimer (2013) describes this as akin to the modern highway system: a driver can ignore the landscape, because the task is to follow the paved road surface, which has to lead from one "place" to another. In this way, the *alamat* serve as an infrastructure of travel and communication that carves out "official" corridors from the desert landscape. They create a formalized

space, overseen and maintained by the state, that opens up the landscape to bureaucratic management, structures of central control, and ultimately, imperial activity. The practice of using straight, marked roads to make desert travel standardized for official Old Kingdom traffic is reminiscent of the ideas in James C. Scott's (1998) *Seeing Like a State.* In Scott's view, the ordering of nature and space by a central authority is a means of controlling and surveilling activity that would otherwise take place in an autonomous and organic way not necessarily legible to a bureaucratic system. Functioning in the landscape, such a system "flattens" the topography by making it less necessary to note (because the important landmarks are artificial).

Water Depots and Re-Supply Stations

The *alamat* were not the only official infrastructure investment that made passage on the Abu Ballas trail efficient and standardized. Less elegant, but far more impressive logistically, is the system of re-supply and watering stations installed along the way in order to enable the passage of large caravans. The best pack animal for desert travel that the Egyptians had at their disposal was the donkey, which can go for about three days without water (Förster 2013). During the Old Kingdom and early First Intermediate Period use of the Abu Ballas trail, the entire route was outfitted with supply stations spaced at most roughly three days' journey, or about 25-30 kilometers, apart (Förster 2007, 2013), although many, especially closer to Dakhla, are much closer together. These stations enabled long-distance caravan travel through the waterless stretch of desert, but provisioning and manning them would have been no mean undertaking.

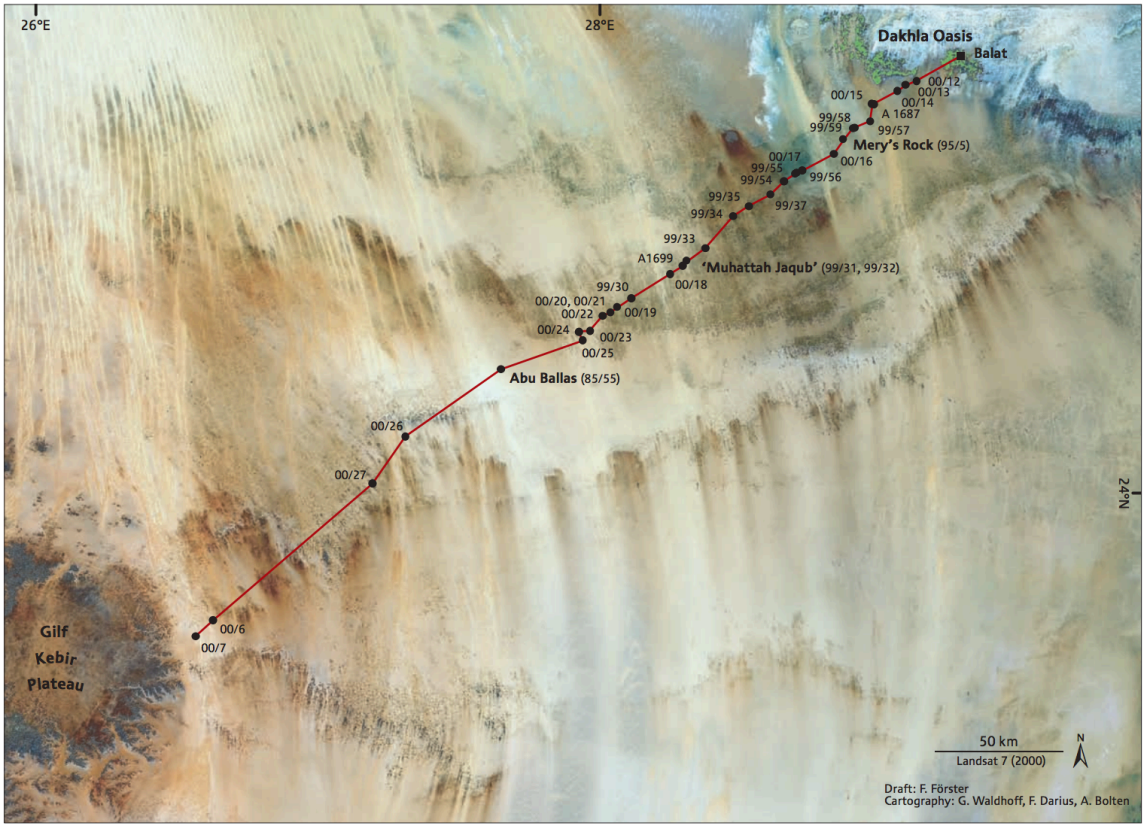


Figure 8. Resupply stations on the Abu Ballas trail (Förster 2007).

Some thirty resupply stations, of varying sizes, have been located along the Abu Ballas trail (Förster 2007). Of these, the great majority are on the half of the trail nearer Dakhla (see Figure 8), whether because they were easier to maintain, or because the others have not been discovered, or because there was an intermediate destination in the vicinity of Abu Ballas (the midpoint of the extant trail) that saw more frequent traffic.

Archaeologically, the resupply stations appear as dumps of large pottery vessels. The jars are of a form and fabric characteristic of Dakhla, but are larger than their counterparts in the oasis, with a capacity of about 30 liters (Förster 2007; Hendrickx, Förster, and Eyckerman 2013). Many of the vessels bear potmarks known from Ain Asil

in Dakhla, particularly the governor's palace, indicating both a secure Old Kingdom date and the official nature of their production and distribution (Förster 2013; Pantalacci 2013; Soukiassian et. al 2002). This identifies the stations as part of the official apparatus of governance in this region, directed by the Egyptian governors in Dakhla.

Initially, the jars would have to be transported by donkey to each of the stations (for figures on donkeys and loads, see Förster 2007). Once installed, they could be refilled with water and other provisions carried in lighter-weight animal skins, easing at least some of the difficulty of transporting material out to the remote stations. Although we have no way of accurately guessing the frequency of traffic on this route, the creation and maintenance of these stations suggests that it was intense enough to make such infrastructure layout worthwhile: staying ahead of, for instance, water evaporation and seep from the unglazed jars, not to mention water use by the passing caravans, would have meant fairly frequent refilling trips sent from Dakhla.

It also appears that some of these stations were at least periodically staffed. In addition to the storage vessels used for water and probably grain, survey of some of the larger stations has yielded pottery for dining and making bread, stone and ceramic tools, game boards, rock engravings, built shelters, and other evidence of people staying for some time (Förster 2013). Whether these individuals were in place to guard the caravan provisions and provide them with fresh bread, or for some other military or strategic reason, is unknown, but they were certainly part of the provisioning system on the Abu Ballas trail.

This evidence suggests that, during the Old Kingdom and the early Second Intermediate Period, the trail was a relatively lively corridor through the desert, with

frequent official traffic in the form of long-haul donkey caravans, re-supply teams, and station staff and their relief shifts. Although the use of the trail is still uncertain, it was clearly an important enough corridor that the central Egyptian authorities, or at least the Egyptian governor in Dakhla, were willing to provision for its management and maintenance.

Use in Later Periods

Middle Kingdom

The supply system declines in the Middle Kingdom and Second Intermediate period, with little material culture dating to either era (Förster 2013). The route was probably still traveled, perhaps by smaller groups that could make the passage without relying on the supply depots (Förster 2013). It is worth remembering that caravans of a few people and a dozen animals (or fewer!) will leave even more fragile traces than groups of several times that size, and that ancient roads probably saw more traffic than remaining archaeological evidence indicates.



Figure 9. Instription of Mentuhotep II at Jebel Ouenat (Pantalacci 2013).

Very little pottery that can be dated to the Middle Kingdom appears on the Abu Ballas trail, suggesting that the administration in this period was not as concerned with maintaining it (Hendrickx, Förster, and Eyckerman 2013). However, there is a possibility that the supply depots,

although no longer manned, were still in good enough condition that at least some of the vessels could be used for the storage of water and grain. Barley grains found in one of the Old Kingdom vessels at the supply station of Jaqub 00/20 returned a c. 12th Dynasty radiocarbon date, suggesting that at least some of the infrastructure from the Old Kingdom system was still useable (Förster 2013). In addition, an inscription of Mentuhotep II at Jebel Ouenat, discovered in 2008, provides evidence that the route was still in intermittent use to its western reaches (Clayton, Trafford, and Borda 2008). The inscription (Figure 9) mentions both Yam and another, otherwise unattested, country or region called Tekhebet, and shows various trade goods being presented to the Egyptian pharaoh. The propagandistic elements of the inscription are consistent with Mentuhotep II attempting to reconsolidate Old Kingdom economic interests at the beginning of the Middle Kingdom, perhaps in conjunction with the "annexation" of Dakhla mentioned above. Although essentially a stand-alone piece of evidence, the inscription indicates early Middle Kingdom awareness and probably use of the Abu Ballas trail as a trading route. Unfortunately, little else points to use of the western part of the route during this time period, an era when we know that the central administration was struggling to keep the oases under control.

During the First Intermediate Period the oasis governors had become more independent, showing themselves with royal attributes and even harboring fugitives from the Nile Valley (Förster 2013). In the early 12th dynasty Senwosret I sent a military expedition from Thebes to "secure the land of the oasis dwellers," which had gotten out of hand (Giddy 1987; Förster 2013). The miscreants may well have been tax evaders, attempting to escape the oasis into the desert after the new tax schemes levied at the

beginning of the Middle Kingdom (Moreno Garcia 2018). A stela of an individual named Kꜣy reports that his job is to "patrol the oasis roads," further suggesting a need for surveillance and control in this perod (Giddy 1987: 57).

A 12th Dynasty inscription of a steward named Mery, the only other Middle Kingdom inscription on the Abu Ballas trail, records an expedition to "search out the oasis dwellers," although whether this is for trading purposes or some kind of punitive military action is difficult to assess (Burkard 1997). However, 12th Dynasty interest in the maintenance of desert road systems in the area can be seen in a Dakhla inscription of (probably the same) Mery, which records his order that a water depot be installed on the road to Kharga (Hendrickx, Förster, and Eyckerman 2013).

Second Intermediate Period and New Kingdom

New Kingdom traffic on the Abu Ballas trail is sparsely attested, but enough remains to conclusively prove that at least portions of the trail remained in use (Förster 2013, Hendrickx, Förster, and Eyckerman 2013). Most of these remains are found on the part of the trail closest to Dakhla, suggesting that the old resupply stations were being reused by hunting parties and security patrols (Pantalacci and Lesur-Gebremariam 2009; Darnell 2003; Kaper and Willems 2002). Some New Kingdom pottery does occur on the western half of the trail, suggesting a revival of caravan trade, although not at the scale seen in the Old Kingdom (Förster 2013). Evidence suggests sporadic use of the trail throughout the Ramesside period, although the motives of this travel are unknown.

Thoughts and Implications

The Abu Ballas trail provides an example of a trans-Saharan path that remained in use for several centuries. It demonstrates the ability of official Egyptian expeditions to venture far into the desert, even where it was completely waterless. The drying of the Sahara through the Pharaonic period may be a factor in the gradual decrease in traffic on the trail, although the provisioning of Old Kingdom water depots indicates that natural water sources did not exist even at this early date. Perhaps the destination of the trail, somewhere in the Gilf Kebir, was greener and supported a population in the Old Kingdom that no longer existed in the later periods, removing the motive for Egyptians to travel in this direction.

The Abu Ballas trail provides an exceptional example of the logistical efforts required to establish and maintain infrastructure for desert travel. The technologies that made moving along this route possible, such as cairns, donkey trains, water depots, and management of the supply system, can be extrapolated to other Pharaonic desert road systems. In many of its particulars, the Abu Ballas road presages later and better-understood road systems. Techniques such as water caching are common on Roman and Islamic routes (Wilkinson 1980; Whitcomb 1996). Herodotus makes note of the strategy and attributes it to the Persians, although they were clearly not the first innovators (Hendrickx, Förster, and Eyckerman 2013).

The construction of cairns and supply depots are pragmatic landscape interventions that also alter the appearance and the experience of space. The creation of an official route with official infrastructure opened the landscape of the Western desert to Egyptians who were not indigenous to the area, and provided visible proof of state

influence in a landscape otherwise devoid of political markers. It altered the dominant paradigm of navigation, doing away with the need for landscape learning or local knowledge. This differs from the marking of paths with petroglyphs discussed in Chapter 4 in that the official nature of the trailmarking would have been apparent even to un-official travelers. The propagandistic tone of the Mentuhotep II inscription at Jebel Ouenat underscores the intention of the Egyptian road-builders to use the route for expanding the territory considered to be under Egyptian influence or control (Pantalacci 2013; Förster 2013). This motive alone may be largely responsible for launching the New Kingdom expeditions the reached the Gilf Kebir.

Roads and outposts also expand the potential for surveillance, which is almost certainly why the nearer branch of the Abu Ballas trail was renovated during the New Kingdom, when surveillance of desert traffic had become a more pressing political and strategic concern. This surveillance, or the potential for the mounting of desert patrols outside Dakhla oasis, was a method of extending the defensible frontier of Egypt outside of the population center of the Nile Valley. The imperial logic of the road system, with its artificial landmarks and resources, also created a landscape layer that could be abandoned and reoccupied without the need for intermediary memories. That is to say, as long as the logic of Egyptian state navigation and road-building remained intact in the Nile Valley, the Abu Ballas trail could be abandoned for decades and then put back into service by any team of travelers acquainted with the cairn system. This both complements and inverts the systems of waymarking discussed in Chapter 4. As with the petroglyphs, marking of the Abu Ballas trail holds and communicates landscape memory and suggests the possibility of safe passage. However, the legibly official infrastructure of the Abu

Ballas trail holds landscape memory in a different, state-mediated and system-driven, register of material culture, intended to be recognizable to those who were familiar with the official mode of way-marking.

The case study of Abu Ballas highlights several important issues in thinking about ancient desert roads, among them: the possibility of interactions with indigenous groups, the early creation and maintenance of "official" Pharaonic space, the logistics and economics of this maintenance, the degree of specialization of the personnel traveling, the rise and fall of traffic on these roads, and the possibility of their carrying differing kinds of traffic (trade, military patrols, hunting parties) as different situations arose.

THE EASTERN DESERT ROADS TO THE RED SEA

The Abu Ballas trail seems to have had two primary functions: to enable contacts and trade with groups to the south and west of the Egyptian oases, and to create infrastructure that made it easier for the western frontier of Egyptian territory to be patrolled and surveyed. In some periods, these concerns were arguably closely aligned, with the ease of exchange between Egyptian and other parties being an index of Egypt's security in the region.

The next case study, in which I examine the Wadi Hammamat route across the Eastern desert, focuses on slightly different concerns. Unlike the sandy and largely waterless expanse of the Western desert, which stretched far into the continent and held populations with whom the Egyptians were sometimes in conflict, the Eastern desert was a mountainous and comparatively well-watered region that ended on the shores of the Red Sea. As discussed in Chapter 4, travel across the Eastern desert was largely

determined by the topography, especially the traversable wadi systems that pass through the Red Sea mountains. Travel in this landscape was primarily focused on two objectives: the Red Sea coast, and the numerous mines and quarries in the Red Sea hills. The extraction of mineral resources is the subject of Chapter 6. Here I will discuss desert traffic associated with maritime trade in the Red Sea.

Eastern desert crossings differed from travel in the Western desert in several ways. For one thing, the landscape of the Eastern and Western deserts varies considerably. For another, the trip to the Red Sea was often only the beginning of the journey for teams making the crossing: in many cases, they were carrying their boats with them, and traveling with the materials and personnel they would need to set sail when they reached the Red Sea coast. And, perhaps most interestingly for us, the geology of the Red Sea mountains provided a surface, already potent with landscape meaning (Chapter 4), for detailed inscriptions recording the specifics of some of these journeys. Such a record is essentially completely lacking for expeditions into the Western desert (mainly due to the nature of the softer, more friable sandstone), and as a consequence our understanding of the social and practical particulars of those journeys is mostly surmise. On the eastern side of the Nile, however, we are given a more explicit record.

One of the densest concentrations of textual inscriptions in the Eastern Desert occurs in the Wadi Hammamat, along the route from Coptos, at the eastern extremity of the Nile's Qena Bend to the Red Sea coast. The inscriptions date to all periods, though the Old and Middle Kingdoms are especially well represented. These inscriptions record numerous expeditions undertaken at the behest of the king, in order to quarry prized

blocks for royal and temple statuary; or to reach the Red Sea coast and sail onward to Punt.

Case Study: Wadi Hammamat Inscription of the Great Steward Henu (Menthuhotep III)

The most detailed expedition text in the Eastern desert is the record left by the Middle Kingdom steward Henu. Henu was responsible for a mission to dispatch ships in the Red Sea to Punt, and returned to Egypt through the Wadi Hammamat, where he ordered the creation of his inscription. The text provides a surprisingly complete picture of the mechanics and itinerary of a Red Sea expedition. I reproduce the full text here, as it is published in Lichtheim's *Ancient Egyptian Autobiographies* (1988). After a long preamble, extolling Henu's virtues, the inscription reads:

> …the Steward Henu, who says:
>
> [My lord] sent [me] to conduct seagoing ships to Punt, to bring him fresh myrrh from the chiefs ruling the Red Land, owing to the fear of him throughout the foreign lands. Then I set out from Coptos on the way his majesty had commanded me, with me being an army of Upper Egypt from the *wꜣbw*-garrisons of the Theban nome, from Imyotru to Shabet. All royal offices from town and country were assembled and followed me, and four companies of police cleared the way before me, smiting any who rebelled against the king. Hunters, natives of the deserts, were employed as body-guards, and all his majesty's councillors were placed under my control to announce messengers to me, the sole commander whom millions obey.
>
> Setting out with an army of 3000 men I made the road into a river, the desert into a field border. For I gave a water skin and a bread bag, with two *ḏs*-measures of water and twenty loaves, to every one of them every day. Donkeys were laden with sandals; when a foot became unshod another (sandal) was ready.

> I also made twelve wells on the valley floor and two wells in Idahet, one measuring twenty cubits, the other thirty. I made another in Yaheteb of 10 by 10 cubits at all water levels. Then I reached the sea, and then I built this fleet. I loaded it with everything when I had made for it a great sacrifice of cattle and goats.
>
> When I had returned from the sea I had done what his majesty had commanded me, bringing for him all kinds of gifts that I had found on the shores of god's land. I descended from Wag and Rahenu, bringing him precious stone blocks for temple statues. Never had their likes come down for kings of the residence. Never had the like been done by any King's Friend sent out since the time of the god.
>
> I did these things for the majesty of my lord because he loved me much, as one who acts forcefully, who is watchful of his service for his lord, one whom his offices advanced, one whose place was advanced in his house above the officials of this land. May even more than this be done for me by the power of my lord who made me!
> May his ka long endure in the Horus Kingdom of the Two Shores! I am his favorite servant who does all he praises in the course of each day.

From this text, we are able to reconstruct many of the pertinent aspects of Henu's expedition into the desert.

The Aim of the Expedition

The stated aim of the trip was an expedition to the Land of Punt, located somewhere probably in the horn of Africa, to bring back myrrh, a valuable incense. Punt, most famous from Hatshepsut's reliefs at Deir el Bahri, was an occasional focus of Egyptian trading expeditions from at least the 5th Dynasty through until the time of Ramesses III (Bard, Fattovich, and Manzo 2013; Wicker 1998; Kitchen 1971). In order to reach the Red Sea port from which the ships set sail for the land of Punt, the full complement of material and personnel, including the ships themselves, had to be collected and organized in the Nile Valley and brought through the desert to the coast.

Although Henu does not accompany the ships to Punt, he records his part in enabling the first, critical stage of their journey.

The Route of the Expedition

Henu records that the king ordered him to set out for the Red Sea along the Coptos route. This most probably refers to one of two routes from the Qena bend in the Nile Valley: the Wadi Hammamh, or the Wadi Hammamat (Bard, Fattovich, and Manzo 2013; Bradbury 1988). The Red Sea port from which the ships were dispatched is probably Mersa/ Wadi Gawasis (Figure 10), making the more direct Wadi Hammamh route seem as likely a route as Hammamat for the outbound journey. We know from the inscription that Henu returned through the more southern Wadi Hammamat. Both of these routes were in use as early as the Old Kingdom and perhaps even earlier. Hammamat is recorded as the route taken by a Punt expedition in the 4th Dynasty, which is perhaps the first state-organized trip to that country (Kitchen 1993). However, the northern route through the Wadi Hammamh, which was both hillier and less well-watered, seems to have been far less popular (Bradbury 1988; Kees 1977).

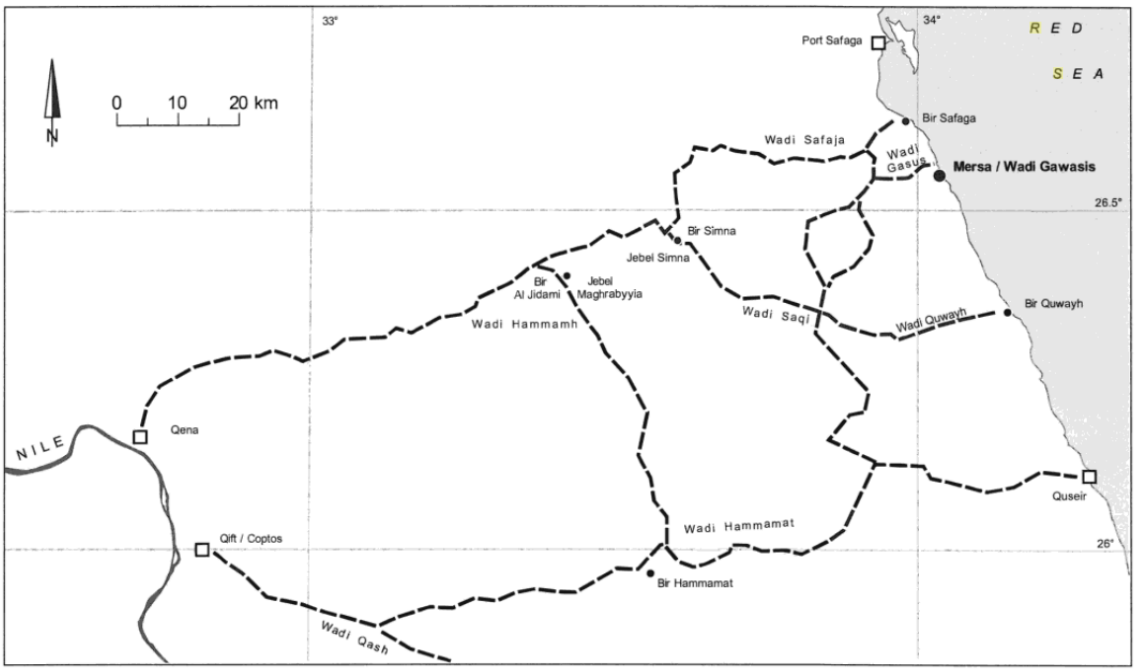


Figure 10. Routes from Qena bend to Wadi Gawasis (Bard, Fattovich, and Manzo 2013).

The Personnel of the Expedition and their Provision

Henu records that he sets off with 3000 men. Among these, presumably, are actual fighting men (who "clear the path" ahead of the expedition). It is unclear whether the "hunters, natives of the deserts" who are posted as scouts and couriers are included in the 3000 who set out from Qena, but it is more likely that they were Eastern Desert nomads who were hired along the way. In addition to the armed men of Henu's army, we can assume that there were a number of other specialists. The boats for the Red Sea voyage were carried from the Nile Valley as timbers, so craftsmen would have been required for their assembly at the coast. Furthermore, the sailors to man the ships would have been traveling with the expedition. And, of course, keeping the entire venture organized would also have required scribes, officers, stewards, and other officials. This raises questions about the varying responsibilities of the members of the desert march:

whether the sailors doubled as porters, or the carpenters as cooks. Judging by Henu's return through the Wadi Hammamat, it seems likely that a significant number of the 3000 men were intended to make up the work force for the quarrying activity during the second half of the trip.

Accompanying the human members of the expedition were probably also several thousand animals: donkeys to carry materials and provisions, domestic animals to provide an "on-the-hoof protein" source along the way, and cattle designated for ritual sacrifice upon launching the assembled ships (this meat, of course, would also have provisioned the departing fleet). Taken together, the train of people and animals must have been vast and noisy, and could easily have strung out for kilometers along the narrow wadi road. Although we have no explicit evidence for this, it is tempting to imagine the group separating into units based on profession and position within the expedition. Especially the ships' crews, whose journey was only beginning, may have stayed together in teams during the march.

The tendency of a group of this size to spread out along a trail justifies the need for security scouts as well as, probably, a military-style organization and discipline. Although Henu's inscription suggests that the "natives of the deserts" or local nomads were engaged to act as scouts against "those hostile to the king," it was probably also nomadic groups that they were watching for. A 6th Dynasty inscription from Elephantine hints at the possibility of violence against Punt expeditions: an official named Pepinakht under Pepi II is sent to retrieve the body of an Egyptian "commander of sailors and caravan-conductor" killed by members of an "Asiatic" tribe while equipping a ship for Punt, presumably on the Red Sea coast (Breasted 1906; Lichtheim 1988).

Perhaps more important than providing security for a group of this size would have been feeding and equipping them in the challenging environment of the Eastern desert. Unfortunately, the complete list of provisions carried by the donkeys is lost, broken off after "sandals." However, we know that they would also have been loaded with grain and other provisions, camping equipment, and tools, not to mention the timbers of the boats themselves. Although some game could have been found to supplement the diet of the team, most of their food for the entire out-and-back desert journey would have had to be carried along. This would have included the provisions of the sea-voyage, as well, although presumably these rations would have been augmented with fresh fish.

Bringing sufficient water for a group of this size would have been impossible. Henu records the digging of several wells along the way. Wells in this context refer to broad pits dug to the water table, allowing many animals to drink. In the spring, when Henu is most likely to have been making this trip (in order to take advantage of Red Sea trade winds), seasonal rainfall would have filled the aquifers in the wadis, making them relatively close to the surface (Bradbury 1988; Kees 1977). Nevertheless, the labor involved in stopping every few days to dig a well 20 cubits square would have been considerable, and slowed the process of the expedition significantly.

Arrival at the Red Sea Harbor Camp

The Red Sea port that Henu was aiming for was almost certainly Wadi Gawasis (Figure 10) (Bard, Fattovich, and Manzo 2013; Bradbury 1988). Upon arrival, the members of the expedition would immediately have set about preparing the ships to sail.

Although in the Old Kingdom the coast at Wadi Gawasis would have boasted a mangrove forest, by the 12th Dynasty this was completely destroyed (Bard, Fattovich, and Manzo 2013). The encampment at the coast, then, was as barren as any in the desert, and time and provisions could not be wasted in a long stay here. Although the harbor was not inhabited between expeditions, some infrastructure was created to support sea-going missions. Galleries for storage and sleeping were excavated in the hillsides at the harbor, and platforms for temporary shelters were created nearby. It is unclear whether a force of 3000 men could actually have been accommodated here, raising questions about whether the bulk of the expedition proceeded directly to the quarry site in Wadi Hammamat or to nearby mines, saving time and provisions (Bard, Fattovich, and Manzo 2013).

Despite the storage galleries at the site, very little kit of any consequence seems to have been kept there. Everything the expedition used while camped at Wadi Gawasis was carried there from the Nile Valley, with the exception of a few traded objects probably returned with the successful Punt expeditions. Likewise, anything of value was carried off again, with the exception of stone anchors (probably made on-site), ships' timbers too compromised to be reused, and the ephemera of the Puntite luxury trade (Bard, Fattovich, and Manzo 2013). Archaeological analysis of campfire ash indicates that, in a region with no firewood available, fuel sources (probably animal dung) were augmented by burning imported cedar and ebony, probably pieces too small to used for anything else (Bard, Fattovich, and Manzo 2013). Burning these precious materials in cooking fires must have been strange for porters and soldiers from the Nile Valley!

The primary task once at Wadi Gawasis would have been the construction of the ships that had been carried in pieces across the desert. Henu does not dwell on this

process, which must have been carried out by experts in boatbuilding who had traveled with the expedition (Bradbury 1996). The highly specialized nature of this work may be another indication that the army of porters and other laborers would have been dispatched to quarry or mining sites at this time, rather than being idle and running through food at the harbor.

The ships, once assembled and ready to launch, would have been loaded with provisions for the journey, and boarded by their crews of sailors, scribes, and traders. Henu records sacrificing a "great oblation" of cattle for the ships as they embark. Offering tables and small shrines are the only permanent constructions, aside from the storage galleries, found at Wadi Gawasis (Bard, Fattovich, and Manzo 2013), suggesting that the ritual observance of embarkations was an important event.

It is unclear whether Henu would have accompanied the ships onward to Punt. Bard, Fattovich, and Manzo (2013) argue that he did not, because his Hammamat inscription, made on the return journey, does not mention this part of the trip. Conversely, Lichtheim (1988: 54), believes that he must have, and points out that expedition inscriptions rarely contain detail about the targeted foreign lands. What is certain is that Henu's return was through the Wadi Hammamat, and included the acquisition of stone for two royal statues. The articulation of sea travel with Eastern desert mining and quarrying is an interesting aspect of these missions that may contribute to shared affordances between the two environments (see below and Chapter 7).

How the Desert is Like the Sea

"The desert is like the sea, and you may travel in it in any direction you wish, if you know your course."

-Ibn al Muqaddisi, 10th c. CE

Although the contrast between desert and sea legs of this journey may, at first glance, seem liable to have produced a cognitive dissonance for the members of the expedition, crossing the Red Sea may not have been so different from crossing the Eastern Desert. There are some surprising similarities between these two ostensibly very different environments, which could have produced experiential similarities. In some cases, this overlap is represented in the Egyptian material.

By definition, deserts are very dry; seas, on the other hand, are very wet. Although this seems like a fairly profound difference, the extreme nature of these environments means that the experience of being in them, conceptually, emotionally, and even physically, is actually somewhat similar. Both the desert and the sea have been viewed as barriers, separating Egyptians from foreigners physically and culturally, and this sense of intermediate space is an important factor in their conceptual associations. Both are characterized by vastness, by broad horizons, by bright days, often punishingly bright, and cold, starry nights. Drinking water must be carefully rationed. Both are subject to sudden, violent weather. Travel across both is difficult and requires specialist knowledge. This travel is rewarding, however, especially economically: both the desert and the sea were conduits for bringing valuable commodities into the Nile Valley. The resource-rich oases can be likened to the Red Sea islands that were sources of exotica (Morris 2010).

And, as we have seen, trips on the sea were predicated by trips through the desert, necessarily associating the two. So, how did these commonalities affect lived experience in both environments, and in what ways were these experiences similar?

Most of the ancient evidence we have comes from reports on large, highly organized, military-style expeditions, as in the case study of Henu above. These forays, involving hundreds or even thousands of people, usually men, and as many livestock created a unique situation that would have influenced the way individuals experienced either environment. The bustle and crowding of a large expedition should be kept in mind when we are thinking about ancient interactions with the desert, since our own experience is more likely to be characterized by feelings of isolation and silence. Even where mining or quarrying expeditions were encamped, this would have been a factor. Miners would have been relatively confined to the camp with their colleagues: not only is there work to do, but the environment does not encourage wandering away. The crowding is even easier to imagine on a ship, which is much more difficult to leave.

In both situations, hierarchical, ordered, military-style social organization would have been crucial to keeping the expedition running smoothly, and we have ample evidence for this. Not only this, but also for highly specialized roles filled by members of any expedition—miners, sailors, engineers, donkey-drivers, and so on. This is confirmed from the variety of titles found in inscriptions and graffiti in places such as Serabit el-Khadim and the Wadi Hammamat. An inscription of Rameses IV from Hammamat roll-calls 8,368 men of various professions, including foreign guides and troops, as well as both miners and sailors. For expeditions into the mining regions of the Sinai peninsula,

and for those crossing the eastern desert to the Red Sea ports, the desert and the sea were essentially extensions of one another.

For one thing, they are environmentally contiguous—that is to say, there is no coastal plain or other transitional area on the Red Sea coast, where the desert descends directly into the water. For another, an individual's social context might stay very much the same through a transition from desert to sea in the course of a journey. Red Sea vessels were carried, in pieces, across the Eastern Desert from the Nile Valley. They were assembled at the coast, and put into the sea. It seems reasonable to assume that the crew of each vessel, already constituted at the beginning of the journey, would perform as a unit for both the land and sea legs of the voyage. Expeditions that were using ships to travel to the mining regions in Sinai would presumably be carrying large numbers of miners and associated professionals, as well as nautical specialists, and they all would have traveled to the Red Sea coast together. Although, as in the case of Henu's expedition, the nautical and mining teams might have gone their separate ways, the successful Red Sea traders would probably have returned to the Nile valley with another mining expedition, in order to take advantage of outlay and security provided by a large group. In this way, even the material goods of the two environments would have been associated by virtue of their entering the Nile Valley together.

In terms of social situation, mining and seafaring were two contexts in which Egyptians were especially likely to encounter and work with foreigners. Levantine sailors are shown aboard Egyptian ships in Old Kingdom reliefs of Sahure and Unas, giving rise to the idea that their technical expertise had won them a place on Egyptian expeditions (Bietak 2010: 68). This engendered a Levantine influence in technology,

material culture, and religion, that made the sea and the desert both into archetypal contexts for encountering the foreign within Egyptianized parameters. Excavations at Red Sea ports such as Mersa, or Wadi Gawasis, show evidence of Canaanite, Minoan, Nubian, and Arabian presence (or at least material culture) during the Middle Kingdom, indicating that sailing was still a cosmopolitan activity (Bard, Fattovich, and Manzo 2013).

In desert mining camps the situation could be much the same. The presence of foreigners, particularly Syrio-Palestinians, at extraction sites in the Sinai is well attested, as is the presence of Nubian miners in the southern parts of Egypt (Chapter 7). The deserts and the coasts were places where borders blurred, even if the area was technically under Egyptian dominion. This association with the foreign is one of the strongest uniting features between the two environments, which are both interfaces between Egypt and foreign lands. This can be seen most strongly in the conceptual realms: landscape imaginaries and cult practices, which are the subject of Chapter 7.

This can also be seen in the use of nautical titles for Egyptian officials operating in the desert, even in the Western desert oases and outlying regions. These titles are attested as early as the old Kingdom. “Boat commander” is the most frequent, but there are also instances of titles like “director of ships’ crews” (Esposito 2014; Darnell 2013; Strudwick 2005; Fischer 1997; Jones 1988). These titles very probably have something to do with the crew-style organization of desert commerce east of the Nile, coupled with the nautical nature of Old Kingdom military efforts. The occurrence of compound titles that mention both the desert and the sea seems to indicate that it may be related to the sense of

both environments as outer or border zones, and of the overseers in these regions as voyagers and border-holders.

For the Egyptians active in the Red Sea trade the two environments created and sustained parallel ways of living. These parallels operate on economic, administrative, and political grounds but also on religious, conceptual, and experiential ones. Even today we call the Sahara the great sand sea, and we often refer to the oases as islands. For the ancient Egyptian, this analogy may have been even more explicit, colored as it was by the early entanglement of the Eastern Desert, Sinai, and the Red Sea, dating back at least as early as the Predynastic participation in Red Sea trade (Zarins 1996). Both the environmental challenges and the sense of being outside of Egypt rendered these domains territory of Seth, the hero and the enemy (see Chapter 7); this association speaks to their conceptual similarities, as well as their ambivalence and complexity.

CONCLUSIONS

In this chapter, I frame the Egyptian deserts as spaces of ambiguity. This is in contrast to the prevalent model of deserts being seen as a binary opposite to the Nile Valley. There is now and probably was also in antiquity a marked contrast between arid and arable land, but I argue that this need not mean that all arid land was seen as equivalent. I argue for a flexible, negotiated spectrum of "Egyptianness" or "familiarity" in the deserts, reckoned by a suite of factors. These might include proximity to the Nile, makeup of the social group one is with, the activity one is partaking in and how it is organized, and the presence or absence of recognizably Egyptian social structures and landscape identifiers.

It is the landscape markers that are accessible to us archaeologically. In this chapter I couple this information with extant historical sources, in order to consider ways in which activity in the desert might have been conceived. In the following chapters I will focus on mining and on religious activity, but here I am primarily interested in movement, trade, and interactions with desert inhabitants. In order to investigate this I have focused on the oases, as spaces where Egyptian influence was negotiated with indigenous inhabitants, and on the desert roads to both sides of the Nile.

