UC San Diego

UC San Diego Electronic Theses and Dissertations

Title

Social boundaries and state formation in ancient Edom : a comparative ceramic approach

Permalink

https://escholarship.org/uc/item/1t01b6p2

Author

Smith, Neil G.

Publication Date

2009

Peer reviewed|Thesis/dissertation

eScholarship.org Powered by the California Digital Library
University of California

UNIVERSITY OF CALIFORNIA, SAN DIEGO

Social Boundaries and State Formation in Ancient Edom: A comparative ceramic approach

A dissertation submitted in partial satisfaction of the requirements
for the degree Doctor of Philosophy

in

Anthropology

by

Neil G. Smith

Committee in charge:

Professor Thomas E. Levy, Chair
Professor Guillermo Algaze
Professor David Goodblatt
Professor William H. C. Propp
Professor Joel Robbins

2009

Copyright

Neil G. Smith, 2009

All rights reserved.

The dissertation of Neil G. Smith is approved, and it is acceptable

in quality and form for publication on microfilm and electronically:

_____

_____

_____

_____

_____

Chair

University of California, San Diego

2009

DEDICATION

For my beautiful wife, Kristiana, and two sons, Elijah and Noah, who have joined me on this journey of archaeological discovery and research in the Biblical land of Edom.

TABLE OF CONTENTS

Signature Page……iii

Dedication …… iv

Table of Contents……v

List of Figures ……xi

List of Tables ……xiii

List of Plates ……xiv

Acknowledgments……xvi

Curriculum Vitae……xxiii

Abstract of the Dissertation……xxviii

Chapter 1:
Introduction -Studying complex societies and social boundaries through the lens of ceramic analysis……1
I. Introduction ……1
II. The Research Problem and Case Study:…… 3
A. The two research agendas: Identifying Social Boundaries and understanding the Formation of Complex Societies in Iron Age Edom…… 3
B. The Case Study: Early and Late Iron Age II Edom of the Southern Levant……6
III. Organization of the Volume:……10

Section I: Testable Anthropological Models of Complex Societies, Social Boundaries and the Southern Levant

Chapter 2:
Anthropological Archaeology Models of Social Complexity for Southern Jordan 13
I. Introduction: Disagreement over the social complexity and nature of Southern Levantine Iron Age Polities……13
II. Modeling Archaic States……16
A. What is an archaic state? An attribute based approach: ……16

1. A Stratified Society……..….... 16
2. A King……..……...17
3. A Palace……...……...18
4. An Administrative Government……...…...19
5. A Political Hierarchy with Three Levels of Decision Making…….……...21
6. A Four-tiered settlement hierarchy……..……....23
7. A State Finance System……..……..……...27
8. Hypotheses……..……...….30
B. A Comparative Approach: Types of Complex Societies……...……...33
1. City-States……...……34
2. Regional States……...…....36
3. Betwixt and Between Chiefdom and State……..……39
4. Heterarchy and Corporate Power Strategies……..…..46
5. Tribal Confederacies……..…..50
6. Hypotheses…….……..53
C. A Socio-Economic Approach: Theories on Interregional Interaction…..……..55
1. World Systems Theory……..……...…56
2. Peer-Polity Interaction and Interaction Sphere……..…..62
3. How Structural Homologies Form……..….65
4. Hypotheses……...…71
D. Additional Models Concerning Complex Societies……...……..…...…74
1. The Conquest Theory Revisited……...…75
2. Export-Driven Trade Model……..……..79
3. Hypotheses…….……..…...82
II. Conclusion…….……..…85

Chapter 3:
Identifying Social Boundaries in the Archaeological Record:
Implications for Iron Age Edom…….……...…...…….87
I. Introduction: Previous Archaeological Studies of Ethnicity…….……..……....87
A. Archaeologists and Ethnicity in the Past: Problems with past approaches……...91
II. The Social Approach to Ethnicity: Toward a Social Boundary Model for
Archaeology……....……..……...…93
A. Ethnic Groups and Social Boundaries……..…….94
B. The Complexity of Social Boundaries within Social Interaction...…….98
C. Summary: Defining Ethnic Groups from a Social Anthropology
Perspective……..…....102
III. Style as Ethnic Communication……....104
IV. Re-examining the connection between Style, Ethnicity and Culture…….....112
A. Drilling Down: A Technical Discussion of the Inner Workings of Culture and
its Impact on Social Practice……..……...…...118
B. A Solution Identifying Ethnicity in the Archaeological Record: Mental Models
and Identifying Primary Ethnic Identity……...……...132
V. Chaîne Opératoire and Mimetic Models: Toward an Integrated Understanding

of Ceramics and Society…....…….....……....135
A. Social Boundaries Expressed Through Motor Habits and Technological Style……...……..136
B. The Cultural Movement of Mimetic Models……...142
C. The Role of Marriage Patterns and Physical Mobility in the Spread of MimeticModels…….....……149
D. Distribution and Consumption…….....154
1. Economic Interdependency of Ethnic Groups ……..155
2. The Complexity of Exchange……....158
3. Social Complexity and Pottery Distribution……..…….……...164
4. Craft Specialization and Ceramic Distribution……..…167
5. Petrographic Clay Provenience……...…….….……171
6. Summary……..……..172
VI. Application: Archaeological Test Methods for Iron Age II Edom...……...174
A. Test Procedures and Methods……..…177
VII. Conclusion……..…179
Figures……..…...181

Chapter 4:
Case Study: Social Boundaries in the Southern Levant……...……....189
I. Introduction……..……..189
II. Tribalism and Ethnic Identity: an Anthropological and Biblical Analysis of Edom……...191
A. Introduction……..…191
B. Tribal Identity ……191
C. Identities within a Tribe……..……193
D. The Difference between Tribal identity and Ethnic identity……..……195
III. Ethnogenesis and Nationalism in Ancient Israel: A Critique and Implications for Edom……..199
A. Introduction……..……199
B. Defining Ethnogenesis……..…...200
C. A Model of Ethnogenesis Outside the State…….……..…205
D. Ethnogenesis within States……..……208
IV. Hypotheses……....212
V. Case Study: Preliminary inferences of Social Boundaries in Edom…….…216
A. Introduction……..…216
B. Debate over the Late Iron Age II Ceramic Assemblage and Ethnicity……....216
1. Tribalism and Ethnicity according to P. Bienkowski and E. van der Steen (2001)……..... 217
2. C. Whiting's approach to understanding 'Edomite' ceramics in foreign contexts…….....223

3. Trade Diasporas and Alien Inhabitants: A testable model for understanding the presence of 'Edomite" ceramics in the Negev…...…....…….…...228
C. The Early Iron II Social Boundaries of Edom: An examination of T. Levy's contributions to our understanding of ethnogenesis…….……...237
D. Hypotheses……...240
VI. Conclusion……245

Section II: New Case Studies and Analyses of Data Sets from Southern Jordan

Chapter 5:
The Lowlands and Highlands of Edom: The Archaeological Context……..…..…...247
I. Introduction……...247
II. Geographic and Environmental Boundaries in Ancient Edom……250
A. Edom Lowlands……...251
B. Steppe……..252
C. Highlands of Edom……..252
D. Discussion……...……253
III. The Archaeological Evidence for the Iron II in Edom……..254
A. The Iron Age Chronology of Edom: Issues and Resolution……254
B. Past Iron Age Excavations ……..259
C. Archaeological Soundings……...260
D. Archaeological Surveys –Iron Age settlement patterns……..261
IV. New Excavations and Survey Data for Testing Iron Age Social Models……..…261
A. Lowland Excavations – Overview……...262
1. Khirbat en-Nahas – Copper Production Center in the Faynan District…….262
2. Khirbat al-Jariyeh ……267
3. Rujm Hamra Ifdan……..……268
B. Steppe and Highland Surveys Conducted by L2HE……277
1. Introduction ……...277
2. Survey Methodology……..279
3. Survey Results……...281
4. Resources and Routes……285
5. Defensive and Economic Factors in the Highland Site Location during the Iron Age……287
6. Conclusion……288
C. Lowlands to Highlands of Edom Archaeological Soundings of the Highlands and Steppe……..……..……289
1. Khirbat al-Malayqtah (KAM)……...……290
2. Khirbat al-Kur (KIJ) (formerly known as Khirbat al-Iraq Junubiya)……296
3. Khirbat al-Iraq Shmaliya (KIS)……302
D. Highland Excavations……..307
1. Tawilan ……307
V. Conclusion……313

Photography Plates……..326

Chapter 6:
From Lowland to Highland –Petrographic Perspectives on Iron Age Edom…….…345
I. Introduction……..……..345
II. Past Petrographic and INAA Ceramic Studies of Iron Age Edom……..……..347
III. Methodology…….....350
A. Sampling Methods……...350
B. Thin Sectioning……351
C. Petrographic Analysis……...……...351
D. Ware Analysis……..……352
IV. Petrographic Groups ……..…...355
A. Petrographic Group 1: Lower Cretaceous Shales……..…..…355
B. Petrographic Group 2: Lower Cretaceous Arkose Group…….……...363
C. Petrographic Group 3: Lower Cretaceous Disi Formation Sandstone……..... 365
D. Petrographic Group 4: Paleozoic Micaceous Clay…….367
E. Petrographic Group 5: Loess Soil……...…368
F. Petrographic Group 6: Lower Cretaceous Shale with Micaceous clay- Qurayyah Ware ……369
G. Petrographic Group 7: Moza Dolomitic Clay……..371
H. Petrographic Group 8: Cypriot Aegean……...372
I. Petrographic Group 9: Syro-Lebanese Coast: Neogene clay with *Amphiroa* fossils ……..……...373
J. Petrographic Group 10: Greek Transport Amphoria……..……374
V. Analysis and Conclusion……....374
Figures……..384
Tables……...387
Plates……392

Chapter 7:
Conclusion: The Ceramics of Edom……...……408
I. Introduction……..,….408
II. The Organization of the Ceramic Analysis……..…409
A. Field Collection and Dirty (Field) Lab Processing…….409
B. Sorting Weighing and Counting……...…411
C. Computer Registration……....411
D. Labeling and Storage……..…412
E. Illustration……..…..413
F. 3D Scanning……413
III. Towards an Objective Analytical Ceramic Study of Iron Age Edom: Typology Construction and Parallel Studies ……...415
A. History of Ceramic Typologies in Edom: Problems and Different Approaches……415
B. A New Ceramic Typology for Iron Age Edom: Theoretical

Considerations and Methods……..…….……420
1. Ware vs. Form typologies…….…420
2. Methods of determining types from Morphological Form and other technological styles for Iron Age Edom……428
3. Taxonomy-Method for labeling and discussing types ……...…435
A. Pottery Informatics Query Database: Current Status and Future Development…….…437
1. The Curvature Function: A Mathematical method for storage and analysis of digitized ceramics……....439
2. Introducing the Pottery Informatics Query Database……....442
3. Pottery Informatics as an Analysis and Publication Tool…….…447
4. Summary……452
IV. Ceramic Typology by Period and Stratigraphic Level…….…..453
A. Introduction……..…..453
B. Ceramic Descriptions ……..…456
C. General Quantitative Analysis……...…561
D. Handmade Ware ……...…563
E. Imports……...…565
F. Quantitative and Qualitative Comparison of Decoration and Surface Treatment over Time.……...570
V. Summary of Ceramic Analysis Results- Implications for Understanding Social Boundaries and Change in Iron Age II Edom……..576
Abbreviations……...588
Figures…….593
Tables……...596
Plates……602

References……..…….680

LIST OF FIGURES

Figure 3.1: Three different scenarios of overlap between Social Boundaries and Culture/Material Culure….....….....…181
Figure 3.2: A Hierarchy of Social Boundaries from Family to National Levels…….....……..….....…182
Figure 3.3: Classic Model of US American address system …….....…….183
Figure 3.4: Connectionist Model of US American address system…….....….....….184
Figure 3.5: Examples of morphological and surface treatment difference between potting communities….....….....….....185
Figure 3.6: Methods of Exchange…..……..……....…..…….186
Figure 3.7: Distribution by primary consumers for Luo pottery…….....….....……187
Figure 3.8: Regression Curves comparing down-the-line exchange to central place markets…….....…….....…..……...188
Figure 3.9: Typologies of Craft Specialization….....…….....…..……....188
Figure 5.1a: Aerial Google Earth© Map of sites studied within Research Area…….....……..249
Figure 5.1b: Aerial Google Earth© Map of All sites studied in the Highlands.….....249
Figure 5.1b: Aerial Google Earth© Map of KAM, KIS, KIJ sites studied in the Highlands…….....……249
Figure 5.2: Edom Chronology…… .....……..…….……258
Figure 5.3: Overview of Faynan District and Khirbat en-Nahas relationship with copper mines ……..……264
Figure 5.4: GIS map of Khirbat en-Nahas: Area A (2002) Excavations …….....…265
Figure 5.5: Topological Map of Rujm Hamra Ifdan Soundings A and B….....271
Figure 5.6: Calibrated radiocarbon dates from the Iron Age excavations at Rujm Hamra Ifdan, Faynan district, Jordan...….....….....……275
Figure 5.7: L2HE Surveyed Sites with Site Catchment Zones ...….....……..….....284
Figure 5.8: L2HE AMS Radiocarbon Results conducted at Univ. of Oxford Radiocarbon Accelerator Unit.....….…….....296

Figure 5.9: UCSD JHF-ELRAP 2002 Survey of KEN and its hinterland (Source: Levy et al. 2003)…….....…...……316
Figure 6.1: Percentage of Petrographic Groups Represented….……...…….....….384
Figure 6.2: Percentage of Ware Group A and Imports…….....……385
Figure 6.3: Percentage of Ware Group B…….....…….386
Figure 7.1: Dendrogram from PIQD Cluster Analysis…….....….....……..593
Figure 7.2: Pottery Informatics Query Database, Main Page……...….....…….594
Figure 7.3: KEN Painted Pottery by Stratum.....…….....….595

LIST OF TABLES

Table 5.1: Integrated Phases for Excavated Areas at Khirbat en-Nahas (Source: Levy et al., in prep)…..…..….....…….....…266
Table 5.2: Radiocarbon dates and calibrations for Rujm Hamra Ifdan, Faynan District, Jordan…….....……...275
Table 5.3: Surveyed sites during Showbak-Dana L2HE survey…….....……283
Table 5.4: Radiocarbon dates and calibrations for L2HE sites…….....…….295
Table 6.1: Petrographic Groups and Wares Distinguished in the Study…….....387
Table 6.2a: Identified Petrographic and Ware Groups for Thin-Sectioned Vessel Types…….....…….....……...…388
Table 6.2b: Identified Petrographic and Ware Groups for Thin-Sectioned Vessel Types……..…389
Table 6.2c: Identified Petrographic and Ware Groups for Thin-Sectioned Vessel Types…….....……...390
Table 6.3: Sites and Areas Thin Sectioned…….....…….……391
Table 7.1: Distribution of Vessel Families by Site….....….....…….……596
Table 7.2: Comparison of Hand made to Wheel made pottery at Sites…..…….....597
Table 7.3: Comparison of Surface Treatment and Decoration of Vessel Families by Site.....……..…598
Table 7.4: Distribution of Predominant Vessel Types that occur more than (n=10) Bowls…….....……599
Table 7.5: Distribution of Predominant Vessel Types that occur more than (n=10) KR and JG…….....…….600
Table 7.6: Distribution of Predominant Vessel Types that occur more than (n=10) PT and CP…….....……...……..…….601

LIST OF PLATES

5.7.1	Photography Plate	5.7.1 : RHI 04	Site Photos		……326
5.7.2	Photography Plate	5.7.2 : RHI 04	Site Photos		……...327
5.7.3	Photography Plate	5.7.3 : RHI 04	Site Photos		……328
5.7.4	Photography Plate	5.7.4 : RHI 04	Special Pottery		……..……329
5.7.5	Photography Plate	5.7.5 : RHI 04	Special Finds		……330
5.9.1	Photography Plate	5.9.1 : L2HE 07	Site Photos	KAM	……..331
5.9.2	Photography Plate	5.9.2 : L2HE 07	Site Photos	KAM	……..332
5.9.3	Photography Plate	5.9.3 : L2HE 07	Special Finds	KAM	……..333
5.11.1	Photography Plate	5.11.1 : L2HE 07	Site Photos	KIJ	……334
5.11.2	Photography Plate	5.11.2 : L2HE 07	Site Photos	KIJ	…….……335
5.11.3	Photography Plate	5.11.3 : L2HE 07	Special Finds	KIJ	…….……336
5.12.1	Photography Plate	5.12.1 : L2HE 07	Site Photos	KIS	……337
5.12.2	Photography Plate	5.12.2 : L2HE 07	Site Photos	KIS	……338
5.12.3	Photography Plate	5.12.3 : L2HE 07	Site Photos	KIS	……339
5.12.4	Photography Plate	5.12.4 : L2HE 07	Special Pottery	KIS	……340
5.12.5	Photography Plate	5.12.5 L2HE 07	Special Finds	KIS	….……341
5.13.1	Photography Plate	5.13.1 L2HE 07	Site Photos	TW	……342
5.13.2	Photography Plate	5.13.2 L2HE 07	Site Photos	TW-J, TW-K	..343
5.13.3	Photography Plate	5.13.3 L2HE 07	Special Finds	TW	……344

6.1	Petrographic Groups XPL/PPL:	Ware A1…….392
6.2	Petrographic Groups XPL/PPL:	Ware A1b, A2, A2b……..394
6.3	Petrographic Groups XPL/PPL:	Ware A2b, A3, A4, A6…….396
6.4	Petrographic Groups XPL/PPL:	Ware A6b, B1, B1b…… .398
6.5	Petrographic Groups XPL/PPL:	Ware B2, B3, B5……...400
6.6	Petrographic Groups XPL/PPL:	Ware A7, A9, A10, I1……...402
6.7	Petrographic Groups XPL/PPL:	Ware I1, I2,……404
6.8	Petrographic Groups XPL/PPL:	Ware I3, I4, I5, I6……..406

7.1.1	Pottery Plate 7.1.1 :	KEN06 Area R Str. V, IV……....602	
7.1.2	Pottery Plate 7.1.2 :	KEN06 Area R Str. IV……...604	
7.1.3	Pottery Plate 7.1.3 :	KEN06 Area R Str. IV, III……...606	
7.2.1	Pottery Plate 7.2.1 :	KEN06 Area T Str. V, IV, III……..……...608	
7.2.2	Pottery Plate 7.2.2 :	KEN06 Area T Str. III ……..610	