With the exception of Dakhla and to some extent Kharga, very little is known historically or archaeologically about the oases during the Pharaonic period. Nevertheless even the northern oases were known and named, and were to some extent under Egyptian administration as early as the Old Kingdom. There is archaeological evidence for a prehistoric indigenous population in both the northern and southern oases, suggesting that there must have been dynamics of encounter between oasis inhabitants and administrators and other officials from the Nile Valley, who seem mostly to have come from politically prominent families. The limited evidence for these encounters, however, suggests that they were not particularly contentions. In the absence of other evidence, this indicates that the dynamic was more similar to local/outsider relationships than colonizer/conquered ones. Unfortunately, this remains mostly conjecture. What does seem to be the case is that the oases were seen from the Nile Valley as ambiguously Egyptian, but outlying territories. By the Middle Kingdom at the latest the oases appear to have been fully within the administrative system of the Nile Valley, but their native inhabitants are still depicted as quasi-foreign. This is especially the case during the New Kingdom, although the oases are being governed as Egyptian territories.

This ambiguity can be argued to apply to the deserts generally, which seem to exist on a spectrum of foreignness to the Nile Valley. Evidence of this can be found in the road networks traversing them. Both the Abu Ballas and Wadi Hammamat routes appear in large part focused on trade and the acquisition of materials not available inside the Nile Valley; both also seem to have been maintained and used by military or other officially-mandated traffic. On the Abu Ballas trail, this is shown by a system of cairns and waystations that socialize the desert route, which along the with straight-ahead layout make it legible to outsiders with no knowledge of the landscape but a familiarity with the logic of official Egyptian infrastructure. The maintaining the waystations and water caches along the way would have required significant investment. The pottery shows that this was undertaken by the Egyptian governor in Dakhla. Although we lack the necessary resolution in the ancient climate data, the timing of the general drying trend suggests that, especially in the Old Kingdom, the deserts could have been somewhat greener. Even so, the significant effort required in order to provision the Abu Ballas trial with artificial water sources suggests that the environment was already dry enough to pose a significant barrier to travel.

In the Wadi Hammamat, water was easier to find, although it still would have required considerable labor to access water sources sufficient to support caravans. The cairn system was also in use here, although it has not, to my knowledge, been systematically surveyed. A comparison of cairn use on the Hammamat and Abu Ballas routes might be productive for understanding how the systems operated in very different terrain. The official use of the Hammamat route is marked by the inscriptions left by members of missions commissioned by kings, especially of the Old and Middle

Kingdoms. These detail missions that were focused on mining and quarrying for the palace or temples, and on state-sponsored Red Sea expeditions to sources of valuable exotica, like Punt. The creation of these inscriptions if an extension and a refiguring of the use of petroglyphs to domesticate and organize desert space (Chapter 4).

The investment in infrastructure for state-organized activity in the desert had the corollary effect of, like the rock art discussed in Chapter 4, domesticating and socializing the landscape, making it knowable, and bringing it inside the political and conceptual borders of the Egyptian realm. Because of the challenging nature of the desert environment, this was a bringing-in that had to be actively sustained: it took tremendous effort on the part of the Egyptians to keep their deserts governable and traversable. The efforts discussed in this chapter include the blazing and maintenance of roads and resupply stations in the Western desert, and efforts to control those routes from posts created in the oases. They also include the organization of Eastern desert expeditions of an incredible scale, which articulated with the technically complicated and highly organized demands of mining activity and Red Sea trade (Chapter 6).

The road systems and their official use, especially in the Old and Middle Kingdoms, create a space that is Egyptian, but not exactly within Egypt: the deserts are called *t3-nṯr*, "God's-land," like Punt, or *bi3w*, "mining-land;" or, like foreign places, they are referred to as *ḫ3st,* "hill-country." This ambiguity makes the deserts into places where the social and cosmological "rules" of Egyptian life are still in play, but the environment is notably different (see Chapter 7). They are a liminal or bleed zone, an interface with the foreign. As such, and because so much of the above activity is focused on trade and exchange, the desert landscapes are associated with encountering foreign individuals and

returning with valuable materials that have been traded, mined, or hunted. This was a traffic in goods not found within Egypt, adding to the ambiguity of the deserts as "outside" spaces but also the origin of valuable exotics with positive associations.

A corollary of desert trade and travel was its importance in another register: it extended the physical and conceptual boundaries of Egyptian dominion well past the limits of the Nile Valley. While acknowledging the ambiguous nature of the desert its and people, The Egyptians were able to devise and execute strategies for negotiating with the landscape in a satisfactory way. In the Western desert, the oases allowed a synthesis of desert and Valley. Arguably, in the Eastern desert, the caravans performed this role: each individual mission, with its thousands of men, was a traveling microcosm of Egyptian social organization. Caravans and oases were islands in a sea of desert, but the sea and the desert were navigable to the "boat commanders" of Egypt.

CHAPTER 6. SOCIAL DYNAMICS OF RESOURCE EXTRACTION

Introduction

This chapter is concerned with the extractive activities of mining and quarrying in the Egyptian Deserts. These activities are responsible for a considerable proportion of the archaeological remains in the desert. The expanding nature of mining sites means that earlier traces are often obliterated by later workings, but in the Egyptian case the surviving archaeological remains, historical records, and landscape inscriptions make it clear that mining was an important activity in all periods (Harrell and Bloxam 2012; Bloxam et. al. 2014).

The primary focus of investigation at mining sites has generally been on the chapels and inscriptions often found in association with mining and quarrying (Bloxam 2006: 279). Accustomed to cutting stone and equipped with appropriate tools to do so, mining expeditions left complex and formal rock art, often in harder, more durable mineral-bearing basaltic rocks than their prehistoric predecessors. The official nature of many mining and quarrying sites, and the presence of literate administrators, increased the incidence of formal, literary inscriptions, some of which are now valuable historical documents (Breasted 1906; Couyat and Montet 1912; Goyon 1957). This evidence is the most intelligible to researchers accustomed to the archaeological and historical sources from the Nile Valley, but omits valuable information about ancient mining that can be

gathered from surveying the other components of mining camps, mining landscapes, and the workings themselves as production sites (Bloxam 2006: 278). Recently, surveys have produced more comprehensive recording of these features of mining sites, but this information is often incompletely incorporated into final publications, which remain largely focused on formal architecture and epigraphic finds (Bloxam 2006: 278).

The focus on official architecture and inscriptions at mining sites has contributed to an assumption that mining activity was exclusively a state-organized and elite-driven endeavor (see, for instance, Shaw 1998: 251; Trigger 1993: 8–14; 2004: 52; Richards 1992: 21). While the participation of the Egyptian administration was doubtlessly a critical force in the organization and outfitting of large-scale mining expeditions, the assumption that the Egyptian elite held a monopoly over mineral resources found in the deserts obscures an understanding of the social dynamics among the miners themselves, who were presumably not members of the elite classes, and overlooks the possibility of small-scale mining activity that is archaeologically subtle. Questions about the "top-down" organization of mining activity have been raised by scholars such as Elizabeth Bloxam (2006, 1993) and Ian Shaw (2002, 1998), whose work I will discuss more below.

The primary focus of this chapter is the social dynamics of mining expeditions, and the ways in which the experience of mining must have differed from other kinds of activity in the desert. Mining as a social activity transported large, diverse groups of people into the desert environment, where they worked and lived in community for a period of time. The diversity of mining camps also occasionally led to multi-lingual inscriptions, or even expedient writing systems presumably designed to be mutually intelligible among speakers of different languages (Beit Arieh 1997; Valbelle and Bonnet

1996). Mining camps will be considered as spaces of negotiation with non-Egyptian people and materials, as the oases and Western desert networks were in Chapter 5. I also discuss the changes in these dynamics that may be observed over time, as the requirements and administrative structures of the Nile Valley changed.

Mining communities included Egyptian foremen and administrators, Nubian prisoners, foreign engineers, and skilled and unskilled laborers of various origins (Bloxam et. al. 2009). Although generally not native to the desert regions, miners and stonemasons were present in the landscape for longer periods of time and had a different embodied experience of it than other groups of people, as they daily entered, altered, and interacted with the physical substrate of the land, rather than just moving across its surface. The affective dimensions of this experience, and the possibility of accessing them in the archaeological record, will be discussed below. I argue that echoes of the affective properties of mining activity may be found in the cult and ritual behaviors that are distinct to mining contexts. Inscriptions, chapels, and other landscape interventions made by the miners themselves demonstrate a bottom-up approach to devotional practice that is largely invisible in the Nile Valley.

A final important social aspect of large-scale mining expeditions is their military-style presentation. This can be seen as a function of state involvement in the organization of mining efforts, but also has ramifications for the social relationships between members of mining communities. It is also relevant to the interpretation of mining as an exercise in territorial control and the imperial project more generally. I explore the extraction of materials from the landscape itself as a component of landscape "domestication," as discussed in the earlier chapters.

Mining and Quarrying

Mining and quarrying are perhaps some of the best-documented activities in ancient Egypt, given the tremendous number of inscriptions, formal and informal, that exist at the desert sites where mineral extraction was carried out, and along the routes to and from the mines. Particularly successful missions are also recorded in private tombs in the Nile Valley. Anthologies of these inscriptions were made around the turn of the last century (e.g., Breasted 1906; Couyat and Montet 1912-23) but remain useful, although new inscriptions and graffiti, as well as updated translations, have been added to the corpus. Rock art and simple inscriptions, sometimes only names etched into the rock, provide proof that several of the Eastern desert's routes and resources were "discovered" in the first dynasties of the Old Kingdom. However, many may have been explored, and exploited, even earlier.

Resources and Exploitation

Artifacts from the Nile Valley suggest that several of Egypt's precious stones were known and prized in the Predynastic and Protodynastic periods. Archaeological evidence from extraction sites indicates that deposits of lead, Egyptian alabaster, alum, ochres, gneiss, carnelian, copper, turquoise, malachite, and gold, in the Eastern and Western deserts and in the Sinai Peninsula, were already being worked in the Predynastic period (Bloxam 2010; Klemm et. al. 2001; Aston et. al. 2000; Ogden 2000; Shaw 1998). Evidence of Predynastic stone procurement and on-site working have been discovered in

the Western Desert, in Wadi Hammamat and as far as the Red Sea coast at Wadi Gawasis (Bloxam et. al 2014; Storemyr 2014; Bard, Fattovich, and Manzo 2013).



Figure 1. Locations of resources, after Baines and Malek (2005). Map Anthony Lauricella.

The control of these desert resources may have been a crucial factor in Protodynastic political development, with early population centers such as Naqada, Hierakonpolis, and el Kab leveraging their access to gold and other materials into social power (Hoffman 1979: 339; Trigger 1983: 39-40; Rice 1990: 34-6). Considering the intensity of later workings at sources of these materials, it is probable that even more extensive evidence of early mining and quarrying was destroyed by later exploitation. In any case, a working knowledge of prospecting and extraction techniques must have been already in place by the beginning of the 4th Dynasty, by which time exploitation of mineral resources in Egypt's arid zones had certainly begun in earnest.

Egypt's complex geology means that there are a number of different mineral resources available, including limestone, granite, gneiss, alabaster, and calcite, suitable for sculpture, building and the production of stone vessels; metals such as copper, lead, and gold; and gemstones such as carnelian, amethyst, jasper, turquoise, malachite, emerald, beryl, sard, peridot, hematite, feldspar, and agate (Aston et. al 2000; Ogden 2000). The majority of these resources are located in the desert regions, at a distance from the Nile Valley.

Getting There: Quarry Roads

As with long distance trade, discussed in Chapter 5, the Egyptian state invested considerably in the formation and maintenance of routes to sources of valuable mined resources. As we have already seen, some of these routes, like the Coptos road, did double-duty as mining and trading corridors. In other cases, roads to mining and

quarrying sites were purpose built, and even sometimes paved (unlike Egyptian roads generally) to facilitate the transportation of heavy blocks of building stone to the Nile, where they could be more easily conveyed to their final destinations in the valley. The titles "Master of the Roads" and "Official of the Masters of the Roads" occur in the Memphite necropolis and in mining inscriptions, suggesting the official oversight of quarry and mining road construction (Fischer 1991).

The Gebel Asr quarry area in the Western desert of Lower Nubia was the source of the sought-after blue-banded gneiss of which several famous statues of the 4th Dynasty pharaoh Kephren were made. It is also the only source in Egypt for carnelian, a hard red agate that was popular, almost ubiquitous in jewelry of all periods (Shaw et. al. 2010). The quarries of Gebel Asr were not more than 3 kilometers from the north-south trading road of the Darb el Arba'in (Chapter 5). While there is some dispute over whether this route was already in use by the Old Kingdom, several scholars identify it with the route south taken by Harkhuf in the 6th Dynasty (see Roe 2005/2006 for a discussion and denial). The arguments against an early use mainly center on the impossibility of using the route without camels (Murray 1939). I am inclined to believe that the route was in service, given what we now know about the greener conditions prevalent in the Old Kingdom, the early Egyptian occupation of the oases, and the ability of the Old Kingdom donkey trains to cross waterless deserts.

Setting aside this controversy, if we are to accept that the Darb Arba'in was in use during the Old Kingdom it is significant that, although it passes within 3 kilometers of Gebel Asr, a separate track was established leading directly from the quarries to modern Toshka, the most direct route to the Nile (Shaw et. al. 2010). Considering the size and

weight of stone blocks removed from the quarry, it would have made sense to establish the shortest possible route. As it is, the road from Toshka to the quarries is 80 kilometers. Like the Abu Ballas trail the Toshka road is straight-ahead and marked with cairns, including an especially large one at the half-way point. As on the Abu Ballas trail, there are also occasional camps with drystone shelters, suggesting an official, standardized infrastructure created in order to facilitate the state-commissioned transport of quarried stone into the Nile Valley (Shaw et. al 2010: 303).

Another Old Kingdom quarry road is the 11 kilometer long road from the basalt quarries at Widan al Faras to the quay at Lake Moeris. This road is paved with local stone, much of it petrified wood that is naturally flagstone shaped, and currently holds the distinction of being the oldest known paved road in the world (Harrell and Bown 1995: 79). While it is unclear how the blocks were transported along the road, the paved surface was certainly instrumental in facilitating their passage. Once at Moeris, they could be floated into the Nile during the flood season (Bloxam and Storemyr 2002; Harrell and Bown 1995).

Other examples exist of purpose-built roads between quarries and the Nile, for instance at the travertine source at Hatnub (Shaw 2013), or the sandstone quarries of Gebel Gulab near Aswan (Bloxam and Storemyr 2005; Heldal et al. 2005: 32 - 33; Heldal, Bloxam, Storemyr et al. 2007: 151- 62). Compared to Gebel Asr or the quarries of the Wadi Hammamat, these stone sources are very accessible to the Nile. Nevertheless infrastructure was put in place to enable the extraction and transport of large blocks. It is not entirely certain how blocks were moved from the quarries, but general consensus rests on teams of men dragging them on sledges (Bloxam and Storemyr 2002). Even

over a road surface, this would have required a concerted effort and a high degree of organization, indicating the ambitious nature of Egyptian quarrying. Where sources of stone were located farther from the valley, it was impractical to build roads of the same permanence. The Toshka road is unusual in apparently having been purpose-built for quarry transportation. Other quarry routes usually shared between trading traffic, as seen in Chapter 5, and military use.

The construction and maintenance of routes to quarries of building stone is an example, as in Chapter 5, of an investment made by the central administration in order to facilitate the transfer of materials into the Nile Valley along official, legible corridors. This argues for the quarrying of stone as a state-organized enterprise. The large workforce required to operate a stone quarry, however, introduces scope for a variety of personal positions within the official enterprise. This dynamic will be discussed more below.

Commissioning and Consuming Mined Materials

At most mining sites, the environmental constraints of the desert landscape prohibited long-term occupation or year-round work: water sources were largely seasonal, and the heat of the Egyptian summer makes physical labor difficult if not entirely impractical. Because of this, mines and quarries were not occupied and worked continuously. Instead, they were worked during periodic expeditions mounted from the Nile Valley. In the case of quarries, we know that work was undertaken when there was a requirement for a particular material, whether for a temple building project or a royal commission. Temples and royal tombs required significant amounts of architectural

stone, statuary, and sumptuous furniture and other equipment made from precious materials. Records of quarrying missions often state that they were commissioned to bring stone for a particular building project, statue, or sarcophagus, either for the royal family or as an incentive or reward for a member of the court (Shaw 1994). A 6th Dynasty inscription from the reign of Pepi I in the Wadi Hammamat specifies that the expedition was accompanied by the chief Pyramid architect, three master builders, and five assistant master builders, suggesting that they were prospecting for the hard stone needed to finish Pepi's pyramid and mortuary temple (Breasted 1906: 136-139). Likewise an 11th Dynasty expedition is dispatched to the Wadi Hammamat to find a block of stone for the sarcophagus of Mentuhotep IV; in conjunction with a series of miracles, the perfect block is located and extracted (Breasted 1906: 211-212; de Buck 1948: 76-77; Couyat and Montet 1912: pl. 29).

The commissioning of these materials as needed for specific projects suggests that they were not circulating in a market sense, but were rather acquired through purpose-mounted expeditions and immediately sunk into buildings and tombs, in many cases where they were not displayed to a large audience or in fact any audience at all. The produce of the expeditions did not circulate further. Therefore I argue that the expedition itself, and the stelae and landscape inscriptions describing and commemorating it, were the conspicuous material aspect of the endeavor, producing a lasting record of the effort required to collect (and then sink) prestige materials. This dynamic may help to explain why the numbers listed in expedition reports often seem to be inflated: the size and exertion of the mission was the measure of its importance, as much as the actual materials procured. In this context, it is interesting that many expedition records are carved in the

quarry landscapes, where their audience would be restricted, rather than in the Nile Valley (the question of restricted audience also applies to the expedition texts found in tombs). Siting the visible evidence of quarrying missions in the desert landscape suggests that the audience of these texts was intended to be members of subsequent missions; the texts were also spatially in dialog with earlier records in a way that would have been difficult to achieve in the Nile Valley. The pattern of acquisition, resource sinking, and inscription described above continues throughout the Pharaonic period, wherever quarries remain in use (Figure 2). The intentional creation of dialog between older and newer landscape inscriptions would have created a sense of historical perpetuation and continuity, allowing missions to compete with their predecessors and confirming certain places in the landscape as sources of important materials so valuable that they are called for by kings. The practice of landscape inscription therefore consolidates the value of the material by materializing a discourse of desire. This is also a discourse of elite engagement with hard-to-reach places, bringing the activity of desert quarrying into line with the desire to trade in exotica discussed in Chapter 5.

The ability to mount a major mining or quarrying expedition has been seen as an index of state control and social cohesion, because of the scale of labor and organization required (Kemp 1983: 86-9; Lehner 1985: 109-10). Extraction of mineral resources, especially gold, has also been credited with Egypt's rise to regional domination and its ability to maintain diplomatic relationships with contemporary states (Shaw 1994). However, there is some question as to whether mining rights were under state monopoly. It is generally assumed that, because of the high costs involved, the state was essentially

the only Egyptian agency equipped to undertake a mining expedition (Shaw 1994: 111). There is evidence that para-state institutions controlled particular mines, such as the

site	period of exploitation							
	OK	FIP	MK	SIP	NK	LP	PT	R
Aswan (granite)	•	•	•	•	•	•	•	•
Aswan (sandstone)	•	•	•	•	•	•	•	•
Gebel el-Ahmar (sandstone)	•	•	•	•	•			
Gebelein (limestone)					•	•	•	•
Gebel Qatrani (basalt)	•	•	•			•?		
Gebel el-Silsila (sandstone)					•	•	•	•
Gebel el-Zeit (galena)			•	•	•			
Hatnub (travertine)	•	•	•	•	•	•		•
Ma'sara (limestone)					•	•	•	
Serabit el-Khadim (turquoise)			•	•	•	•		
Timna (copper)					•			
Tura (fine limestone)	•	•	•	•	•	•	•	•
'Tushka' quarries (gneiss)	•	•	•					
Umm el-Sawwan (gypsum)	•							
Wadi Abbad (gold)					•			
Wadi Allaqi/Gabgaba (gold)	•	•			•	•	•	•
Wadi Gerrawi (travertine)	•							
Wadi Hammamat (gold)	•	•	•	•	•	•	•	•
Wadi Hammamat (*bekhen*)	•	•	•	•	•	•	•	•
Wadi el-Hudi (amethyst)		•	•					
Wadi Maghara	•	•	•		•			

OK = Old Kingdom (2649–2134 BC), FIP = First Intermediate Period (2134–2040 BC), MK = Middle Kingdom (2040–1640 BC), SIP = Second Intermediate Period (1640–1550 BC), NK = New Kingdom (1550–1070 BC), LP = Third Intermediate Period and Late Period (1070–332 BC), PT = Ptolemaic Period (332–30 BC), R = Roman Period (30 BC–AD 395)

This table includes all of the quarrying and mining sites mentioned in the text, as well as a few others too important to omit. Lucas & Harris (1962: 50–63, 386–428), Harrel (1989: tables 1, 2) and Arnold (1991: tables 2.2, 2.3) provide more detailed listings of Egyptian stone quarries, while Castel & Soukiassian (1989: 10–12) list virtually all of the major Egyptian and Nubian gold, copper, turquoise, galena, iron, amethyst and chrysocolla (copper silicate) mines, with an accompanying map showing their locations.

Figure 2. Major mines and quarries and their periods of use (Shaw 1994).

temple of Seti I at Abydos which apparently had exclusive rights to the produce and workforce of a set of gold mines in the Wadi Abbad (Schott 1961: 143- 59). Whether this can be counted as non-state enterprise, however, is questionable, as temple establishments from the Old Kingdom on were important revenue-generating institutions working closely with other bureaucracies. Some sources of relatively less valuable materials, for instance galena, alabaster, and gypsum, show signs of private or unofficial work (Shaw 1994: 111). It is highly likely that even deposits of valuable minerals too

small to be worth large-scale investment were worked by smaller groups on their own initiative, as they are by "artisanal" or ASM miners in Egypt today. These distinctions, however, are difficult to recognize in the archaeological record. It is also unclear how miners were recruited, even by state-organized expeditions. Although "professional" miners (*ikyw*) and prospectors (*sementyw*) are attested, Middle Kingdom inscriptions suggest that the labor force for most mining crews was usually pulled together predominately from local agricultural workers, working on a seasonal basis (Shaw 1994).

Mining and the Military

Many large-scale Egyptian mining and quarrying expeditions were characterized by a military organization or presentation. Control of a region's mineral resources, then, must have had some conceptual equivalence with political control of the region and dominion over its people, at least from a propagandistic state perspective. Mining expeditions at the borders of Egypt should therefore be viewed partly as a carrier for military, territory-expanding initiatives, and it is easy to imagine whatever armed confrontations may have taken place having an offensive, rather than defensive, character. Inscriptions of every period record the inclusion in expedition personnel of an "army," probably a genuine force of fighting men and not simply a synonym for "multitude."

Old Kingdom

The first royal inscriptions in the copper and turquoise mining regions of the Sinai Peninsula date to the Protodynastic and early First Dynasty, indicating that an interest in

the mineral resources here had already been taken (Tallet and Laisney 2012). By the 1st Dynasty reign of Djer, smiting scenes appear in the Wadi Ameyra (Tallet and Laisney 2012: 381-398). The early transposition of smiting iconography from portable prestige objects found in the Nile Valley to the peripheral landscape of the Sinai mining regions demonstrates their importance to the rulers of the Nile Valley, and the ethos of military control over the area. Virtually all of the royal inscriptions that follow in the Sinai include a smiting scene (Bestock 2018: 174).

The inscriptions at the Wadi Maghara turquoise mines in Sinai, which date to the Old Kingdom, are most frequently composed of an inscription referencing the king, the commander of the mission, mining activity, and the patronage of a deity; and are accompanied by a scene of the king smiting enemies (Gardiner et. al. 1955: 52-66). The combination of imagery of control and domination with the documentary particulars of mining missions suggests that the two activities were conceptually linked, and furthermore suggests competition with nomadic tribes native to the area who were probably also exploiting its mineral resources. That these inscriptions are landscape monuments is significant: while the presence of Egyptian expeditions was periodic, the inscriptions remained present and visible, serving as a reminder of Egyptian claim on the region and mines, and functioning as a warning to "keep out." Landscape monuments often function in this manner, serving as proxies for the physical presence of their commissioners. Whether or not this was effective in the Wadi Maghara cannot be said. Presumably, it was not.

Confrontations with groups living in and beyond the Sinai are already attested in the Old Kingdom. The tomb biography from Abydos of Weni, an official under Pepi I,

records outright war with the "sand-dwellers" of Sinai and Palestine (Mariette 1880: pls. 44-45; Breasted 1906: 140 ff.; Lichtheim 1975: 18-22). Weni is sent with an army "of many ten thousands" composed of troops from all parts of Egypt and Nubia. At least some of Weni's army marches overland, meaning that they would have crossed the Sinai, and the rest crosses the gulf of Suez in ships. In Palestine, Weni's army slays "many ten thousands" of Asiatics, and returns safely to Egypt. The work is not done, however, and Weni records five more trips along the same itinerary, and with the same objective. The infrastructure of roads and ports required to move armies along this itinerary could well have overlapped with that maintained for the use of mining expeditions, meaning that there were multiple layers of benefit for the state in creating this infrastructure.

There are several potential ports on both the Egyptian and Sinai sides of the gulf, which could be reached from points in the delta or from Memphis. Many of these potential ports have yielded archaeological material related to mining (Tallet and Marouard 2016; Tallet 2012; Mumford and Parcak 2003). Therefore, the participation of mariners seems to have been just as much a part of Sinaitic mining expeditions as it was for the quarries further south (Chapter 5), perhaps even more so as the miners would also have had to set sail. On Weni's sixth and final military trip to Sinai he makes a sea crossing in "troop-ships." Again, this is an instance of mining and military expeditions sharing technology, infrastructure, and in many cases personnel. Here again, it is significant that many leaders of mining expeditions have naval titles, suggesting that mining articulated with sea travel was customarily administered by that branch of the military (Shaw 1998: 246).

The overlap between mining and military personnel shows the extent to which the two activities were entangled. When Weni is promoted to Governor of the South, he is commissioned to oversee quarrying at Aswan and Hatnub in order to provide stone for the royal building projects of Merenre. He boasts that he is able to venture to Elephantine with only one warship for his six cargo ships, by reason of the Nubians' fear of him. On his second trip to Aswan he makes canals in the first cataract, thereby opening Nubia to the passage of Egyptian ships, and presses the Nubian chiefs into service on his boat-building project. Therefore his duties as Governor include administration, quarrying activity, and military action.

The press-ganging of Nubians as labor on royal projects may be seen as a form of tax or tribute. Egyptian citizens were subject to a corvée, under which they could be pressed into service whenever there was need. Subjecting Nubians to this as well might have been a form of political domination, drawing Lower Nubia into the Egyptian administrative system, or, in later periods, the Nubian laborers may have been captives. Weni forcing the Nubians to "draw timber" for him is reminiscent of the later formula "I forced the Nubian chiefs to wash gold" found in texts detailing success on royal missions.

Middle Kingdom

Middle Kingdom mining missions maintain the aggressive posture of earlier trips, and also take on colonial aims. A stela from the Wadi Hammamat records what may be an attempt to settle the desert stations along the mining road around this time (Breasted 1906: Vol. I, 217). Whether this was intended to be a staffing of outposts as on the Abu Ballas trail, or an actual settling of population to secure the road and discourage

incursions of the nomadic tribes is unclear. In any event the effort seems to have been unsuccessful, and is not referenced in any other surviving documents. Nevertheless the reference is interesting as an attempt to maintain Egyptian communities in the desert landscape as a way of holding valuable territory.

The Middle Kingdom is also when the system of fortresses in Nubia is established. The procurement and control of mineral resources, especially gold, is doubtless one of the functions of these fortresses, especially in places like Buhen and Aniba where they fortify earlier Old Kingdom mining settlements (Ferreira 2019: 34; Shaw 1998). There is some evidence that Middle Kingdom gold mining in Nubia was directed from the fortresses and conducted with captive Nubian labor (Wegner 1995: 153).

As discussed in Chapter 4, the mission of Henu to the Red Sea coast is reportedly accompanied by an army of 3,000 men, as well as Beja mercenaries. The fact that many of these men probably also served as quarry workers does not necessarily diminish their power as a fighting force. Other Middle Kingdom expeditions report being composed of 10,000 men (Amenemhet under Mentuhotpe IV); an army of 2,000, accompanied by 20 soldiers of the Necropolis, 30 quarrymen, and 30 sailors (an unnamed official of Senwosret III); and 734 soldiers (Khentkhetihotep-Khenemsu under Amenemhet III) (Breasted 1906 Vol. I). Amenemhet's mission of 10,000 is said to return to the Nile Valley with the sarcophagus it was commissioned to quarry *and* an additional 3,000 sailors, not listed on the outward journey. Perhaps they joined the mining expedition on their way back from the Red Sea? Although these figures vary wildly, they are all rather

large numbers (and quite possibly inflated). The impression of might conveyed by these inscriptions recalls and doubtlessly emulates the records of military expeditions.

Mines at the edges of Egyptian territory, such as the turquoise and copper mines of Wadi Maghara in Sinai or the amethyst deposits of Wadi el Hudi in the south, display a more fortified, centralized settlement plan than the dispersed shelters of the central Eastern desert and Western desert quarries (Shaw 1994: 114). Expeditions to these mines also list smaller numbers of people than the large expeditions to Hammamat and other central Egyptian quarries (Sadek 1980: 104). Whether this was so they could move more easily in contested territory, or because the mining of metals and gemstones required less unskilled labor and portage than quarried blocks, is an open question. What is clear is that the settlements at these sites, at the edge of Egyptian colonial territories, are dense and sometimes fortified, with facilities for processing the material (smelting copper, sorting amethysts) on-site (Shaw 1994: 115).

Case Study: Wadi el Hudi

The amethyst mines at Wadi el-Hudi, in the Eastern Nubian desert, were exploited primarily in the Middle Kingdom and then again in the Ptolemaic Period. The Middle Kingdom activity begins at least as early as the 11th Dynasty, at which point there are extensive constructions on site to house miners and administrators as well as to process and warehouse the material itself (Shaw 1993: 84). Buildings and roads were built as a complex of an apparently permanent nature, and there is evidence of multi-phase construction, indicating prolonged use of the site. Inscriptions indicate an Egyptian presence at the site throughout the Middle Kingdom (Shaw 1993: 95).

A 12th Dynasty fortress is located directly adjacent to the main Middle Kingdom mine. This structure probably functioned as an administrative center and as storage space for processed material (Shaw 1993: 90). The façade of the fortress is constructed to resemble the Nile Valley border fortresses of the same period, with narrow, guarded entrances and defensive positions at the tops of corner bastions (Shaw 1993: 88). However, its position is on flat, low ground rather than on any nearby defensible hills, and the construction itself is flimsy (Shaw 1993: 93). The walls are short and thin, only a meter thick at the base, and support defensive positions only at the corners rather than along the entire perimeter (Shaw 1993: 80).

This suggests that defense was not the primary function of the building. Given the relative isolation of the mines and the large numbers of men working there, it is difficult to imagine the site was under threat of attack. The fortress is also situated to face the approach from the Nile valley (Shaw 1993: 82). Positioned at the end of the formal road to the site, it would have served as a gateway between the mining operation and convoys arriving from the Nile Valley. Thus the fortress façade may have been intended to give the impression of a fortified stronghold to discourage and intimidate would-be marauders, and to enforce the authority of the mine administrators by highlighting their control over the material. This can be seen as analogous to the imposing or quasi-military appearance of many modern banks: the goal is to imply the physical security of the building itself as well as the commitment of the state to protect the institution, whether or not this commitment actually exists.

Through its similarity to the contemporary border fortresses, the façade of the fortress at Wadi el-Hudi makes a visual allusion to the operation's place in the military

system of the time. Mining of amethyst and other commodities was generally undertaken by large state-sponsored expeditions, under the control of officials directly appointed by the king (Sidebotham 2008: 279). In addition to contributing to the treasury, these expeditions would have served to display and reinforce the king's economic and political control over these relatively remote regions (Sidebotham 2008: 279). Inscriptions from Wadi el-Hudi suggest that large numbers of the miners may have been Egyptianized Nubians or even captives; they certainly would have registered the similarity between this fortress and the constructions at the Second Cataract (Sadek 1985: 10; Darnell 2013: 800). The fortress façade of the administrative building at Wadi el-Hudi is an example of a landscape intervention designed to aesthetically tie the experience and exploitation of the desert landscape into the colonial system of the Nile Valley (Shaw 1994: 116).

The second cataract fortresses participated in the movement of mined materials from the desert into the Egyptian Nile Valley. Raw material was transported from the mines to the fortresses, and then shipped downstream, perhaps to workshops at Lahun or Lisht but more likely to the royal treasuries (Sidebotham 2008: 279). The road from Wadi el-Hudi to the Nile, which departs the fortress in a northwesterly direction, is quickly lost in the desert, making it difficult to say if the mines were directly tied to a particular fortress (Shaw 2013: 92). The nearest administrative centers to Wadi el-Hudi are Aswan, about thirty-five kilometers to the northwest, and the fortresses of Ikkur and Qubban, only slightly further away to the southwest. Qubban sat at the mouth of the Wadi Allaqi and was certainly an Egyptian portal for gold coming from mines in the Nubian Desert (Darnell 2013: 800). Trays of raw amethyst have been excavated from other Nubian fortresses, such as Buhen, although this fortress is considerably south of Wadi el-Hudi

(Emery 1963: 11). This could be an indication of amethyst sources further south or, conversely, evidence that amethyst was being traded southward into Nubia. Whether the amethyst shipped to Egypt was delivered directly to the artisans who would work with it or to the royal treasury is a matter of debate, although given the other evidence for state-embedded mining expeditions the latter seems more likely. Ultimately, the material reached professional jewelers who shaped the raw material into beads, amulets, and scarabs, often set with gold and combined with other precious materials mined from the desert regions.

New Kingdom

Far fewer mining and quarrying inscriptions are found from the New Kingdom, although archaeological evidence suggests that most of these sources were still being worked (this disparity is also noted by Shaw 1986: 201-203). There was New Kingdom activity in building-stone quarries of Turah and Aswan, which are relatively accessible to the Nile (for instance the quarrying and construction of Hatshepsut's famous obelisk). It is also clear that the desert route to the Red Sea is in use: in addition to Hatshepsut's expedition to Punt, there is evidence of another successful mission there under Thutmosis III (Breasted 1906). Unfortunately, Hatshepsut's Puntite reliefs at her mortuary chapel of Deir el Bahri begin their narrative with the embarkation from Wadi Gawasis, and do not show the desert travel required for either the outbound or the return journey, or disclose whether the Punt expedition involved quarrying as well. Under Amenhotep III there is some record of the limestone and granite quarries at Turah and Aswan, respectively,



Figure 3. Reign of Akhenaten/Tutankhamun: Nubian Tribute Presented to the King, Tomb of Huy (detail). Copy made by Charles Wilkinson, tempera on paper. Metropolitan Museum of Art.

being "reopened," and a fragmentary inscription from Serabit el-Khadim suggests that an expedition reached the mines there by means of crossing the Suez (Breasted 1906).

Perhaps the rulers of the 18th and 19th dynasties were more concerned with recording their military, imperial entanglements, although this type of activity would certainly not have diminished the demand for precious materials from the desert, particularly gold. It may be that one of the advantages of a military, colonial strategy was the ability to exact these materials in the form of tribute, rather than mounting expeditions to procure them. The tomb of Rekhmire at Thebes (Thutmose III) shows tribute being brought from various parts of Egypt and Nubia to the Temple of Amun, although gold and silver are the only mined resources included in the lists. The High Priest of Amun Menkhepereseneb is shown in his tomb receiving tribute from Asia and Africa. The Asiatics bring the produce of the mining-country, or "Gods-Land:"

> Giving praise to the Lord of the Two Lands, obeisance to the Good God, by the chiefs of every land. They acclaim the victories of his majesty; their tribute is upon their backs, being every [product] of God's-Land: silver, gold, lapis lazuli, malachite, every splendid, costly stone.