7.2.3 Pottery Plate 7.2.3 : KEN06 Area T Str. III……..…..612
7.3.1 Pottery Plate 7.3.1 : KEN06 Area M Str. VII, VI, IV-V, III……..…614
7.3.2 Pottery Plate 7.3.2 : KEN06 Area M Str. II-III, II……..……..…..616
7.3.3 Pottery Plate 7.3.3 : KEN06 Area M Str. II…….……618
7.4.1 Pottery Plate 7.4.1 : KEN06 Area A Str. Virgin, V, IV, III-IV…...…620
7.4.2 Pottery Plate 7.4.2 : KEN06 Area A Str. III-IV, II…….……..622
7.4.3 Pottery Plate 7.4.3 : KEN06 Area A Str. II ……..……..…..624
7.4.4 Pottery Plate 7.4.4 : KEN06 Area A Str. II ……..……..…..626
7.4.5 Pottery Plate 7.4.5 : KEN06 Area A Str. II ……..……..…..628
7.4.6 Pottery Plate 7.4.6 : KEN06 Area A Str. II ……..……..…..630
7.4.7 Pottery Plate 7.4.7 : KEN06 Area A Str. II, I……..……632
7.4.8 Pottery Plate 7.4.8 : KEN06 Area A Str. I ……..……..……..634
7.4.9 Pottery Plate 7.4.9 : KEN06 Area A Str. I ……...636
7.5.1 Pottery Plate 7.5.1 : KEN06 Area S Str. VI, V, III……..638
7.5.2 Pottery Plate 7.5.2 : KEN06 Area S Str. III II ..……640
7.5.3 Pottery Plate 7.5.3 : KEN06 Area S Str. II …….……642
7.5.4 Pottery Plate 7.5.4 : KEN06 Area S Str. II, I…….…..……..644
7.5.5 Pottery Plate 7.5.4 : KEN06 Area S Str. I……..……646
7.5.6 Pottery Plate 7.5.6 : KEN06 Area S Str. I ……..……..648
7.5.7 Pottery Plate 7.5.7 : KEN06 Area S Str. I ……..…..650
7.6.1 Pottery Plate 7.6.1 : KEN06 Area F Str. IV, III-IV, III, I……....652
7.7.1 Pottery Plate 7.7.1 : RHI04 Sounding A …….……...654
7.8.1 Pottery Plate 7.8.1 : RHI04 Sounding B …….……...656
7.8.2 Pottery Plate 7.8.2 : RHI04 Sounding B …….……...658
7.8.3 Pottery Plate 7.8.3 : RHI04 Sounding B …….……..660
7.8.4 Pottery Plate 7.8.4 : RHI04 Sounding B ……..……..662
7.9.1 Pottery Plate 7.9.1 : KAM A ……..… …….……..664
7.10.1 Pottery Plate 7.10.1 : KAM B ……..… …….……...666
7.11.1 Pottery Plate 7.11.1 : KIJ ……..… …….……...668
7.12.1 Pottery Plate 7.12.1 : KIS ……..… …….……...670
7.13.1 Pottery Plate 7.13.1 : TW J ……..… …….……...672
7.14.1 Pottery Plate 7.14.1 : TW K ……..… …….……..674
7.15.1 Pottery Plate 7.15.1 : KEN06 Area KAJ Str. V-VI, VI, IV-V , III, I 676
7.16.1 Pottery Plate 7.16.1 : KEN02 Imports ……678

ACKNOWLEDGMENTS

I have discovered through this process that writing this thesis is very similar to being taught how to produce pottery from a master potter. A master teacher takes a new apprentice under his tutelage and over a long duration of one on one interaction, correction, and impartation of positive and negative feedback, the master molds the young apprentice into a professional in the art of the master's study. Now this young professional can move on to train his own students but he too passes on the knowledge, refined skills, and styles of thinking, writing, and researching that he has learned from his master. In many ways I believe I have had the opportunity to work under several masters at UCSD but chiefly the one that has taken me directly under his tutelage is Professor Thomas E. Levy. This work would not have been possible with out his guidance, tutelage, patience, encouragement and vision. I am grateful that I have had the opportunity to be his apprentice for the last 12 years of my life. He has performed above and beyond his duty on helping me complete this dissertation on time and I will forever be indebted.

From the beginning I have been amazed by his ability to always be on the cutting edge of research and to find students like myself that can take one of his visions and run with it. I am very grateful for his permission to study the ceramic collections from the excavations he directed and co-directed, but especially his ability to carry me through every obstacle that I have faced in this academic process. He is a professor that demands much from his students but gives abundantly in return. I am indebted to his countless hours of reading and commenting on the several drafts of these chapters. In the final

hours of this work, he came through in mobilizing the monetary resources to enable me to complete this work and finish strong.

I would also like to thank Professor Guillermo Algaze for his many comments and teaching that have sharpened my arguments and caused me to look past the surface of theoretical models to uncover the mechanisms that drive them. I am grateful for the mentorship over the years by Professor William H. C. Propp. He has supported my pursuit to not only become proficient in the discipline of anthropological archaeology but also has been my teacher in several Semitic languages and the Hebrew Bible. Professor Joel Robbins has influenced significantly my conceptions of culture and ability to connect anthropological theory with archaeology through his classes and the rich conversations we have had concerning different aspects of this work. I am also grateful to Professor David Goodblatt who I have met in passing over the years but have now had a chance to sit down with and glean from his wisdom.

This study also would not have been possible without the hard labour and perseverance of the Jabal Hamrat Fidan Project and Edom Lowlands Regional Archaeology Project team members, Mohammad Najjar, Dr. Russell B. Adams, Dr. Jim Anderson, Dr. Yoav Arbel, Lisa Soderbaum, Dr. Adolfo Muniz, Kristiana Smith, Sarah Malena, Erez Ben-Yosef, Kyle Knabb, Marc Beherec, Aaron Gidding, Elizabeth Monroe, and Aladdin Madi. I thank each one of them and hope this study brings honour to their work. I also appreciate all that Dr. Tom Higham of the Oxford Radiocarbon Accelerator Unit has done in carrying out the dating and Bayesian analysis of the dating samples from Khirbat en-Nahas and the L2HE sites. Thanks also to the students and volunteers who

participated on the excavations and helped me in the washing, sorting, registering, labelling, and storing of the ceramics recovered.

I am grateful to Dr. Fawwaz al-Khraysheh, Director General, Department of Antiquities of Jordan, for his long-term support of the University of California, San Diego's archaeological research activities in Jordan. It was a pleasure to work with Tahani al-Salhi and Haroun al-Amarat from the Department of Antiquities. They performed above and beyond on the L2HE project and I thank them. I am indebted to Dr. Mohammad Najjar in his guidance in preparation of the creation of the L2HE project, his hospitality every time I visited him and our friendship. I would like to thank the villagers of Hawalli and Showbak for their hospitality and generosity during both seasons of the L2HE project. I am indebted to my Bedouin workers who have become my friends and my family.

Dr. Pierre Bikai, former director, Dr. Barbara Porter, current director, and Christopher Tuttle, assistant director, of the American Center of Oriental Research (ACOR) have been very helpful every step of the way while I lived and worked in Jordan for three years. In particular, I would like to thank Dr. Barbara Porter for insuring that I always had a place to study our projects ceramic assemblages and making me feel welcome every time I visited to study in the library. The staff of ACOR has been of great assistance as well to the work done in Jordan. These individuals include Kathy Nimri, Nisreen Abu al-Shaikh, Mohammed Adawi, Sa'id Adawi, Abed Adawi, and Carmen Ayoubi.

The L2HE reconnaissance survey was in large part not possible without the groundwork and surveys conducted by Dr. George Findlater, Dr. Douglas Baird and

Professor Bill Finlayson in the Dana Archaeological Survey. I am grateful for Dr. George Findlater's willingness to share the data recovered from these surveys. These reports and tables facilitated me in narrowing the study down to a manageable size that could be completed within 10 days and still achieve quality results. I also would like to thank Dr. Charlotte Whiting who put me in touch with Dr. Findlater, her guidance in the preparation of the L2HE project, her hospitality every time I visited CBRL, and for our informative conversations about Edom and its ceramics. I also would like to thank the CBRL staff and Professor Bill Finlayson, for allowing me to rent their vehicles during this survey.

The petrographic study conducted in this work involved the help of many individuals. First, I would like to thank Professor James W. Hawkins who first taught me how to use the polarizing microscope and his encouragement to pursue a ceramic petrographic study of our ceramic material. He facilitated me every step of the way. The thin sections were made by Ram Alkaly. I am grateful for his labour and wiliness to let me visit him at UCLA and watch his method of producing the thin-sections. The thin section analysis was conducted at Tel Aviv University, Laboratory for Comparative Microarchaeology and Metal Conservation. Professor Yuval Goren kindly invited me to come study the thin sections at his lab and he personally examined each slide with me. I now cherish that unique opportunity and want to thank him for all his hard work and hospitality while I was there. I would like to thank Erez Ben-Yosef who kindly invited me to stay at his apartment while I was studying at Tel Aviv. I am grateful for the generous study abroad grant provided by the Judaic Studies Department, which covered my travel and living expenses while in Tel Aviv, Israel. Finally, I would like to thank

Professor Paterno Castillo and the Scripps Institution of Oceanography, UCSD who allowed me to borrow for an extended period of time one of their polarizing microscopes for this study while I was completing my analysis at UCSD.