A similar scene can be found in the tomb of Thutmosis IV's scribe Taneni, and Menkhepereseneb receives "…gold of the highland of Coptos, besides gold of Kush the wretched, being the yearly dues…" Tutankhamun also receives the tribute of North and South, including precious stones. If the state is relying on tribute and tax to bring in these materials, it begs the question: who is financing and undertaking the extraction? More secure control of the frontier regions of Egypt's territory probably meant that more Nubians and Asiatics could be pressed into service in mines local to them, and fewer Egyptians needed to be transported to these far-flung locations. In all probability, the specialists and technicians who were overseeing the actual extraction, such as quarrymasters, architects, scribes, and gangleaders, continued to be members of the Egyptian privileged classes, as before.

Material and Meaning

So far in this chapter, the acquisition of mineral materials from the deserts has been framed as a political or economic exercise in conspicuous consumption, elite resource control, and a feature of the military aesthetic of colonial expansion. In this section, I will briefly lay out an argument for the desirability of mineral resources being governed by their perceived associations and powers, and for the experience of mining as an affective, embodied task that participates in a multivalent understanding of landscape and cosmology. I will return to these arguments in Chapter 7, but it is important to introduce them here because of the effect of these properties of mined materials on the

miners themselves, and the ways in which they may have perceived their work and their world.

Mineral materials were prized and selected for their material properties of surface texture, density, and color. The sources of stone quarried for statuary were selected according to these physical and aesthetic properties, because they provided the surface or skin of the subject carved. Lyvia Morgan (2011) has identified patterns in the types of stone used for figural sculpture, and concluded that certain materials were the exclusive prerogative of the elite, of royalty, or of the gods (Figure 4).

Material	Use
Veined stones (gneiss)	Divinities or divinities accompanied by the divine king.
Fine black stone (greywacke, schist, basalt)	Kings and occasionally other royalty.
Coarse black stone (granite)	Elite private statuary.
Fine red stone (quartzite)	Royalty, elite private statuary.
Coarse red stone (granite)	Elite private statuary, occasionally kings.
Pink or yellow stone (hard crystalline limestone)	Kings and other royalty
Fine white stone (calcite)	Kings, other royalty, and the elite.

Figure 4. Stones used for sculpture. After Lyvia Morgan (2011).

The selection of stones from certain quarries for certain purposes, based on the properties of the material, underscores the intrinsic affective values of the materials. The physical properties of different stones had different meanings, which made them more effective for certain applications. This applies to statuary but also to other items made out of mined materials, particularly gemstones, which had apotropaic valences. The consistent use of particular gemstones for particular amulets highlights the importance of material in

magical practices (Wilkinson 1994; Andrews 1994). This significance permeates the material to the extent that any gemstone jewelry may be considered to have apotropaic as well as aesthetic value (Andrews 1990: 171).

The stone amulets with which we are most familiar, such as the scarab, the ankh, the *wadjet* eye, and the *djed* pillar, were already being produced in the Old Kingdom and continued to be made well into the Late Period (Andrews 1994:11). Amulets could be as fully decorative as they were protective, but their material was chosen primarily for its magical efficacy. In many cases this is even prescribed in surviving texts. Chapters 159 and 160 of *The Book of Going Forth by Day* indicate how to make a *w3d* (papyrus) amulet out of green feldspar (Robins 2001:291). Chapter 156 of the Book of the Dead gives directions for making a *tyt* (girdle knot) amulet from red jasper, and explicitly connects the color of the material to the power of the amulet: as the amulet is made, the maker should say, 'You have your blood, O Isis. You have your power' (Robins 2001:292). More than any other physical property of a particular material, its color seems to be what is magically important. Colored gemstones were the most prized in these applications because of their natural and intrinsic properties of hue.

By the Middle Kingdom, the variety and popularity of gemstone jewelry had exploded, along with the intensity of gemstone mining in the deserts (Bloxam 2006: 278). Though much extant ancient jewelry is found in funerary contexts, it is reasonable to assume that people were wearing pieces in life, as well. This represents a departure from the "commission and sink" strategy of stone procurement seen in the realm of the royal and religious use of quarried materials, and suggests an alternative mode of distribution for mined materials in the Nile Valley. This is in accordance with the "democratization"

trend noted in the Middle Kingdom generally, in which many scholars see a rising intermediate class with access to prestige materials and participating in personal ritual practices (Parkinson 1991: 11; O'Connor 1985; Simpson 1974). In point of fact, evidence for the "democratizing" trend, seen in funerary goods, theophoric personal names, low-level bureaucratic titles, and increased access to cult areas, appears even as early as the late Old Kingdom (Richards 2005).

In light of the evidence for general participation in suites of apotropaic practices using gemstones, it seems likely that the people involved in their extraction would be aware of and influenced by their magical and apotropaic valences. The goddess Hathor is an important patroness of mining activity in her guise as Mistress of Foreign Countries, and additionally bears epithets referencing virtually every gemstone the deserts offered: Mistress of Turquoise, Mistress of Amethyst, and so on (Doxey 1998).

Hathor and Mining

Hathor is the most prominent deity at Egyptian mining sites, readily taking on as an epithet whatever material is being extracted. Thus she is "Mistress of Amethyst" at Wadi el Hudi, but "Mistress of Turquoise" at Serabit el-Khadim (Doxey 1998). Aufrere (2001: 59) suggests that Hathor embodies the precious 'fluids,' or minerals, concealed in the depth of the rocks, and that this is connected to her reproductive potential. Hathor also has prominent associations with sex and fertility, and can be personified as a mountain landform full of mineral-bearing caverns (Faulkner 1973: Vol. II, 130-131; Aufrere 2001:59).

In this context, it is probably significant that the earliest cult-space of Hathor at Serabit el-Khadim was a shrine cut into the living rock (Bonnet and Valbelle: 1997; Petrie and Currelly 1906: 96–8). Miners engaged in breaking up the desert mountains in order to extract minerals were devoted to Hathor, as demonstrated by the density of votive inscriptions dedicated to her at the site of Serabit el-Khadim (Gardiner et. al. 1955; Valbelle and Bonnet 1996; Tallet 2003). Hathor's temple at Serabit is perhaps the oldest rock-cut temple in Egypt, reiterating the theme of cutting into the earth that characterized mining (Pinch 1993). This temple is notable for having apparently been built largely by the miners themselves, in the Twelfth, Eighteenth, and Twentieth Dynasties (Valbelle et. al. 1994). This initiative suggests the importance and Hathor and her cult to the miners who were working here. Her worshippers at Serabit were not only Egyptian, as attested by the presence of proto-Sinaitic inscriptions, indicating the presence of Canaanite miners at the site as well (Beit Arieh 1997; Valbelle and Bonnet 1996).

Sydney Aufrere notes a New Year's Day procession dedicated to Hathor that brings together the produce of the mining regions (1991: 731-787). This is the time of year when the rising of Sirius signals the beginning of the inundation. At this time of year, the Coffin Texts declare: 'the mountain is broken, the stone is split, the caverns of Hathor are broken open; she ascends in turquoise and is covered with her royal wig-cover...' (Faulkner 1973: Vol. II, 130-131). From this we might conclude that miners located Hathor *inside* the earth that they were physically digging into in the course of their work, and that the minerals they sought were, to a certain extent, identified with the body of the goddess. Thus Hathor is associated not only with the produce of the mines but also with the actual material and location of the earth from which they come. The act

of mining, or seeking materials within the earth, takes on aspects of fertility cult. This perhaps explains the prominence of a female divinity who oversees an apparently male enterprise.

The associations of Hathor with mining and with fertility, sex, and motherhood resonate with more recent anthropological work on mining, in which ores grow inside the earth, as in a womb, and are extracted by miners who consider themselves consorts of the earth (Eliade 1956: 33; Godoy 1985: 208; Moretti 2006: 108; the concept has been theorized for the Egyptian context by Aufrere 2001: 159). In light of the connection between mining and fertility it is significant that the only other god specifically associated with mining is Min, the ithyphallic god of fertility and generation (Bloxam 2006: 283). Min is particularly associated with the *beken* stone sourced from Wadi Hammamat for statuary, and his epithet "Min of Coptos, Lord of the Desert" is probably related to the position of Coptos on the entrance to the Hammamat road (Chapter 4) (Lichtheim, 1973: 114–5; McFarlane, 1995: 319). In the New Kingdom he is also associated with the lead galena sources in the Eastern desert (Pinch, 1993: 73).

Anatomy of a Mining Camp

This section considers the situation of daily life in Egyptian mining communities, beyond the ritual and cosmological associations discussed above and in the following chapter. Most of the information we have about the composition of these communities comes from epigraphic evidence, but the figures recorded in mining inscriptions for the numbers and composition of mining personnel need to be viewed cautiously. As an

indication of how mining activity was conceived and presented in official discourse, they are a useful genre, but it is unlikely that they can provide an accurate picture of the social reality of Egyptian mining. Although the ephemeral nature of most mining camps makes it difficult to estimate the maximum size of an expedition, archaeological remains at most sites suggest that the maximum number of workers in residence at one time was around 200 (Bloxam 2010). This contradicts and undermines the reports made in the mining inscriptions, but seems considerably more reasonable given the constraints of travel and water availability. The discrepancy cannot be resolved for the time being. The previous sections have summarized the genre of sources and evidence for the enterprise of mining in Pharaonic Egypt. In the last section of this chapter, I will focus on what we can glean archaeologically of the social dynamics of mining expeditions, and recent arguments for a bottom-up imterpretation of the standard narrative of mining as a state activity.

Bloxam (2006) offers a critique of the top-down assessment of mining activity as generalized and Orientalist, and argues for greater attention to social complexities at a micro-scale. Her arguments center mostly on cult practices, and I will attend to them in the next chapter. Here, I would like to apply her call for nuancing the interpretation of state models of enterprise to the evidence we have for diverse, cooperative groups at mining sites, whether or not they are assembled there by state authority.

As discussed in Chapter 5, border territories tend to be regions of "ambiguity and intersection," where the frameworks that enforce "normal" often blend paradigms (see also Preucel and Meskell 2004: 220–221). Mining was not the main livelihood of many individuals, although lists of expedition members do include professional prospectors and quarrymen (Shaw 1998: 246). The bulk of the workforce were not specialists, but

agriculturalists subject to the corvée (Shaw 1998: 246). Thus a catalog of personnel from an expedition to Wadi Hudi records one steward and his 56 officers, one general, 1,000 "strong men from all Thebes," 200 from Elephantine, 100 from Kom Ombo, 41 "chief prospectors of the residence," 50 caravan leaders, and 61 "archers from the department of the south" (Shaw 1998: 247). Here is a group drawn from several different places in Egypt and Nubia, and from several different walks of life. This diversity would seem to characterize Egyptian mining camps.

At Serabit el Khadim in the Sinai, the situation is much the same. Hundreds of formal and informal rock inscriptions exist at the site, dating from the Twelfth Dynasty into the New Kingdom, indicating the presence of miners from Egypt, Nubia, and the Levant (Valbelle and Bonnet 1996; Tallet 2003). Some of the most interesting of these are not in Egyptian but in proto-Sinaitic, a Canaanite writing system, further attesting to foreign miners (Beit Arieh 1987; Valbelle and Bonnet 1996). A private stela depicting a family suggests possible intermarriage between Egyptian miners and local women (Sweeny 2013).

This diversity is in line with the idea of the mining community "representing the domestic space of people who often were or are heterogeneous in character, of diverse origins, and drawn together by the need to work" (Roberts 1996: 5,10). The ethnic diversity displayed by Egyptian mining communities is complemented by the professional diversity seen in many expeditions. In addition to the soldiers, sailors, skilled and unskilled quarrymen, donkey drivers, generals, archers, scouts, scribes, etc. that we have already seen in the mining inscriptions, a wide array of titles are attested. Gardiner et. al.'s (1955) index of titles in the Sinai inscriptions includes a gardener,

domestic servants, and several "removers of scorpions." The variety of roles would have meant that members of mining expeditions, both elite and non-elite, may have been rubbing elbows with perhaps a wider slice of society than they would have in "normal" life. This would have opened up possibilities for friendship, conflict, and transmission of knowledge that are largely invisible in the archaeological record, but are an important part of the social reality of desert expeditions.

The paradox of the temporary, state-supplied nature of these settlements is that the material that we would normally use to identify social difference and identity is curiously uniform. This is a peculiar hallmark of mining camps ancient and modern, because they are usually formed of people who traveled light, do not intend to remain, and are content to be supplied with the basic needs by a company or other institution (Knapp 1998). At most Egyptian mines and quarries, some provision is made for the accommodation of the large number of workers who made up an expedition. Even where mines were returned to repeatedly, however, the nature of the living structures is ephemeral, consisting mainly of low wind-break walls of un-mortared local stone (i.e., Shaw 2009, 1994). Probably the mixing of mortar was too water-intensive for limited resources already stretched thin, and the majority of expedition members probably carried their own tents or other temporary shelters. Whether these varied significantly based on the status of their occupants cannot be said.

The pottery and other artifacts found at these sites originate in the Nile Valley. The pottery especially most often bears similarities in fabric, type, and pot-marking to administrative production in the Nile Valley, showing the official, governmental distribution of provisions (Shaw 2009). The institutional, and probably rationed, nature of

food delivery to the mining camps flattens out another marker that archaeologists normally use to detect social difference. The standardization of material culture at mining encampments creates a peculiar situation for archaeology: should we assume that the lack of luxury items created a more egalitarian social system, or did it drive people to distinguish themselves in other ways, for instance by segregating according to ethnic group or profession? The difficulty of finding ways to answer these questions may account for the lack of anthropological studies on mining camps. The impermanence and resulting absence of distinctive cultural markers defy traditional ways of defining and studying community. Douglass (1998) approaches this issue, and refers to mining settlements as communities "without locus," describing the thin material evidence and lack of variability that characterizes mining camps in both ancient and modern contexts.

These challenges mean that the study of mining settlements requires its own rubric, based more on social situation than on material culture. Bulmer (1975) suggests that mining communities exhibit the following characteristics:

1. physical isolation, and a dispersed settlement system;
2. economic predominance of mining;
3. exacting, dangerous and periodic work;
4. occupational homogeneity and isolation;
5. communal leisure activities (religious, sporting, drinking) where work remains the chief interest and topic of conversation;
6. sharply segregated family and gender roles;
7. economic and political conflict between miners and managers;
8. multiple and complex communal social relationships: solidarity, shared histories of work and living, inward focus.

This list is intended for modern, capital-intensive communities, but it nevertheless fits the Pharaonic Egyptian evidence well. Items 1 through 4 of this list have been discussed at length already in this chapter. Item 5 will be addressed more fully in Chapter 7, but certainly applies to Egyptian mining camps, where cult seems to have been a

matter of both community and individual concern. Several deities, principally Horus, Hathor, Sopdu, and Min, are venerated at mining sites with chapels, inscriptions, and evidence of cult. In many instances they blend with local deities or take on epithets specific to the mining context (Shaw 1998: 253). The large temple to Hathor at Serabit el Khadim is notable for having apparently been built largely by the miners themselves, in the Twelfth, Eighteenth, and Twentieth Dynasties (Pinch 1993; Valbelle et. al. 1994). This shows an unusual piety and initiative in a context where temple-building is otherwise exclusively a state prerogative. Item 6 also seems to apply to our context: evidence for the participation of women in mining expeditions is exceptionally thin (Sweeny 2013). Whether this is due to their actual absence or to a bias in the record (which so often obscures women's roles in community activities) is a matter for further study. Items 7 and 8 are more difficult to identify in the archaeological record, but indicate areas where directed research could be conducted.

Conclusion

The study of mining activity is an important component in understanding the Egyptian relationship with the desert. The numerous surviving official inscriptions that document mining expeditions provide insights into political conceptions of the mining enterprise. This record, however, obscures personal experience and the subtle negotiations of identity that must have taken place within the socially diverse context of a mining camp. This is where archaeology would normally step in to provide evidence from the material record, but the particular circumstances of mining camps mean that the archaeological record will also obscure the social questions at hand. A more nuanced understanding will need to come from an assessment through an anthropological lens, but

the anthropology of mining and mining communities is still largely undeveloped (Knapp 1998).

Where historical, archaeological, and anthropological methods come up short, however, we can still look to the landscape. The stelae and inscriptions left by mining and quarrying missions are landscape interventions that tell us a great deal, textually and sub-textually, about the motives and meaning of these expeditions. Although generally studied as historical documents, on a landscape level these inscriptions create place and materialize the ongoing tradition of seeking certain materials by allowing past missions to communicate with each other and with their audiences. In this sense, they can be studied with the same methods I advocate for non-textual rock art: an analysis of the spatial relationships of expedition texts to the topography and to each other has not yet been made.

The location and particulars of a mining camp are determined by the presence of the resource to be mined (Knapp 1988: 4). The landscape will force certain aspects of life in the camp: the layout and materiality of the architecture, for instance, or the difficulty in accessing water. Even the planning apparatus of the organizing authorities is subject to the pressures of terrain and environment, forcing settlements that might otherwise follow an intelligible logic of state planning to be modified to accommodate the requirements of the landscape. The experience of people living in the camp will be informed and shaped by the effect of the landscape on their lives, physically and emotionally. The triad of perceived, conceived, and lived experience can be applied to these dynamics, which are operating simultaneously within the realms of state planning, bottom-up community-building, and physical and cosmological engagement with the landscape itself. It is the

emotional dimensions of this experience, the landscape imaginaries that influence day-to-day life, that are the subject of the next chapter.

CHAPTER 7. CULT, RITUAL, AND LANDSCAPE IMAGINARIES

Introduction

The previous chapters have mostly been concerned with the Egyptian engagements with the desert landscape in their "pragmatic" or "realistic" dimensions. This chapter is concerned with the abstraction of desert landscapes, generally and particularly, and their influence on conceptual frameworks within the Nile Valley. Accessing this dimension of landscape thinking in the ancient past is difficult: by nature, much of this genre of landscape knowledge is either taken for granted in its time, or intentionally occluded, as in religious texts that rely on suites of references and allusions. In places where we have ethnographic evidence, such as modern Australia, many aspects of landscape knowledge are secrets held by initiated community members (Morphy 1995).

For the case of ancient Egypt, we lack a direct ethnographic perspective on the desert landscape. Egyptologists of the last centuries applied their own assumptions instead, with the result that the desert has been presented holistically as a threatening, hostile place, where the forces of chaos reigned. As the last chapters have shown, the Egyptians frequently entered and engaged with the desert for a variety of reasons. If the landscape evoked chaotic forces, anathema to the Egyptian principle of *maat*, how was

this reconciled by a population that crossed the deserts, worked in the deserts, and acknowledged the desert origin of some of the most prized luxury goods?

The distinction between cosmic order, *maat*, and chaos, *isfet*, has been discussed in other chapters, because it is the structuralist pairing that this dissertation seeks to complicate. If the deserts are consistently assigned to the "chaos" side of the equation, we risk missing important conceptual roles of the desert landscapes as generative, mythologically potent, and even protective. As Axelle Bremont (2018) points out, Egyptologists have often uncritically mapped the chaos/order dichotomy onto the nature/culture divide, and therefore assumed that any actors and entities that are "wild" can also be seen as "chaotic" and therefore dangerous to cosmic order. Bremont instead advocates an understanding of wildness as a critical component of the cosmic balance of the world, rather than a destabilizing force that must be held in check. Following this idea, I argue for an understanding of the Egyptian deserts in which "wildness" was ambivalent rather than destructive. Bremont (2018: 1) phrases this in terms of non-organization, as opposed to disorganization. As a "non-organized" zone the desert is conceptually similar to the waters of Nun, the neutral, primordial liquid from which the world is generated, and which contains the material of both positive and negative possibilities (Hornung 1956). I find this ambiguity to be a useful framework for understanding the complicated and at times contradictory ideas about how people viewed the ancient desert landscapes.

This chapter is focused primarily on cult and ritual and the ways in which the deserts are reflected in cosmological geographies. Many intricacies of Egyptian theology

and practice have been left out, although these are questions I hope to return to in future projects. Here, I focus on three main concepts:

The need to domesticate or socialize the desert landscape in order to render it intelligible and navigable;

The tendency of real and imagined desert landscapes to bleed or blend into one another, with ambiguous boundaries in geographic and conceptual space;

And the formation of gods and other supernatural entities, real and fantastic animals, and human populations in the desert into a cosmopolitan "koine" associated with elite participation and knowledge.

In Chapter 1, I suggested that representations in art, literature, and symbolic behavior can be useful sources for understanding landscape imaginaries. By reflecting perceptions, rather than total realities, representations of landscape serve as a culture-specific filter for aspects of a landscape that are deemed significant. In studying what is represented, we can make guesses about the aspects of the landscape that were culturally salient. These representations are often accessible in many parts of the archaeological record, allowing a comparative analysis across genres and time.

In the Egyptian context, the vast majority of surviving references to and representations of the desert landscape are found in material genres relating to cult and ritual. Even the mining inscriptions discussed in the previous chapter very often include dedications to important deities associated with the desert. This chapter investigates the religious dimensions of the deserts in Pharaonic Egypt and considers how conceptions of these landscapes were informed by cosmological ideas, and by cult and ritual practice.

Memories of a Green Sahara and Predynastic Conceptions of the Cosmos

As discussed in Chapter 3, the drying of the Sahara at the end of the African Humid Period was a gradual process that started around 5000BCE and was punctuated by wetter episodes. Even as populations were slowly forced to aggregate in the Nile Valley, they were still able to practice a traditional pastoralist way of life. The gradual transition appears to have allowed many aspects of Saharan cult, such as that practiced at Nabta Playa, to enter the Nile Valley and influence the foundational Egyptian religious system (Chapter 3).



Figure 1. Barbary sheep among the desert hills. Naqada Ic (c. 3700 BCE). Ashmolean Museum of Art and Archaeology AN1895.482 (Patch 2011).

Archaeological evidence shows a concern with the symbolism of the desert landscape, as well. In the cemeteries at Badari, which are situated not in the floodplain settlement but in the low desert wadi mouth to the west of it, the bodies are almost exclusively buried with their faces to the west (Hendrickx and Vermeersch 2000: 37). The association of the dead and the necropolis with the desert fringes and the west continues throughout Pharaonic history.

Predynastic Iconography and the Desert Environment

As discussed in Chapter 4, there is considerable overlap and stylistic similarity between the motifs of the rock art of the Eastern desert and those of the movable decorated objects of the Predynastic period, although attempts to match the two corpuses stylistically in order to form a chronology have shown that they are not exactly comparable (Wengrow and Baines 2004: 1089).

The decorated objects of the Naqada periods include pottery, stone maceheads and vessels, amulets, cosmetic palettes, and portable objects related to personal grooming. The suite of decoration is mostly composed of environmental motifs: flora and fauna figure prominently, and I will follow other scholars in arguing that geometrical motifs found in much Predynastic art represent topography. Human figures also appear, generally shown among the other natural elements. Most of these objects are portable or even wearable, designed for close interaction with the human body. Wengrow and Baines (2004: 1088) suggest that Predynastic decorated objects "a coherent vision of the non-human environment into the intimate spaces of human interaction."

In the context of this assertion, which has important implications for the cultural conceptions and consumption of the desert landscape, it is critical to address the geometric motifs that often occur on painted pottery of the Naqada periods, such as rows or clusters of triangular "mountains" and fronded "plants" (Figure 1). While Wengrow and Baines (2004: 1085) rightly caution against the interpretation of these early abstract motifs as landscape features, I will follow many other scholars (Fairservis 1983; Finkenstaedt 1981; Davis 1976) who do accept this analysis. The siting of the identifiable animals among these motifs gives a distinct impression of environment; the generally

horizontal arrangements of the motifs in separate registers from figures and animals suggests landscape (Davis 1976: 407). The repeating peaks of the triangular "mountain" motif are recalled by the wavy ground-line that canonically identifies a desert environment in later compositions, seen already in the 5th Dynasty reliefs at the pyramid temple of Sahure at Abusir (Figure 2). Significantly, these elements do not appear in the roughly contemporary and stylistically similar rock art. I believe that this is because these motifs represent landscape elements, and would have been redundant if carved on a landscape substrate. Therefore, acknowledging the difficulty of conclusively identifying the triangle motif on Predynastic pottery, I am of the opinion that it is intended to represent the desert hills that flank the Nile, and to situate the figures or action depicted on pieces with the hill motif in the desert environment.

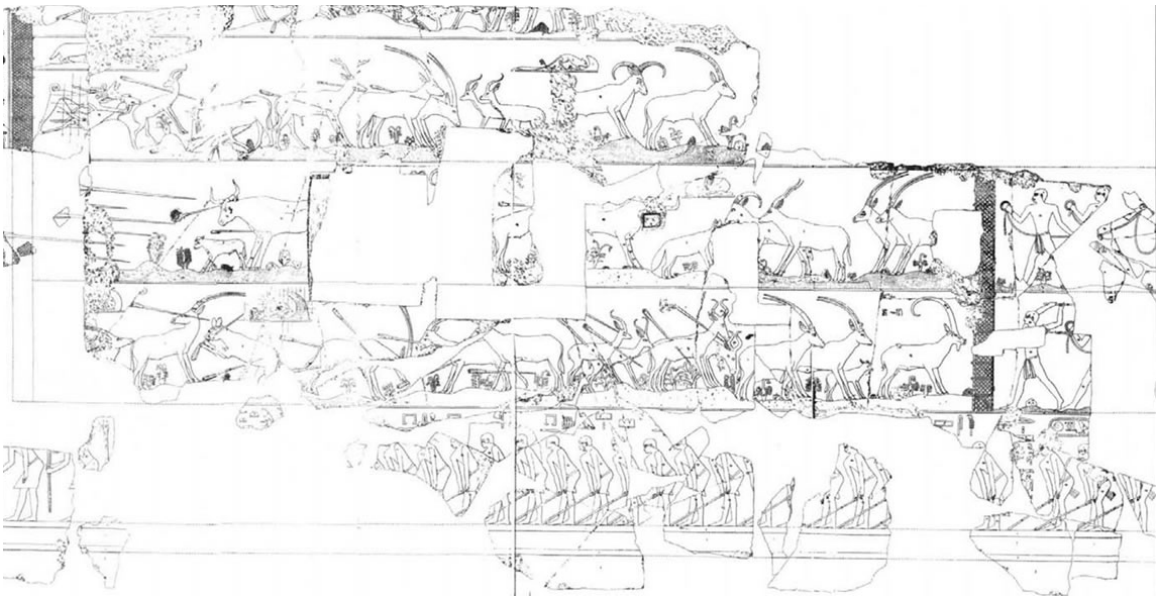


Figure 2. Detail from the desert hunt scene of Sahure from his pyramid temple at Abusir. 5th Dynasty. From Borchardt, 1913. Pl. 17. Note the wavy ground-lines (painted red) on which the animals stand, and the nets (depicted as vertical barriers, crossing registers) at either side.

Figure 3. Boats in a desert landscape. Naqada II (c. 3450-3300 BCE). Metropolitan Museum of Art 20.2.10 (Patch 2011).



The distribution of Naqada-period art, across media and geographical space, demonstrates the movement of its creators across both desert and Nile landscapes. A Naqada II jar (Figure 3) shows the triangular desert-hill motifs combined with people on boats, a common juxtaposition that raises questions about where, precisely, the action is occurring. On the ceramic vessel it seems that the desert mountains may be the landscape as seen in the distance from the Nile, but this interpretation does not account for the numerous contemporary depictions of boats and their crews which are found throughout the desert, the interpretation of which is as yet undecided (Lankester 2013; Darnell 2002). In other words, the landscape is densely decorated with images of boats, suggesting that their iconographic significance is not confined solely to Nile navigation. Therefore the combination of boat motifs with desert landscape elements should not surprise us, even if we have not arrived at a firm interpretation.

Although the decoration of the Naqada vessels probably draws on scenes of daily life, it doubtless also has a symbolic function. This can be seen in the raised-arm posture of many of the human figures (which is probably associated with mourning, dance, or worship), and the formal arrangement of animals in rows, which on other Predynastic

objects has a demonstrably symbolic resonance (Raffaele 2010). The ritual context of the scenes, and the decision to include landscape elements among the other salient motifs, would make it seem that the inclusion of landscape elements is an important part of the message of the piece, and not just background. The consistent and schematic representation of landscape features suggests that these elements had general, commonly understood meanings. This is turn indicates that the "places" represented on the Naqada vessels are not intended to be particular, but rather to depict events that were known to take place in a *kind* of place: in this case, a desert environment.

The Desert in a Predynastic Ritual Context

The depiction of desert animals and desert hunts is a common theme of decoration on Predynastic pottery. Figure 4 shows a Naqada III jar that depicts human figures along with antelopes among the triangular desert hills. The paneled design at the rim of the piece has been interpreted as representing a fence used to direct animals during game drives: parallels are seen in the Sahure desert hunt (Figure 2) and in Middle Kingdom desert hunt scenes such as that in the tomb of Khnumhotep II at Beni Hassan (Patch 2011).

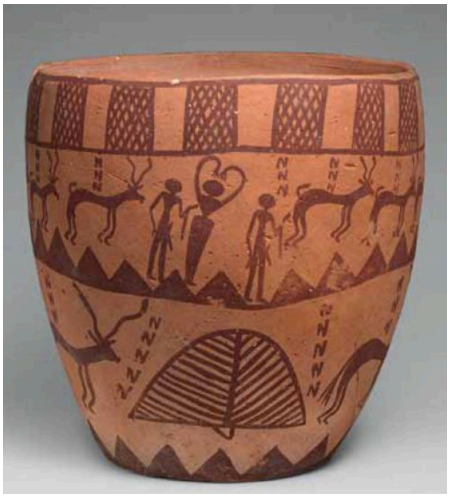


Figure 4. Naqada III. Ashmolean Museum of Art and Archaeology AN1896-1908.E.2832 (Patch 2011).

Although it is worth noting that the pieces cited here are separated from the Naqada vase by a considerable amount of time, the practice of driving desert game into nets through "desert kites" has

been attested archaeologically and ethnographically in a number of times and places, including prehistoric southern Egypt (Storemyr 2011; Rosen and Perevoletsky 1998; Echallier and Braemer 1995).

Despite the frequent appearance of hunting scenes and desert animals on Predynastic decorated objects, archaeological evidence suggests that desert hunting was not an important part of the Predynastic subsistence strategy. Wild animal remains make up less than one percent of the faunal assemblage at Predynastic settlement sites (Hendrickx 2011: 77), with the notable exception of Hierakonpolis, where their consumption is patently part of a ritual practice (Friedman 2011). This suggests that the importance of desert hunting as an activity was located beyond the pragmatic needs of the population.

The theme of desert hunting, as it appears in later Egyptian art (often in conjunction with scenes of the king killing enemies in battle), has been interpreted as a metaphor for the control of chaotic forces and the maintenance of *maat* (Bremont 2018; Assmann 1990; Kemp 1989). This explanation has accordingly also been applied to the Predynastic material, as evidence of a developing visual vocabulary of elite power and royal control (Hendrickx and Eyckerman 2010: 122; Ciałowicz 1991; Asselberghs 1961). An effect of this identification has been to project into the earliest periods of Egyptian history the idea of an inimical and chaotic desert. This does not satisfactorily address the fact that the deserts of the Predynastic period were considerably greener than later in Pharaonic history, and that the record of rock art suggests that the desert landscapes were widely traversed and utilized in a variety of human activities (Chapter 4).

This suggests the need for an interpretation of the ritual valences of the deserts that is focused not on control and fear, but on relationships with desert landscapes and species that had a more complicated conceptual significance for the humans who were decorating their pottery, ritual objects, and personal items with desert animals, plants, and landforms. In Chapter 3, I discussed the Predynastic approach to the deserts as familiar spaces that held important social memories, even in a gradually changing environment. In the following sections, I investigate how these bodies of memory can be seen in later engagements with the same spaces, and how the reiterative action of landscape memory can transform linear time into cyclical, or mythological, time. The conceptual rooting in place of events understood as occurring in cyclical time transforms physical spaces. This phenomenon applies a layer of landscape meaning that exists outside of historical time and outside of "reality," allowing the understanding of conceptual realms and cosmological events to become sedimented in place along with the memories of lived experiences. In this way, abstract landscapes, built of memory, association, and myth, become a part of the lived experience of space.

The Desert as Abstract and Otherworldly

Understanding the dimensions of the deserts as abstract or mythological spaces requires the unraveling of complex sets of associations. In the following sections, I attempt to access some of these dimensions of landscape conception by highlighting references to the desert, or to desert-like environments, described in an array of different media. Some of these references are explicit, and others are admittedly more subject to interpretation. However, all are related to the various, and sometimes contradictory, ways

in which desert landscape imaginaries functioned as substrates for the construction of ancient Egyptian cosmological ideas.

The Geography of the Egyptian Cosmos

The sun's journey from eastern to western horizon formed the centerpiece of the Egyptian cosmological geography, as we understand it (Pinch 2002; Allen 1988: 5). In this abstract and schematic conception, the Nile Valley figured as the center of the world; to either side was the low desert, then the desert mountains, the demon-infested barrier territory between this world and the next, and then the realm of the gods. The entire world was surrounded by water, the primordial sea that, when receding at the beginning of time, had exposed the world (Allen 1988). In the cenotaph of Seti I this is referred to as "the uniform darkness, the southern, northern, western, and eastern limits of which are unknown, these having been fixed in the waters, in inertness" (Allen 1988: 1).

The sun was thought to traverse this geography on a circular path: rising in the eastern horizon, arcing through the daytime sky, and setting in the western horizon before traveling back to the east through a watery, underground nighttime world. Seen from the Nile Valley, the horizon is located in the desert hills; the image of the sun rising from or setting into the hills is expressed in the *akhet* symbol. This stylized depiction of the moment of the sun's transition between day and night worlds is an important representation of the liminal zone where the sky and the earth connect and can be passed between (Assmann 1996).

An Naqada I plate in the Cairo Museum has been interpreted as an early representation of the sun's journey across day and night worlds (Figure 5). In this

interpretation, the triangular mountains in the center represent either the desert hills that flank the Nile Valley, or the pair of hills that create the *akhet.* The wavy lines surrounding them can be seen as the primordial sea, and the two suns then represent the day and night halves of the solar journey (Giedion 1962). Acknowledging again the methodological risks of projecting these interpretations so far back in history, if we are to follow this interpretation of the Cairo Museum plate it suggests a very early establishment of the geographical understanding of the solar cycle.



Figure 5. Naqada I plate depicting the passage of sun through day and night worlds. Egyptian Museum, Cairo.

The horizons, in this conception, are critical locations of transition, intermediate regions between the daylight surface world and the chthonic realm that is its inverse and opposite. This latter is not precisely located, although it carries a sense of being *under* the

surface world (see below). The horizons, however, are visible and therefore locatable, and, from the perspective of the Nile Valley, they are in the Eastern and Western deserts.

Liminality and Ambiguous Landscape Imaginaries

As a liminal zone between the human world of the Nile and the supernatural world of the gods, the desert was seen as a intermediary space where elements of both might intermingle. Images of desert hunts and collections of desert animals, therefore, include gazelle, Barbary sheep, lions and leopards, hares, and foxes; but already by the Predynastic period they are intermixed with griffins, serpopards, and other fantastic animals, who have crossed into the Egyptian desert from foreign or mythological lands (Wyatt 2009; Kamrin 1999: 85; Shedid 1994; Davies 1933: 26-28; Newberry 1893: II, pl. 13).



Figure 6. "Two Dog Palette." Note the mix of gazelle, lion, giraffe, etc., with griffins, serpopards, and other fantastic animals. Hierakonpolis. 3300-3100 BCE. Ashmolean Museum.

This permeability to otherworldly influence is what is meant by the term "chaotic" as it is usually used to describe the desert in ancient Egyptian thinking. In the framework of traditional scholarship, "chaos" is assigned a negative valence,

being the opposite of *maat,* or cosmic order, perceived as the force of good. I would like to propose, however, that we think about chaos not in terms of evil, but in terms of an ambiguity seen in wildness. The danger of the "chaotic" desert landscape comes from the fact that it is not wholly within the Egyptian paradigm, and therefore Egyptian standards of action and behavior may not guarantee successful outcomes. This does not mean, however, that disaster is assured: with appropriate knowledge, the "chaotic" landscape can be safely navigated.

The previous chapters have discussed ways in which landscape knowledge was created and materialized in the actual desert, i.e., with petroglyphs, inscriptions, cairns, and other technologies that create landmarks or nodes and cause the geological surface to communicate with humans in a way that is recognizable and coherent. This process of landscape "domestication" can be seen reflected in "magical" or religious ways of dealing with the *abstract* notion of the desert. Depiction of and interaction with fantastical desert animals such as griffins, serpopards, and Seth-animals is a useful touchstone for the phenomenon, because they are consistently and clearly represented. In his 12th Dynasty desert hunt scene at Beni Hassan, for instance, Khety I is seen with a griffin collared and tethered among his hunting dogs. This is an explicit example of the "domestication" of supernatural desert elements, as it implies the capture of a fantastical desert animal and its transformation into a companion creature that will assist in the hunt of its own kind (Kamrin 1999: 85). The unusual and prominent teats of the griffin may be intended to heighten the idea of domestication by implying that the animal has been bred, although this is speculative.



Figure 7. A captive griffin. 12th Dynasty. Tomb of Khety I, Beni Hassan. Facsimile Painting, Metropolitan Museum of Art.

In this example, the "real" and "abstract" deserts are shown bleeding into one another, making the taming of a griffin an obvious and material sign of Khety's knowledge of the desert landscape. It is worth noting that Khety was nomarch of the Oryx nome, which administered much of the Eastern desert (Grajetzki 2006: 111-113). His pet griffin can be seen as an indication of his ease in and ownership of the Eastern desert, gained through knowledge and experience.

Khety is not the only elite Egyptian to be shown engaged in desert hunts. The scene appears throughout the Predynastic and Old Kingdoms, in the Middle Kingdom tombs at Beni Hassan, and it proliferates in private and royal contexts in the New Kingdom (Bremont 2018; Marshall 2012; Raffaele 2010; Hendrickx et. al 2009; Altenmuller 1981, 1967). Due in part to the ritualized tomb and temple contexts in which

they are usually seen, which lend a layer of cosmological symbolic significance, hunting scenes are generally interpreted as ciphering for the control of chaos (Raffaele 2010; Hendrickx 2006; Kemp 2006: 92-99; Arnold 1999: 99). This interpretation is based on parallels to battle scenes in which the king destroys enemies, and the two genres are often discussed as symmetrical or equivalent (e.g. Pietri 2014; Kamrin 1998; Bonhême and Forgeau 1988; Derchain 1966). However, as Bremont (2018) points out, the parallels are not precise. Significantly, throughout the dynastic period it appears that many of the desert animals pursued in hunting scenes were ideally captured rather than killed. They were then held in game preserves, and ultimately presented to temples and other institutions as offerings (Kamrin 2009: 29; see extensive bibliography in Woods 2018: notes 35-37). This situates desert animals as desirable, rather than anathema, and suggests that the procuring of them (presented as an elite undertaking) was a prestige activity (Baines 2013; Hendrickx and Eyckerman 2012).

Found occasionally among the groups of desert animals shown in hunt scenes are the fantastical animals mentioned above: griffins, serpopards, and Seth-animals. With the exception of the Seth-animal (discussed below), these composite creatures in their several iterations are found not only in Egypt but also in Mesopotamia, beginning very early. Some scholars (Wengrow 2014; Gerke 2014) believe that images of composite beasts were introduced into Egypt on Levantine cylinder-seals starting in the early 4th millennium, while others believe that at least the griffin originated in Egypt and then travelled abroad (Wyatt 2009). Regardless of their origin, both of these animals can be found in non-Egyptian 4th Millennium contexts. Within Egypt, they were therefore

associated not only with the desert, but with the iconography of Bronze Age Mediterranean trade (Wengrow 2014).

I would like to suggest that the encounters of the Egyptian elite with fantastical animals in their desert hunts is, in fact, a sign of cosmopolitan access to a kind of Mediterranean koiné of mythological entities. As such, griffins and serpopards were associated with the foreign and with prestige as well as with the desert territories that formed the border between Egypt and the Levant. In this conception, Khety's captive griffin is not only a sign of his familiarity and mastery in the desert landscape that he governs, but also a signal of his participation in a suite of cosmopolitan, elite idea exchange. I will elaborate on the idea of the supernatural desert koiné in the following section. Here, I will simply reiterate that the polysemous nature of the mythological animals understood as living wild in the desert contributes to the understanding of the desert environment as liminal and ambiguous. The depiction of these animals is a way of making knowledge about the desert environment, a representation of what is "out there." The hunting and capture of real and fantastic desert species is a form of domestication or socialization of the wild, but I would advocate a critical appraisal of whether these species have the negative connotation of "chaotic." Instead, it seems that they are desirable produce of the desert regions and an important part of the temple economy. Their acquisition requires the exertion of elite hunting activity, bringing desert animals into the realm of prestige and display. The coexistence of real and imagined animals in the desert creates a gradient of reality and geography that highlights the liminality of the landscape, in the sense that imaginary species can "bleed through" from the cosmological

into the physical landscape, without a clear separation needing to be drawn between the two.

SETH, HATHOR, AND THE SUPERNATURAL KOINÉ

Major gods of the Egyptian pantheon held dominion in desert landscapes, by means of their associations with mythological narratives or topographic features. Here, I will focus on two major deities: Seth and Hathor. The absence of the god Min from the following section may stand out: he is equally as important as Seth and Hathor in the desert regions. For reasons of time and space, I have left a discussion of the overwhelming body of material on Min and his cult out of the following discussion, but his presence, especially in the Eastern desert, is extremely important. Each god had their own, frequently intersecting, affordances connecting them to the desert landscape, having to do with landscape features, real and mythological histories, and the activities of mining, trade, and diplomacy. In their desert guises, each of these gods is connected to the tension between fertility and barrenness, encounters with the foreign, and wildness and ambiguity.

Seth

By the New Kingdom, the god Seth is explicitly stated to be the Lord of the Desert. This is his chief domain, which he is given in settlement (or punishment) after being removed from the line of succession to the divine throne. This is related in the text referred to as *The Contendings of Horus and Seth*. The story, which describes the conflict between Seth and his nephew, Horus, and their respective suits for the throne of Egypt, is

preserved from the Ramesside period although elements of it are referenced as early as the Old Kingdom Pyramid Texts (Mathieu 2011: 143; Simpson 2003: 91-103). In it, both gods behave egregiously, but Horus is judged over Seth. Egypt is initially divided between them, but then Seth is instead given the deserts as his portion, as well as an important role as a protector of the Solar Barque.

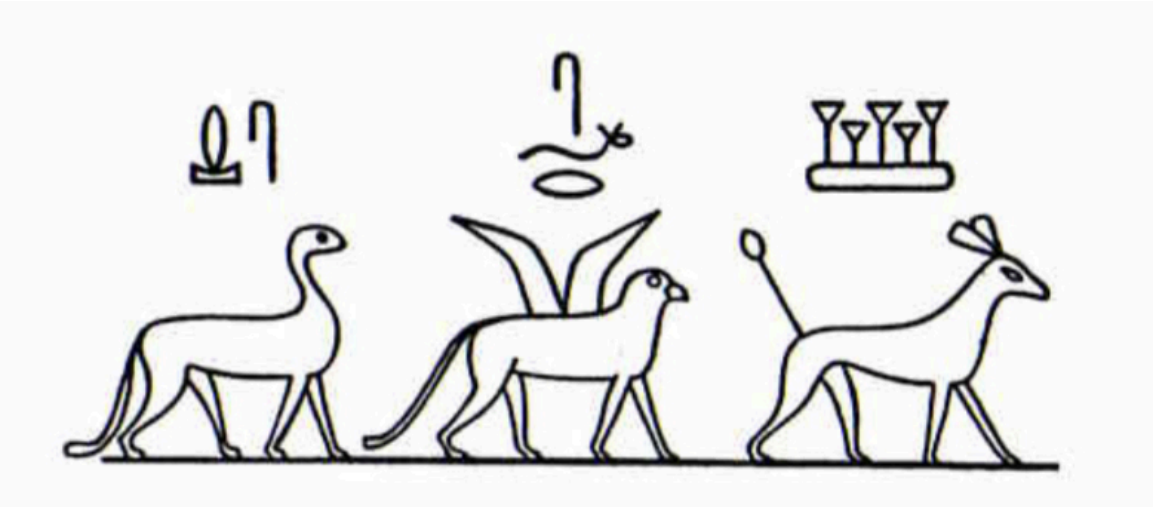
Seth is often regarded as the personification of chaos within the Egyptian pantheon, because he repeatedly subverts the norms of *maat*: he murders his brother Osiris and solicits his nephew Horus, and is generally quarrelsome and a trouble maker. However, his image may have been severely compromised by the much later writings of Plutarch (*de Iside et Osiride*), on whose occluded works many early Egyptological analyses lay (Meeks 2018: 114). More recent works that revisit the nature of Seth argue that until the late New Kingdom, he was a more or less normative member of the pantheon, with a productive role in the maintenance of cosmic order (Meeks 2018; Cruz-Uribe 2009). Much has been written about the negative associations of Seth and the supernatural threat he poses to the continuation of *maat*. These dangerous tendencies were no doubt a genuine element of his personality. My goal in this section is not to totally redeem his reputation, but to provide examples of the positive or ambiguous natures Seth simultaneously possessed, especially in the earlier periods of Egyptian history. His close association with the desert suggests that the different facets of his personality may be reflections of perceptions of that environment.

By at least the 3rd Dynasty, the cult of Seth was established at the already ancient city of Ombos (Naqada, Nubt), and many scholars argue that this powerful city was sacred to him long before that, although conclusive evidence is lacking (de Velde 1957:

10). That Ombos controlled the Eastern desert route into the gold-mining regions of the Wadi Hammamat is a significant factor in its power and perhaps its association with Seth in his desert aspect.

Throughout Egyptian history, Seth is recognized in his form as a peculiar long-eared, long snouted quadruped with an erect tail. Much ink has been spilled over the identification of this animal with actual species (de Maret 2005; McDonald 2000; Jensen 1934). Of the wild asses, okapis, anteaters, dogs, etc., that have been proposed, it is significant that all are desert animals. It is perhaps most probable that the Seth animal is not meant to represent a real species at all, but is a fantastical animal like the griffins and serpopards with which it keeps company. Even when gods are represented in the form of real animals, however, they are understood to be larger, more powerful, versions of the species representing them (Ikram 2018; Houlihan 1996). Seth is also associated with the griffin, perhaps taking on the falcon head from the attributes of Horus, with whom he is sometimes conflated (de Velde 1957: 21). When considered in this light, the hunting-griffin from the tomb of Khety I is even more interesting (although that animal is clearly female, complicating a straight-forward identification with a domesticated form of Seth).

Figure 8. Fantastical animals, including the Seth animal on the far right, from Beni Hassan. de Velde 1957:15.



Less fantastically, Seth is associated with the donkey (de Velde 1957: 14). As a wild desert animal, the ass is often interpreted as "chaotic," although, as with all desert animals, I would suggest caution in this identification. The ass may have Sethian connotations because of its loud braying (one of Seth's epithets is "He who roars"). But it is perhaps also because of the importance of the domestic donkey as a pack animal for desert nomads and travelers (de Velde 1957: 14). The similarity between the donkey's long ears and the upright, squared-off ears of the Seth animal has been noted, and a donkey's head and Seth animal head are used interchangeably as determinatives in the writing of Seth and his epithets (de Velde 1957: 14).

The Seth animal appears early in Egyptian art. A few Naqada I period hair ornaments from Mahasna have been identified as representing it (de Velde 1957: 8). It can be seen among desert animals on the Two Dog Palette, confirming that it is already

considered a desert species in this early period (Figure 6). The Seth animal is also a component of early royal iconography, seen on standards on the Scorpion mace head and, along with Horus, atop the serekhs of the 2nd Dynasty kings Peribsen and Khasekhemwy.

It is tempting attribute the identification of Seth with the earlier kings to their continuing orientation toward the desert, and the political need to govern both herders and agriculturalists. What is more certain is that these kings appreciated the martial capabilities of "Seth, strong-of-arm," which could be harnessed by the rulers themselves. In the New Kingdom, kings on the battlefield are said to become "like Seth" in their fierceness, harnessing his power as a fighter and a storm-god (Lichtheim 1976: Vol II, 32, 62, 63, 66). The image of the king as a griffin trampling enemies, seen from at least the 5th Dynasty on (Wyatt 2014: 30), should be viewed as a royal manifestation of Sethian nature; Seth is sometimes shown as a hawk-headed griffin (de Velde 1957: 5). Wildness in war can be seen as a positive aspect of the chaotic elements of Seth's nature, one that could be productively harnessed for the good of Egypt.

Seth as a Protector and Preserver of Order

In his military element, Seth emanates power and might (Cruz-Uribe 2009: 202). Like the bezerk King on the frontlines of the battle, Seth defends Egypt from its enemies. He also defends the solar barque from the enemies of Re, being one of the few gods strong enough to defeat the snake Apophis (de Velde 1967: 99). In the Book of the Dead, he stands in the prow of the barque and spears Apophis, saving the world from disaster.

Like the jackals in the *Jackal Hymn of the West* (see below), the solar barque is sometimes drawn by Seth animals who protect and aid it (Pleyte 1861: Pl. 1). The

substitution of Seth animals for the jackals of the west makes sense if we remember that they are both desert animals with supernatural associations (the jackal being the animal of Anubis and a denizen of the necropolis). Jackals and Seth animals appear together in other protective contexts, such as the ivory wands of the Middle Kingdom, which I will discuss more below.

Seth as a God of Foreigners

As the Lord of the Desert, Seth was also the patron of the people who lived in it: the nomadic groups in the Eastern and Western deserts and, by extension, the people of foreign lands. Even as a ruler of foreign lands, however, Seth remains an Egyptian agent. In the 5th Dynasty mortuary temple of Sahure "Seth, He of Ombos, Lord of All Foreign Lands," delivers captives from Libya, Asia, and Punt to the king (Strudwick 2005: 84). On the Merneptah Stela, Seth turns his back on the Libyans and they are destroyed (Lichtheim 1976: Vol. 2, 75). At the same time, Seth can act as an intermediary between Egypt and the outside world. Papyrus Anastasi vi relates that starving Bedouin were allowed into Egypt on Seth's birthday, in order to feed their herds, also in the time of Merneptah (Goedicke 1987: 89-90).

Another aspect of Seth's foreign-ness is his conflation with foreign gods, although this is not at all uncommon in the Egyptian pantheon. Seth's powers as a storm god, however, made him a ready match for other Mediterranean gods like Tesub and Baal, who tend to be more primary members of the pantheons in their native contexts than Seth is in Egypt. Nevertheless his storm-god attributes elevate his status in the eyes of foreign kings. In Egyptian treaties with the Hittites, Tesub and Seth are given as equivalent

divine guarantors (Gardiner 1920: 195-196). Another effect of this kind of transposition is seen in diplomatic texts, where the "Amun" particle in Egyptian names is swapped out for Seth in their foreign usage (Meeks 2018: 115)

Perhaps because of Seth's ambivalent qualities, his inscriptional mark on the landscape of the desert lands he rules is relatively minor. In all of the hundreds of mining inscriptions in Sinai, recorded by Gardiner et. al. (1955), only four mention Seth: two from the 12th Dynasty (113, 122) and two from the 19th Dynasty (175, 196). In both the eastern and western deserts, incised or scratched Seth animals of modest size dot the landscape. An unusual concentration is found at Seth Rock in the desert outside the Kharga Oasis, (Lazaridis 2019: 593). This freestanding outcrop is curiously pocked with small holes, and clearly drew ancient attention, as it is covered with travelers inscriptions and graffiti of Seth and Amun. The concentration of pottery around Seth Rock and the density of inscriptions, plus the presence in the rock of a larger grotto, have led to speculation that this may be a cult site for Seth in the New Kingdom (Ikram 2020, 2013). In this, it would be relatively unique, although the oases show a close affinity with Seth throughout the Dynastic period (de Velde 1967). Although it is well outside the time period of this study, it is worth mentioning the Saite Period temple of Hibis in the Kharga Oasis, which preserves an astonishing relief of Seth in the form of a falcon-headed griffin slaying Apophis (Davies 1953: pls. 42-43). This is some indication of the resilience and flexibility of the cult of Seth in the desert oases.

As a storm god and a patron of foreigners, Seth is also associated with the sea. Despite being mariners from at least the early Dynastic period (Tallet and Marouard 2016; Tallet 2012; Mumford and Parcak 2003), the Egyptians seem to have not

distinguished either the Mediterranean or the Red Sea in their ritual lives. Bodies of seawater do not have the same symbolic potency as bodies of fresh water, which is not entirely surprising. The oceans appear to have been within the realm of the foreign. Despite the Nile being linked to several deities, as far as I am aware no god was ascribed to the marine environment except for the Semitic loan-god Yamm, who is only mentioned in the 19th dynasty Amherst papyrus. Even the personified *w3ḏ-wr*, long identified as the Mediterranean and occasionally the Red Sea, now seems more likely to have belonged to the marshes of Fayoum and the Delta (Goelet 2016).

Seth, however, is related to the sea in his roles as a storm god, a god of foreign places, and as a sailor, all seen especially in his syncretism with the Canaanite god Baal, which begins in the 2nd Intermediate Period (Allon 2007: 15). In a mythological episode recorded in the Hittite, Ugaritic, and Egyptian texts, the Semitic sea god Yamm threatens to flood the entire world if his unreasonable and covetous demands—jewels and other riches, plus Astarte (or her analogs) as wife—are not met (de Velde 1957). In the Ugaritic verison the god Baal battles and overcomes Yamm, who is in the form of a serpentine sea monster. In the Egyptian version it is Seth who goes to battle on behalf of the Ennead and quells the sea (de Velde 1957; Ayali-Barsham 2017: 196). His confrontation of the snake-like monster is reminiscent of his role in defending the solar barque from the snake Apophis in the waters of the Duat (see below). Unfortunately, the actual battle is lost from the Egyptian version, but a later list of the transgressions of Seth (Louvre E 3129) suggests that he turned the sea brackish by spitting into it (Ritner 1993: 84).

The action of disastrous spitting is consistent with Seth's powers as a storm god, and with his epithet of "spewer." Baal, of course, is also a storm god, and its no coincidence here that the cult of Baal was established in Memphis by the 18th dynasty. Memphis, of course, was a port town, and home to many foreigners, and Seth, especially in his conflation with Baal, fully reaches his associations as a god of foreigners and foreign lands in this period, when Syrio-Palestinian engagements are at their height. The foreign gods he is conflated with, all of them storm gods, like Baal, Ash, and Teshub, often have their names written with a Seth-animal determinative (Allon 2007). In this role as a storm-god and a god of foreign lands, Seth has primary dominion over both the deserts and the seas, and the people therein.

Hathor

The goddess Hathor is one of the most important in Egypt, and perhaps in the ancient Mediterranean. Her flexible and absorptive nature allows her to take on the roles of mother, concubine, queen, and avenger, patron of the dead, and mistress of foreign lands, as well as easily conflating with major goddesses of foreign pantheons.

Hathor emerges in her canonical form in the Pyramid Texts, although Predynastic depictions of "celestial" cows, such as that seen on the Gerzeh and Narmer palettes, are probably early instantiations of her or a precursor goddess. By the time she appears in the Pyramid Texts, she is already understood as the mother of the king, a nursing cow, and the wearer of the uraeus (Allen 2005). These are her most important attributes in the state cult of Egypt: divine mother, protector of the child Horus, and personification of the Eye of Re. By reason of her regenerative powers she is also closely associated with the

protection of the dead. This role gave her a chthonic form, in which she moved back and forth as a messenger between the underworld and the land of the living (Posener 1985: 63-72). Because of this movement, she was associated with caves, cavities, and tombs in the desert cliffs, which could be seen as liminal spaces or passageways between worlds (Bleeker 1973: 30-31, 46-48). The association with cavities and caves also gave Hathor her connection to mines and the mineral produce of the insides of the earth, discussed in Chapter 5 (Aufrère 1991: 122-130).

Hathor and Foreigners

Hathor's dominion over the mining lands and over foreign lands more generally is expressed by her epithets "Lady of the Horizon," *nbt nt ꜣḫt,* and "Mistress of Foreign Lands" (Faulkner 1973: Vol. II, 207-208; Doxey 1998). In her role as a celestial goddess and the dog-star, she also has a sky association and a navigational dimension that made her important to mariners. This is probably why her cult spread across the entire Red Sea corridor (Meeks 2018). She became a principle goddess at Byblos, a Mediterranean trading center, as well (Meeks 2018: 113). These resonances contribute to the shared properties of desert and sea. However, it is her position as Mistress of the Desert that most concerns us here. In this role, Hathor is connected to the koiné of fantastical animals and gods who arrived in Egypt from foreign lands.

Hathor as the Eye of Re

The following story concerns Hathor in her form of the Solar Eye of Re. The Eye can be associated with a number of Egyptian goddesses, or stand alone as Rat-Tawy, the

consort of Re (Wilkinson 2003: 164). The most complete myth of the Solar Eye, also called the myth of the Distant or Wandering Goddess, describes the estrangement of the god Re from his daughter, the Eye, and the circumstances of their reconciliation. The most complete version of the myth is found in Papyrus Leiden I 384, a Demotic text that dates to the Second Century AD. Sections of the text are also preserved in Papyrus Tebtunis Tait 8 and a fragment in Lille that is not numbered, and in a Third Century Greek translation (Reitzenstein 1923). It is from these late texts that we know the myth in its complete form, but there are suggestions that the narrative could be as early as the Old Kingdom in origin (Richter 2010: 157). References to the myth appear in the Pyramid Texts, the Coffin Texts, and the Book of the Dead, as well as in hymns preserved on temple walls.

In the story, the Eye of Ra, a detachable and autonomous facet of the personality of Ra-Atum, is a powerful female entity with a volatile temper. The Eye becomes angry with her 'father' and departs Egypt in high dudgeon. She travels to the southeastern desert, where she rages violently in the form of a lioness, along with the wild creatures she finds there. Meanwhile Egypt suffers the lack of her powerful protection, and Ra misses his daughter. Several emissaries are sent, but the fearsome might of the goddess prevents any from being successful in reasoning with her. Finally Thoth is able to flatter and cajole the Eye into returning to Egypt. She travels northward in a procession of joyful people and animals celebrating her return, including desert people and animals that travel into the Nile Valley with her. Upon reaching the Nile, the goddess is escorted to a temple where she is reunited with her father and couples with either him or Horus, depending on the version, thus becoming pregnant with the young sun-god (Pinch 2002: 130).

Performance and Reenactment: The Festival of the Return of the Solar Eye

Direct references to festival celebrations of the myth, which contains important elements of pacification, rejuvenation, and rebirth, are found on the walls of Ptolemaic temples at Philae, Edfu, El Kab, Dendara, and Medamud (Richter 2010: 155-186). There are also indications that the festival enactments are much older, at least as early as the 13th Dynasty (Darnell 1995: 47). The Hymn to Hathor at Medamud incorporates a detailed description of the procession that accompanies the wandering goddess' return (Darnell 1995). Here I give Darnell's translation of the portion describing the goddess' desert entourage:

> "…There dance ecstatically for you the Mentyew-Libyans in their (peculiar) clothing, and the Nubians with their mace(s); The nomads throw themselves down to you in front of you, and the bearded ones declaim for you.
> Let us take for her feathers of the back(s) of ostriches which the *tmḥ.w*-Libyans slay for you with their throw sticks, their straps being of leather; and let us make acclamation to you, and let the Libyan dancers dance for you, let us dance and let us cry out for our mistress,..
> The *kyky*-simians give praise to you with *spn*-staffs, and the *krỉ.w*-apes with *ssnḏm*-sticks; The griffins cover themselves for you with their wings; The foxes raise up their heads for you.
> The Reret-goddesses praise you, their mouths open, their forearms in adoration before you…"

The people and animals that return to the Nile Valley with the Eye are brought from the desert regions. As in the Middle Kingdom tombs at Beni Hassan, a set of "types" indicates a desert origin: foreigners, produce of hides, staves, and ostrich feathers, and a mixed assortment of real and fantastical animals. The foreign dancers are a component of many Egyptian festival processions, especially Hathoric rites, and are probably intended to demonstrate the wide geographical area in which humans praise and

worship Egyptian gods with dominion in foreign places (Morris 2001: 81; Darnell 1995: 69; Giddy 1987). I argue that the importation of foreign performers in native costumes creates a noticeable spectacle of strangeness, contributing to the exceptional nature of the festival. This operates in the same way as the importation and dedication of desert animals: noticeable and unusual individuals that can be dedicated to the deity as proof of the cult's wide power and currency. As living artifacts of the desert regions, the animals and performers both enliven the festival and lend credibility to mythological ideas about the desert's inhabitants.

Landscape and Experience: The Festival of the Returning Goddess at el Kab

Barbara Richer (2010) has identified the series of chapels in Wadi Hillal, west of the ancient city of Nekhen (el Kab) as the itinerary of a Solar Eye procession. The site of el Kab lies on the eastern bank of the Nile, about 40km north of Edfu. The site was occupied from at least the Predynastic, as evidenced by a Naqada III cemetery and prehistoric petroglyphs in the adjacent Wadi Hillal (Hendrickx 1994; Richter 2010). The wadi itself extends into the desert and connects with the network of desert routes discussed in Chapter 4. The mouth of the wadi is wide and flat, and extends into the desert almost three and a half kilometers before narrowing into a desert canyon. Standing near the eastern end of the wadi mouth are unusual rock formations in the shape of a vulture, a cobra, and a pyramid (Richter 2010). Petroglyphs of all periods cluster around the bases of these formations, which themselves show signs of reworking (Richter 2010). The vulture, in particular, shows some evidence of intentional shaping and may not be entirely natural (Capart 1946). The central temple complex of the urban part of Nekheb is

sacred to the vulture goddess Nekhbet, the tutelary deity of Upper Egypt.

In the desert to the east of the temple, in the mouth of the Wadi el-Hallel, are several small chapels dating to the New Kingdom and Ptolemaic period (Derchain 1971). The chapels are united by scenes from the myth of the Eye of Re. The Eye's return encourages cosmic balance and heralds the beginning of the inundation, so it is important to celebrate it annually. Based on the scenes and physical arrangement of the buildings, Richter argues that these chapels are way-stations for a festival procession that enacts the return of the Solar Eye goddess (Richter 2010). The chapels are situated in the wadi mouth in such a way that seasonal rains would create a kidney-shaped lake reminiscent of the *isheru*, or lions' watering-hole, a critical landscape featuere in rituals of pacification (Goyon 2006). In the myth, the angry Eye of Re takes the form of a fierce lioness and is conflated with Sekhmet, a lioness who must be pacified with a drink of beer or blood (Hornung 1982).

The decoration of the chapels suggests that the celebration of the Solar Eye festival took the form of a procession that stopped at each one. We can imagine the makeup of the participants being something like that described in the Medamud hymn, quoted above, with an additional complement of officiants, musicians, and taggers-along. The situation of the chapels in the desert, at some distance from the city, suggests that the physical experience of processing in the arid desert margin was an important part of the re-enactment of the mythological cycle. The consolidation and modification of natural, suggestive, topography through re-carving, plus the marking of the terrain with architecture and petroglyphs show how the cosmic associations of certain landscapes were re-inscribed explicitly on the land itself. This is a materialization of the

cosmological layer of the desert landscape, and an acknowledgement and facilitation of the "reality bleed" that allows real and imagined landscapes to be interleaved without conceptual conflict. It is worth noting that the later Ptolemaic temple of Hathor at Dendara, where the celebration of the Wandering Goddess was also an important part of the annual festival cycle, re-creates this landscape in miniature within the temple precinct (Richter 2010). The artificial construction of the wadi landscape inside a temple indicates how important the environmental backdrop was to the maintenance of cult practices.

In a recent article, Anna Garnett (2013) discusses the history of the Wadi Hillal, dating back to preshistoric sites. As a desert wadi, and start of an eastward route, directly adjacent to a major population center, the Hillal accrued thick residues (Meskell 2003: 36), in which the creation of monuments was an interpretation and manifestation of a pre-existing landscape (Barrett 1999: 255). By creating barque shrines, the priests of the New Kingdom materialized a ritual landscape that already existed, and that built on millennia of practice, constantly revised and re-interpreted. Each one of these interventions left some perceivable trace that affected the landscape conceptions of the people who came after them. Once an imagined ritual landscape is supplied with monuments, the itinerary of the mythological narrative becomes embodied and fixed in place. In the case of the Wadi Hillal, the creation of a ritual landscape materialized a distant desert imaginary within reach of a major urban center. This is a landscape domestication par excellence, in which the important ideological functions of a deep desert context, along with (during the festival) its foreign inhabitants, are transported almost into the Nile Valley.

Landscape Functions of Hathor and Seth

In these few examples, I hope that I have shown that both Hathor and Seth have close associations with the desert as a place that is ambiguously foreign. The two gods are similar in key ways that reference their landscape associations. Both are among the oldest gods attested in the Egyptian pantheon, and have a close association with the protection of Re (and by extension, the king): Hathor in her guise as the uraeus and Seth as the griffin trampling enemies and as the slayer of Apophis. In order to exercise this protective power, both deities have violent, threatening aspects. This is seen in Hathor/Sekhmet's aggressive episodes in the myth of the Solar Eye and in the Book of the Heavenly Cow, in which she nearly destroys humanity. Seth's aggression is more constant, but periodically reaches exceptional limits, as in his murder of Osiris. The dual nature shared by these gods means that their mythology is characterized by cycles of separation and reconciliation. In Hathor's case this separation can be seen in her estrangement from Egypt and sojourn in the desert, and in Seth's it is his conflict with Horus, which results in him being given the desert as his territory, rather than Egypt. Ultimately, both gods are reconciled with the Nile Valley: Hathor/Sekhment is pacified and returns in festival, and Seth, always the protector of Re, is eventually also reconciled with Horus. Their respective associations with militarism, overland and maritime trade, and mining consolidate relationships of the two gods with the desert landscape. In the case of Hathor, this even goes as far as a direct analogy between the goddess' body and the mineral-bearing desert mountains (Chapter 5). As Seth and Hathor accumulate associations with the desert landscape so too do they accumulate connections with the people and animals of those regions. Likewise, in their connection with trade and

militarism they take on a relationship with foreigners and the foreign, and become conflated with foreign gods both in Egypt and abroad. As a result of all of these aspects of their personalities and mythologies, both Seth and Hathor, along with the suite of real and fantastic animals and certain foreign types of human being, participate in a cosmopolitan, international koiné of characters. In Egypt, this koineé stands for an ambivalent but knowable type of foreignness, susceptible to domestication and productivity.

THE DESERT AS THE REALM OF THE DEAD

The twin themes of knowledge and domestication run throughout ancient Egyptian sources that reference the desert landscape. Perhaps one of the most prevalent and important of these is the analogy between the desert and the Netherworld, a zone the dead were required to negotiate in their journey to eternity. In order to aid this passage, several genres of Egyptian funerary literature offer knowledge and advice about the Netherworld, its geography, and its inhabitants.

Early Associations

As mentioned above, the Western desert was associated with the dead as early as the Badarian period, and probably before. Cemeteries were located out of the flood plain, in wadi mouths of the low desert. Bodies were laid on their sides, facing west. The orientation to the west and the proximity to wadis that access the desert doubtless relates to the western akhet-horizon, the place where the sun god enters the Netherworld in the course of his daily circuit (Hendrickx and Vermeersch 2000: 37). For pastoralists settled

in the Nile Valley, who would have still been seasonally active in the desert, an orientation west could also have been associated with the beginning of a journey.

The nature of Egyptian necropolises would have reinforced the idea of the dead inhabiting the desert. Through the early Dynastic period, the settlements of the living seem to have been relatively ephemeral. Many of the tombs of the cemeteries, on the other hand, were constructed of durable masonry or excavated into living rock, becoming enduring houses for the dead who had entered a timeless state (for notions of linear and cyclical time in ancient Egypt, see Assmann 1996; Hornung 1999, 1992: 64; Allen 1988). These aggregations of tombs, often visible from the settlements of the valley, created parallel "urban" centers which formed stable loci for the more ephemeral centers of the living. As the population gradually became more settled in the Nile Valley and less active in the Sahara, the situation of the necropolises in the desert may have contributed to an understanding of the western desert as the location of "ancestral" or cyclical time.

As a result of long-term engagements with these cemeteries, early Egyptians would have been aware of the corpse-preserving properties of the desert environment. Some of the very first Egyptian mummies are natural, preserved by the rapid drying effect of the salty desert sand in which they were buried. Later efforts to preserve the bodies of the dead were probably inspired by these early examples. Taken along with architecturally enduring nature of the necropolis, the mummification of the dead contributes to the sense that they are now participating in a cyclical, endless kind of time. The location of the cemeteries in the deserts suggests that the arid landscape, itself largely unchanging, is where ancestral or mythological time plays out. Put another way, the stable ecological nature of the desert environment, coupled with its association with

the repeating, endless time in which the dead participate, suggests that in the desert landscape *place* is more important than time.

The Pharaonic Necropolis and the Underworld Texts

The practice of burying the dead at the desert margins is a pragmatic choice, and therefore remains constant. The desert necropolises do not occupy valuable agricultural land and are undisturbed by Nile floods. Pharaonic cemeteries are found in the low desert outside of population centers on both sides of the Nile. The decoration of the tombs, coupled with the genre of funerary literature that appears in the Old Kingdom, give us a better sense of how death and the afterlife were understood.

The first funerary compositions are the 5th Dynasty Pyramid Texts, which are at the outset confined to the burial chambers of kings but are found in burials of queens and court officials by the end of the 6th Dynasty (Hornung 1999: 1). Like the funerary texts that will follow, the Pyramid Texts are a collection of spells and instructions that allow the deceased to negotiate a passage through the netherworld to join with Re in the hereafter (Hornung 1999: 5). A component of this process is the deceased's entry into cyclical, rather than linear, time, in order to better participate in the repeating journey of Re from horizon to horizon (Hornung 1999: 6).

By the Middle Kingdom, the spells of the Pyramid Texts have evolved into a collection referred to as the Coffin Texts. Excerpts from this collection are found inscribed on coffins and other funerary objects of officials throughout Egypt, although the most complete examples were excavated from Deir el Bersha in Middle Egypt (Hornung 1999: 7). Like the Pyramid Texts, the Coffin Texts provide spells and

information for moving safely through the netherworld. A novel addition in some Coffin Text collections, however, is the inclusion of a *spatial* description of the netherworld, giving it shape and an itinerary of sequential topographical features. The surviving examples of these texts are painted on coffins from Deir el Bersha (Hornung 1999: 11; Willems 2018). Referred to as the Book of Two Ways, this iteration of the description of the netherworld includes an annotated diagram which can only be called a map (Robinson 2003: 145).

The landscape diagram of the Book of Two Ways shows two alternate paths through the regions of the netherworld. The upper path is through the sky, and the lower path is through a dark subterranean realm. Both are full of towns, portals, obstacles, and monsters. These are described in the spells, and their locations are marked out on the map (Robinson 2003: 149).

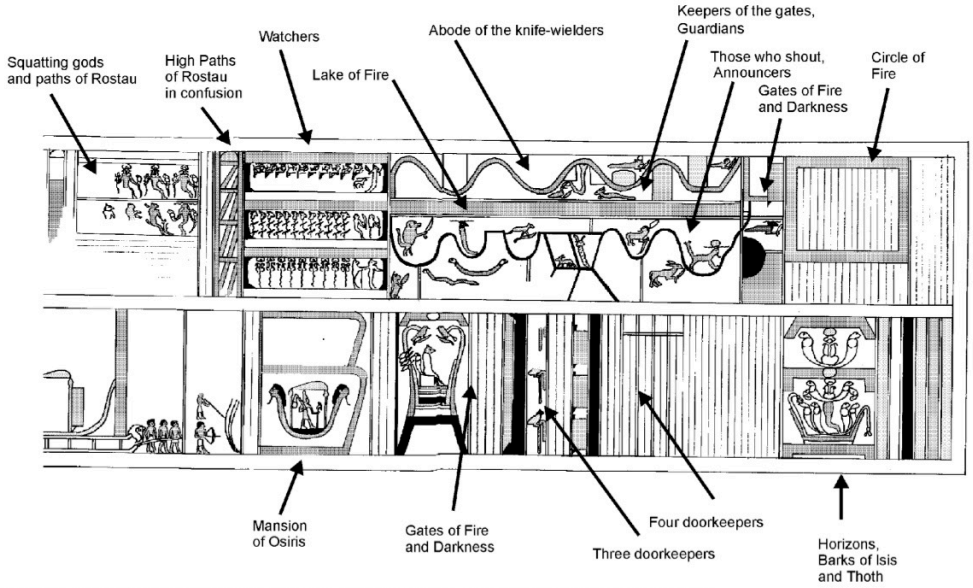


Figure 8:4 The layout and landscape of the 'Book of the Two Ways': coffin of Sepi (after de Buck 1961: plan 1).