The vision of the Pottery Informatics Query Database would not have come to fruition without the help of numerous individuals. I would like to particularly thank Avshalom Karasik, who worked very closely with me every step of the way as I learned MATLAB and sent him a barrage of questions. One of the joys of working on this project has been developing a great friendship and bond with Avshalom and his family. I am grateful for all of Uzy Smilansky's support of this project, his genius (as I slowly came to understand the programs he wrote for this project), and his hospitality when I came to visit the Weizmann Institute of Science in Israel. I am indebted to Tejaswini Narayanan who wrote half the code for the PIQD and coached me through a number of the programming glitches of PHP, and Javascript. A number of advanced undergraduates put many hours into this work and I thank each of them. First, I would like to thank Eric Olsen who put his heart and mind into this project and scanned over fifty percent of the sherds that have been illustrated in this study. Second, I am grateful for Caitlin Connoly's work, which brought order to the database, and helped complete the scanning for this project. I would like to thank Charlene Wang and Sorayda Santos who vectorized or corrected all the scanned ceramic publications of Edom and many of the sites in the Negev. Eric Tipton also contributed to both parts of these projects and brought insight and wisdom into them.

I am especially indebted to Prof. Larry Herr, Prof. Amihai Mazar, Dr. Nava Panitz-Cohen, and an anonymous reviewer for their very critical and important comments on a previous draft of the pottery chapter.

Although the direction this study has taken is further away from analog methods of ceramic illustration, I do not believe it will be possible to ever digitally replicate the beauty in Dr. Caroline Hebron's illustrations of the ceramics presented in this study. I am grateful for her work.

I would also like to particularly thank Cindy Beck for her enormous help in the Levantine Archaeology Ceramics Lab and aptitude in picking up and performing accurately any project.

This study could not have gone forward with out the generous funding provided by the 2006 National Science Foundation Doctoral Dissertation Improvement Grant (Grant No. 0631220), a 2005 ICES Doctoral Candidate Study Abroad Grant, several Judaic Studies Dorot scholarships and travel grants, and a Doctoral Dissertation grant.

Many other people contributed to the development and completion of this study in a variety of ways, most importantly, my friends and family who have supported me and my family through this long process. I would like to thank them. In particular, I would like to thank Kathleen Bobczynski for all of her help, watching kids, editing, and moral support. And Alina Levy who has sacrificed many hours away from her husband as he has worked with me in bringing this work to completion.

Finally, I will forever be indebted and grateful to my wife Kristiana for her moral support, love, patience, beauty, exorbitant amount of help reading and editing this study, watching and raising of the children, making sure I ate, holding our family together, and

willingness to forgive me every time I had to go back on a promise because of the demands of this study. She has contributed a significant portion of her time to this work in both participating on all of the excavations as the digital photographer and in assisting me in numerous seasons in the analysis of the ceramics. She has also directly contributed by producing the plates in Chapter 5, inputting and formating all of this project's bibliographic references in Endnote, and designing several of the original figures in Chapter 3. For all of her work as a professional archaeologist and as my עֵזֶר כְּנֶגְדּוֹ I will forever appreciate it. I also want my dear two sons Elijah and Noah to know that through this process they brought me great joy and relief when days were hard or stressful.

CURRICULUM VITAE

Academic History:

- PhD. in Anthropology, University of California, San Diego, 2009.
- M.A. in Anthropology, University of California, San Diego, 2003.
- B.A. in Anthropology with Concentration in Archaeology, University of California, San Diego, 2001.
- Minor in Hebrew Language and Literature, University of California, San Diego, 2001.

Archaeological Field Experience:

- Pottery Specialist. Edom Lowlands Regional Archaeological Project. Jabal Hamrat Fidan, Jordan. Directors: Thomas E. Levy (P.I.) & Mohammad Najjar, 2007
- Site Co-director. Lowlands to Highlands of Edom Project. Showbak, Jordan. Directors: Neil G. Smith, Thomas E. Levy, Mohammad Najjar ,2007
- Pottery Specialist. Edom Lowlands Regional Archaeological Project. Jabal Hamrat Fidan, Jordan. Directors: Thomas E. Levy (P.I.) & Mohammad Najjar, 2006
- Site Supervisor/Spatial Analyst/Pottery Specialist. Jabal Hamrat Fidan Project Excavations. Jabal Hamrat Fidan, Jordan. Directors: Thomas E. Levy (P.I.) & Mohammad Najjar, 2004
- Site Supervisor/Spatial Analyst. Jabal Hamrat Fidan Project Excavations. Jabal Hamrat Fidan, Jordan. Directors: Thomas E. Levy (P.I.) & Russell B. Adams, 2003
- Field Staff/Spatial Analyst/Pottery Specialist. Jabal Hamrat Fidan Project Excavations. Jabal Hamrat Fidan, Jordan. Directors: Thomas E. Levy (P.I.) & Russell B. Adams, 2002
- Associated Staff/Excavator. Tel Rehov Project. Israel. Director Amihai Mazar, 2005
- Volunteer Excavator. San Elijo Research Project. Encinitas, CA. Director: Brian Byrd, 2001.
- Field Staff/Spatial Analyst. Jabal Hamrat Fidan Project Excavations. Jabal Hamrat Fidan, Jordan. Directors: Thomas E. Levy (P.I.) & Russell B. Adams, 2000.

- Student Excavator. Jabal Hamrat Fidan Project Excavations. Jabal Hamrat Fidan, Jordan. Directors: Thomas E. Levy (P.I.) & Russell B. Adams, 1999.

Work Experience:

- Calit2 Staff Researcher/Investigator. Calit2-CISA3, University of California, San Diego, 2008.

- Teaching Assistant. (HUM: Humanities, Fall-Spring 2003/2004), University of California, San Diego, 2003-2004.

- Teaching Assistant. (ANGR 500: Field Archaeology and GIS, Fall 2002; Aztecs and their Predecessors, Winter 2003; ANLD3, Spring 2003), University of California, San Diego, 2002-2003.

- Training Assistant. *Geographic Information Systems Specialist*, GIS Lab in Geisel Library, University of California, San Diego, 1999-2002.

Languages:

- Akkadian (HINE 173A, 173B), University of California, San Diego, 2002.

- Ancient Hebrew: (Judaic Studies 1, 2, 3, 101, 102, and 103; HIGR 261), University of California, San Diego, 1998-2000. Personal Reading 2000-Present.

- Aramaic (2 Quarters), University of California, San Diego, 2003.

- Greek: (LTGK 1, 2, 3 "Homeric Greek"; LTGK 120 "New Testament Greek"), University of California, San Diego, 1999-2000.

- Modern and Colloquial Arabic (3 year immersive), Amman, Jordan, 2004-2007.

Programming Languages:

- JavaScript

- CSS/XHTML

- PHP

- MySQL

- MATLAB

Publications:

- Smith, N.G., and T. E. Levy. (2009). “The Iron Age Pottery from Khirbat en-Nahas, Jordan: A Preliminary Study.” *BASOR* 352: 1-51.

- Levy, T. E., T. Higham, C. Bronk-Ramsey, N. G. Smith, E. Ben Yosef, M. Robinson, S. Munger, K. Knabb, J. Schultz, M. Najjar, and L. Tauxe. 2008. High Precision Radiocarbon Dating and Historical Biblical Archaeology in Southern Jordan. *Proceedings of the National Academy of Science* 43.

- Levy, T. E., and N. G. Smith. 2007. "On-Site Digital Archaeology: GIS-Based Excavation Recording in Southern Jordan," in *Crossing Jordan – North American Contributions to the Archaeology of Jordan*. Edited by T. E. Levy, M. Daviau, R. Younker, and M. M. Shaer, pp. 47-58. London: Equinox.

- Levy, T. E., M. Najjar, J. van der Plicht, N. G. Smith, H. J. Bruins, and T. Higham. 2005. "Lowland Edom and the High and Low Chronologies: Edomite State Formation, the Bible and Recent Archaeological Research in Southern Jordan," in *The Bible and Radiocarbon Dating - Archaeology, Text and Science*. Edited by T. E. Levy and T. Higham, pp. 129 - 163. London: Equinox Publishing Ltd.

- Levy, T. E., R. B. Adams, M. Najjar, A. Hauptmann, A. Danin, J. Grattan, A. J. Witten, J. D. Anderson, Y. Arbel, M. Homan, A. Muniz, N. Smith, J. Moreno, K. Twiss and C. de Jong. (Forthcoming)."Excavations and Surveys in the Jabal Hamrat Fidan (Jordan): Social Archaeology and Early Metallurgy at Khirbet Hamra Ifdan and it's Environs, 1999 - 2000 Seasons". *Bulletin of the American Schools of Oriental Research*.

- Levy, T. E., R. B. Adams, J. D. Anderson, N. Najjar, N. Smith, Y. Arbel, L. Soderbaum, and M. Muniz. 2003. “An Iron Age Landscape in the Edomite Lowlands: Archaeological Surveys along the Wadi al-Guwayb and Wadi al-Jariyeh, Jabal Hamrat Fidan, Jordan, 2002.” *Annual of the Department of Antiquities Jordan* 47:247 - 277.

- Levy, T.E., J.D. Anderson, M. Wagonner., N. Smith, A. Muniz, and R.B. Adams. 2001. “Interface: Archaeology and Technology, Digital Archaeology 2001: GIS-Based Excavation Recording in Jordan.” *SAA* 1: 23-29.

- M.A. Thesis, UCSD, Winter-Spring 2003

Thesis: *The Neo-Assyrian Provincial System: The correlation of archaeology and history in an Annales framework.*

Faculty Advisors: Dr. Paul Goldstein; Dr. Guillermo Algaze.

Papers Presented at Professional Meetings:

- 2008. Smith, N.G. & T. E. Levy. "Tribes and Secondary States: Anthropological Perspectives on Southern Levantine Iron Age State Formation." Society of Biblical Literature, Boston, MA..

- 2008. Smith, N.G. & T. E. Levy. "Pottery Informatics at Khirbat en-Nahas: A New Digital Archaeology Tool for Analyzing South Levantine Iron Age Pottery." Annual Meeting of American Schools of Oriental Research, Boston, MA.

- 2007. Smith, N.G. & T. E. Levy. "Ceramics and the Chronological Relationship between the Lowlands and Highlands of Ancient Edom: a typological and radiocarbon study of sites in the Faynan District and Showbak, Jordan." Annual Meeting of American Schools of Oriental Research, San Diego, CA.

- 2001. Levy, T.E., J.D. Anderson, M. Wagonner., N. Smith, A. Muniz, and R.B. Adams. "Interface: Archaeology and Technology, Digital Archaeology 2001: GIS-Based Excavation Recording in Jordan." Annual Meeting of American Schools of Oriental Research, Boulder, CO.

Awards & Fellowships:

2009 Judaic Studies Doctoral Dissertation Writing Grant
2008 Judaic Studies Travel Grant
2008 Judaic Studies Study Abroad Grant
2005 ICES Doctoral Candidate Study Abroad Grant
2005 Judaic Studies & Dorot Travel Scholarship
2004 UCSD Anthropology Graduate study dissertation project grant
2004 Dean's Social Science Travel Fund
2004 Dorot Travel Scholarship
2003 Dorot Travel Scholarship to Israel/Jordan
2001 Judaic Studies Graduate Student Fellowship
2006 NSF Doctoral Dissertation Improvement Grant

Current Research Projects:

- Dissertation, UCSD & Abroad, Fall 2004-Present

  Thesis: Social Boundaries and Secondary State Formation in Ancient Edom: A Ceramic Approach

Committee Members: Dr. Thomas E. Levy (Chair), Dr. Guillermo Algaze, Dr. Joel Robbins, Dr. William H. C. Propp, Dr. David Goodblatt.

- Petrographic Thin-Section Analysis of pottery from Lowlands and Highland Iron Age Sites located in Edom.

- Spectral Electron Microscopic Analysis of Iron Age ceramic paint pigments and other surface treatments

- Pottery Informatics: 3D Scanning and mathematical analysis of Iron Age ceramics

Current Research Interests:

- Syro-Palestinian Archaeology (Chalcolithic, Early Bronze – Late Iron Age)
- Clay Petrology/INAA
- Iron Age Ceramics
- Interaction between Complex and tribal societies
- Segmented Genealogies and Social Structure of the Biblical Period
- North-West Semitic Languages
- Judaic Studies
- Ethnoarchaeology
- Online Database Construction
- Geographic Information Systems

ABSTRACT OF DISSERTATION

Social Boundaries and State Formation in Ancient Edom:
A comparative ceramic approach

by

Neil G. Smith

A Doctor of Philosophy in Anthropology

University of California, San Diego, 2009

Professor Thomas E. Levy, Chair

In recent years, the area referred to as "Edom" in ancient Egyptian and Biblical texts, dating to the 2nd and 1st millennium BCE, has sparked much scholarly debate over chronology, the nature of its social organization and the relationship of the archaeology of Edom to ancient Near Eastern textual sources. Located in southern Jordan, relatively little Iron Age (ca. 1200 – 500 BCE) archaeological work has been carried out here resulting in a failure to develop an objective chronology for measuring and understanding social evolution in one of the southern Levant's key geographic regions. This has resulted in many gaps concerning the nature of the social complexity of Edom. This dissertation examines the emergence of complex societies and social boundaries in Iron Age Edom through the lens of ceramic analysis. Consequently, the thesis will illuminate some of the mechanisms underlying social change and social boundary formation in this region. The

study tests a range of models using new archaeological and ceramic data from Iron Age Edom in the following manner: 1) by relying on theory from cognitive anthropology, a series of testable methods are employed for determining ancient social boundaries based on examining how technological styles are learned by a culture; 2) using recent UCSD archaeological excavations from seven previously untested sites in Edom that provide new data for testing these social models concerning social complexity in Biblical Edom; 3) employing ceramic ethnoarchaeology to help analyze the ancient ceramic assemblages from these sites to clarify their role in social boundary formation; 4) using petrographic analysis that gives a more detailed look into the ceramic assemblages, thereby increasing an understanding of where pottery originated and what materials were used – factors that ultimately reflect distinctions between different ancient pottery producing communities; and 5) developing the first comprehensive ceramic typology for the entire Iron Age II (ca. 1000 – 500 BCE) sequence of Edom that encompasses both the lowlands and highlands. Thus, this study contributes new data, methods and testable theoretical models for studying the archaeological record of the Iron Age Southern Levant when the first historical state level societies emerged in this part of the ancient Near East.

Chapter 1: Introduction- Studying complex societies and social boundaries through the lens of ceramic analysis

I. Introduction

During the 10th through 7th centuries BCE, the Southern Levant reached a new apex of social complexity and regional interaction. Archaeologically, the conventional name for this period is the Iron Age IIA - C (Stern 2008) where the beginning, the 10th c. BCE, is fraught with scholarly controversy concerning chronology, the nature of social organization and its relationship to ancient Near Eastern historical sources. The textual and archaeological data for this region, on the surface, portray a period that was geographically and 'ethnically' divided into a number of different complex societies including Philistia, Phoenicia, Aram, Judah, Israel, Ammon, Moab, and Edom (Bienkowski and van der Steen 2001; Bunimovitz 1990; Faust 2006; Finkelstein 1997; Levy 2008a, 2008b, 2009; Levy et al. 2004; Levy and Holl 2002; Routledge 2004; Sparks 1998; Stager 1985; Whiting 2007; Wilson 1977). This thesis explores one of these geographic regions located in southern Jordan – an area known from ancient Egyptian and Biblical texts as 'Edom.' The lack of a comparative ceramic chronology for Edom rooted in absolute radiometric dating has hindered an anthropological approach to the archaeology of Edom that can identify some of the mechanisms that led to social evolution in this region, and the social boundaries that existed between Edom and its Iron Age II neighbors (c.f. Bienkowski 2002; Smith and Levy 2008). To elucidate the mechanisms behind social change and social boundaries in this region, the proposed study will test a range of models against the archaeological and, more specifically, the Iron Age ceramic record of the Edomite region. These models will be extracted from

studies in cognitive anthropology (D'Andrade 1995; Shore 1996, 1998; Strauss and Quinn 1994; Holland and Quinn 1987), archaeology, ceramic ethnoarchaeology, and petrography. However, this is an archaeological study. Although the anthropological archaeology models introduced here have important implications for how we interpret various passages from the Hebrew Bible and handle historical problems related to the 'Edomites', the attempt to do so here would entail writing another doctoral dissertation.

Central to this study will be the analysis of new archaeological and ceramic data recovered from the lowlands and highlands of Iron Age II Edom conducted during the 2002-2007 expedition seasons by the author as part of the UCSD Edom Lowlands Regional Archaeology Project (ELRAP) and Lowlands to Highlands of Edom (L2HE) project (Levy et al. 2003, 2004, 2005, 2008).[1] These excavations are central to understanding new social, economic, and historical dimensions of Edom and are summarized in Chapter 5. While one must not ignore other domains of material culture, such as metallurgy, architecture and settlement patterns, the primary objective of this work will be to test the applicability of the models derived in this study to the ceramic assemblages recovered from these excavations. This dissertation will seek to study complex societies and social boundaries through the lens of ceramic analysis.

To this end, a new approach to ceramic analysis will be initiated in this study that takes into consideration the insights from models and discoveries made in

[1] Thomas E. Levy, Principal Investigator of the UCSD projects, co-directed with Mohammad Najjar, and Russell B. Adams the2002 excavations at Khirbat en-Nahas now called here KEN02 and a central part of the ELRAP project. Levy and Najjar are the current co-field directors of the ELRAP project the author, Levy and Najjar are co-directors of the L2HE project that was carried out in 2006-2007 with the funding from a NSF Doctoral Dissertation Improvement Grant (Grant No. 0631220--for Neil G. Smith: Social Boundaries and Secondary State Formation in Southern Jordan: Modeling Iron Age Settlement Patterns in the Southern Levant ; PI: Thomas Levy).

ethnoarchaeology (Deal 2007; Dietler and Herbich 1998; Gosselain 1998; Lecthman 1977; van der Leeuw 1993; Stark 1998; Stark et al 1998) and petrographic studies (Ballard et al. 2002; Goren 1996; Goren et al. 2004; Levy 1987; London 1995; Porat 1989; Rothenberg and Glass 1983; Singer-Avitz 1999; Whitbread 1995). In order to resolve the lack of a comparative ceramic chronology at present, radiocarbon dated samples collected from these Jordanian sites will be examined in conjunction with the relative dating extracted from the stratigraphy of these sites and a new comprehensive ceramic typology for the region of Edom. In the final analyses, a series of intra-site and inter-site spatial analyses will be conducted on the ceramic assemblages from the newly excavated sites in relations to the ceramic typology developed for this thesis. It is the goal of these analyses to relate the quantitative data of the ceramic assemblages to the social models developed in this study concerning complex societies and social boundaries.

II. The Research Problem and Case Study:

A. The two research agendas: Identifying Social Boundaries and understanding the Formation of Complex Societies in Iron Age Edom

First, this study will investigate how to measure social complexity in Southern Levantine Iron Age polities. A set of testable models will be generated to distinguish one level of social complexity from another and to handle complex societies that do not fit the standard social evolutionary models for chiefdoms or archaic states used by anthropological archaeologists. Specifically, in Chapter 2 these models will seek to clarify the mechanisms behind the legitimization and formation of kingdoms, tribal confederacies and tribal states (a trajectory of social evolution little explored in the

archaeological literature) and test them against the archaeological record of Iron Age Edom.