Figure 9. Annotated map of the Afterlife from the Book of Two Ways (Robinson 2003: 147).

The monsters drawn on the map brandish knives and snakes; they are familiar from other Middle Kingdom depictions of magical beasts (Liptay 2011; Roberson 2009). Some are the same griffins, serpopards, and other mythological creatures seen among the desert animals in the tombs at Beni Hassan, suggesting that parts of the netherworld shown here are in an arid environment. Many of these creatures also accompany the Solar Eye on her return from the desert, and are shown on Middle Kingdom apotropaic wands, which I have previously argued depict the Eye's escort of pacified supernatural desert creatures (Hackley 2014). The wands had a protective function, with the knife-wielding monsters on them probably intended to protect small children. Although they are ambivalent or threatening in the Book of Two Ways, the same creatures when accompanying the Eye into the Nile Valley are festive and celebratory. The contrast with the dangerous creatures found on the path of the Two Ways indicates the ambiguity of desert beings and their power to both harm and protect. This is a further example of the importance of domestication/pacification as a governing principle for dealing with the deserts safely.

The spatial sensibility of the Coffin Texts diagram is significant here because it demonstrates that the netherworld was seen as existing in traversable space, and indicates paths along which certain landmarks should be sequentially encountered. Dating to roughly 2000 BCE (Bonacker 1950: 5), the Book of Two Ways considerably predates the oldest Egyptian map of physical terrain, the Turin Papyrus map of the Wadi Hammamat from about 1150 BCE (Harrell and Brown 1992). Although we unfortunately lack other examples for comparison, the logic of the two maps in representing space bears certain

similarities. The Turin map, which marks out locations in a desert wadi, winds in a linear way between rocky hills. The paths in the Book of Two Ways are rendered in a similar way: a serpentine path with obstacles to either side. As in the Book of Two Ways, the creators of the Turin map do not trust the schematic rendering of the landscape to communicate the meaning fully; both maps are heavily labeled and annotated with explanatory text. Harrell and Brown (1992) have convincingly shown the Turin Papyrus map to represent the landscape of the Wadi Hammamat with reasonable accuracy, even to our modern standards of map-viewing, suggesting that maps were created to be used as actual navigational tools. This lends credence to the idea that the Book of Two Ways diagrams painted on coffins were included as a wayfinding technology for the deceased, who were heading out into unknown lands.



Figure 10. Turin Papyrus map of the Wadi Hammamat, c. 1150 BCE.

Where, in space, the netherworld represented by the Book of Two Ways was actually thought to exist is the subject of the next section, but the accompanying texts repeatedly emphasize that the goal of the journey lies in the west, the land of the necropolis and the justified dead (Faulkner 1973). Spell 30 is representative of the deceased's westward journey, and the equation of this direction with the dead, the necropolis, and entry into cyclical, repeating time:

> Recitation: to cause the west to love a man and to cause the west to rejoice over a man by means of everything that is done for him in all the seasonal festivals of the necropolis, in all the yearly festivals and at all days and times.
>
> A cry issues from the mouths of the great ones, the lords of the people, and a shout from the mouths of the sceptred ones, because of the thundering noise of the gods who are in the horizon when they see the terror on their faces, who have never seen the like of it when they seel N (the deceased) proceeding peacefully on the beautiful paths of the West in his shape of a god-like spirit, having acquired all powers when the great ones who preside over the horizon spoke to him. The young god is born of the beautiful West, having come here from the land of the living; he has got rid of his dust, he has filled his body with magic, he has quenched his thirst with it, those who watch for him tremble at it like a bird! So say the gods of the horizon concerning N who is in the West. They shall say to him: Go, row to the Field of Rushes within the Islands of the Sky, navigate therein to Him who is on his *k3dt*-plant! So shall the gods say to N (Faulkner 1973: 32).

Desert Geography of the Netherworld

The Western Horizon

By the New Kingdom, the corpus of Netherworld literature had expanded considerably. Several different texts, most famously the Book of the Dead (or the Book of Going Forth by Day) offer magical spells and advice for the deceased. The journey from the land of the living to the land of the dead is still a central theme, although the focus is now on the journey of Re, with whom the deceased is meant to identify (Hornung 1999). In describing the netherworld and its landmarks, these texts sometimes provide precise distances and other measurements (Quirke 2003). Measuring the physical space of the afterlife provides verisimilitude while, presumably, mimicking the form of actual maps or navigational texts.

In this section, I will discuss primarily the Amduat, a collection of texts that details Re's nocturnal passage through the netherworld hour by hour. Scenes from the

twelve hours of the Amduat are painted on the walls of the tombs of several 18th and 19th Dynasty kings. In these scenes, the itinerary of the solar barque of Re through the underworld is described in great detail, beginning with his exit from the western horizon of the Nile Valley at dusk, and concluding with his dawning, rejuvenated, in the eastern horizon. Thomas Schneider (2010) has produced an extensive analysis of the itinerary of the Amduat, and argues that the geographical particulars of the first hours of the trip into the Duat, or netherworld, are based on distances and landmarks of the Western desert between the Nile Valley and the Gilf Kebir. I summarize the main features of his argument here.

At the beginning of the first hour, Re sails in his barque through the "western portico of the horizon," and enters a passageway 1260 kilometers long, which is called the "waterway of Re." This passage is described as watery in the Amduat but as desert in the corresponding portion of another underworld text, the Book of Gates. I will address this discrepancy, and other confusions between water and desert, in the next section. The second hour of the Amduat is passed in a region called Wernes, which is characterized by an enormous body of fresh water surrounded by lush green fields. In the third hour, Re encounters a second lake, of equal size to Wernes. Schneider equates this with the distance from the Nile Valley to the ancient shorelines of paleo-lakes Chad and Bodélé, which during the Pharaonic period were both still of considerable size. Schneider identifies the narrow rock formations of the Tibest-Erdi-Ennedi belt as a possible candidate for the "portico of the horizon," although in my own reading of the sequence of Re's travel the akhet of the Nile Valley is as likely.

As additional evidence for the equation of the "near" part of the netherworld and the Lake Chad area, Schneider offers etymologies for the toponym Wernes and for the giant serpent Apophis, who threatens the solar barque in later hours of its passage. He connects them with words for "large snake" and "lake of the sun" in the Tubu language of Niger and Chad. The Egyptian epithet for "Wernes" is "water expanse of Re;" if Schneider's identification is correct then this is simply a gloss, rather than a description. In producing theses etymologies, Schneider is suggesting that the terms came into Egyptian through actual contact with Tubu speakers living in the Lake Chad area. Given the length and trajectory of the Abu Ballas trail, this doesn't seem entirely outlandish, although the evidence is circumstantial. Whether the first hours of the Amduat are informed by the actual geography of the Abu Ballas trail and Chad basin, it is clear that they, through producing specific measurements and landscape descriptions, are intended to describe a believable terrain for the liminal boundary of the afterlife. That is to say, even if the description of the first hours of the Amduat is not intended to precisely describe the Abu Ballas trail itself, knowledge of the Abu Ballas trail informs the description and lends it spatial and landscape credibility.

In the fourth hour of the Amduat, it is necessary to cross an arid, difficult desert teeming with snakes, and the barque must be towed by the attendant deities. The fourth hour is dark, and the way must be lit by the Eye of Re in her guise as the uraeus (Hornung 1999: 37; Darnell and Manassa 2018: 167). Thereafter, the solar barque descends through a series of caverns into the watery, subterranean environment in which it makes the rest of its journey back to the eastern horizon.

The Eastern Horizon

In the same way that the western horizon, and by extension the Western desert, are associated with death and the night-time journey of the solar barque, the eastern horizon is associated with the sunrise and the rejuvenated Re. On the west we can identify the Libyan oases or perhaps even the Gilf Kebir as the last "real" place on the itinerary before the barque enters wholly imaginary realms; in the east the sun shines first on the shores of Punt or *t3-ntr*, "god's land." The latter epithet is applied to an extensive area of the eastern part of the Egyptian desert, from Sinai in the north to Punt in the south. Paired with another toponym in mining inscriptions and expedition reports, *t3-ntr* denotes real places in the Eastern desert or Red Sea region, but it also appears in cosmological books (Cooper 2017: 384; von Lieven 2007: 49–51, 127–128; Müller-Roth 2008: 161). Because of its extreme eastern-ness, the entire region is related to the *akhet* and understood to be the location of Re's birth from the body of Nut at dawn (Cooper 2017; Cooper 2011: 47-66; Nutz 2010: 281-288; Kuentz 1920: 178-183). Here the local animals, especially baboons and monkeys, are ready to "jubilate" at the daily birth of the sun-god and his emergence from the Duat as he returns to Egypt (Cooper 2017: 386-389).

Landscape Layers: Real and Imagined Places

The itinerary of Re's cyclical journey reinforces the Egyptian cosmology in its most basic form: that the Nile Valley is surrounded by a low desert, desert mountains, and a liminal zone where the desert bleeds into supernatural space. Beyond this, there is darkness and water, the limit of which is "not known by the gods" (Allen 1988: 1). The desert zones of this space create a gradient, radiating outwards from the Nile Valley,

across which normal human space shades into progressively more supernatural territory. The corpus of funeral texts that deals with the deceased's journey in the Duat makes use of known places in order to fix the geography of the afterworld to the actual geography of Egypt and its surroundings. The effect of this is to create a landscape layer, where real locations take on cosmological associations and begin to serve as mnemonics for mythological or religious narratives. This lends veracity to the myth, allowing people to experience at least part of the itinerary with their own bodies. Knowing that some of the places mentioned in a text are real brings the other, fictional locations into being by association.

While the Amduat presents itself as secret knowledge, confined to royalty and their closest associates, its contents are compiled from centuries of magical texts, and probably an oral tradition, that would have been considerably more accessible. The emphasis on exclusive knowledge is a manifestation of the idea discussed earlier in this chapter, that engaging with liminal, "chaotic" landscapes successfully is a matter of foreknowledge and wayfinding. All you need is a good map.

How the Desert is Like the Sea Part II: Abstractions

It is significant that the underworld texts discussed above note the existence of enormous bodies of water beyond the eastern and western horizons. This is in keeping with the idea that the known world is bounded at its limits by water. Just as it shades into the otherworld, however, the desert also seems to fade into and share consonance with the sea. Substitutions of one for the other in underworld texts make the boundary between the

two even less clear. The "Jackal Hymn of the West" found in the underworld text "The Book of the Night" provides a good example of the confusion:

> The [jackal-headed] Western *bas*: they are the ones who travel flatlands and hill-countries, the horizon of the West and Heliopolis. It is they who haul the barque of Re toward the sky, after having glorified the Jackal-folk in Heliopolis and the Horizon of the West.
> (Their manifestation is (the image of) a western jackal.)
>
> Rebu (Libya) is its name: It is their land, the Great God, the Westerner, being in the midst of the western sea, which is before the people of Rebu, at the ends of the Earth.
> (These are their names of their locality.) (Roberson in press).

The otherworldly jackals who help tow the barque of Re are described as "Libyan." It is unclear whether the "western sea" refers to the Wernes, the body of water that Re reaches in the 2nd hour, or if it is meant to be understood as the desert: recall the oasis governor titles written with the "island" determinative, discussed in Chapter 5, as well as other confluences between islands and oases (Pantalacci 2013; Morris 2010).

There is also the confusion over the medium that Re actually ferries through, which is variably described as the sky, the desert, and the waters of Nun. I noted the similarities between the non-organization of the desert and of the Nun above; I believe that the analogy is worth pursuing given the continuing confusion of abstract desert and abstract sea in the Underworld Texts. To me it seems likely that the desert, with its waves of sand at the edge of the Egyptian world, had a valence similar to the one it has today when we refer to the Sahara as the "Great Sand Sea." Likening the desert to the sea evokes an expansive landscape with broad horizons, the visibility of the sky, and an absence of the network of places and landmarks that characterize settled land.

It would be remiss not to mention the numerous instances of boat petroglyphs that occur in the deserts and oases west of the Nile. Because many of them are prehistoric, and seem to depict river craft, I hesitate to connect them directly to marine environments, although it is possible that the distinction between marine and riverine was not always firmly drawn. However, many scholars have proposed that these petroglyphs are intended to represent early ideas about the passage of the solar barque (Darnell 2009; Hendrickx and Eyckerman 2008; Lankester 2007). At the very least, because of the prevalence of these images, Egyptians of all eras would have noticed them while traveling in the desert. The presence, and perhaps also the discernible antiquity, of boat petroglyphs where there was no water would have reinforced the mythological narrative of the passage of Re through the desert environment, or at least an idea of the navigability of the desert in very ancient times.

CONCLUSIONS

Conceptual approaches to the desert, throughout the Pharaonic period, can be characterized by two related themes: that the deserts are geographical locations where reality is permeable to entities and topographies that originate in imaginary landscapes; and that successful engagement with these entities is a matter of knowledge and domestication or socialization. This should be understood as distinct from the notion of "control of chaos" so often invoked in Egyptological literature about the desert landscape, because the infiltration of these entities is not uniformly perceived as negative or dangerous. They can aid or protect, as well as being threatening. All of the desert entities discussed in this chapter possess this ambivalent character: the wild animals

pursued in the desert hunt are undomesticated and uncontrolled but, when captured alive, are important cult offerings; the fantastical animals sometimes shown with them are powerful and frightening but perform important protective functions as in the case of the griffin trampling the enemies of Egypt. Foreign or desert nomadic people themselves are sometimes presented as a threat to the stability of Egypt, but also play an important role as performers in cult festivals celebrating desert gods and their maintenance of ritual cycles. These gods themselves are possessed of dual natures, having both violent and protective moods, which are necessary for them to fulfill their roles with power and effectiveness.

Together these entities produce a community or koiné that is simultaneously foreign, otherworldly, and Egyptian. This community of people, animals, and gods is understood to reside primarily in the desert, while being able exceptionally able to traverse Egypt and other lands, as well as the cosmological spheres of mythological time. The existence of this koiné in mythological, or cyclical, time, can be seen as the product of compounded residues of cultural memory. These memories are compiled out of lived, conveyed, and represented experiences, which accumulate over time and become sedimented in place. I argue that it is the gradually developing precedence of place over time, and the location of landscape narratives in cyclical rather than linear time, that enables the permeability of the desert landscape to mythological beasts and other ambiguous entities. The materialization of mythological time through architecture, rock art, and other landscape interventions contributes to this effect.

Likewise, the situation of the necropolis at the desert's edge materializes a borderland between this world and the next. Where, precisely, the boundaries are is

uncertain: they exist somewhere in the undifferentiated space of the desert, which in its non-organization evokes the waters of Nun that are both the wellspring of everything and the medium that the Sun God must navigate in the netherworld.

The simultaneous layering of many landscape imaginaries (real, cosmological, mythological, historical) onto the space of the desert is the final and critical piece of the argument that this dissertation has been pursuing: that far from being anathema, "chaotic," or wasteland zones, the desert landscapes were potent, malleable spaces rich with a variety of kinds of meaning. Because it was assembled from personal, official, cosmological, and political conceptions, this meaning included positive, neutral, and negative associations, often simultaneously. The desert landscape of ancient Egypt, therefore, cannot accurately be reduced to a negative totality but must be carefully parsed and considered in the various modes in which it worked on the Egyptian landscape imagination, and on an individual's understanding of the world around them.

CONCLUSION

The central concern of this dissertation has been the examination of the desert landscapes of Egypt as dynamic, culturally potent social landscapes. This is in contrast to older but still canonical literature that views them as culturally sterile, and anathema to the ancient Egyptian principle of *maat*, or "order." The canonical adherence to binaries in Egyptological analysis, especially the "chaos" versus "order" binary, has delayed critical investigations of the history and importance of Egypt's desert landscapes. This has obscured, until recently, not only the archaeological evidence for ancient activity in the desert landscape, but also the potential of asking questions about the role of the deserts in the social and conceptual lives of ancient Egyptians. The last two decades have seen an exponential increase in our knowledge about the archaeology of the desert landscapes, due to numerous survey projects which have been able to locate and record road networks, architecture, rock art, and many other kinds of remains. Here, I build on this recent work that acknowledges the importance of the deserts, explores the ramifications of their history of slow aridification, and documents and the wealth of archaeological material they hold. In addition to continuing this work, the task now is to develop paradigms for understanding the meaning of ancient activity in the desert, and its integration into ancient Egyptian life. I approach this need with the concept of the social

landscape. This views landscape as a cultural product, in which human experience of space creates dynamic layers of perception, myth, memory, and communication.

Social Landscapes and Human Geography

The theoretical frameworks of human geography, from which the social landscape concept is borrowed, remain relatively untested in Egyptology. This is in spite of the fact that pertinent themes, such as landscape aesthetics and symbolism, memory, cultural continuity in place, and deep history are implicit in much Egyptological literature. Instead, they are taken as givens or, at worst, reduced to structuralist simplifications. In this dissertation, I have explicitly articulated a theoretical framework adapted from human geography in order to develop and drive my research questions. Through attentive and integrated applications of landscape questions, I have focused on nuancing and complicating older assumptions, as well as advocating new research agendas with the potential to open up whole new areas of understanding. Among these are spatial approaches, an updated phenomenological method, and an exploration of the contradictory valences of the desert landscape in ancient Egyptian culture.

By using these frameworks, in which landscape is seen as a cultural product and social actor, broader geographical areas can be viewed as "place" rather than undifferentiated "space." In essence, this has the effect of breaking down the distinction between "site" and "landscape" designations, and integrates possible ancient perceptions of distance and geographical context into archaeological approaches to local-scale questions. A major piece of my analysis is the integration of conceptual landscape layers, which are extracted from representational media. This is a critical advantage of using the

social-landscape paradigm: the ability to untangle the simultaneous and sometimes contradictory interpretations that can be applied to the same physical landscape. This is an expression of Lefebvre's triad of perceived, conceived, and lived space, a framework that allows for co-existing, related landscape paradigms that nevertheless have separable elements. In the Egyptian case, this highlights what I believe to be an important feature of the relationship with the desert landscape: ambivalence, or ambiguity. The property of ambivalence permits us as researchers to understand the wide variety of meanings that engagement with the desert landscapes could hold, and provides a framework for understanding the apparent contradictions. As a framework for understanding the Egyptian desert landscapes, this is a novel contribution. However, it is also broadly applicable to other archaeological landscape questions, which sometimes falter when faced with understanding the cultural position of "unused" or "waste" land.

Arid Landscapes Require Unique Modalities of Perception

I have argued that a major factor in the delay of research on the Egyptian deserts, and on desert landscapes in general, is simply their aridity. Not only does it complicate the logistics of scientific research, but it has the potential to produce bias in researchers who are accustomed, in their own cultural contexts, to thinking of deserts as empty or hostile. Archaeological and theoretical landscape approaches require methodological adaptation for use in arid landscapes, and this adaptation has not yet been fully achieved. This dissertation is a step toward methodological and theoretical approaches to Egyptian desert landscapes and arid landscapes generally.

Arid landscapes are unique in their composition and in the ways that people use them, especially when compared to the agricultural landscapes in which most archaeologists are trained. These differences require different approaches, especially when researchers are not accustomed to them. Human presence in arid landscapes tends to be of shorter or transient duration; traces of this activity can be extremely subtle. In difficult environments very slight environmental or ecological variation can determine whether and where human activity takes place; this too can be difficult to detect unless researchers are closely attuned to micro-topographical and seasonal factors that predicate human activity.

Phenomenology in Place

In my fieldwork, I carried out a practice of remaining in place and slow observation, with attention to phenomenological factors, as a response to the methodological demands of the desert environment. This is a departure from traditional desert survey methods that, understandably, need to cover ground in the face of limited resources and supply constraints. Significantly, it is also a departure from the standard practices of landscape survey and phenomenological landscape archaeology, both of which are focused on embodied movement—walking—as the default mode of human landscape experience.

In my own fieldwork I found drawing to be a productive activity that encouraged me to slow down and observe the total landscape with more patience than I might if I were actively surveying or exploring by walking. As the Egyptian deserts become increasingly well-documented, I suggest that methodologies based on slow, embodied,

multi-sensorial immersion in place will be a productive methodological addition. In part, this is because of their potential to adapt researcher perceptions to the subtlety of the desert environment. However, sitting is also a phenomenological practice that allows the researcher to experience a landscape while at rest. Rest, or waiting, was surely an important part of landscape experience in the ancient world. Significantly, time spent being still is also time when a human being, mentally and physically, is free to observe, to formulate narratives, and to consolidate memories about place.

I conceived the switch from movement to stillness as a technique for meeting the requirements of the arid landscape, but it is a novel method that has the potential to be productive in landscape archaeology generally, especially in contexts where motion from place to place was not the chief pursuit of ancient populations. Adding it to the phenomenological toolkit creates important opportunities for understanding the dynamics of ancient landscape experience.

Spatial Methodologies

Another major methodological intervention that I develop and advocate in this dissertation is the closer integration of spatial sensibilities into desert survey work. To date, much survey work has prioritized the recording of archaeological material such as architecture, artifact scatters, and rock art, while under-recording data on terrain, geology, and ecological indicators. This is understandable considering the logistical constraints acting on survey recording strategies. However, in some cases it is also influenced by art historical and epigraphic traditions in Egyptology, which privilege iconography and text. This can result in publications that present survey findings divorced from their landscape

context. This occludes valuable information about the motive, message, and audience of landscape interventions.

The spatial sensitivity that I propose includes but goes beyond locational recording and mapping which many projects have been carrying out since the introduction of commercially available handheld GPS units. A fully integrated system of spatial landscape recording in the desert environment should also include information about topography, geology, ecology, and spatial relationships with other natural and anthropogenic features. Even where survey data is published spatially, it is often shown mapped as points on white space, obscuring the natural landscape context with which the archaeological material is in close dialog. Unfortunately, at the time I conducted my fieldwork, permitting and security regulations did not allow me to fully implement the recording methods I advocate in this project. However, the case study that I performed with legacy data, augmented by field visits, returned promising results. This is an indication that spatial research in the Egyptian deserts stands to make a significant contribution to our understanding of the ancient experience of the landscape, as it has in other subfields. This will involve a higher resolution of environmental recording in the field, but also the formulation of research questions that utilize the considerable analytical power of GIS toolkits. This work is only beginning to be carried out and the potential of these analyses is as yet unrealized.

Rock Art as a Waymarking Technology

I applied a very simple environmental/spatial analysis in my Eastern desert case study. Foregrounding topography in my investigation allowed me to see patterns in the

location of rock art, and led to the hypothesis that rock art in this environment functions as a technology of waymarking. The rock art, the majority of which is prehistoric in date, predominately marks communicating wadis that allow passage between the Nile Valley and the Red Sea. The Red Sea connection was already established in prehistory, but much of the movement in the wadis at this time, when the landscape was considerably greener, probably related to hunting and pastoralism.

In my analysis, the gradual aggregation of rock art at major wadi junctions is a critical part of its function. Densely aggregated rock art panels, in which figures are added over time by generations of travelers, create important landmarks that serve a technological function as waymarkers, but also become sites of cultural discourse across time. As the landscape dried and the motives and modes of human activity in it changed, the nature of the wadi system meant that the routes marked out in prehistory remained in use (as they largely do to this day). Travelers of Pharaonic period would have recognized the meaning and pattern of the earlier rock art, and in many cases they added their own figures and inscriptions. The pattern of aggregation continues into the present, and many extremely ancient panels are over-carved with modern traveler's marks. This phenomenon can be expressed as memory, and as a manifestation of communication with earlier human traces. The marking out of human space also serves to "domesticate" or "socialize" the landscape, a governing principle of Egyptian interaction with the desert that is one of the major themes of this dissertation.

The related cairn system should be extensively surveyed at the earliest opportunity, as it likely forms the missing piece of this analysis. Cairns in general are an under-studied feature of the archaeological landscape of the deserts. It is likely that they

have been neglected because they are un-dateable, but I argue that their multi-temporality is a critical factor both in their function and in their social lives.

Before moving on, it is important to call attention to an important and unusual advantage of the waymarking hypothesis: unlike many interpretive landscape analyses, it is genuinely testable. The combination of spatial, environmental, and cultural data, in this case, produces theories that can be effectively ground-checked and confirmed. This is an important direction for future research.

Time and Place

The gradual aggregation of rock art calls attention to the interaction of time and space that characterizes any landscape, but is especially culturally active in the desert. Throughout this dissertation, I have explored the ways in which this relationship makes the desert landscapes into exceptional spaces of memory, and complicates an understanding of the passage of time.

The first of these is the gradual climate change that we now know occurred in the Sahrara as the African Humid Period ended. The most profound drying effect seems to have taken place c. 5000-3000 BCE, although it was not consistently seen across the entire Sahrara, and in many places fully arid conditions were not reached until substantially later. It is now widely accepted that the population of the Nile Valley were essentially climate refugees, pastoralist groups who were increasingly obliged to remain close to the perennial water source of the Nile as the Sahara became less habitable. However, the possible connections between this cultural heritage and later uses of and views toward the desert have not been fully explored. In this project I explored the

implications of this migration for landscape memory, and for the re-interpretation of desert spaces as lands of the past, of ancestry, and of the dead.

Implied in this is a temporal phenomenon. I argue that the desert landscapes were seen by the Egyptians as simultaneously participating in both linear and cyclical time, that is to say, in time on a quotidian scale and on a mythological scale. Mythological time in this sense is comparable to the Dreaming of Aboriginal Australia, a constant, motionless temporality that is both located in the past and accessible in the present. A feature of Australian Dreaming that is applicable here is the possibility of accessing, remembering, or participating in cyclical time through the medium of place: landscape features are mnemonics for Dreaming episodes but also locations of their repeating enactment.

Landscape interventions participate in multiple timescales due to their durability. Egyptian landscape monuments and inscriptions, such as border stelae, rock art, and mining inscriptions, make and hold place, and communicate for their creators even when those people are absent. As communicators, these interventions take on a human personality. In desert landscapes, the medium for landscape interventions is most often stone, the most readily available material. I argue that whether or not it is intended, such interventions begin to participate in geological, as well as human time. Subsequent audiences, therefore, have the experience of communicating with a geological or landscape-bound personality. I suggest that this phenomenon is especially powerful in the desert landscape, where the plausible antiquity of such traces, their constitution in rock, and the paucity of other human interventions heighten the sensorial impact of the encounter.

This transforms the modified desert landscape into a medium of memory and a communicator of stories about the past that are still manifest and physical in the present. Place, as a consequence, vies in importance with time, as human landmarks in the desert environment participate in multiple systems of time at once but remain fixed in place. The identification of the conceptual multi-temporality of the desert landscape, and its relationship to the construction of place, is an important contribution of this dissertation.

Ambiguity and "Reality Bleed"

The idea of the deserts as operating in cyclical or mythological as well as in linear time opens up ideas about the beings that dwell in them, which can range from quotidian, to foreign, to supernatural. In this dissertation, I have framed this uncertainty about the deserts in terms of "ambiguity." The exceptional status of the desert, relative to Egypt, is generally recognized in Egyptology but is normally framed in oppositional terms. In the traditional paradigm, the deserts are considered as a negative of the Nile Valley. In my ambiguity paradigm, the deserts are intermediate, or liminal, zones: between the Nile Valley and other, real, foreign places, and between the Nile Valley and other, supernatural realities. This explains why many divine and supernatural beings were connected with the desert environment, and why, in iconography and literature, they mix so readily with "real" desert fauna and human groups. Because these entities, both real and imaginary, are not wholly seen as negative or dangerous, it seems that the assessment of the desert context as generally negative is not appropriate. The framework of ambiguity allows a more flexible interpretation: that the difficulty of encounters in the desert essentially comes from the uncertainty of encountering the unfamiliar.

In my analysis, uncertainty about the unfamiliar leads to a concern with domestication and socialization. This is distinct from the traditional paradigm of "control over chaos" in that it allows for negotiated, beneficial relationships with desert landscapes and entities. Significantly, it does not require the conquest or annihilation of these entities in order to function ideologically. Domestication through socialization (as in waymarking and landscape art), capture (as in the case of desert animals), or pacification (as in the case of the Solar Eye) is sufficient, and in fact beneficial to the Egyptian actors. Reading engagements with the desert landscape in terms of ambiguity rather than fear or antagonism will create new avenues of research into their conceptual and cosmological values. It can also contribute to our understanding of how the properties and valences of desert-identified entities affected Egyptian ideas about the world outside of the Nile Valley. The reciprocal action of the desert landscape on Egyptian culture has not been fully theorized; laying a foundation for this work has been one of the major goals of this dissertation.

Contributions and Moving Forward

The most important contributions of this project are theoretical and methodological adjustments for thinking about Egyptian desert landscapes. By bringing a social landscape framework to bear on the Egyptian material, we can break free of the limitations of traditional research questions and begin to create inquiries that view the deserts as dynamic and culturally productive spaces, sites of encounter, and important substrates of memory. This dissertation is intended to lay some of the groundwork for social landscape inquiries in Egyptian desert landscapes: how did people conceive of and

demarcate desert space? How were environmental understandings communicated between people and across time? How did different groups exchange information about living and working in the desert environment? How were desert entities, especially people and animals, produced as metonyms of real and imagined desert environments, and what effect did that have on the culture of the Nile Valley? These are examples of questions that can be investigated with a social landscape approach, and which stand to add productively to our understandings of human experience in the ancient Egyptian deserts.

In my approach, I advocate greater attention to spatial analyses, which I believe will result in a significant contribution to our understanding of these landscapes. Landscape archaeology in general and desert archaeology in particular privilege anthropogenic features over natural ones, imposing a nature/culture divide that obscures the critical give-and-take between human activity and the environment in which it takes place. It will be necessary to continue developing field methodologies that best capture the relevant data for analyses incorporating cultural, topographic, and ecological information, but even the limited case study I include in Chapter 4 shows the potential of such studies. I believe that this is an important direction to take moving forward with desert research.

My call for slow phenomenology, or phenomenology in place, is a novel addition to the toolkit of survey and landscape archaeology generally. Other phenomenological approaches are focused on movement, which I believe may be an inappropriate mode both for the desert landscape and for simulating the embodied experience of ancient people. In my own fieldwork going forward I will certainly implement this to the extent

possible, because I found it to be an extremely productive tool for increasing landscape acuity.

In addition to these methodological interventions, I am advocating an alternative paradigm for viewing ancient Egyptian desert landscapes. This is a framework based on the principle of ambiguity and the desire to domesticate and socialize the desert in order to make it knowable. These coupled concepts enable a scholarly approach to the deserts as complex social spaces with a variety of possible meanings.

Taken as a whole, the methods and frameworks that I advocate, develop, and apply in this dissertation are all directed toward accessing more complete and nuanced evidence about the role of the desert landscapes in ancient Egyptian life and thought. This addresses a gap in Egyptological knowledge, which has until recently neglected the deserts as cultural spaces. The work that I present in this project, and which I propose going forward, builds on the last two decades of data collection and exploration in the Egyptian deserts, and seeks to create frameworks for productively integrating this data with what we know about life in the Nile Valley. Ultimately, this has the potential to tell us a great deal about close and reciprocal relationships between the deserts and the Nile Valley throughout Egyptian history, the processes of re-interpretation and memory-making that took place in the Egyptian deserts, and the ways in which ancient Egyptians constituted place out of space, even outside of the Nile Valley.

REFERENCES

Adams, R. 1981. *Heartland of Cities: Surveys of Ancient Settlement and Land Use on the Central Floodplain of the Euphrates.* Chicago: University of Chicago Press.

Adkins, J., P. deMenocal, and G. Eshel. 2006. "The 'African Humid Period' and the Record of Marine Upwelling from Excess 230Th in ODP Hole 658C." *Paleoceanography* 21.

Alcock, S. 2002. *Archaeologies of the Greek Past: Landscapes, Monuments, and Memories.* Cambridge: Cambridge University Press.

Aldred, C. 1987. *The Egyptians.* London: Thames and Hudson.

Allen, J. 2005. *The Ancient Egyptian Pyramid Texts.* Writings from the Ancient World 23. Atlanta: Society of Biblical Literature.

Allen, J. 1988. *Genesis in Ancient Egypt.* New Haven: Yale Egyptological Seminar.

Allon, N. 2007. "Seth is Baal—Evidence from the Egyptian Script." *Egypt and the Levant* 17. 15-22.

Altenmuller, H. 1967. *Darstellungen der Jag im alten Agypten*. *Die Jagd in der Kunst* 4.1 Berlin: Parey.

Andrews, C. 1994. *Amulets of Ancient Egypt.* London: British Museum Press.

Andrews, C. 1990. *Ancient Egyptian Jewelry.* New York: Abrams.

Anschuetz, K., R. Wilshusen, and C. Scheick. 2001. "An Archaeology of Landscapes: Perspectives and Directions." *Journal of Archaeological Research* 9.2. 157-211.

Applegate, A., A. Gautier, and S. Duncan. 2001. "The North Tumuli of the Nabta Late Neolithic Ceremonial Complex." In F. Wendorf, R. Schild, et.al., eds., *Holocene Settlement of the Egyptian Sahara: The Archaeology of Nabta Playa.* Vol. 1.London: Kluwer. 468–488.

Ashmore, W., and B. Knapp. 1999. *Archaeologies of Landscape: Contemporary Perspectives.* Malden, Mass.: Blackwell Publishers.

Asselberghs, H. 1961. *Maat: Chaos en Beheersing*. Leiden: Brill.

Assmann, J. 1990. *Ma'at: Gerechtigkeit und Unsterblichkeit im Alten Ägypten*. Munich: Beck.

Assmann, J. 1996. *The Mind of Egypt: History and Meaning in the Time of the Pharaohs.* New York: Metropolitan Books.

Aston, B., J. Harrell, and I. Shaw. 2000. "Stone." In P. Nicholson and I. Shaw, eds., *Ancient Egyptian Materials and Technology*. Cambridge: Cambridge University Press. 5-77.

Aufrere, S. 2001. 'The Egyptian temple, substitute for the mineral universe.' In Davies, ed. *Color and Painting in Ancient Egypt.* London: British Museum Press.

Aufrere, S. 1991. *L'univers minéral dans la pensée égyptienne 1. L'influence du désert et des minéraux sur la mentalité des anciens Égyptiens*, Institut français d'archéologie orientale, Le Caire .122-130.

Avni, G. 1996. *Nomads, Farmers, and Town-Dwellers: Pastoralist-Sedentist Interaction in the Negev Highlands, Sixth-Eighth Centuries CE.* Supplement to the Archaeological Society of Israel, Jerusalem, Israel Antiquities Authority.

Ayali-Darsahn, N. 2017. "Egyptian and Levantine Belles-Lettres—Links and Influences During the Bronze Age." In P. Creasman and R. Wilkinson, eds., *Pharaoh's Land and Beyond: Ancient Egypt and its Neighbors*. Oxford: Oxford University Press. 195-206.

Ayedi, A. 2007. "The Cult of Hathor as represented on the Stelae at Serabit el-Khadim." *Bulletin of the Egyptian Museum* 4, 23-28.

Bagnall, R., and O. Kaper. 2015. "Introduction." In R. Bagnall, N. Aravecchia, R. Cribiore, P. Davioli, O. Kaper, and S. McFadden, eds., *An Oasis City.* ISAW.

Bahn, P. 1991. "Where's the Beef? The Myth of Hunting Magic in Paleolithic Art." In P. Bahn and A. Rosenfeld, eds., *Rock Art and Prehistory.* Oxbow Monograph 10. 1-13.

Baines, J. 1995. Origins of Egyptian Kingship. In: D. O'Connor and P. Silverman, eds., *Ancient Egyptian Kingship*. Leiden – New York – Köln. 95-156.

Baines, J. 1996. "Contextualizing Egyptian Representations of Society and Ethnicity." In J. Cooper and G. Schwartz, eds., *The Study of the Ancient Near East in the Twenty-First Century. The William Foxwell Albright Centennial Conference.* Winona Lake: Eisenbrauns, 339-384.

Baines, J. 2001. *High Culture and Experience in Ancient Egypt*. Sheffield: Equinox Publishers.

Baines, J. 2003. "Early Definitions of the Egyptian World and Its Surroundings." In T. Potts, M. Roaf, and D. Stein, eds., *Culture through Objects: Ancient Near Eastern Studies in Honour of P. R. S. Moorey*. Oxford: Griffith Institute. 27–57.