Second, this study will develop a series of testable models to identify social boundaries within the archaeological record and under what conditions they form. A *social boundary* is defined in this study (see Chapter 3) as a collectively-constructed identity that groups use to define who is included among them and who is excluded. Social boundaries occur at multiple levels, ethnic identity represents only one of these levels. Ethnic identity is defined here as a primary self-ascription to an endogamous community with a clearly established social boundary that transcends the necessity to create group solidarity through kinship, shared activities and pursuits, or regular social contact. However, other identities may still persist with or without the development of an ethnic identity (e.g. tribal, village/community, occupation, class identities). All of these have their own social boundaries. A central argument developed in Chapters 3 and 4 is that at each level of identity formation (e.g. kin-group, village, clan, tribe, ethnic group, and nation) different social institutions are activated to facilitate self-ascription and cultural distinctiveness. In this study the ceramic assemblages recovered from Iron Age Edom will be examined in order to make a number of informed inferences concerning the nature of different levels of social boundaries in Edom and how ethnic identity developed.

It is not expected that this study will provide definitive answers to all of the hypotheses developed here (c.f. Binford 2001; David and Kramer 2001; Hodder 1995; Renfrew et al. 1982; Schiffer 1992). Rather the goal is to develop models that can actually be tested against the archaeological record instead of remaining unexamined

speculations about Edom's social organization (Levy 2009). In areas where the required data is still lacking, it is hoped that this study will stimulate new archaeological studies and theory driven excavations in order to extract the essential data that is required. Therefore, conclusions drawn in the final chapter (7) are made tentatively as new data is still required to further corroborate the discoveries made here. To achieve these goals, this study has sought several innovative ways to move beyond traditional approaches to ceramic analysis and present new digital archaeology methods for ceramic and spatial analysis. The first step has involved the invention of an online Pottery Informatics Queryable Database (PIQD; http://daahl.ucsd.edu) to facilitate the project's methodological approach. As developed in Chapter 7, the PIQD has facilitated this study by helping to integrate the typological, comparative, spatial, and radiometric analyses of the ceramic analyses. Second, in Chapter 6, petrographic and ware analyses were carried out by the author on the entire ceramic assemblage and integrated with the morphological typology. This was done in two stages – sampling and preparation at UCSD and final analysis in the Petrography Laboratory at Tel Aviv University in Israel. Finally, a series of the ceramics presented in this study were 3D scanned to achieve an objective representation of their profiles for comparative studies and publication. A new automated method for the production of publishable ceramic plates (or any other artifacts) has also been developed for this research and linked to the PIQD. All of these data have been integrated into the PIQD to facilitate further research on the testable models developed here. The database can be dynamically updated as new data is recovered from the archaeological record.

B. The Case Study: Early and Late Iron Age II Edom of the Southern Levant

The selection of Iron Age Edom as a case study for the research problems outlined above presents a number of obstacles as well as advantages for new research directions. For example, prior to the UCSD research projects in Edom there were few (n = 6) controlled excavations conducted in the Transjordanian region and until the large-scale work at KEN. None of these sites had clearly defined stratigraphy. With the exception of KEN and Tel el-Kheleifeh (Pratico 1993) all of the other sites were excavated primarily by the British archaeologist Crystal Bennett on the high plateau of Edom during the late 1960s to early 1990s and these were inadequately recorded leading to a series of problems in the final reports of these excavations (c.f. Bennett and Bienkowski 1995; Bienkowski 2002 Oakshott 1983). The ceramic assemblages studied and published from these sites were not collected systematically. Thus, the assemblages are not completely representative as sherds were hand-picked by the original excavators and a number of atypical forms were discarded. Therefore, bias has been introduced into the published ceramic studies and plates for these sites. Since there was no attempt to carryout quantitative analyses of the different assemblages and ceramic types, it cannot be determined *a priori* how dominant certain forms were at the sites. Since Bennett's pioneer excavation work, there been a series of small probes conducted throughout the plateau of Edom especially in the south (Bienkowski and Adams 1999; Hart 1989; Lindner and Farajat 1987; Lindner et al. 1988; Lindner et al. 1990; Lindner et al. 1996). However, information from these soundings has appeared only in brief preliminary reports. In addition to the dearth of archaeological data from this region, as is typical of the Southern Levant, there are few textual documents referring to the inhabitants of Edom

(cf. Bartlett 1989; Avishur 2007). With the exception of a small number of 'Edomite' inscriptions and seal impressions from the late Iron Age (e.g., Vanderhooft 1995; DiVito 1993) and limited information from the Hebrew Bible, at present no textual evidence has come to light from the local inhabitants of Edom.

To tackle these obstacles, as shown here, new excavations need to be carried out in Edom to fill in numerous gaps in knowledge not available from earlier excavations. Unlike earlier ceramic studies (Bienkowski 2002; Hart 1995; Oakshott 1978, Pratico 1993; Zeitler 1992), the research for this thesis is complemented with recently published high precision radiocarbon dating from all of the sites studied here. This provides the first absolute dating framework for Edom that facilitates both the reconstruction of the chronology and a new comprehensive ceramic typology of the region enabling us to determine which sites should be considered contemporary. Taking these obstacles into consideration, there are also several advantages to the study of Iron Age II Edom in the Southern Levant.

First, many of the sites surveyed within Edom were occupied only during the Iron Age. Although this does not permit deep-time diachronic studies that encompass several millennia, it does allow more research time to be devoted specifically to the Iron Age period. This enables extensive excavations to take place within the course of several field seasons. It is also possible to conduct a number of small scale soundings at different archaeological sites within one season. Both of these advantages have been exploited in this study. The two excavation seasons at KEN (2002 and 2006) have exposed six large areas – two of which have reached virgin soil (Areas A, M). In area M, the UCSD team has produced the deepest stratified archaeological sequence (over 6 meters) of an Iron

Age site in Edom (Levy et al 2008). Similarly, multiple excavations have been carried out in the lowlands (Khirbat en-Nahas (KEN), Rujm Hamra Ifdan (RHI), Khirbat al-Jariya (KAJ), and Wadi Fidan 40 cemetery) and the highlands (Khirbat al-Malyqtah (KAM), Khirbat al-Kur (KIJ), Khirbat al-Iraq Shmaliyeh (KIS), and Tawilan (TW)) that have yielded a substantial ceramic dataset for comparison of the two main geographic regions of Edom.

Second, the nature of Edom's copper rich resources and exploitation of these as demonstrated at Khirbat en-Nahas (Hauptmann 2007; Levy et al. 2003; Levy 2008a), enable us to examine the roles craft specialization and trade played during the early Iron Age II in the Southern Levant. As will be argued in this study, Khirbat en-Nahas and Edom in general was not an isolated region but interacted extensively with the neighboring polities on its four borders. Khirbat en-Nahas played a central role in the lucrative exportation of copper and thus would have benefitted from a number of mechanisms leading to greater social complexity.

Third, both in the early and later Iron Age II, there is strong evidence that social boundaries played a fundamental role in the lives of the inhabitants of the region of Edom. How the inhabitants of this region came to identify themselves in relation to their neighbors is a significant question that this study seeks to clarify through a study of social boundaries seen through the lens of the ceramic record. In the late Iron Age II, ceramics considered 'Edomite' were found in relatively large quantities in Israel's Negev desert, traditionally thought to be controlled primarily by the Israelites (Bienkowski and van der Steen 2001; Gunneweg and Balla 2002; Gunneweg amd Mommsen 1990, 1995; Gunneweg et al. 1991; Singer-Avitz 1999, 2002, 2004; Whiting 2007). How the late Iron

Age II inhabitants of the region of Edom negotiated their social relationship with the local inhabitants of the Negev and whether clearly demarcated social boundaries existed between these groups is a hotly contested debate. Similarly, the early Iron Age II was a period of intense social interaction and change (Levy 2009; Masters 2001). As Edom's neighboring polities developed new levels of social organization they also gained power to subdue other areas. These new threats from Edom's immediate neighbors would have played a definitive role in how the 'Edomites' responded by the development of new social organizations and the genesis of new social identities.

Finally, a number of scholars have argued that Edom's inhabitants belonged to tribal groups and at a later point in time merged into a tribal confederacy (c.f. Bienkowski and van der Steen 1991; LaBianca 1999; LaBianca and Younker 1995; Levy et al. 2004; Levy 2008a; Levy 2008b; Levy 2009). Bienkowski and van der Steen (1991:36) argue that these tribes can be identified by the high regionalism of their ceramic assemblages. However, these observations were untested hypotheses that had not been rigorously examined against the archaeological record. An investigation concerning the mechanics underlying tribal confederacies and the interaction of tribes and states has only superficially been dealt with until now in the thesis presented here. Similarly, the internal social boundaries at the tribal and lineage level that may have existed within the region of Edom remain uninvestigated. These are some of the issues that this study seeks to address by taking an anthropological archaeology approach along with the application of new science-based methods of investigation.

III. Organization of the Volume:

The following is a brief summary of this doctoral dissertation that has been divided into two sections.

The first section presents a series of testable anthropological models that explore the nature of complex societies, social boundaries and their application to the Southern Levant. This section includes:

Chapter 2: Anthropological Archaeological Models of Social Complexity for Southern Jordan addresses the problems with previous research where use of simplistic models in measuring social complexity has taken place. Chapter 2 presents a set of archaeologically testable models to examine the social complexity of Southern Levantine Iron Age polities, with particular reference to social formation in Iron Age II Edom. It addresses a number of ethnographic and historical case studies that are more complex than chiefdoms yet lack a number of features associated with archaic states. Specifically, these complex societies are defined here under the category of 'kingdom.' Finally, this chapter addresses the specific social evolutionary trajectories that tribal groups may take towards increasing social complexity and also presents a series of testable hypotheses for the following chapters.

Chapter 3: Identifying Social Boundaries in the Archaeological Record — Implications for Iron Age Edom reviews the concept of ethnic groups and social boundaries, the fluidity of ethnicity, and how style is used as ethnic communication. Chapter 3 also reexamines the connection between social boundaries and culture that are

aimed at understanding the relationship of ceramic technological styles and social boundaries. It then develops an approach that can accurately distinguish social boundaries in the archaeological record by applying the concept of technological style and mimetic models to the archaeological record.

Chapter 4: Case Study: Social Boundaries in the Southern Levant discusses the relationship between the models that have been developed in the previous theoretical chapters dealing with social complexity, tribalism and social boundaries. The concepts of tribal identity, ethnogenesis, and nationalism are explored. These models are then applied to past scholarly works concerning Iron Age Edom. A series of testable hypotheses that require further investigation of the ceramic assemblages is then detailed.

The second section presents new case studies and analyses of original data sets collected for this thesis that are a result of the UCSD ELRAP and L2HE projects in the southern Jordan.

Chapter 5: The Lowlands and Highlands of Edom: The Archaeological Context briefly summarizes the current state of the archaeological research for the Iron Age II period in Edom. This is followed by summaries of the new excavations conducted for this study. As shown here, these excavations in both the lowlands and highlands of Edom shed new light on the material culture of this part of the Southern Levant and provide the archaeological and cultural context to the in-depth ceramic analyses presented in the following two chapters.

Chapter 6: From Lowland to Highland – Petrographic Perspectives on Iron Age Edom summarizes the results of the extensive petrographic and ware analysis of the

ceramic assemblages recovered from the seven excavations (KEN, KAJ, RHI, TW, KAM, KIS, KIJ) that were analyzed in this study.

Chapter 7 Conclusion: The Ceramics of Edom presents a new detailed morphological and typological analysis of the ceramic assemblages recovered from the UCSD ELRAP and L2HE projects that can now be applied to the whole of Iron Age Edom. This analysis includes a description of the attributes for every defined ceramic type. In the final section, a series of quantitative comparative intra-site and inter-site analyses will be applied to the ceramic typology. The chapter ends by summarizing the contribution of this large-scale pan-regional ceramic study for new understandings concerning the Iron Age of southern Jordan.

Section I: Testable Anthropological Models of Complex Societies, Social Boundaries and the Southern Levant

Chapter 2: Anthropological Archaeological Models of Social Complexity for Southern Jordan

I. Introduction: Disagreement over the social complexity and nature of Southern Levantine Iron Age Polities

Although a number of archaeologists and biblical scholars have attempted to unmask the level of social complexity and nature of the Southern Levantine Iron Age polities, the nature of these complex societies remain obscure because they do not conform to traditional social evolutionary models. This impasse has led to conflicting theories of Israel, Edom, and Moab's social complexity among archaeologists (Israel-[Dever 2003; Finkelstein 1999; Finkelstein and Silberman 2001; Frick 1985; Fritz 1996; Halpern 1996; Jamieson-Drake 1991; Miller 2005; Weippert 1971]; Edom- [Bienkowski 1992; Bienkowski and van der Steen 2001; Kitchen 1992; Knauf-Belleri 1995; LaBianca 1999; LaBianca and Younker 1995; MacDonald 2000; Levy 2009; Smith and Levy 2008]; and Moab-[Dearman 1989; Routledge 2000, 2004]). Moreover, it is compounded by biblical scholars' uncertainty of the Hebrew Bible's depiction of the nature of social complexity in Israel, Moab and Edom and the assertion of proponents of the low chronology[1] that an early Israelite kingdom never existed.

[1] The low chronology supports the arguments presented in a number of articles and popular books by Davies (1992) and Finkelstein (2001) that many monumental architectural features associated with King David and King Solomon's 10th C. BCE rein should be lowered to the 9th C. BCE. By lowering the dates there essentially becomes no evidence supporting a United Monarchy associated with these early biblical kings.

A central problem with previous scholarly work on the subject of Southern Levantine Iron Age social complexity is the use of simplistic models that they attempt to force upon the archaeological and historical data. Some studies have applied modern multivariate theories of social formation to the archaeological record (e.g. Eisenstadt 1986; Faust 2006; Joffe 2002 Levy 2009; Masters 2001). Yet, there are many cases where scholars use: conflicting variables to measure social complexity; comparative examples from unrelated and very different regions; arguments from silence; and preconceived notions. Although a number of scholars have noted the nomadic tribal background of the three polities discussed here, only a handful of studies have used ethnographic and historical data to examine the relationship between nomadic tribes and social complexity (e.g. Bienkowski and van der Steen 2001; Faust 2006; Levy 2009).

One of the central goals of this chapter is to develop testable models of this relationship for the study of the social formation of Iron Age II Edom.

The central focus of this chapter will be to develop a set of testable models to examine the social complexity of the Southern Levantine Iron Age polities. The central questions that run throughout this chapter are: How do we distinguish one level of social complexity from another?; How do we handle complex societies that do not fit the standard variables for chiefdoms or archaic states?; and What factors should be accounted for in examining the development of these complex societies? Consequently, this chapter will be broken down into several parts:

First the essential elements that enable researchers to distinguish archaic states from less complex societies will be discussed. An archaic state, according to Marcus and Feinman (1998) is generally considered to be "societies with two class-endogamous

strata and a government that was both highly centralized and internally specialized."[2] The explication of this definition will be handled by examining the key components found universally among all archaic states. Then a series of hypotheses and test implications will be suggested for identifying them in the archaeological and textual record. Second, this chapter will focus on the two most common types of archaic states: city-states and regional states. The difference between each, as well as a justification for the use of the terms will be argued. Additionally, it will address complex societies that do not fit into either of these types. These models will be localized to account for the influence pastoral tribal backgrounds may have played in the social evolutionary trajectories of these polities. Third, we will discuss processes that lead to change within complex societies and how to test these changes in the archaeological record. The main focus will be on examining different forms of social interaction including peer-polity interaction and world-systems theory. It will be argued that these interactions can be subsumed under a term defined as *interaction spheres*. At the end of the chapter, conquest theory and export driven trade models will be discussed. Important test hypotheses will be extrapolated from this discussion for later chapters' analysis of Southern Levantine social complexity. In chapter 4, the Southern Levantine polities will be discussed in a preliminary case study of the archaeological and textual work that has already been conducted on this subject. Issues and questions that arise from this discussion will be used for hypothetical testing in the later chapters.

---

[2] A lot of deliberation (Marcus and Feinman 1998:9) has occurred over the best term to be used.. Initially, the qualifier 'full-fledged' state was used, since it implied that the state meets all the specific essential elements discussed here. However, there are significant drawbacks to this term as well. Following Marcus and Feinman (1998), the term Archaic State was chosen since it limits the scope to pre-Modern states and has been used extensively and properly throughout the archaeological literature.

II. Modeling Archaic States

A. What is an archaic state? An attribute based approach

Identifying the essential elements that make up an archaic state is foundational to our examination of ancient Iron Age Edom. Although there may never be complete consensus on all the elements that make up an archaic state, there are certain minimal components agreed upon by many scholars (c.f. Claessen and Skalnik 1978a; Flannery 1999; Fried 1960; Hansen 2000; Johnson and Earle 2000; Levy 2009; Marcus 1993; Marcus and Feinman 1998; Trigger 1993). The first six elements that will be examined in this section will primarily be extracted from observations made by J. Marcus and G. Feinman (1998:6). The seventh element (see Table 1) on state finance systems comes from the extensive work done by T. Earle (1987) and his colleagues (e.g. D'Altroy and Earle 1985; Johnson and Earle 2000; see also Algaze 2005a).

1. A Stratified Society

A two-class-endogamous strata is a distinct component that only emerges among nascent archaic states. It can be defined as a socially stratified polity divided into at least two distinct classes: an elite class and a commoner class which do not intermarry.[3] Within this class distinction the elite have acquired their wealth primarily through inheritance and their exclusive, unimpeded access to the means of production (Claessen and Skalnik 1978a:20; Fried 1960). In other words, they have the power and authority to control land that commoners live on and require resources from peasant production. B.

[3] Despite the ideal that endogamy would prevent the social mobility of the classes, some scholars have argued that in some states elites lived among peasants and intermarried with them (e.g. Stone 1987).

Trigger (1993:44) writes “the principal economic feature common to all the early civilizations was the institutionalized appropriation of surpluses from the lower classes by the ruling group.” Commoners are obligated to pay tribute, tax, labor, or military service to the ruling class. Since the exploitation of commoner classes was the livelihood of state surplus, rulers were aware that they should not “exploit their subjects beyond conventional limits” and “took care not to alienate the passive support of the peasantry by overtaxing or otherwise oppressing them” (Trigger 1993:54). Thus the relationship between these two different classes was one that required balance. They depended on each other for state survival. The wealthy class depended on the working class to work the land and produce goods and the working class depended on the wealthy for the oversight of political and economic stability.