Baines, J. 2013. *High Culture and Experience in Ancient Egypt*. Sheffield.

Bard, K. 1989. "The Evolution of Social Complexity in Predynastic Egypt: An Analysis of the Naqada Cemeteries." *Journal of Mediterranean Archaeology* 2.2. page #s?

Bard, K. 1994. "The Egyptian Predynastic: A Review of the Evidence." *Journal of Field Archaeology* 21.3. 265-288.

Bard., K., R. Fattovich, and A. Manzo. 2013. "The Ancient Harbor at Mersa/Wadi Gawasis and How to Get There: New Evidence of Pharaonic Seafaring Expeditions in the Red Sea." In F. Förster, Frank and H. Riemer, eds., *Desert Road Archaeology in Ancient Egypt and Beyond*. Köln: Heinrich-Barth-Institut. 533-554.

Barich B., and F. Hassan. 2000. "A stratified sequence from Wadi el-Obeiyd, Farafra: New data on subsistence and chronology of the Egyptian Western Desert." In L. Krzyzaniak, ed., *Recent Research into the Stone Age of Northeastern Africa*, Poznaán: Sudies in African Archaeology; vol. 7. 11-20.

Barich, B. 2002. "Cultural Responses to Climatic Changes in North African: Beginning and Spread of Pastoralism in the Sahara." in H. Fekri, ed., *Droughts, Food and Culture.* Springer. 209–223.

Barich, B., G. Lucarini, M. Hamdan, F. Hassan, eds. 2014. *From Lake to Sand: The Archaeology of Farafra Oasis, Western Desert, Egypt.* Sapienza University of Rome, Dipartimento di Scienze Dell'Antichità/ Ministry of Antiquities, Egypt.

Barker, G. and D. Gilbertson, eds.. 2000. *The Archaeology of Drylands: Living at the Margin.* London: Routledge.

Barker, G., D. Gilbertson, G. Jones and D. Mattingly. 1996. *Farming the Desert. The UNESCO Libyan Valleys Archaeological Survey*. Paris and London: UNESCO, Society for Libyan Studies.

Barnard, H. 2012. "From Adam to Alexander (500,000-2500 Years Ago)." In H. Barnard and K. Duistermaat, eds., *The History of the Peoples of the Eastern Desert.* Monograph 73. Cotsen Institute of Archaeology. 2-23.

Barnard, H. and W. Wendrich, eds. 2008. *The Archaeology of Mobility: Old World and New World Nomadism.* Cotsen Advanced Seminars v. 4. Cotsen Institute of Archaeology Los Angeles: University of Californa Los Angeles.

Barret, J.C. 1999. "The Mythical Landscapes of the British Iron Age." In W. Ashmore and B. Knapp., eds. *Archaeologies of Landscape: Contemporary Perspectives.* Oxford: Blackwell. 253-265.

Bárta, M. 2011. *Swimmers in the sand. On the Neolithic origins of ancient Egyptian mythology and symbolism.* Prague.

Bárta, M. 2018. "The Birth of the Supernatural: On the Genesis of Some Later Egyptian Concepts." In J. Kabacinski, M. Chlodnicki, M. Kobusiewicz, and M. Winiarska-Kabacinska, eds., *Desert and the Nile. Prehistory of the Nile Basin and the Sahara. Papers in Honour of Fred Wendorf.* Poznan Archaeological Museum. 669-686.

Basso, K. 1996. *Wisdom Sits in Places: Landscape and Language Among the Western Apache.* Albuquerque: University of New Mexico Press.

Bednarik, R. 1990. “Neuropsychology and Shamanism in Rock Art.” *Current Anthropology* 31.1. 77-84.

Bednarik, R. 2013. “Myths about Rock Art.” *Journal of Literature and Art Studies* 3.8. 482-500.

Bednarik, R. 2016. *Myths About Rock Art.* Archaeopress.

Beit Arieh, I. 1987. “Canaanites and Egyptians at Serabit el-Khadim.” in A. Rainey, ed., *Egypt, Israel, Sinai: archaeological and historical relationships in the Biblical period*. Tel Aviv: Tel Aviv University. 57-67.

Bender, B. 1993. *Landscape: Politics and Perspectives.* Berg.

Berger, J. 1972. *Ways of Seeing.* Penguin Books.

Bergman, C., and K. Kuhlmann. 2001. “Die Expedition des Cheops.” *GEO Germany*. Special 5: Ägypten. 120-127.

Berke, H. 2001. “Gunsträume und Grenzbereiche. Archäozoologische Beobachtungen in der Libyschen Wüste, Sudan und Ägypten.” In B. Gehlen, M. Heinen, & A. Tillmann, Eds., *Zeit-Räume. Archäologische Berichte* 14. Bonn: DGUF. 257–282.

Bertini, L., and S. Ikram. 2014. “Faunal Analyses.” In P. Wilson, G. Gilbert, and G. Tassie, eds., *Sais II: The Prehistoric Period at Sa el-Hagar*. London: Egypt Exploration Society. 133-139.

Bestock. L. 2018. *Violence and Power in Ancient Egypt: Image and Ideology Before the New Kingdom.* Routledge.

Bietak, M. 2010. “The Early Bronze Age III Temple at Tell Ibrahim Awad and its Relevance for the Egyptian Old Kingdom.” In Z. Hawass, P. Der Manuelian, and

R. Hussein, eds., *Perspectives on Ancient Egypt: Studies in Honor of Edward Brovarski.* SASAE 40. Supreme Council of Antiquities. 65-77.

Bloxam, E. 2006. "Miners and Mistresses: Middle Kingdom Mining on the Margins." *Journal of Social Archaeology* 6.2. 277-303.

Bloxam, E. 2010. "Quarrying and Mining (Stone)." In W. Wendrich, ed., *UCLA Encyclopedia of Egyptology*. Los Angeles. http://digital2.library.ucla.edu/viewItem.do?ark=21198/ zz0026jkd5

Bloxam, E., and P. Storemyr. 2002. "Old Kingdom basalt quarrying activities at Widan el-Faras, Northern Faiyum Desert." *Journal of Egyptian Archaeology* 88. 23-36.

Bloxam, E., and P. Storemyr. 2005. "The quarries of Gebel Gulab and Gebel Tingar, Aswan." *Egyptian Archaeology* 26. 37-40.

Bloxam, E., J. Harrel, A. Kelany, N. Moloney, A. el-Senussi, and A. Tohamey. 2014. "Investigating the Predynastic Origins of Greywacke Working in the Wadi Hammamat." *Archaeo-Nil* 24. 11-30.

Bloxam, E., P. Storemyr, and T. Heldal. 2009. "Hard stone quarrying in the Egyptian Old Kingdom (3rd millennium BC): rethinking the social organization." in Y. Maniatis, ed., *ASMOSIA VII: actes du VIIe colloque international de l'ASMOSIA organisé par l'École française d'Athènes, le National Center for Scientific Research, "Dimokritos", la 18e éphorie des antiquités préhistoriques et classiques (Kavala) et l'Institute of Geology and Mineral Exploration, Thasos, 15-20 septembre 2003*. Athènes: École française d'Athènes. 187-201.

Boivin, N. 2003. "Rock Art and Rock Music: Petroglyphs of the South Indian Neolithic." *Antiquity* 78.299. 38-53.

Bonacker, W. 1950. “The Egyptian ‘Book of the Two Ways.’” *Imago Mundi* 7. 5-17.

Bonhême, M., and A. Forgeau. 1988. *Pharaon: Les secrets du pouvoir*. Paris: Armand Colin.

Bonnet, C. and D. Valbelle. 1997. “The Middle Kingdom Temple of Hathor at Serabit el-Khadim,” in S. Quirke, ed., *The Temple in Ancient Egypt*. London: British Museum Press. 82–89.

Boozer, L. 2015. “The Social Impact of Trade and Migration: The Western Desert in Pharaonic and Post-Pharaonic Egypt.” *Oxford Handbooks Online.* DOI:10.1093/oxfordhb/9780199935413.013.37

Borchardt. L. 1913. *Das Grabdenkmal des Königs S'aḥu-Re*. Ausgrabungen der Deutschen Orient-Gesellschaft in Abusir 1902 – 1908.

Bourassa, S. 1991. *The Aesthetics of Landscape.* Belhavin Press.

Bourdieu, P. 1980. “Appendix: The Kabyle House or the World Reversed,” in *The Logic of Practice*. 271-283.

Bradbury, L. 1988. “Reflections on Traveling to “Gods-Land” and Punt in the Middle Kingdom.” *Journal of the American Research Center in Egypt* 25. 127-156.

Bradbury, L. 1996. “Kpn-boats, Punt Trade, and a Lost Emporium.” *Journal of the American Research Center in Egypt* 33. 37-60.

Bradley, J. 2011. “’Whitefellas Have to Learn About Country, it is Not Just Land:’ How Landscape Becomes ‘Country’ and not an Imagined Place.” In J. Malpas, ed., *The Place of Landscape: Concepts, Contexts, and Studies.* MIT Press.

Brass, M. 2003. “Tracing the Origins of the Ancient Egyptian Cattle Cult.” In A. Eyma and C. Bennett, eds., *A Delta-Man in Yebu.* Universal Publishers. 101-110.

Braudel, F. 1972. *The Mediterranean and the Mediterranean World in the Age of Phillip II.* New York: Harper and Row.

Breasted, J. 1906. *Ancient records of Egypt: historical documents from the earliest times to the Persian conquest.* Chicago: The University of Chicago Press.

Bremont, A. 2018. “Into the Wild? Rethinking the Dynastic Conception of the Desert Beyond Nature and Culture.” *Journal of Ancient Egyptian Interconnections* 17. 1-17.

Breuil, H. 1952. *Four Hundred Centuries of Cave Art.* Centre d’Etudes et de Documentation Préhistoriques.

Briois, F., B. Midant-Reynes, S. Marchand, Y. Tristant, M. Wuttmann, M. De Dapper, J. Lesur, and C. Newton. 2012. “Neolithic occupation of an artesian spring: KS043 in the Kharga Oasis, Egypt.” *Journal of Field Archaeology* 37.3. 178-191.

Brophy, T., and P. Rosen. 2005. "Satellite Imagery Measures of the Astronomically Aligned Megaliths at Nabta Playa" *Mediterranean Archaeology and Archaeometry*. 5:1. 15–24.

Brück, J. 2005. “Experiencing the past? The development of a phenomenological archaeology in British prehistory.” *Archaeological Dialogues*. 12.1. 45-72.

Brunner, H. 1937. *Die Texte aus den Gräbern der Herakleopolitenzeit von Siut.* ÄF 5. Glückstadt, Hamburg, and New York. 43–44.

Bubenzer, O., and A. Hilgers. 2003. “Luminescence dating of Holocene Playa Deposits of the Egyptian Plateau, Western Desert, Egypt.” *Quaternary Science Reviews* 22. 1077–1084.

Bubenzer, O., and H. Riemer. 2007. "Holocene Climatic Change and Human Settlement Between the Central Sahara and the Nile Valley: Archaeological and Geomorphological Results." *Geoarchaeology: an International Journal* 22:6. 607-620.

Bulmer, M. 1975. "Sociological models of the mining community." *Sociological Review* 23. 61–92.

Bunbury, J., S. Ikram, and C. Roughly. 2020. "Holocene Large Lake Development and Desiccation: Changing Habitats in the Kharga Basin of the Egyptian Sahara." *Geoarchaeology* 2020. 1-20.

Burkard, G. 1997. "Inscription in the Dakhla Region: Text, Translation, and Comments." *Sahara* 9. 152-153.

C.J. Bleeker, 1973. Hathor and Thoth. Two key figures of the Ancient Egyptian religion, Brill, Leiden.

Capart, J. 1904. *Le Débuts de l'art en Egypte.* Bruxelles.

Capart, J. 1946. *El Kab: Impressions et souvenirs*. Bruxelles.

Carson, R. 1962. *Silent Spring*. Houghton Mifflin.

Case, H., and J. Payne. 1962. "Tomb 100: The Decorated Tomb at Hierakonpolis." *The Journal of Egyptian Archaeology* 48. 5-18.

Casey, E. 1996. "How to Get From Space to Place in a Fairly Short Amount of Time: Archaeological Prolegomena." In S. Feld and K. Basso, eds., *Senses of Place.* Santa Fe: School of American Research Press. 13-52.

Casson, L. 1974. *Travel in the Ancient World.* George Allen and Unwin.

Castel, G., and B. Mathieu. 1992. “Les mines de cuivre du Wadi Dara.” *BIFAO* 92. 51–65.

Caton-Thompson, G. 1946. “The Levalloisian Industries of Egypt.” *Proceedings of the Prehistoric Society*. Vol. 12: 57–120.

Červíček, P. 1973. “Datierung der nordafrikanischen Felsbilder durch die Patina.” *Jahrbuch fiir Prehistorische und Ethnographische Kunst* 23. 82-87.

Červíček, P. 1974. *Felsbilder des Nord-Etbai, Oberiigyptens und Unternubiens*. Ergebnisse der vin. DIAFE nach/4gypten 1926. Wiesbaden: F. Steiner Verlag.

Červíček, P. 1986. *Rock Pictures of Upper Egypt and Nubia.* Istituto Universitario Orientale.

Chadwick, A. 2007. “Trackways, Hooves, and Memory-Days: Human and Animal Movements and Memories Around the Iron Age and Romano-British Rural Landscapes of the English North Midlands.” In V. Cummings and R. Johnston, eds., *Prehistoric Journeys.* Oxford: Oxbow. 131-152.

Cherry, P. 2000. The world’s oldest maps? A preliminary study of the abstract rock-art lines. In Rohl, D. (ed.) *The Followers of Horus. Eastern Desert Survey Report 1*. Institute for the Study of Interdisciplinary Sciences: Abingdon, pp. 166–8.

Chippendale, C., and G. Nash. 2004. “Pictures in Place: approaches to the figured landscapes of rock art.” In C. Chippendale and G. Nash, eds., *Pictures in Place: the figured landscapes of rock art.* Cambridge University Press. 1-36.

Churcher, C.S. 1999. “Holocene Faunas of the Dakhleh Oasis.” In C.S. Churcher & A.J. Mills, eds., *Reports from the Survey of the Dakhleh Oasis, Western Desert of*

Egypt, 1977–1987. Dakhleh Oasis Project Monographs 1. Oxford: Oxbow. 133–152.

Ciałowicz, K. 1991. *Les palees égyptiennes aux motifs zoomorphes et sans décoration: Études de l'art prédynastique*. Krakow: Uniwersytet Jagiellonski.

Clayton, J., A. de Trafford, and M. Borda. 2008. "A Hieroglyphic Inscription Found at Jebel Uweinat Mentioning Yam and Tekhebet." *Sahara* 19. 129-134.

Close, A. 2002. "Sinai, Sahara, Sahel: The Introduction of Domestic Caprines to Africa." In Jennerstasse 8, Eds., *Tides of the Desert*. Africa Praehistorica 14. Heinrich Barth Institut. 459-469.

Clottes, J. 1997. "New Laboratory Techniques and their Impact on Paleolithic Cave Art." In M. Conkey, D. Stratmann, and N. Jablonski, eds., *Beyond Art: Pleistocene image and symbol. California Academy of Sciences Memoir 23.* 37-52.

COHMAP Members. 1988. "Climatic changes of the last 18,000 years: Observations and model simulations." *Science* 241. 1043-1052.

Conkey, M. 1987. "New Approaches in the Search for Meaning? A review of research in 'Paleolithic Art.'" *Journal of Field Archaeology* 14.4. 413-430.

Cooper, J. 2011. The Geographic and Cosmographic Expression t3-ntr, in: The Bulletin of the Australian Centre for Egyptology 22, 47–66.

Cooper, J. 2017. "Between this world and the Duat: The land of Wetenet and Egyptian cosmography of the Red Sea", in C. Di Biase-Dyson and L. Donovan, eds., *The Cultural Manifestations of Religious Experience: Studies in Honour of Boyo G. Ockinga.* 383-394.

Cooper, S.F. 1850. *Rural Hours: a Nature Diary of Cooperstown, New York.* George Palmer Putnam.

Cosgrove, D. 1985. *Social Formation and the Symbolic Landscape.* University of Wisconsin Press.

Cosgrove, D., and S. Daniels. 1988. *The Iconography of Landscape.* Cambridge University Press.

Couyat, J. & P. Montet. 1912-13. *Les inscriptions hieroglyphiques et hieratiques du Ouadi Hammamat.* Cairo: L'Institut francais d'archkologie orientale du Caire. Memoires publiks par les membres de I'Institut francais d'archkologie orientale 34.

Cremaschi, M., D. Zampetti, and A. Zerboni. 2005. "Different paths: Rock art, sites and territories in Wadi Raharmellen (Tadrart Acacus– Libyan Sahara)." *Origini* 27. 191–217.

Cribb, R. 1991. *Nomads in Archaeology.* Cambridge University Press.

Crumley, C. L. 1994. "Historical Ecology: A Multidimensional Ecological Orientation." In C.L. Crumley, ed., *Historical Ecology: Cultural Knowledge and Changing Landscapes*. School of American Research Press.

Cruz-Uribe, E. 2009,."Sth '3 phty, 'Seth God of Power and Might.'" *Journal of the American Research Center in Egypt* 45. 201-226.

Dams, L. 1984. "Palaeolithic Lithophones: Descriptions and Comparisons." *Oxford Journal of Archaeology* 4. 31–46.

Darby, W. 2000. *Landscape and Identity: Geographies of Nation and Class in England.* Oxford: Berg.

Darnell, J. 1995. 'Hathor Returns to Medamud.' *Studien zur Altagyptischen Kultur* 22.

Darnell, J. 2002a. "Opening the narrow doors of the desert: Discoveries of the Theban Desert Road Survey." In R. Friedman, ed., *Egypt and Nubia: Gifts of the Desert*. London: British Museum Press. 132-155.

Darnell, J. 2002b. *Theban Desert Road Survey in the Egyptian Western Desert, Volume I: Gebel Tjauti rock inscriptions 1 –45 and Wadi el-Hôl rock inscriptions 1-45.* Oriental Institute Publications 119. Chicago: Oriental Institute.

Darnell, J. 2003. "A Stela of the Reign of Tutankhamun from the Region of Kurkur Oasis." *Studien zur Altägyptischen Kultur* 31. 73-91.

Darnell, J. 2008. "The Eleventh Dynasty Royal Inscription from Deir el Ballas." *Revue d'Egyptologie* 59. 81-106.

Darnell, J. 2009 "Iconographic Attraction, Iconographic Syntax, and Tableaux of Royal Ritual Power in the Pre- and Proto-Dynastic Rock Inscriptions of the Theban Western Desert." *Archéo-Nil* 19. 83-107.

Darnell, J. 2011. "The Wadi of the Horus Qa-a: a Tableau of Royal Ritual Power in the Theban Western Desert." In R. Friedman and P. Fiske, eds., *Egypt at its Origins 3, OLA 205*. Peeters Publishers. 1151-1193.

Darnell, J. 2013a. "The Girga Road: Abu Ziyâr, Tundaba, and the integration of the southern oases into the Pharaonic state." In F. Förster and H. Riemer, eds, *Desert Road Archaeology in Ancient Egypt and Beyond.* Köln: Heinrich-Barth-Institut. 221-263.

Darnell, J. 2013b. “A Bureaucratic Challenge? Archaeology and Administration in a Desert Environment.” In J.C. Moreno García, ed., *Ancient Egyptian Administration*. HdO I.104. Leiden/Boston: Brill, 2013.785–830.

Darnell, J. and C. Darnell. 2016. “Umm-Mawagir in Kharga Oasis: an industrial landscape of the Late Middle Kingdom/Second Intermediate Period.” In G. Miniaci and G. Wolfram, eds., *The world of Middle Kingdom Egypt (2000-1550 BC): contributions on archaeology, art, religion, and written sources. Volume II*. London: Golden House. 27-70.

Darnell, J., and C. Manassa. 2018. *The Ancient Egyptian Netherworld Books.* SBL Press.

Darnell, J., and D. Darnell. 2002. *Theban desert road survey in the Egyptian western desert.* Chicago: The Oriental Institute of the University of Chicago.

Darnell, J., D. Klotz, and C. Manassa. 2013. “Gods on the road: the pantheon of Thebes at Qasr el-Ghueita.” in C. Thiers, Christophe, ed., *Documents de théologies thébaines tardives (*D3T *2)*. Montpellier: Université Paul Valéry. 1-31.

Davidson, T. 2009. “The Role of Domestic Architecture in the Structuring of Memory.” *Space and Culture* 12(3): 332-342.

Davis, W. 1976. “The Origins of Register Composition in Predynastic Egyptian Art.” *Journal of the American Oriental Society* 96.3. 404-418.

Davis, W. 1986. “The Origins of Image-Making.” *Current Anthropology* 27. 193-215.

de Beauvoir, S. 1953. *The Second Sex*. New York: Knopf.

De Buck, A. 1948. *Egyptian Readingbook*. Chicago: Ares Publishers.

de Garis Davies, N. 1953. The Temple of Hibis in el Khargeh Oasis. Part III. The Decoration, ed. L. Bull and L. Hall. New York.

de Maret, P. 2005. "L'orycterope, un animal "bon a penser" pour les Africains, est-il a l'origine du dieu egyptien Seth?" BIFAO 105. 107-28.

Dee, M., D. Wengrow, A. Shortland, A. Stevenson, F. Brock, and C. Ramsey. 2014. "Radiocarbon Dating and the Naqada Relative Chronology." *Journal of Archaeological Science* 46. 319-323.

Deetz, J. 1990. "Landscapes as Cultural Statements." in W. Kelso and R. Most, eds, *Earth Patterns: Essays in Landscape Archaeology*, Charlottesville: University Press of Virginia. 1-4.

deMenocal, P. 1995. "Plio-Pleistocene African Climate." *Science* 270. 53–59.

deMenocal, P., and J Tierney. 2012. "Green Sahara: African Humid Periods Paced by Earth's Orbital Changes." *Nature Education Knowledge* 3:10.

Dening, G. 1996. *Performances*. Chicago: University of Chicago Press.

der der Jagd- Die Jagd Nach Spure

Derchain, P. 1966. "Réflexions sur la décoration des pylônes." *Bulletin de la Société française d'Égyptologie* 46. 17–24.

Derchain, P. 1971. *Elkab* I. *Les monuments religieux à l'entrée de l'Ouady Hellal*. Brussels: Fondation Égyptologique Reine Élisabeth.

de Velde, T. 1967. *Seth, God of Confusion.* Probleme Der Ägyptologie. Leiden: Brill.

di Lernia, S. 2006. "Building Monuments, Creating Identity: Cattle Cult as a Social Response to Rapid Environmental Changes in the Holocene Sahara." *Quaternary International* 151. 50–62.

di Lernia, S., and D. Zampetti, Eds. 2008. *La memoria dell'arte. Le pitture rupestri dell'Acacus tra passato e futuro*. All'insegna del Giglio.

Dietrich, H. 2013. *The Role of Emotion in Environmental Decision Making* (Doctoral Dissertation). University of Nebraska, Lincoln.

Doherty, S. 2016. "Provisioning a Quarry Workforce: Pottery at Gebel el Silsila." In Christelle Alvarez, Arto Belekdanian, Ann-Katrin Gill, Solène Klein, eds., *Current Research in Egyptology 2015: Proceedings of the Sixteenth Annual Symposium.* Oxford: Oxbow. 34-49.

Dorman, P., and B. Bryan, eds. 2007. *Sacred Space and Sacred Function in Ancient Thebes.* Studies in Ancient Oriental Civilization 61. Chicago: Oriental Institute.

Douglass, W.A. 1998. "The mining camp as community." In A.B. Knapp, V. Pigott, and E. Herbert, eds., *Social Approaches to an Industrial Past: The Archaeology and Anthropology of Mining*. London and New York: Routledge. 87–108.

Doxey, D. 1998. *Egyptian Non-Royal Epithets in the Middle Kingdom: A Social and Historical Analysis.* Brill.

Drake, N., R. Blench, S. Armitage, C. Bristow, and K. White. 2011. "Ancient Watercourses and Biogeography of the Sahara Explain the Peopling of the Desert." *PNAS* 108.2. 458-462.

Dunne, J. R. Evershed, M. Salque, L. Cramp, S. Bruni, K. Ryan, S. Biagetti, and S. di Lernia. 2012. "First Dairying in Green Saharan Africa in the Fifth Millennium BC." *Nature* 486. 390–394.

Echallier, J.C., and F. Braemer. 1995. Nature et fonctions des "desert kites" : données et hypothèses nouvelles. Paléorient 21. 35–63.

Egyptian Administration. Leiden: Brill. 785-830.

Ellingson, T. 2001. *The Myth of the Noble Savage.* University of California Press.

Embabi, N. 1999. “Playas of the Western Desert, Egypt.” In J. Donner, ed., *Studies of Playas in the Western Desert of Egypt.* Academia Scientiarum Fennicae 160. Helsinki: Academia Scientiarum Fennica. pp. 5–47.

Emerson, R.W. 1836 (1995). "Nature." In Hart, James D., and Rev. Philip W. Leininger, eds., *The Oxford Companion to American Literature.* Oxford University Press.

Emery, W. 1960. ‘Buhen. Main Fort and Town Site.’ Kush 8.

Engelbach, R. 1938. “The quarries of the Western Nubian Desert and the ancient road to Tushka (survey expedition; February 1930, under the direction of Mr G. W. Murray, Director of the Topographical Survey).” *Annales du Service des Antiquités de l'Égypte* 38. 369-390.

Esposito, S. 2014. *L'administration égyptienne du désert occidental de l'Ancien au Nouvel Empire*. Paris: Presses de l'université Paris-Sorbonne.

Esposito, S. 2014. *L’Administration Égyptienne du Désert Occidental de l’Ancien au Nouvel Empire.* Presses de l’université Paris-Sorbonne.

Fahlander, F. 2013. “Articulating Relations: A Non-Representational View of Scandinavian Rock Art.” In B. Alberti, A. Jones, and J. Pollard, eds., *Archaeology After Interpretation: Returning Materials to Archaeological Theory.* Left Coast Press. 305-324.

Fairservis, W.A. 1983. *Hierakonpolis - The Graffiti and the Origins of Egyptian Hieroglyphic Writing.* The Hierakonpolis Project. Occasional Papers in Anthropology 2. Poughkeepsie NY.

Fakhry, A. 1942. *The Egyptian Deserts I: Bahria Oasis.* Cairo.

Faulkner, R. 1973-8. *The Ancient Egyptian Coffin Texts* Vol. I-III. Warminster: Aris and

Phillips.

Faulstich, P. 1997. “Mapping the Mythological Landscape: an Aboriginal Way of Being-in-the-World.” *Ethics, Place, and Environment* 1.2. 197-221.

Fekri, H. 1985. “Radiocarbon Chronology of Neolithic and Predynastic Sites In Upper Egypt and the Delta.” *The African Archaeological Review* 3. 95-116.

Feld, S., and K. Basso, eds. 1996. *Senses of Place.* Santa Fe: School of American Research Press.

Ferreira, E. 2019. “The Lower Nubian Fortresses in the Middle Kingdom: A Strategic Point of View.” *Athens Journal of History* 5.1. 31-52.

Finkenstaedt, E. 1981. “The Location of Styles in Painting: White Cross-Lined Ware at Naqada.” *Journal of the American Research Center in Egypt* 18. 7-10.

Fischer, H. 1957. “A god and a general of the oasis on a stela of the late Middle Kingdom.” *Journal of Near Eastern Studies* 16.4. 223-235.

Fischer, H. 1964. *Inscriptions from the Coptite Nome: Dynasties VI-XI*. Analecta Orientalia 40. Rome.

Fischer, H. 1991. “Sur les routes de l’Ancien Empire.” *Cahiers de Recherches de l’Institut de Papyrologie et Égyptologie de Lille* 13. 59–64.

Fleming, A. 1999. “Phenomenology and the Megaliths of Wales: a Dreaming Too Far?” *Oxford Journal of Archaeology* 18. 119–125.

Fletcher, R. 1981. “Space and Community Behavior: Spatial Order in Settlements.” In *Universals of Human Thought*, ed. by B. Lloyd and J. Bay: 97-128. Cambridge: Cambridge University Press.

Förster, F. 2007. “The Abu Ballas Trail: A Pharaonic Donkey-Caravan Route in the Libyan Desert (SW Egypt). In O. Bubenzer, A. Bolten, and F. Darius, eds., *Atlas of Cultural and Environmental Change in Arid Africa.* Africa Praehistorica 21. Koln: Heinrich-Barth-Institut.

Förster, F. 2013. “Beyond Dakhla: The Abu Ballas Trail in the Libyan Desert (SW Egypt).” In F. Förster, Frank and H. Riemer, eds., *Desert Road Archaeology in Ancient Egypt and Beyond*. Köln: Heinrich-Barth-Institut. 297-337.

Förster, F. and H. Riemer, eds. 2013. *Desert Road Archaeology in Ancient Egypt and Beyond*. Africa Praehistorica 27. Köln: Heinrich-Barth-Institut.

Frazer, G. 1933. *The Golden Bough: A Study in Magic and Religion.* MacMillan.

Friedman, R. 1999. “Pots, pebbles and petroglyphs II: 1996 Excavations at Hierakonpolis Locality HK64.” In A. Leahy and J. Tait, eds., *Studies on Ancient Egypt in Honour of H. S. Smith.* Occasional Publications 13. London: The Egypt Exploration Society.101 - 108.

Friedman, R. 2011a. “Hierakonpolis.” In E. Teeter, ed., *Before the Pyramids: Origins of Egyptian Civilization.* Oriental Institute of the University of Chicago. 33-44.

Friedman, R. 2011b. “Hierakonpolis.” In D.C. Patch, M. Eaton-Krauss, and S. Allen, eds., *Dawn of Egyptian Art.* Metropolitan Museum of Art.

Fuchs, G. 1989. “Rock Engravings of the Wadi el-Barramiya, Eastern Desert of Egypt.” *The African Archaeological Review* 7. 127-153.

Fuscaldo, P. 1998. “Pottery From the Nubian Tombs (A and C Groups) at Serra West in la Plata Museum of Natural Sciences, Argentina.” In C. Eyre, ed., *Proceedings of*

the Seventh International Congress of Egyptologists, Cambridge, 3-9 September 1995. Orientalia Lovaniensia Analecta 82. Leuven: Peeters Publishers. 409-417.

Gallinaro, M. 2013. "Saharan Rock Art: Local Dynamics and Wider Perspectives." *Arts* 2. 350-382.

Gardiner, A. 1909. *The Admonitions of an Egyptian Sage (Papyrus Leiden 344 recto).* Leipzig.

Gardiner, A. 1920. "The Treaty of the Alliance Between Hattusili, King of the Hittites, and the Pharaoh Ramesses II of Egypt." *Journal of Egyptian Archaeology* 6. 195-196.

Gardiner, A., T. Peet, and J. Cerny. 1955. *The Inscriptions of Sinai*. London: Oxford University Press. Egypt Exploration Society Memoir 45.

Garnett, A. 2013. "'Landscape is Time Materializing:' A Study of Embodied Experience and Memory in Egypt's Eastern Desert." In A. Chadwick and C. Gibson, eds., *Memory, Myth, and Long-Term Landscape Inhabitation.* Oxbow. 226-239.

Gasse, F. 2000. "Hydrological Changes in the African Tropics since the Last Glacial Maximum." *Quaternary Science Review* 19. 189–211.

Gates-Foster, J. 2012. "The Eastern Desert and the Red Sea Ports." in C. Riggs, ed., *The Oxford Handbook of Roman Egypt.* Oxford: Oxford University Press.

Gatto, C. 2001/2002. "Two Predynastic Pottery Caches at Bir Sahara (Egyptian Western Desert). *Sahara* 13. 51-60.

Gatto, M. 2011. "The Nubian pastoral Culture as Link Between Egypt and Africa: A View from the Archaeological Record.: In K. Exell, ed., *Egypt in Its African Context*. BAR International Series 2204. Archaeopress, Oxford. 21–29.

Gatto, M. 2012. "The Holocene Prehistory of the Nubian Eastern Desert." In H. Barnard and K. Duistermaat, eds., *The History and Peoples of the Eastern Desert*. Cotsen Institute of Archaeology. 42-57.

Gehlen, B., Kindermann, K., Linstädter, J., Riemer, H., 2002. "The Holocene Occupation of the Eastern Sahara: Regional Chronologies and Supra-Regional Developments in Four Areas in the Absolute desert. In Jennestraße 8, ed., *Tides of the Desert*. Africa Praehistorica 14. Heinrich Barth Institut. 85-116.

Gerke, S. 2014. "Der altägyptische Greif: von der Vielfalt eines 'Fabeltiers.'" *BSAK* 15.

Germond, P., and J. Livet. 2001. *An Egyptian Bestiary: animals in life and religion in the land of the pharaohs.* New York: Thames & Hudson.

Giddy, L. 1980. "Some exports from the oases of the Libyan Desert into the Nile Valley: tomb 131 at Thebes." In J. Vercoutter, ed., *Livre du centenaire: 1880-1980*. Le Caire: Institut français d'archéologie orientale. 119-125.

Giddy, L. 1987. *Egyptian Oases: Baḥariya, Dakhla, Farafra, and Kharga during Pharaonic Times*. Warminster, UK: Aris & Phillips Ltd.

Giedion, S. 1962. *The Eternal Present: A Contribution on Constancy and Change*. Bollingen Series 35.6. New York: Bollingen Foundation.

Gilman, D.C. 1905. "Appalachian Mountain Club". in Peck, H.T., and F.M. Colby, eds., *New International Encyclopedia.* Dodd, Mead.

Goedicke, H. 1964. "Some Remarks on Stone Quarrying in the Egyptian Middle Kingdom (2060-1786 BC)." *Journal of the American Research Center in Egypt* 3. 43-50.

Goedicke, H. 1987. “Papyrus Anastasi vi 51-61.” *Studien zur altägyptischen Kultur* 14. 89-90.

Goelet, O. 2016. “*W3ḏ-wr*, Punt, and Wadi Hammamat: The Implication of Verbs of Motion Describing Travel.” *Abgadiyat* 11. 51-67.

Goldstein, L. 1988. *The Social and Cultural Roots of Linear Perspective*. Minneapolis, MN: MEP Publications.

Goodwin, A. 1957. "Rock Gongs, Chutes, Paintings and Fertility." *The South African Archaeological Bulletin*. 12.45. 37-40.

Goyon, G. 1957. *Nouvelles inscriptions rupestres du Wadi Hammamat*. Paris.

Goyon, J. 2006. *Le rituel du sehetep Sekhmet au changement de cycle annuel*. IFAO bibliotheque d’etude.

Grajetzki, W. 2006. *The Middle Kingdom of Ancient Egypt: History, Archaeology, and Society.* London: Duckworth Egyptology. 111-113.

Grant, C. 1968. *Rock Drawings of the Coso Range, Inyo County, California.* Maturango Museum Publications.

Green, F.W., 1903. “Prehistoric Drawings at El Kab.” *Proceedings of the Society for Biblical Archaeology* 25. 371-2.

Green, T. 2017. “Devoted Forever to Popular Resort and Recreation.” *Places Journal*. https://doi.org/10.22269/171205

Gupta, A, and J. Ferguson, eds. 1997. *Culture, Power, Place: Explorations in Critical Anthropology*. Durham, NC: Duke.

Haiman, M. 1995. “Agriculture and Nomad-State relations in the Negev Desert in the Byzantine and Early Islamic Periods.” *Bulletin of the American Schools of*

Oriental Research 297. 29-53.

Hamilakis, Y. 2003. "The Sacred Geography of Hunting: Wild Animals, Social Power, and Gender in Early Farming Societies." In: E. Kotjabopoulou, Y. Hamilakis, P. Halstead, C. Gamble, and P. Elefanti, eds., *Zooarchaeology in Greece: Recent Advances, 4*. London: British School of Athens Studies 9. 239-247.

Hamilakis, Y. 2017. "Sensorial Assemblages: Affect, Memory, and Temporality in Assemblage Thinking." *Cambridge Archaeological Journal* 27.1. 169-182.

Hamilakis, Y. 2013. *Archaeology of the Senses: Human Experience, Memory, and Affect.* Cambride: Cambridge University Press.

Hamilakis, Y. and A. Anagnostopoulos, eds. 2009. *Archaeological Ethnographies*. London: Maney.

Hardtke, F. 2013. "The Place of Rock Art in Egyptian Predynastic Iconograpy—Some Examples From the Fauna." *Rock Art Research* 30.1.

Harmanşah, Ö. 2014. *Of Rocks and Water: Towards an Archaeology of Place.* Oxford: Oxbow Books.

Harmanşah, O. 2015. "Stone Worlds: Technologies of Rock Carving and Place-Making in Anatolian Landscapes." In B. Knapp and P. van Dommelen, eds., *The Cambridge Prehistory of the Bronze and Iron Age Mediterranean.* Cambridge University Press. 379-394.

Harrell, J. 2004. "Wadi Abu Diyeiba: an Amethyst Quarry in Egypt's Eastern Desert." *Minerva* 15:6. 13.

Harrell, J. and E. Bloxam. 2012. "The Wadi Hammamat Quarryscapes Survey" *Paper presented at the annual meeting of the The 63rd Annual Meeting of the American*

Research Center in Egypt, Renaissance Providence Hotel, Providence, RI, Apr 27, 2012.

Harrell, J. and T. Bown. 1995. “An Old Kingdom Basalt Quarry at Widan el-Faras and the Quarry Road to Lake Moeris.” *Journal of the American Research Center in Egypt* 32. 71-91.

Harrell, J. and V. Brown. 1992. "The World's Oldest Surviving Geological Map: The 1150 B.C. Turin Papyrus from Egypt." *The Journal of Geology* 100.1. 3-18.

Harrison, S. 2004. “Forgetful and Memorious Landscapes.” *Social Anthropology* 12.2. 135-151.

Hartley, R. 1992. *Rock Art on the Northern Colorado Plateau: variability in content and context*. Aldershot: Avebury.

Harvey, D. 1989. *The Condition of Postmodernity: an Enquiry into the Origins of Social Change.* Wiley-Blackwell.

Hassan, F. 1992a. “Primeval Goddess to Divine King: The Mythogenesis of Power in the Early Egyptian State.” In Friedman, R. & B. Adams, eds., *The Followers of Horus: Studies Dedicated to Michael Allen Hoffman 1944-1990*. ESA Publication No. 2. Oxford: Oxbow Monograph 20.

Hassan, F. 1992b. “The Mythogenesis of Power in the Early Egyptian State”, in R. Friedman and B. Adams, eds., *The Followers of Horus: Studies Dedicated to Michael Allen Hoffman.* Oxford: Oxbow Books. 307–22.

Hassan, F. 1998. “The Earliest Goddesses of Egypt”. In L. Goodison and C. Morris, eds., *Ancient Goddesses: the Myths and the Evidence*. British Museum Press. 98–112.

Hassan, F., ed. 2002. *Droughts, Food and Culture: Ecological Change and Food Security*

in Africa's Later Prehistory. New York: Plenum Publishing Corporation.

Hawass, Z., F. Hassan, and A. Gauthier. 1988. "Chronology, Sediments, and Subsistence at Merimda Beni Salama. *Journal of Egyptian Archaeology* 74. 31-38.

Hayes, W.C. 1949. "Career of the Great Steward Henenu under Nebhepetre Mentuhotpe." *Journal of Egyptian Archaeology* 35. 43-49.

Heidegger, M. 1977. "Building, Dwelling, Thinking." In *Basic Writings,* ed. by D. Krell: 323-339. New York: Harper Collins. (Original work published 1951).

Heizer, R., and M. Baumhoff. 1962. *Prehistoric Rock Art of Nevada and Eastern California.* University of California Press.

Heldal, T., E. Bloxam, and P. Storemyr, and A. Kelany. 2005. "The geology and archaeology of the ancient silicified sandstone quarries at Gebel Gulab and Gebel Tingar, Aswan (Egypt)." *Marmora: International Journal for Archaeology, History and Archaeometry of Marbles and Stones* 1. 11-35.

Heldal, T., E. Bloxam, and P. Storemyr. 2007. "Unravelling Ancient Stone Quarry Landscapes in the Eastern Mediterranean: Three Egyptian Case Studies". In B. Ooghe and G. Verhoeven, eds., *Broadening horizons: Multidisciplinary Approaches to Landscape study*. Newcastle: Cambridge Scholars Press. 90-112.

Hély, C., and A. Lézine. 2014. "Holocene Changes in African Vegetation: Tradeoff Between Climate and Water Availability." *Clim. Past* 10. 681–686.

Hendrickx, S. 1995. *Analytical Bibliography of the Prehistory and the Early Dynastic Period of Egypt and Northern Sudan.* Egyptian Prehistory Monographs. Leuven University Press.

Hendrickx, S. 2002. "Bovines in Egyptian Predynastic and Early Dynastic iconography."

In F. Hassan, ed., *Droughts, Food and Culture. Ecological Change and Food Security in Africa's Later Prehistory*. New York: Kluwer Academic / Plenum Publishers. 275-318

Hendrickx, S. 2006. "The dog, the Lycaon pictus and order over chaos in Predynastic Egypt." In K. Kroeper, M. Chłodnicki, and M. Kobusiewicz, eds., *Archaeology of Early Northeastern Africa. In Memory of Lech Krzyżaniak*. Studies in African Archaeology 9. 723–49.

Hendrickx, S. 2011a. "Hunting and Social Complexity in Predynastic Egypt." *Académie Royale des Sciences d'Outre-mer, Bulletin des Séances* 57.2–4. 237–263.

Hendrickx, S. 2011b. "Iconography of the Predynastic and Early Dynastic Periods." in E. Teeter, ed., *Before the Pyramids: The Origins of Egyptian Civilization.* University of Chicago Press. 75-82.

Hendrickx, S. and M. Eyckerman. 2010. "Continuity and Change in the Visual Representations of Predynastic Egypt." In F. Raffaele, M. Nuzzolo, and I. Incordino, eds., *Recent discoveries and latest researches in Egyptology. Proceedings of the First Neapolitan Congress of Egyptology. Naples, June 18th-20th 2008.* Wiesbaden: Harrassowitz Verlag. 121-144.

Hendrickx, S. and M. Eyckerman. 2012. "Visual Representation and State Formation in Egypt." *Archéo-Nil* 22. 23-72.

Hendrickx, S. and P. Vermeersch. 2000. "Prehistory: From the Paleolithic to the Badarian Culture." In I. Shaw, ed., *The Oxford History of Ancient Egypt.* Oxford: Oxford University Press. 16-40.

Hendrickx, S., and M. Eyckerman. 2010. "Continuity and Change in the Visual Representations of Predynastic Egypt." In F. Raffaele, M. Nuzzolo, and I. Incordino, eds., *Recent discoveries and latest researches in Egyptology. Proceedings of the First Neapolitan Congress of Egyptology. Naples, June 18th-20th 2008.* Wiesbaden: Harrassowitz Verlag. 121-144.

Hendrickx, S., *Elkab* V. *The Naqada III Cemetery*. Brussels: MRAH, 1994.

Hendrickx, S., F. Förster, and M. Eyckerman. 2013. "The Pharaonic Pottery of the Abu Ballas Trail: 'Filling Stations' along a Desert Highway in Southwestern Egypt." In F. Förster, Frank and H. Riemer, eds., *Desert Road Archaeology in Ancient Egypt and Beyond*. Köln: Heinrich-Barth-Institut. 339-380.

Hendrickx, S., H. Riemer, F. Förster, and J.C. Darnell. 2009. "Late Predynastic/Early Dynastic rock art scenes of Barbary sheep hunting in Egypt's Western Desert. From capturing wild animals to the women of the 'Acacia House.'" In H. Riemer, F. Förster, M. Herb & N. Pöllath, eds., *Desert Animals in the Eastern Sahara: Status, Economic signifiance and Cultural Reflection in Antiquity. Proceedings of an interdisciplinary ACACIA Workshop held at the University of Cologne, December 14-15, 2007.* Colloquium Africanum 4. Cologne, Heinrich-Barth Institut. 189-244.

Hendrickx, S., J. Darnell, and M. Gatto. 2012. "The Earliest Representations of Royal Power in Egypt: The Rock Drawings of Nag el-Hamdulab (Aswan). *Antiquity* 86.334. 1068-1083.

Herb. M., and P. Derchain. 2009. "The 'Landscapes' of Ancient Egypt." In O. Bubenzer and M. Bollig, eds., *African Landscapes. Studies in Human Ecology and Adaptation*. Vol 4. New York: Springer.

Hirsch, E. 1995. "Landscape: Between Space and Place." in E. Hirsch and M. O'Hanlon, eds., *The Archaeology of Landscape: Perspectives on Place and Space.* Oxford: Clarendon Press. 1-30.

Hoelzmann, P., B. Keding, H. Berke, S. Kröpelin, and H. Kruse. 2000. "Environmental Change and Archaeology: Lake Evolution and Human Occupation in the Eastern Sahara during the Holocene." *Palaeogeography, Palaeoclimatology, Palaeoecology* 169. 193-217.

Hoffman, M. 1980. *Egypt before the pharaohs: the prehistoric foundations of Egyptian civilization.* London: Routledge & Kegan Paul.

Holtorf, C. 2015. "What Future for the Life-History Approach to Prehistoric Monuments in the Landscape?" In J. Kolen, J. Renes, and R. Hermans, eds., *Landscape Biographies: Geographical, historical, and archaeological perspectives on the production and transmission of landscapes.* Amsterdam University Press. 167-181.

Holtorf, C., and H. Williams. 2006. "Landscapes and Memories." In D. Hicks and M. Beaudry, eds. *The Cambridge Companion to Historical Archaeology.* Cambridge: Cambridge University Press. 235-254.

Holzer, A., U. Avner, N. Porat, L. Horwitz. 2010. "Desert Kites in the Negev Desert and Northeast Sinai: Their Function, Chronology, and Ecology." *Journal of Arid Environments* 74:7. 806-817.

Hope, C. 2007. “Egypt and ‘Libya’ to the end of the Old Kingdom: a view from Dakhleh oasis.” In Z.A. Hawass and J. Richards, eds., *The Archaeology and Art of Ancient Egypt. Essays in Honour of David B. O’Connor, vol. I*. CASAE 36. Cairo: Conseil Suprême des Antiquités de l’Égypte. 399–415.

Horden, P., and N. Purcell. 2000. *The Corrupting Sea: a Study of Mediterranean History*. Wiley-Blackwell.

Hornung, E. 1982 “The Book of the Heavenly Cow.” *Orbis Biblicus et Orientalis* 46. 74-87.

Hornung, E. 1999. *The Ancient Egyptian Books of the Afterlife.* Translated by D. Lorton. Ithaca: Cornell University Press.

Hornung, E.. 1956. “Chaotische Bereiche in der geordneten Welt.” *Zeitschrift für ägyptische Sprache und Altertumskunde* 81. 28–32.

Hoskins, W.G. 1955. *The Making of the English Landscape.* Hodder and Stoughton.

Houlihan, P. 1996. *The Animal World of the Pharaohs.* Thames and Hudson.

Howes, D. 2019. “Digging up the Sensorium.” In R. Skeates and J. Day, eds., *The Routledge Handbook of Sensory Archaeology.* Routledge.

Hubschmann, C., 2010. “Who Inhabited Dakhleh Oasis? Searching for an Oasis Identity in Pharaonic Egypt.” *Papers from the Institute of Archaeology* 20. 51–66. DOI: http://doi.org/10.5334/pia.341

Hugill, P., and K. Foote. 1995. “Re-reading cultural geography.” In K. Foote, P. Hugill, K. Mathewson, and J. Smith, eds., *Re-Reading Cultural Geography*. Austin: University of Texas Press. 9-23.

Huyge, D. 2002. Cosmology, ideology and personal religious practice in ancient

Egyptian rock art. In Friedman, R. (ed.) *Egypt and Nubia: Gifts of the Desert*. British Museum Press: London, pp. 192–206.

Huyge, D. 2014. "The Painted Tomb, Rock Art, and the Recycling of Predynastic Egyptian Imagery." *Archaéo-Nil* 24. 93-102.

Huyge, D., A. Watchman, M. de Dapper, and E. Marchi. 2001. "Dating Egypt's Oldest 'Art': AMS 14C Age Determinations of Rock Varnishes Covering Petroglyphs at el-Hosh (Upper Egypt)." *Antiquity* 75. 68-72.

Hyder, E. 2004. "Locational Analysis in Rock Art Studies." In In C. Chippendale and G. Nash, eds., *Pictures in Place: the figured landscapes of rock art.* Cambridge University Press. 85-102.

Ikram, S. 2020. "Rock Art and the Transformation of Landscape in the Kharga Oasis." *SDAIK* 43. 101-112.

Ikram, S. 2013. "Wanderers in the Desert. The North Kharga Oasis Survey's Exploration of the Darb 'Ain Amur." In R. Bagnall, P. Davoli, and C. Hope, eds., *The Oasis Papers 6. Proceedings of the Sixth International Conference of the Dakhla Oasis Project (Dakhla Oasis Project Monographs 15).* 11–17.

Ikram, S. 2009. A Desert Zoo: An Exploration of Meaning and Reality of Animals in the Rock Art of Kharga Oasis. In H. Riemer, F. Förster, M. Herb & N. Pöllath, eds., *Desert Animals in the Eastern Sahara: Status, Economic signifiance and Cultural Reflection in Antiquity. Proceedings of an interdisciplinary ACACIA Workshop held at the University of Cologne, December 14-15, 2007.* Colloquium Africanum 4. Cologne, Heinrich-Barth Institut.

Ikram, S., and P. Nicholson. 2018. "Sacred Animal Cults in Egypt: Excavating the Catacombs of Anubis at Saqqara. *Expedition* 60.3. 12-20.

Ingold, T. 1986. *The Appropriation of Nature: Essays on Human Ecology and Social Relations*. Manchester University Press.

Ingold, T. 1993. "The Temporality of the Landscape." *World Archaeology* 25.2. 152-174.

Ingold, T. 1994a. "From trust to domination: an alternative history of human–animal relations." in A. Manning and J. Serpell, eds., *Animals and Human Society: Changing Perspectives.* Routledge. 1–22.

Ingold, T. 1994b. "From Trust to Domination: An Alternative History of Human–Animal Relations." In A. Manning and J. Serpell, eds., Animals and Human Society: Changing Perspectives. London: Routledge. 1–22.

Jensen, A. 1934. *The Sacred Animal of the God Seth.* Det Kgl. Danske Videnskabernes Selskab. Biologiske Meddelelser XI, 5. Copenhagen: Levin and Munksgaard.

Jensen, V. 2017. "Predynastic Precursors to the Festival of Drunkenness." In G. Rosati and M.C. Guidotti, eds., *Proceedings of the XIth Annual Congress of Egyptologists, Florence, Italy, 23-30 August 2015.* Archaeopress. 296-302.

Jeuthe, C. 2018. "The Governor's Palaces at Ain Asil/Balat." In M. Bietak and S. Prell, eds., *Ancient Egyptian and Near Eastern Palaces Vol. 1.* CAENL 5. 125-140.

Johnson, M. 2007. *Ideas of Landscape.* Wiley.

Joliveau, T. 2009. "Connecting Real and Imaginary Places Through Geospatial Technologies: Examples from Set-Jetting and Art-Oriented Tourism." *The Cartographic Journal* 46:1. 36-45.

Jones, A. 2007. *Memory and Material Culture.* Cambridge University Press.

Jones, A. and M. Díaz-Guardamino. 2015. "'Enigmatic Images from Remote Prehistory:' Rock Art and Ontology from a European Perspective." In B. David and I.J. McNivens, eds., *Oxford Handbook of the Anthropology and Archaeology of Rock Art.* Oxford: Oxford University Press.

Jones, C., J. Lowe, S. Liddicoat, and R. Betts. 2009. "Committed Terrestrial Ecosystem Changes Due to Climate Change." *National Geosciences* 2. 484-487.

Jones, D. 1988. *A Glossary of Ancient Egyptian Nautical Titles and Terms.* London: Studies in Egyptology 91-92.

Jousse, H. 2006. "What is the Impact of Holocene Climatic Changes on Human Societies? Analysis of West African Neolithic Population's Dietary Customs." *Quaternary International* 151. 63–73.

Judd. T. 2008. "A Rock Art Palimpsest: Evidence of the Relative Ages of Some Eastern Desert Petroglyphs." *Journal of Egyptian Archaeology* 94. 282-288.

Kamrin, J. 1999. *The Cosmos of Khnumhotep II at Beni Hassan.* London: Kegan Paul International.

Kanawati, N. 2010. Beni Hassan: Art and Daily Life in an Egyptian Province. Cairo: Supreme Council of Antiquities.

Kaper, O., and H Willems. 2002. "Policing the desert: Old Kingdom activity around the Dakhleh Oasis." In Renée Friedman, ed., *Egypt and Nubia: Gifts of the Desert*. London: British Museum Press. 79-94.

Kees, H. 1977. *Ancient Egypt: A Cultural Topography.* Chicago.

Kehoe, T. 1996. "The Case for an Ethnographic Approach to Understanding the European Paleolithic." In I. Campen, J. Hahn, and M. Uepermann, eds., *In Spuren*

der der Jagd- Die Jagd nach Spuren. Tübinger Monographien zur Urgeschicte 11. 193-202.

Kemp, B. 1983. "Old Kingdom, Middle Kingdom and Second Intermediate Period c. 2686-1552 BC." in B. Trigger, B. Kemp, D. O'Connor, and A. Lloyd, eds., *Ancient Egypt: A Social History.* Cambridge: Cambridge University Press. 71-182.

Kemp, B. 1989. *Ancient Egypt: Anatomy of a Civilization*. London: Routledge.

Keyser, J., and D. Whitley. 2006. "Sympathetic Magic in Western North American Rock Art." *American Antiquity* 71.1. 3-26.

Kindermann, K. 2004. "Djara: Excavations and Surveys of the 1998-2002 Seasons." *Archéo-Nil* 14. 31-50.

Kitchen, K. 1971. "Punt and How to Get There." *Orientalia* 40. 184-207.

Kitchen, K. 1993. "The Land of Punt." In T. Shaw, P. Sinclair, B. Andah, and A. Okpoko, eds., *The Archaeology of Africa: Food, Metals, and Towns.* London: Routledge. 587-608.

Kleinitz, C., and R. Koenitz. 2006. "Fourth Nile Cataract Petroglyphs in Context: The Ed-Doma and Dirbi Rock-Art Survey" *Sudan and Nubia* 10. 34–42.

Klemm, D., R. Klemm, and A. Murr. 2001. "Gold of the Pharaohs—6000 Years of Mining in Egypt and Nubia." *Journal of African Earth Sciences* 33. 643-659.

Klemm, R., and D. Klemm. 1994. "Chronologischer Abriss der Antiken Goldgewinnung in der Ostwüste Ägyptens. Mitt. Deutsch. Arch- Catalog. Inst. Kairo Band 50, 189–222.

Knapp, A. 1998. "Social approaches to the archaeology and anthropology of mining." In

A.B. Knapp, V. Pigott, and E. Herbert, eds., *Social Approaches to an Industrial Past: The Archaeology and Anthropology of Mining*. London and New York: Routledge. 18-40.

Kobusiewicz, M., J. Kabaciński, R. Schild, J. Irish, and F. Wendorf. 2004. "Discovery of the First Neolithic Cemetery in Egypt's Western Desert." *Antiquity* 78. 566–578.

Kobusiewicz, M., J. Kabacinski, R. Schild., J. Irish, M. Gatto, and F. Wendorf. 2010. *Gebel Ramlah, Final Neolithic Cemeteries from the Western Desert of Egypt*. Poznań.

Köhler, C. 2011. "Neolithic in the Nile Valley (Fayum A, Merimde, el-Omari, Badarian). *Archéo-Nil* 21. 17-20.

Kosiba, S. and A. Bower. 2013. "Mapping the Political Landscape: Toward a GIS Analysis of Environmental and Social Difference." *Journal of Archaeological Method and Theory* 20:1. 61-101.

Kozlowski, J., and B. Ginter. 1989. "The Fayum Neolithic in the Light of New Discoveries." In L. Krzyżaniak and M. Kobusiewicz, eds., *Late Prehistory of the Nile basin and the Sahara.* Poznań: 157-179.

Kröpelin, S. 1987. "Palaeoclimatic Evidence from Early to Mid-Holocene Playas in the Gilf Kebir (Southwest Egypt)." *Palaeoecology of Africa* 18. 189–208.

Kuentz, C. 1920. "Autour d'une conception égyptienne méconnue: l'akhit ou soi-disant horizon." *Bulletin de l'Institut français d'archéologie orientale* 17. 121–190.

Kuper, R., and S. Kröpelin. 2006. "Climate-Controlled Holocene Occupation of the Sahara: Motor of Africa's evolution." *Science* 313. 803-807.

Kutzbach, J. 1981. “Monsoon Climate of the Early Holocene: Climate Experiment with the Earth's Orbital Parameters for 9000 Years Ago.” *Science* 214. 59-61.

Kuznar, L., and R. Sedlmeyer. 2008. “NOMAD: an Agent-Based Model (ABM) of Pastoralist-Agriculturalist Interaction.” In H. Barnard and W. Wendrich, eds., *The Archaeology of Mobility: Old World and New World Nomadism*. Cotsen Institute of Archaeology. 557-583.

Landsberg, A. 2004. *Prosthetic Memory: The Transformation of American Memory in the Age of Mass Culture*. New York: Columbia University Press.

Lange, M. 2006. *Wadi Shaw-Wadi Sahal. Studien zur Holozänen Besiedlung der Laqiya-Region (Nordsudan).* Africa Praehistorica 19. Koln: Heinrich-Barth-Institut.

Lankaster, F. 2013. *Desert Boats. Predynastic and Pharaonic era Rock-Art in Egypt's Central Eastern Desert: Distribution dating and interpretation : Predynastic and Pharaonic Era Rock-Art in Egypt's Central Eastern Desert: Distribution, dating and interpretation.* Oxford: BAR Publishing.

Lankester, Francis 2017. "Control of the wild" in Egypt's Predynastic rock art. In Midant-Reynes, Béatrix and Yann Tristant (eds), Egypt at its origins 5: Proceedings of the Fifth International Conference "Origin of the state. Predynastic and early Dynastic Egypt", Cairo, 13th-18th April 2014, 863-881. Leuven: Peeters.

Lazaridis, N. 2017. “Carving out identities in the Egyptian desert: self-presentation styles adopted by the ancient travelers of Kharga Oasis.” In G. Rosati and M. Guidotti, eds., *Proceedings of the XI International Congress of Egyptologists, Florence Egyptian Museum, Florence, 23-30 August 2015*. Oxford: Archeopress. 328-332.

Lazaridis, N. 2019. Carving the desert: Ancient travellers’ epigraphic uses of Kharga

Oasis rock surfaces. In M. Brose, P. Dils, F. Naether, L. Popko, D. Raue, eds., *En détail – Philologie und Archäologie im Diskurs. Festschrift für Hans-W. Fischer-Elfert*, Bd. 1. Zeitschrift für Ägyptische Sprache und Altertumskunde – Beihefte 7, Berlin: DeGruyter.

Lazaridis, N., 2015. "Amun-Ra, lord of the sky: a deity for travellers of the Western Desert." *British Museum Studies in Ancient Egypt and Sudan* 22. 43-60.

Laziridis, N. 2012. "Crossing the Egyptian Desert: Epigraphic Work at Kharga Oasis." *MAARAV* 19.1-2. 117-129.

Lebedev, M. 2014. "Encountering gods of the desert: ancient Egyptians beyond the Nile Valley during the Old and Middle Kingdoms." In T. Lekov and E. Buzov, eds., *Cult and belief in ancient Egypt: proceedings of the Fourth International Congress for Young Egyptologists, 25-27 September 2012, Sofia.* Sofia: East West. 181-189.

Lefebvre, H. 1991. *The Production of Space.* Wiley-Blackwell.

Lehner, M. 1985. "The development of the Giza necropolis: the Khufu project" *Mitteilungen des Deutschen Archaologischen Instituts Abteilung Kairo* 4. 109-44.

Lenssen-Erz, T. 2012. "Rock Art in Context: Theoretical Aspects of Pragmatic Data Collections." In B. Smith, K. Helskog, and D. Morris, eds., *Working with Rock Art: Recording, Presenting, and Understanding Rock Art Using Indigenous Knowledge.* Wits University Press.

Leonhardt, G. 1961. *Divinity and Experience: The Religion of the Dinka*. Clarendon.

Leroi-Gourhan, A. 1965. *Treasures of Prehistoric Art*. New York: Abrams.

Leroi-Gourhan, A. 1968. "The Evolution of Paleolithic Art." *Scientific American*. 209.2

58-74.

Lesko, L. 1991. “Ancient Egyptian Cosmogenies and Cosmology.” in J. Baines, L. Lesko, and D. Silverman, eds., *Religion in Ancient Egypt.* London: Routledge. 88-122.

Lesur, J. 2015. “Exploitation animale à l'Ancien Empire en Égypte: les apports d'Ayn Asil (oasis de Dakhla).” *Anthropozoologica* 50.1. 33-47.

Lewis-Williams, J.D, and T. Dowson. 1990. “Through the Veil: San Rock Paintings and the Rock Face.” *The South African Archaeological Bulletin* 45.151. 5-16.

Lewis-Williams, J.D. 1983. “Introductory Essay: Science and Rock Art.” In J. Lewis-Williams, ed., *New Approaches to Southern African Rock Art.* The South African Archaeological Society Goodwin Series 4. 2-13.

Lewis-Williams, J.D. 2006. “Debating Rock Art: Myth, Ritual, Theories, and Facts.” *South African Archaeological Bulletin* 61.183. 105-114.

Lichtheim, M. 1973. *Ancient Egyptian Literature Volume 1: The Old and Middle Kingdoms.*

Lichtheim, M. 1976. *Ancient Egyptian Literature Volume II: The New Kingdom*. Los Angeles: University of California Press.

Lichtheim, M. 1988. *Ancient Egyptian Autobiographies Chiefly of the Middle Kingdom: A Study and an Anthology. Orbis Biblicus et Orientalis* 84. Universitätsverlag.

Lieven, A. von 2007. The Carlsberg Papyri 8: Grundriss des Laufes der Sterne: Der sogenannte Nutbuch, CNI Publications 8, Copenhagen.

Linseele, V., W. Van Neer, S. Thys, R. Phillipps, R. Cappers, et al. 2014. "New Archaeozoological Data from the Fayum 'Neolithic' with a Critical Assessment of the Evidence for Early Stock Keeping in Egypt." *PLoS ONE* 9(10): e108517.

Linseele V., and W. Van Neer. 2009. "Exploitation of Desert and Other Wild Game in Ancient Egypt: the archaeozoological evidence from the Nile Valley." In: H. Riemer, F. Förster, M. Herb and N. Pöllath, eds., *Desert Animals in the Eastern Sahara: Status, Economic signifiance and Cultural Reflection in Antiquity. Proceedings of an interdisciplinary ACACIA Workshop held at the University of Cologne, December 14-15, 2007, Colloquium Africanum, 4.* Cologne: Heinrich-Barth Institut. 47-78.

Linseele, V., W. Van Neer, and R. Friedman. 2009. "Special Animals from a Special Place? The Fauna from HK29A at Predynastic Hierakonpolis." *Journal of the American Research Center in Egypt* 45. 105-136.

Liptay, E. 2011. 'From Middle Kingdom Apotropaia to Netherworld Books.' In Bechtold, E., A. Gulyas, and A. Hasznos, eds., *From Illahun to Djeme.* BARInternational Series 2311.

Liu, Z., Y. Wang, R. Gallimore, M. Notaro, and I. Prentice, I. 2006. "On the Cause of Abrupt Vegetation Collapse in North Africa During the Holocene: Climate Variability vs. Vegetation Feedback." *Geophysical Research Letters* 33. L22709.

Lockwood, A. 2012. "The Affective Legacy of *Silent Spring.*" *Environmental Humanities* 1:1. 123-140.

Loprieno, A. 1988. *Topos und Mimesis.* Harrassowitz Verlag.

Lucas, G. 2008. "Time and Archaeological Event." *Cambridge Archaeological Journal*

18.1. 59-65.

Lynch, K. 1972. *What Time is This Place?* MIT Press.

MacDonald, K. 1999. “Archaeology, Language and the Peopling of West Africa: a Consideration of the Evidence. In R. Blench and M. Spriggs, eds. *Archaeology and Language II.* Routledge, Taylor & Francis Group. 33–66.

Magli, G. 2013. *Architecture, Astronomy, and Sacred Landscape in Ancient Egypt.* Cambridge: Cambridge University Press.

Majer, J. 1992. The Eastern Desert and Egyptian Prehistory. In Friedman, R. & Adams, B., eds. *The Followers of Horus: Studies Dedicated to Michael Allen Hoffman 1944-1990.* ESA Publication No. 2. Oxbow Monograph 20.

Malpas, J., 2011. “Introduction.” In J. Malpas, ed., *The Place of Landscape: Concepts, Contexts, and Studies.* MIT Press.

Malville, J. 2015. "Astronomy at Nabta Playa, Egypt", in C. Ruggles, ed., *Handbook of Archaeoastronomy and Ethnoastronomy* 2. Springer Science+Business Media. 1079–1091.

Manning, K., and A. Timpson. 2014. “The Demographic Response to Holocene Climate Change in the Sahara.” *Quaternary Science Review* 101. 28–35.

Marchand, S. 2013. “La céramique de la fin de l’Ancien Empire/Première Période Intermédiaire: Tombe 10 de la nécropole de Qaret el-Toub (oasis de Bahariya).” In M. Dospěl and L. Suková, eds., *Bahriya Oasis. Recent Research into the Past of an Egyptian Oasis*, Prague: Czech Institute of Egyptology. 227–241.

Marchand, S., and P. Tallet. 1999. “Ayn Asil et l’oasis de Dakhla au Nouvel Empire: *Bulletin de l’Institut Français d’Archéologie Orientale* 99. 307-352.

Mariette, A. 1869-1880. *Abydos.* Volume II. Paris.

Marlow C., and A. Mills, eds. 2000. *Dakhleh Oasis Project*. Oxford: Oxbow Monographs in Archaeology 6.

Marshall, F., and F. Hildebrand. 2002. "Cattle Before Crops: The Beginnings of Food Production in Africa." *Journal of World Prehistory* 16. 99–143.

Marshall, N. 2012. "The desert and the hunt." In A. McFarlane and A.L. Mourad, eds., *Behind the scenes. Daily life in Old Kingdom Egypt*. Oxford. 125–46.

Marx, K. 1867 (Trans. B, Fowkes 1990). *Capital*. Volume I, Ch. 27 "The Expropriation of the Agricultural Population." Penguin Classics.

Maslow, A. 1970. *Motivation and Personality*. New York: Harper and Row.

Mattingly, D. 2004. "Surveying the Desert: From the Libyan Desert to Saharan Oases." *British School at Athens Studies* 11. 163-176

Mattioli, T., and M. Díaz-Andreu. 2017. "Hearing Rock Art Landscapes: A Survey of the Acoustical Perception in the Sierra de San Serván Area in Extremadura (Spain). *Time and Mind: The Journal of Archaeology, Consciousness, and Culture* 10.1. 81-96.

McDonald, A. 2000. "Tall Tails. The Seth Animal Reconsidered," in A. McDonald and C. Riggs, eds., *Current Research in Egyptology.* 75-81

McDonald, M. 2009. "Increased Sedentism in the Central Oases of the Egyptian Western Desert in the Early to Mid-Holocene: Evidence from the Peripheries." *African Archaeological Review* 26:1. 3-43.

McDonald, M. 2016. "The Pattern of Neolithization in Dakhleh Oasis in the Eastern Sahara." *Quaternary International* 410:A. 181-197.

McDonald, M., C. Churcher, U. Thanheiser, J. Thompson, I. Teubner, and A. Warfe. 2001. “The mid-Holocene Sheikh Muftah Cultural Unit of Dakhleh Oasis, South Central Egypt: A Preliminary Report on Recent Fieldwork.” *Nyame Akuma* 56. 4–10.

McGee, D., and P. deMenocal. 2017. “Climatic Changes and Cultural Responses During the African Humid Period Recorded in Multi-Proxy Data.” *Oxford Research Encyclopedia of Climate Science.* DOI: 10.1093/acrefore/9780190228620.013.529

McIntosh, S., and R. McIntosh.1986. “Recent Archaeological Research and Dates from West Africa.” *Journal of African History* 27. 413–442.

McKibben, B. 1989. *The End of Nature.* Bloomsbury.

Meeks, D. 2018. “Hathor et Seth passeurs de l'Autre.” *Studi e materiali di storia delle religioni* 84.1. 109-118.

Meinig, D.W. 1979. *The Interpretation of Ordinary Landscapes: Geographical Essays.* Oxford University Press.

Merleau-Ponty, M. 1945. *Phenomenology of Perception.* Trans. D. Landes 2013. London: Routledge.

Meskell, L. 2003. “Memory’s Materiality: Ancestral Presence, Commemorative Practice, and Disjunctive Locales.” In R.M. Van Dyke and S.E. Alcock, eds., *Archaeologies of Memory.* Oxford: Blackwell. 34-55.

Midant-Reynes, B. 2000. *The Prehistory of Egypt: From First Egyptians to the First Pharaohs*. Blackwell, Oxford.

Midant-Reynes, B., and F. Braunstein-Silvestre. 1977. “Le chameau en Egypte.” *Orientalia* 46. 337-362.

Mills, A. 1999. “Pharaonic Egyptians in the Dakhleh Oasis.” In C. Churcher and A. Mills, eds., *Reports from the Survey of the Dakhleh Oasis, Western Desert of Egypt, 1977-1987.* Dakhleh Oasis Project Monograph 2. Oxford: Oxbow. 171-178.

Milroy, J., and G. Revell. 2013. “Aboriginal Story Systems: Re-mapping the West, Knowing Country, Sharing Space.” *Occasion: Interdisciplinary Studies in the Humanities* 5. http://occasion.stanford.edu/node/123.

Mitchell, W.J.T. 1994 (2002). *Landscape and Power.* University of Chicago Press.

Molotch, H. 2011. “Objects and the City.” In G. Bridge and S. Watson, eds., *The New Blackwell Companion to the City*. Wiley-Blackwell. 66–78.

Moreno García, J.C. 2018. “Elusive "Libyans": identities, lifestyles and mobile populations in NE Africa (late 4th-early 2nd millenium BCE).” *Journal of Egyptian History* 11.1-2. 147-184.

Morgan, J., U. Bouriant, G. Legran, G. Jéquier, and A. Barsanti, 1894. *Catalogue des Monuments et Inscriptions de l’Egypte Antique. Première Série. Haute Egypte. Tome Premier. De la Frontière de Nubie à Kom Ombo.* Vienne.

Morgan, L. 2011. “Enlivening the Body: Color and Stone Statues in Old Kingdom Egypt.” *Notes in the History of Art* 30.3 4-11.

Morphy, H. 1995. “Landscape and the Reproduction of the Ancestral past.” in E. Hirsch and M. O'Hanlon, eds., *The Anthropology of Landscape. Perspectives on Place*

and Space. (Oxford Studies in Social and Cultural Anthropology). Oxford: Clarendon Press. 184-209.

Morris, E. 2010. "Insularity and Island Identity in the Oases Bordering Egypt's Great Sand Sea." In S. Ikram and Z. Hawass, eds., *Thebes and Beyond: Studies in Honor of Kent R. Weeks.* Supreme Council of Antiquities Press. 127-144.

Morris, E. 2001. "Paddle Dolls and Performance." *Journal of the American Research Center in Egypt* 47.

Morrow, M., and M. Morrow, eds. 2002. *Desert RATS: Rock art topographical survey in Egypt's Eastern Desert.* London: Bloomsbury Summer School, University College London.

Müller-Roth, M. 2008. Das Buch vom Tage, Orbis Biblicus et Orientalis 236, Göttingen.

Mumford, G., and S. Parcak. 2003. "Pharaonic Ventures into South Sinai: el-Markha plain site 346." *The Journal of Egyptian Archaeology* 89. 83-116.

Murray, G. 1939. "The Road to Cephren's Quarries." *Geographical Journal* 94. 97-114.

Nash, G., and A. Mazel. 2018. *Narratives and Journeys in Rock Art: A Reader*. Archaeopress.

Nelson, D., G. Chaloupka, C. Chippindale, M. Alderson, and J. Southon. 1995. "Radiocarbon Dates for Beeswax Figures in the Prehistoric Rock Art of Northern Australia." *Archaeometry* 37.1. 151-6.

Nelson, K. 2001. The pottery of Nabta Playa: A Summary. In F. Wendorf, R. Schild, and Associates, eds., *Settlement of the Egyptian Sahara. Volume 1: The Archaeology of Nabta Playa.* Kluwer Academic.

Nelson, R.K.1983. *Make Prayers to the Raven: A Koyukon View of the Northern Forest*.

University of Chicago Press.

Newberry, P. 1893. *Beni Hasan I.* London: Egypt Exploration Fund.

Newberry, P. 1893. *Beni Hassan II.* London: Egyptian Exploration Fund.

Nicholas, G., and N. Markey. 2015. "Traditional Knowledge, Archaeological Evidence, and Other Ways of Knowing." In R. Chapman and A. Wylie, eds., *Material Evidence. Learning from Archaeological Practice.* London: Routledge. 286–307.

Nicoll, K. 2004. "Recent Environmental Change and Prehistoric Human Activity in Egypt and Northern Sudan." *Quaternary Science Reviews* 23. 561-580.

Niedermeyer, E., E Schefuß, A, Sessions, S. Mulitza, G. Mollenhauer, M. Schulz, and G. Wefer. 2010. "Orbital- and Millennial-Scale Changes in the Hydrologic Cycle and Vegetation in the Western African Sahel: Insights from Individual Plant Wax δD and δ13C." *Quaternary Science Review* 29. 2996–3005.

Nissen, K. 1994. "Pray for Signs? Petroglyph Research in the Western Great Basin of North America. In J. Steinbring, ed., *Rock Art Studies in the Americas.* Oxbow Monograph 45. 67-76.

Nutz, R. 2010. Zur ideologischen Verortung von 6A-nTr und Punt, in: Studien zur Altägyptischen Kultur 39, 281–288.

O'Connor, D. 1986. "The Locations of Yam and Kush and Their Historical Implications." *Journal of the American Research Center in Egypt.* 23: 27–50.

O'Connor, D. 1990. "The nature of Tjemhu (Libyan) society in the later New Kingdom." In A. Leahy, ed., *Libya and Egypt c. 1300–750 BC*. London: School of Oriental

and African Studies, Center of Middle and Near Eastern Studies and The Society for Libyan Studies. 29–113.

Ogden, J. 2000. "Metals." In P. Nicholson and I. Shaw, eds., *Ancient Egyptian Materials and Technology*. Cambridge: Cambridge University Press. 148-176.

Olivier, L., 2004. "The Past of the Present: Archaeological Memory and Time." *Archaeological Dialogues* 10.2. 204-213.

Olwig, K.F., and K. Hastrup, eds. 1997. *Siting culture: The Shifting Anthropological Object*. New York: Routledge.

Osypiński, P. and M. Osypińska. 2014. "Wadi Khashab: ceremonial complex of cattle keepers in the Egyptian EasternDesert, season 2014." *Nyame Akuma* 82. 84-90.

Overton, M. 1996. *Agricultural Revolution in England: The Transformation of the Agrarian Economy 1500–1850*. Cambridge University Press.

Overton, N., and Y. Hamilakis. 2013. "A Manifesto for a Social Zooarchaeology: Swans and Other Beings in the Mesolithic." *Archaeological Dialogues* 20.2. 111-136.

Pantalacci, L. 2008. "La Documentation Épistolaire du Palais des Gouverneurs à Balat-Ayn Asil. *Bulletin de l'Institute Français d'Archéologie Orientale* 98. 303-315.

Pantalacci, L. 2013a. "Balat: A Frontier Town and its Archive." In J.C. Moreno-Garcia, ed., *Ancient Egyptian Administration.* Handbuch der Orientalistik I.104. Leiden: Brill. 197-214.

Pantalacci, L. 2013b. "Broadening Horizons: Distant Places and Travels in Dakhla and the Western Desert at the Beginning of the 3rd Millennium." In Förster, F. and H. Riemer, eds., *Desert Road Archaeology in Ancient Egypt and Beyond*. Köln: Heinrich-Barth-Institut. 283-296.

Pantalacci, L., and J. Lesur-Gebremariam. 2009. “Wild Animals Downtown: Evidence from Balat, Dakhla Oasis (End of the Third Millenium BC). In In H. Riemer, F. Förster, M. Herb & N. Pöllath, eds., *Desert Animals in the Eastern Sahara: Status, Economic signifiance and Cultural Reflection in Antiquity. Proceedings of an interdisciplinary ACACIA Workshop held at the University of Cologne, December 14-15, 2007.* Colloquium Africanum 4. Cologne, Heinrich-Barth Institut. 245-259.

Paprocki, M. 2019. *Roads in the Deserts of Roman Egypt: Analysis, Atlas, Commentary.* Oxford: Oxbow Books.

Parkinson, R. 1991. *Voices from Ancient Egypt: an Anthology of Middle Kingdom Writings.* London: British Museum.

Partridge, R. 2010. “Transport in Ancient Egypt.” in A. Lloyd, ed., *A Companion to Ancient Egypt.* Wiley.

Patch, D. 2011. *The Dawn of Egyptian Art.* New York: Metropolitan Museum of Art.

Petrie, W. 1899. “Sequences in Prehistoric Remains.” *Journal of The Anthropological Institute of Great Britain and Ireland* 3.4. 295-301.

Petrie, W., and C. Currelly. 1906. *Researches in Sinai.* London: John Murray.

Pietri, Renaud. 2014. “Le roi en char au Nouvel Empire.” *Egypte, Afrique & Orient* 74. 13–22.

Pinch, G. 1993. *Votive offerings to Hathor*. Oxford: Griffith Institute; Ashmolean Museum.

Pinch, G. 2002. Handbook of Egyptian Mythology. Santa Barbara, California: ABC-CLIO.

Pleyte, W. 1861. *Set Dans le Barque Solaire.* Leiden.

Pöllath, N. 2009. "The Prehistoric Gamebag: The Archaeozoological Record from Sites in the Western Desert of Egypt." In In H. Riemer, F. Förster, M. Herb & N. Pöllath, eds., *Desert Animals in the Eastern Sahara: Status, Economic signifiance and Cultural Reflection in Antiquity. Proceedings of an interdisciplinary ACACIA Workshop held at the University of Cologne, December 14-15, 2007.* Colloquium Africanum 4. Cologne, Heinrich-Barth Institut. 79-108.

Poo, M. 2005. *Enemies of Civilization: Attitudes Toward Foreigners in Ancient Mesopotamia, Egypt, and China.* Albany: State University of New York Press.

Posener, G. 1985. "Le papyrus Vandier." Institut français d'archéologie orientale, Le Caire. 63-72.

Preucel, R. and L. Meskell. 2004. "Places." in L. Meskell and R.W. Preucel, eds., *A Companion to Social Archaeology*. Oxford: Blackwell Publishing Ltd. 215–229.

Pugh, S. 1990. *Reading Landscape: Country, City, Capital.* Manchester University Press.

Quirke, S. 2003. "Measuring the Underworld." In D. O'Connor and S. Quirke, eds., *Mysterious Lands.* London: UCL Press. 161-18.

Radford, R., and J. Hylton. 1995. *Australian Colonial Art 1800-1900*. Adelaide: Art Gallery of South Australia.

Raffaele, F. 2010. 'Animal Rows and Ceremonial Processions in Late Predynastic Egypt.' in: F. Raffaele, M. Nuzzolo and I. Incordino, eds., *Recent Discoveries and Latest Researches in Egyptology. Proceedings of the First Neapolitan Congress of Egyptology, Naples, June 18th-20th 2008*. Wiesbaden: Harrassowitz Verlag. 245-285.

Rainbird, P. 2002. “Making Sense of Petroglyphs: the Sound of Rock Art.” In B. David & M. Wilson, eds., *Inscribed Landscapes: Marking and Making Place*. Honolulu: University of Hawaii Press. 93-103.

Rapaport, R. 1999. *Ritual and Religion in the Making of Humanity*. Cambridge: Cambridge University Press.

Redford, S. and Redford, D. 1989. Graffiti and Petroglyphs Old and New from the Eastern Desert. *Journal of the American Research Centre in Egypt.* 3–49.

Reimer, H. and R. Kuper. 2000. “’Clayton Rings:’ Enigmatic Ancient Pottery in the Eastern Sahara.” *Sahara* 12. 91-100.

Reitzenstein. 1923. “Die griechische Tefnutlegende: pBM 274.” *Sitzungsberichte der Heidelberger Akademie der Wissenschaften.* Hiedelberg.

Rice, M. 1990. *Egypt’s Making: the Origins of Ancient Egypt 5000-2000 BC.* London: Routledge.

Richards, J. 1992. *Mortuary Variability and Social Differentiation in Middle Kingdom Egypt*. Ann Arbor, MI: UMI.

Richards, J. 1999. “Conceptual Landscapes in the Egyptian Nile Valley.” In W. Ashmore and B. Knapp, eds., *Archaeologies of Landscape: Contemporary Perspectives*. London: Blackwell. 83-100.

Richards, J. 2005. *Society and Death in Ancient Egypt: Mortuary Landscapes of the Middle Kingdom.* Cambridge: Cambridge University Press.

Richter, B. 2010. “On the Heels of the Wandering Goddess: The Myth and the Festival at the Temples of Wadi el-Hallel and Dendera.” *Proceedings of the 8. Ägyptologische Tempeltagun.* Wiesbaden: Harrassowitz. 155-186.

Riemer, H. 2006. “Out of Dakhla: Cultural Diversity and Mobility between the Egyptian Oases and the Great Sand Seas during the Holocene Humid Phase.” In K. Kroeper, M. Chlodnicki, M. Kobusiewicz, and M. Poznan, eds., *Archaeology of Early Northeastern Africa: In Memory of Lech Krzyzaniak*. Studies in African Archaeology 9. Poznan: Poznan Archaeological Museum. 493-526.

Riemer, H. 2009a. “A Potsherd from Northwest of Abu Minqar and the Dispersal of Sheikh Muftah Pottery in the Western Desert of Egypt.” *Sahara* 20. 57-62.

Riemer, H. 2009b. *Desert animals in the eastern Sahara: status, economic significance, and cultural reflection in antiquity ; proceedings of an interdisciplinary ACACIA workshop held at the University of Cologne, December 14-15, 2007.* Köln: Heinrich-Barth-Institut.

Riemer, H. 2011. *El Karafish. The Archaeology of Sheikh Muftah Pastoral Nomads in the Desert Around Dakhla Oasis (Egypt).* Africa Praehistorica 25. Koln: Heinrich-Barth-Institut.

Riemer, H. 2013. “Lessons in landscape learning: the dawn of long-distance travel and navigation in Egypt's Western Desert from prehistoric to Old Kingdom times.” In Förster, F. and H. Riemer, eds., *Desert Road Archaeology in Ancient Egypt and Beyond*. Köln: Heinrich-Barth-Institut. 77-106.

Ries, J. 1975. “La Religion de la Préhistoire Égyptienne: les Étapes de la Recherche.” In E. Anati, ed., *Actes du Symposium International sur les Religiones de la Préhistoire, Valcamonica 1972.* Capo di Ponte. 293-312.

Ritchie, J., C. Eyles, and C. Haynes. 1985. “Sediment and Pollen Evidence for an Early to Mid-Holocene Humid Period in the Eastern Sahara.” *Nature* 314. 352–355.

Ritner, R. 1993. *The Mechanics of Ancient Egyptian Magical Practice.* Chicago: Oriental Institute.

Roberson, J. 2009. "The Early History of 'New Kingdom' Netherworld Iconography: A Late Middle Kingdom Apotropaic Wand Reconsidered." In Silverman, D., ed., *Archaism and Innovation: Defining the Cultural Expression of Egypt's Middle Kingdom*. New Haven: Yale. 427-445.

Roberson, J. In press. "The 'Jackal Hymn of the West' in the Book of the Night." In D. Kloz and A. Stauder, eds, *[New Kingdom Cryptography]*. Zeitschrift für Ägyptische Sprache und Altertumskunde, Beihefte. Berlin: Akademie-Verlag / De Gruyter.

Roberts, B. 1996. *Landscapes of Settlement: Prehistory to the Present.* London: Routledge.

Robins, G. 2001. "Color Symbolism." In Redford, D. ed., *The Oxford Encyclopedia of Ancient Egypt*. Cairo: The American University in Cairo Press. 291-294.

Robinson, P. 2003. "As For Them Who Know Them, They Shall Find Their Paths: Speculations on Ritual Landscapes in the 'Book of Two Ways.' In D. O'Connor and S. Quirke, eds., *Mysterious Lands.* London: UCL Press. 139-160.

Roe, A. 2006. "The Old Darb al Arbein Caravan Route and Kharga Oasis in Antiquity." *Journal of the American Research Center in Egypt* 42. 119-129.

Rohl, D. 2000. *The Followers of Horus: Eastern Desert Survey Report*. Basingstoke, Institute for the Study of Interdisciplinary Sciences (ISIS).

Roosevelt, T. 1908. “Conservation as a National Duty.” *Voices of Democracy: The U.S. Oratory Project.* http://voicesofdemocracy.umd.edu/theodore-roosevelt-conservation-as-a-national-duty-speech-text/

Rosen, B., and A. Perevoletsky. 1998. The Function of “Desert Kites”: Hunting or Livestock Husbandry? Paléorient 24. 107–111.

Rossi, C., and S. Ikram. 2014. “New Kingdom Activities in the Kharga Oasis: The Scribe Userhat Travels Westwards.” *The Journal of Egyptian Archaeology* 100. 474-478.

Rossi, C. and S. Ikram. 2013. “Evidence of Desert Routes across Northern Kharga (Egypt's Western Desert).” in F. Förster and H. Riemer, eds., *Desert road archaeology in Ancient Egypt and beyond*. Köln: Heinrich-Barth-Institut. 265-282.

Rossi, C., and S. Ikram. 2018. *North Kharga Oasis Survey: Explorations in Egypt’s Western Desert.* British Museum Publications on Egypt and Sudan 5. Peeters.

Rowe, A. 1939. “Three New Stelae from the South-Eastern Desert. *Annales du Service des Antiquités de l'Égypt* 39. 187-191.

Roymans, N., F. Gerritsen, C. van der Heijden, K. Bosma, and J. Kolen. 2009. “Landscape Biography as Research Strategy: The Case of the South Netherlands Project.” *Landscape Research* 34.3. 337-359.

Sadek, A. 1985. *The Amethyst Mining Inscriptions of Wadi el-Hudi*. Warminster: Aris and Phillips.

Scarre, C. 1989. “Painting by Resonance.” *Nature* 338. 382.

Schäfer, H. 1905. “Ein Zug nach der grossen Oase unter Sesostris I.” *ZAS* 42. 124-128.

Schama, S. 1995. *Landscape and Memory*. New York: Alfred A. Knopf.

Schneider, T. 2010. “The West beyond the West: The Mysterious ‘Wernes’ of the Egyptian Underworld and the Chad Palaeolakes.” *Journal of Ancient Egyptian Interconnections* 2.4. 1-14.

Schott, S. 1961. *Kanais: Der Ternpel Sethos I. im Wadi Mia.*Gottingen: Vandenhoeck & Ruprecht. Nachrichten vonder Akademie der Wissenschaften zu Gottingen,Philologische-historische Klasse 6.

Schulz, E. 1991. “Holocene Environments in the Central Sahara.” *Hydrobiologica* 214. 359–365.

Scott, J. 1998. *Seeing Like a State.* New Haven: Yale University Press.

Scott, J. 2009. *The Art of Not Being Governed: An Anarchist History of Upland Southeast Asia.* New Haven: Yale University Press.

Scully, V. 1989. *Pueblo Mountain, Village, Dance*. Chicago: University of Chicago Press.

Searles, K. 2010. “Feeling Good and Doing Good for the Environment: The Use of Emotional Appeals in Pro-Environmental Public Service Announcements.” *Applied Environmental Education and Communication: An International Journal.* 9:3. 173-184.

Seidl, A. 2009. *Early Spring: An Ecologist and Her Children Wake to a Warming World*. Beacon Press.

Seland, E. 2018. “Nomads and Caravan Trade in the Syrian Desert.” In N. Boivin and M. Frachetti, eds., *Globalization in Prehistory: Contact Exchange, and the “People Without History.”* Cambridge University Press. 184-204.

Sereno, P. A. Garcea, H. Jousse, C. M. Stojanowski, J.-F. Saliège, A. Maga, O. A. Ide, K. J. Knudson, A. M.Mercuri, T. W. Stafford Jr., T. G. Kaye, C. Giraudi, I. M. N'siala, E. Cocca, H. M. Moots, D. B. Dutheil, and J. P. Stivers. 2008. "Lakeside Cemeteries in the Sahara: 5000 years of Holocene Population and Environmental Change." *PLOS ONE* 3, e2995.

Shaw, I. 1986. "A survey at Hatnub." in B. Kemp, ed., *Amarna Reports III*. London: Egypt Exploration Society.189-212.

Shaw, I. 1993. 'Amethyst Mining at Wadi el-Hudi.' *The Journal of Egyptian Archaeology* 79. 81-97.

Shaw, I. 1994. "Pharaonic quarrying and mining: settlement and procurement in Egypt's marginal areas." *Antiquity* 68. 108-19.

Shaw, I. 1998. "Exploiting the desert frontier: The logistics and politics of ancient Egyptian mining expeditions." In P. Nicholson and I. Shaw, eds., *Ancient Egyptian Materials and Technology*. Cambridge: Cambridge University Press. 242 - 258.

Shaw, I. 2002. 'Life on the edge: gemstones, politics and stress in the deserts of Egypt and Nubia', in Friedman, R., ed., *Egypt and Nubia: Gifts of the Desert*. London: British Museum Press. 244–51.

Shaw, I. 2009. "Textual and Non-textual marks and the twelfth Dynasty dynamics of centre and periphery: A case-study of potmarks at the Gebel el-Asr gneiss quarries." In P. Andrassy, J. Budka and F. Kammerzell, eds., *Marking Systems, Writing and Pseudo Script from Prehistory to Present Times*. Lingua Aegyptia – Studia Monographica No. 8 (Göttingen, 2009). 69-82.

Shaw, I. 2013. "'We went forth to the desert land…': Retracing the routes between the Nile Valley and the Hatnub travertine Quarries." In F. Förster and H. Riemer, eds, *Desert Road Archaeology in Ancient Egypt and Beyond.* Köln: Heinrich-Barth-Institut. 521-532.

Shaw, I., E. Bloxam, T. Heldal, and P. Storemyr. 2010. "Quarrying and Landscape at Gebel el-Asr in the Old and Middle Kingdoms." In F. Raffaele, M. Nuzzolo, and I. Incordino, eds., *Recent Discoveries and Latest Researches in Egyptology: Proceedings of the First Neapolitan Congress of Egyptology, Naples, June 18th-20th 2008.* Harrassowitz. 293-312.

Shirai, N. 2006. "Supra-regional Concepts in Near Eastern Neolithisation from a Viewpoint of Egyptian Neolithic Research." *Paléorient* 32.2. 7-21.

Shirai, N. 2010. *The Archaeology of the First Farmer-Herders in Egypt. New Insights into the Fayum Epipalaeolithic and Neolithic.* Leiden University Press.

Sidebotham, S., J. Gates-Foster, and J. Rivard, eds. 2019. *The archaeological survey of the desert roads between Berenike and the Nile Valley: expeditions by the University of Michigan and the University of Delaware to the Eastern Desert of Egypt, 1987-2015.* American Schools of Oriental Research archaeological reports 26. Boston, MA: American Schools of Oriental Research.

Sidebotham, S., M. Hense, and H. Nouwens. 2008. *The Red Land: The Illlustrated Archaeology of Egypt's Eastern Desert.* The American University in Cairo Press.

Silverman, D. 1991. "Divinity and Deities in Ancient Egypt." in J. Baines, L. Lesko, and D. Silverman, eds., *Religion in Ancient Egypt.* London: Routledge. 7-87.

Simpson, W. 2003. *The Literature of Ancient Egypt.* Yale University Press.

Smith, A. 2003. *The Political Landscape: Constellations of Authority in Early Complex Polities.* Berkeley: University of California Press.

Smith, A. 2005. *African Herders: Emergence of Pastoral Traditions.* Walnut Creek: Altamira Press.

Smith, B., and G. Blundell. 2004. "Dangerous ground: a critique of landscape in rock-art studies." In C. Chippindale and G. Nash, eds., *Pictures in Place: The Figured Landscapes of Rock-Art.* Cambridge University Press. 239-262.

Snape, S. 2003. "The emergence of Libya on the horizon of Egypt." In D. O'Connor and S. Quirke, eds., *Mysterious Lands*. London: UCL Press. 93–106.

Soggnes, K. 1998. "Symbols in a Changing World: Rock Art and the Transition from Hunting to Farming in Mid Norway." In C. Chippendale and P. Taçon, eds. *The Archaeology of Rock Art.* Cambridge University Press. 146-162.

Soukiassian, G., M. Wuttmann, and L. Pantalacci. 2002. "Le Palais de Gouverneurs de l'Epoque de Pepy II: Le Sanctuaires de Ka et leurs Dépendences." *Balat VI.* Fouilles de l'Institut Français d'Archéologie Orientale 46. Cairo: l'Institut Français d'Archéologie Orientale.

Steindorff, G. 1904. *Durch die Libysche Wüste zur Amonoase (Land und Leute XIX).* Bielefeld and Leipzig.

Stevenson, A. 2011. "Material Culture of the Predynastic Period." in E. Teeter, ed., *Before the Pyramids: The Origins of Egyptian Civilization.* University of Chicago Press. 65-74.

Stevenson, A. 2016. "The Egyptian Predynastic and State Formation." *Journal of Archaeological Research.* 24:4. 421-468.

Storemyr, P. 2008. “Prehistoric Geometric Rock Art at Gharb Aswan, Upper Egypt.” *Sahara* 19. 61-76.

Storemyr, P. 2011. “The Ancient Stone-Built Game Traps at Gharb Aswan and Beyond, Lower Nubia and Upper Egypt.” *Sahara* 22. 15-28.

Storemyr, P. 2014. “A Preshitoric Grinding Stone Quarry in the Egyptian Sahara.” *AmS-Skrifter*, 24. 67-82.

Storemyr, P., A. Kelany, M. Negm, and A. Tohami. 2008. “More ‘Lascaux along the Nile’? Possible Late Palaeolithic rock art in Wadi Abu Subeira, Upper Egypt.” *Sahara 19.* 155-158.

Street-Perrott, F., D. Marchand, N. Roberts, and S. Harrison. 1989. “Global Lake-Level Variations from 18,000 to 0 years ago: a Paleoclimatic Analysis.” U.S. Department of Energy Technical Report 46, 20545.

Strudwick, N. 2005. *Texts from the Pyramid Age.* Atlanta: Society of Biblical Literature.

Stuckey, J. 2005. Ancient Mother Goddesses and Fertility Cults.” *Journal of the Association for Research on Mothering.* 7:1. 32-44.

Sutton, J. 1977. “The African Aqualithic.” *Antiquity* 51. 25–34.

Sutton, P. 1998. “Aboriginal Maps and Plans.” In Woodward, D., and G. M. Lewis, eds., *The History of Cartography.* Vol. 2, Book 3. University of Chicago Press.

Svoboda, J. 2006. “Prehistory of the Southern Bahariya Oasis, Western Desert, Egypt. An Outline.” *Archaeology, Ethnology, and Anthropology of Eurasia* 28.1. 18-30.

Sweeny, D. 2013. “The Maghara (Sinai) Family Revisited.” *Tel Aviv* 40. 46-54.

Sweeny, D. 2017. “Self-Representation in Old Kingdom Quarrying Inscriptions at Wadi Hammamat.” *Journal of Egyptian Archaeology* 100:1. 275-291.

Taçon, P., and S. Ouzman. 2004. “Worlds Within Stone: The Inner and Outer Rock-Art Landscapes of Northern Australia and Southern Africa.” In Chippendale, C., and G. Nash, eds., *The Figured Landscapes of Rock Art: Looking at Pictures in Place.* Cambridge. 39-68.

Taçon, P., and C. Chippindale. 1998. “An archaeology of Rock Art through Informed and Formal Methods. In C. Chippindale and P. Taçon, eds.,*The Archaeology of Rock Art.*

Tait, J. 2003. “The ‘Book of the Fayum:’ Mystery in a Known Landscape.” In D. O’Connor and S. Quirke, eds., *Mysterious Lands*. University College London Press.

Tallet, P. 2003. “Notes sur la zone minière du Sud-Sinaï au Nouvel Empire.” *Bulletin de l'Institut Français d'Archéologie Orientale* 103. 459-486.

Tallet, P. 2012. “Ayn Sukhna and Wadi el-Jarf: Two Newly Discovered Pharaonic Harbours on the Suez Gulf.” *British Museum Studies in Ancient Egypt and Sudan* 18. 147-168.

Tallet, P., and D. Laisney, 2012. “Iry-Hor et Narmer au Sud-Sinaï (Ouadi ‘Ameyra): un complement à la chronologie des expeditions minières égyptiennes.” *Le Bulletin de l’institute Français d’archéologie orientale*. 381-398.

Tallet, P., and G. Marouard. 2016. “The Harbor Facilities of King Khufu on the Red Sea Shore: The Wadi al-Jarf/Tell Ras Budran System.” *Journal of the American Research Center in Egypt* 52. 135-177.

Tally, R. 2013. *Spatiality.* Routledge.

Thomas, J. 2001. “Archaeologies of Place and Landscape.” In I. Hodder, ed., *Archaeological Theory Today.* 165-186.

Thoreau, H.D. 1854. *Walden; or, Life in the Woods.* Ticknor and Fields.

Tierney, J., R. Pausata, and P. deMenocal. 2017. “Rainfall Regimes of the Green Sahara.” *Science Advances* 3:1. DOI: 10.1126/sciadv.1601503

Tierney, J., S. Lewis, B. Cook, A. LeGrande, and G. Schmidt. 2011. “Model, Proxy and Isotopic Perspectives on the East African Humid Period.” *Earth and Planetary Science Letters* 307. 103-112.

Tillet, T. 1985. “The Palaeolithic and its Environment in the Northern Part of the Chad Basin.” *African Archaeological Review* 3: 163–177.

Tilley, C. 1994. *A Phenomenology of Landscape: Places, Paths, and Monuments.* Oxford: Berg.

Tonkinson, R. 1979. *The Mardudjara Aborigines: Living the Dream in Australia’s Desert.* Harcourt School.

Trigger, B. 1983. “The Rise of Egyptian Civilization.” in B. Trigger, B. Kemp, D. O’Connor, and A. Lloyd, eds., *Ancient Egypt: A Social History.* Cambridge: Cambridge University Press. 1-70.

Trigger, B. 1993. *Early Civilizations*. Cairo: The American University Press.

Trigger, B. 2004. “Cross-cultural Comparison and Archaeological Theory.” in L. Meskell and R. Preucel, eds., *A Companion to Social Archaeology*. Oxford: Blackwell. 43–65.

Trigger, B., B. Kemp, D. O’Connor, and A. Lloyd. 1994. *Ancient Egypt; a Social History.* Cambridge: Cambridge University Press.

Tristant, Y., and M. Ghilardi. 2010. *Landscape Archaeology, Egypt, and the Mediterranean World* (Conference Program). Cairo: Institut Français d'Archéologie Orientale.

Tuan, Y. 1977. *Space and Place.* University of Minnesota Press.

Ucko, P.J., and R. Layton. 1999. *The Archaeology and Anthropology of Landscape.* Routledge.

Ullmann, M. 2007. "Thebes: Origins of a Ritual Landscape" in P. Dorman, B. Bryan, and B. Morrell, eds., *Sacred Space and Sacred Function in Ancient Thebes*. Chicago: Oriental Institute of the University of Chicago.

Urton, G. 1981. At the Crossroads of the Earth and the Sky. Austin: University of Texas Press.

Usai, D. 2008. "Tracing the Movement of the Western Desert Dwellers: Site 11-I-13 in Wadi Karagan, Sudanese Nubia, Closely Akin to el-Ghorab or el-Nabta." *Journal of African Archaeology* 6: 219–232.

Valbelle, D. 1998. "Les dieux et la royauté au Sinaï." in D. Valbelle, and C. Bonnet, eds., *Le Sinaï durant l'antiquité et le Moyen-Age: 4000 ans d'histoire pour un désert : actes du colloque "Sinaï" qui s'est tenu à l'UNESCO du 19 au 21 septembre 1997*. Paris: Errance. 50-55.

Valbelle, D. and C. Bonnet. 1996. *Le sanctuaire d'Hathor, maîtresse de la turquoise: Sérabit el-Khadim au Moyen Empire*. Paris: Picard.

Vallogia, M. 2004. *Les oasis d'Égypte dans l'Antiquité. Des Origines au deuxième millenaire avant J.-C.* Gollion: Infolio Éditions.

Van Neer, W., and H. Uerpmann. 1989. “Palaeoecological Significance of the Holocene Faunal Remains of the B.O.S. Missions.” In R. Kuper, ed., *Forschungen zur Umweltgeschichte der Ostsahara. Africa Praehistorica* 2. Köln: Heinrich-Barth-Institut. 307–341.

Vermeersch, P. 2002. “The Egyptian Nile Valley During the Early Holocene.” In Jennerstasse 8, Eds., *Tides of the Desert*. *Africa Praehistorica* 14. Heinrich Barth Institut. 27-40.

Vermeersch, P. 2012. “Contributions to the Prehistory of the Eastern Desert in Egypt.” In H. Barnard and K. Duistermaat, eds., *The History and Peoples of the Eastern Desert.* Cotsen Institute of Archaeology. 24-40.

Vermeersch, P., P. Van Peer, J. Moeyersons, and W. Van Neer. 1996. “Neolithic Occupation of the Sodmein Area, Red Sea Mountains, Egypt.” In G. Pwiti and R. Soper, eds., *Aspects of African Archaeology.* 411-420.

Veth, P., M. Smith, and P. Hiscock. 2005. *Desert Peoples: Archaeological Perspectives.* John Wiley and Sons.

Wallerstein, I. 1987. “World-Systems Analysis.” In A. Giddens and J. Turner, eds., *Social Theory Today.* Stanford University Press. 309-324.

Walther, G. 2010. “Community and Ecosystem Responses to Recent Climate Change

Webster, R. 1983. *Gems: Their Sources, Descriptions, and Identification*. London: Butterworth and Co.

Wegner, J. 1995. “Regional Control in Middle Kingdom Lower Nubia: The Function and History of the Site of Areika.” *Journal of the American Research Center in Egypt* 32. 127-160.

Wendorf, F. 1968. *The Prehistory of Nubia*. Dallas, Texas: SMU Press.

Wendorf, F., and R Schild. 1976. "Prehistory of the Nile Valley." New York.

Wendorf, F., and R. Schild, eds. 2001. *Holocene Settlement of the Egyptian Sahara, The Archaeology of Nabta Playa*. Kluwer Academic.

Wendorf, F., and R. Schild. 1980. *Prehistory of the Eastern Sahara*. New York: Academic Press.

Wendorf, F., and R. Schild. 1998. "Nabta Playa and its Role in Northeastern African Prehistory." Journal of Anthropological Archaeology 17. 97-123.

Wendrich, W. and H. Barnard. 2008. "The Archaeology of Mobility: Definitions and Research Approaches." In H. Barnard and W. Wendrich, eds., *The Archaeology of Mobility: Old World and New World Nomadism.* Cotsen Institute of Archaeology. 1-21.

Wendrich, W., and R. Cappers. 2005. "Egypt's Earliest Granaries: Evidence from the Fayum." *Egyptian Archaeology* 27. 12-15.

Wengrow, D. 2001. "Rethinking 'Cattle Cults' in Early Egypt: Towards a Prehistoric Perspective on the Narmer Palette." *Cambridge Archaeological Journal* 11.1. 91-104.

Wengrow, D. 2003. "Landscapes of Knowledge, Idioms of Power: the African Foundations of Egyptian Civilization Reconsidered." In D. O'Connor, ed., *Ancient Egypt in Africa*. University College London Press. 121-135.

Wengrow, D. 2014. *The Origins of Monsters: Image and Cognition in the First Age of Mechanical Reproduction*. Princeton and Oxford.

Wengrow, D., and J. Baines. 2004. “Images, Human Bodies, and the Ritual Construction of Memory in Late Predynastic Egypt.” In S. Hendrickx, R.F. Friedman, K.M. Ciałowicz, and M. Chłodnicki, eds., *Egypt at its Origins: Studies in Memory of Barbara Adams.* Uitgeverij Peters. 1081-1113.

Wengrow, D., M. Dee, S. Foster,A. Stevenson, and C. Ramsey. 2014. “Cultural Convergence in the Nile Valley Neolithic: A Prehistoric Perspective on Egypt’s Place in Africa.” *Antiquity* 88. 95–111.

Wenke, R., J. Long, and P. Buck. 1988. “The Epipaleolithic and Neolithic Subsistence and Settlement in the Fayyum Oasis of Egypt.” *Journal of Field Archaeology* 15.1.a 29-51.

Whitcomb, D. 1996. "The Darb Zubayda as a Settlement System in Arabia." *ARAM Periodical* 8.1. 25-32.

Wicker, F. 1998. “The Road to Punt.” *The Geographical Journal* 164.2. 155-167.

Wilkinson, R. 1994. *Symbol and Magic in Egyptian Art*. London: Thames and Hudson.

Wilkinson, R. 2003. The Complete Gods and Goddesses of Ancient Egypt. Cairo: American University in Cairo Press.

Wilkinson, T. 2000. *Royal Annals of Ancient Egypt; The Palermo Stone and its Associated Fragments.* London: Kegan Paul International.

Wilkinson, T. 2001. “Rock Drawings in the Eastern Desert.” In D. Rohl, ed., *The Followers of Horus: Eastern Desert Survey Supplement.* ISIS. 158-165.

Wilkinson, T. 2001. *Early Dynastic Egypt*. London: Routledge.

Wilkinson, T. 2003. *Archaeological Landscapes of the Near East.* University of Arizona Press.

Wilkinson, T. J. 1980. "Darb Zubayda 1979: The Water Resources." *Atlal. The Journal of Saudi Arabian Archaeology* 4. 51-67.

Willems, H. 2018. “A Fragment of an Early *Book of Two Ways* on the Coffin of Ankh from Deir el-Barshā (B4B).” *The Journal of Egyptian Archaeology* 104.2. 145-160.

Winkler, H. A. 1938. *Rock-Drawings of Southern Upper Egypt. Sir Robert Mond Desert Expedition Season1936-7, Preliminary Report.* London: Oxford University Press.

Woods, A. 2018. “Drawing the Bow: A Re-examination of the Desert Hunt Scene in the Tomb of Khnumhotep II at Beni Hassan.” *The Bulletin of the Australian Center for Egyptology* 26. 103-126.

Wyatt, N. 2009. ‘Grasping the Griffin: Identifying and Characterizing the Griffin in Egyptian and West Semitic Tradition.’ *Journal of Ancient Egyptian Interconnections.* 1:1. 29–39

Wylie, A. 1985. “The Reaction Against Analogy.” *Advances in Archaeological Method and Theory* 8. 63-111.

Yellen, J. 1998. “Barbed Bone Points: Tradition and Continuity in Saharan and sub-Saharan Africa.” *African Archaeological Review* 15. 173-198.

York, A., R. Daly, and C. Arnett. 1993. *They Write Their Dreams on the Rocks Forever: Rock Writing in the Stein River Valley of British Columbia*. Talon Books.

Zampetti, D. 2008. “Le nuove ricerche sull'arte rupestre dell'Acacus: Il senso del paesaggio, il senso della figura.” In S. di Lernia and D. Zampetti, Eds. *La memoria dell'arte. Le pitture rupestri dell'Acacus tra passato e future*. All'Insegna del Giglio: Firenze. 339–349.

Zarins, J. 1996. “Obsidian in the Predynastic/Archaic Egyptian Red Sea Trade.” In J. Reade, ed. *The Indian Ocean in Antiquity.* Routledge. 89-106.

Zboray, A. 2013. “Wadi Sura in the Context of Regional Rock Art.” In R. Kuper, F. Bartz, E. Büttner, F. Darius, F. Förster, L. Hermsdorf Knauth, S. Krause, H. Leisen, H. Riemer, J. Seidel and A. Zboray., eds., *Wadi Sura – The Cave of Beasts. A rock art site in the Gilf Kebir (SW-Egypt).* Africa Praehistorica 26. 18-23.