2. A King

Archaic states were ruled by kings. In a state, to rule refers to a king/queen’s ability to exercise authority or power over individuals to make them act according to his/her will. Depending on cultural context, the king/queen reigns as god or servant of the god so that to question his/her supreme authority would be a moral offense. A paramount chief may have the power to lead and even claim authority from a god but his legitimate right to lead local leaders and individuals who still maintain the right to go against his wishes. (Carniero 1981; Service 1962). The son of the king succeeds the throne at his father’s death. However, many cases of assassination and coups show that kings still must always maintain the perception of their legitimate right to rule by different means of demonstration of their power, prowess, authority, and obedience to the divine gods.

In some archaic states, a more heterarchical[4] form of rule developed, where the divine ruler shared his power with an assembly government (c.f. Crumley 1995; Stone 1990). Classic examples are Greece and Rome but others regions such as Mesopotamia have been argued to have had assembly governments in the past.[5] For instance in Athens, "all free-born Athenian men over eighteen were citizens, regardless of occupation or wealth" representing one fifth of the society (Morris 1997:95). The citizens controlled all the land and made political decisions within the town assembly. These governments still recognize the ruler's divine right to rule, but different sectors of government power are controlled by other elite parties. In chapter 3, following the concept of heterarchy, it will be argued that assembly governments are most commonly associated with archaic states that practiced more egalitarian and decentralized methods of administrative control. Although power and authority may have differed between states with a deified ruler or more heterarchical form of government, what they all share is ruling over the commoner classes. Even though egalitarian ideology may have prevailed in an archaic state, in reality, inequality and dominance by a ruling class was the norm.

3. A Palace

In contrast to temples, which are found in the archaeological record among chiefdoms, palaces are unique to archaic states. Although palaces may have varied in size

[4] See Chapter 3 for a definition and analysis of heterarchy.

[5] Stone (1997) based off of Jacobson's (1957) work, has argued that assembly government even existed among the earliest states in Mesopotamia. She points out that ancient Sumer relied on consensual relationships to organize governmental activity and that consensual based states have rulers managing religious institutions and military actions but the city council, rather than the ruler, decides on economic decisions of the city . Stone (1997:17) remarks that "when the institution of kingship was added, the king's power was still tempered by a city council and by the other, separate urban institutions, the temples." Rulers functioned as a "unifying symbol" of the state but had limited power primarily focused on conducting military campaigns and defense.

and complexity (c.f. Flannery1998), palaces are ubiquitous in early archaic states. In contrast they are atypical in chiefdoms.[6] Chiefs often have the power to coordinate monumental construction for the community or the gods but they are not able to raise the same support to build a palace since it would be seen as self-seeking. (Flannery 1998; Johnson and Earle 2000) Palaces played a central role in the administration of a state. They also functioned as a materialized symbol of the ruler's power. Palaces represent one of the key signs in the archaeological record for the presence of rulers and the emergence of a stratified society.

4. An Administrative Government

There is a fundamental difference between a chiefdom and an archaic state. A chiefdom is a complex polity that has developed a ranked lineage with a hereditary chief and redistributive economy that integrates a small town with associated villages and hamlets. An archaic state, on the other hand, has an administrative government with the ability to enforce decisions, demand resources, and exact punishment on individuals as well as communities that disobey. An administrative government can be defined as a set of public institutions containing a host of attached servants or elites with many specialized positions who manage or supervise the execution of state affairs. That archaic states must posses an administrative institution is an imperative highlighted by many anthropological researchers (c.f.; Carneiro 1981; Claessen and Skalnik 1978; Fried 1967; Hansen 2000; Marcus and Feinman 1998; Sanders 1974; Service 1975). For example, Carneiro (1981:69) remarks that "the power to draft, the power to tax, and the power to

[6] The exceptions are provinces that may have once been part of a regional state (see B.3. for a discussion of these anomalies).

enforce law—are the most crucial and therefore the most diagnostic ones of a state." Similarly, Hansen (2000:13) finds all archaic states "characterized by specialized and hierarchically organized decision-making institutions and administrative organs which have monopolized the legitimate use of physical force." In essence, an essential element of archaic states is an administrative body with a monopoly of force to carry out its decisions. (Fried 1960)

Despite the ability of the state to exercise legal force, it was not always put into practice on the local level. For example, Trigger (1993:47) notes that many states allowed self-regulation at lower levels. The only time the archaic state became involved was when these systems for one reason or another stopped functioning properly. Even though some states gave the appearance of enforcing moral order (e.g. Hammurabi's code),[7] in general, the archaic state did not invest the same type of energy as modern states to enforce judicial laws that protected the right of individuals. Many times individuals still take the judgment of crimes into their own hand and are not tried by an archaic state's judicial branch (c.f. Carniero 1981:68). Moreover, there was no need to enforce certain laws since many of the smaller settlements would have had local self-regulating processes. Extended families, villages, and towns were fully capable of making internal judicial decisions. In sum, government at the state level has the power to enforce law, even though there are times when they allow lower levels of jurisprudence, i.e. local family or chiefs to enforce their own judgments.

[7] Recent scholarship on Hammurabi's code has noted that the law was more for propaganda than actual enforcement (c.f. Yoffee 2005).

5. A Political Hierarchy with Three Levels of Decision making

In every archaic state, an administrative institution has emerged that can pass governmental decisions from the ruler and heads of government down to officials or elders residing within smaller villages and hamlets. Archaic states have a complex decision making hierarchy that involves at least three levels or more (c.f. Flannery 1999; Johnson and Earle 2000; Marcus 1993; Marcus and Feinman 1998). This political system starts with rulers in a capital city, who pass decisions directly down to secondary officials over towns/provinces. They in turn coordinate with tertiary officials in charge of large villages or subsidiary towns. Often the centralized administration will also dispatch tax collectors and military to support the state activities of the officials at each level. It is through this system that state resources can be collected, land tenure can be organized, integration of smaller settlements is reinforced, and labor or military can be mobilized.

The indigenous terms used for the political personnel employed in Mayan archaic states is an illustrative example of the three levels of decision making. Although this is only one example, similar systems of indigenous political naming structures have been noted for many other archaic states (e.g. Egypt-Kemp 1989; Baines and Yoffee 1998; Mesopotamia- Yoffee 2005; Mongolia-Khazanoz 1994). In the case of the Maya, these names continued in use long after many of the former states had dissolved into autonomous provinces (Marcus 1993; Marcus 2004). For the sake of context, Marcus's (1993:130) description of the Mayan terms will be quoted and then discussed:

> At the top was the territorial ruler or *halach uinic*, who carried the title of *ahau*, One of the terms for the territory he controlled was *ahaulil* (*ahaulel*), probably most like our term "realm." Below the *ahau* were local lords or *batabob* who administered second- and third-level dependencies. The realm administered by each *batab* was called a *batabil*. One kind of assistant to the

> *batab* was called an *ah kulel*, "deputy"; another of his assistants was called an *ah can*, "he who speaks." Most *batabob* had three or more *ah kulelob* and *ah canob*. Also aiding the *batab* was a special war lord, called the *nacom*, and a group of *holcanob*, men who would "call up" adult me from the *batab*'s district to bear arms…For those provinces that had a *halach uinic*, all towns within the province were subject to him, and all *batabob* owed him their allegiance."

The three level decision making hierarchy can be outlined: *halach uinic* (Ruler), *batabob* (Town chief/lord), *ah kulel/ah can* (Large village-deputy). At each decreasing level, the official's realm of control becomes more specific. This enabled the higher level leaders such as the *batabob* or *halach uinic* to disseminate decisions down to the village level efficiently. The *batabob*'s multiple deputies could handle individual villages' needs and extraction of resources, while the *batabob* oversaw more pertinent issues affecting the province. Likewise, the *halach uinic* and his bureaucracy managed the vast amount of resources and information being sent by the provinces through the *batabob*.

This system can function either through direct rule by the replacement of the lower leaders with state appointed officials or indirect rule where the indigenous leaders are retained. There are a number of advantages to both strategies. For example, some states seeking greater centralized control over the lower tiered settlements will often replace the local leaders of towns or villages with officials loyal only to the archaic state.[8] Flannery (1999:9) describes this process as "linearization." This technique prevents lower tier insubordination by indigenous leaders who hold no filial loyalty to the ruler and have no other means to enhance their power and position. In contradistinction, archaic states may choose to maintain indigenous leaders with the benefit that their position is not

[8] This tactic can start among complex chiefdoms such as the Polynesian examples (c.f. Earle 1978). However, the lower leaders belonged to the senior line of the paramount chief rather than being part of a stratified elite.

antagonistic to the commoners they oversee. In other words, the local leader brings greater stability to the internal integration of the settlement. This strategy may also prove economically advantageous for the archaic state as it would not have to directly involve itself in the economic affairs of the province. The province can function semi-autonomously. The archaic stay may also have co-opted the polity through a peaceful means of alliance (e.g. marriage alliance, patron-client relationship, vassal treaty) making linearization a non-option. In a large archaic state like the Inca, a strategy of both direct and indirect rule may be the best option (c.f. Johnson and Earle 2000:316, 321). Unruly provinces can be handled through deportation of a segment of the population and their local leaders, while placid provinces could be indirectly ruled. This system of hierarchy is important to understand for Edom because it allows us to distinguish between an archaic state where this administration existed and less complex polities that lacked these three levels.

6. A Four-tiered Settlement Hierarchy

Another marked difference between chiefdoms and archaic states is the development of a four-tiered settlement hierarchy. At the center of an archaic state is the urban center. It is the hub of all economic, political, social and religious activities. The city also sits at the center of a political domain that encompasses many other subordinate towns with their satellite villages and hamlets. These urban centers were at one point, if not created by the state, autonomous chiefdom polities that had already integrated large villages, small villages and hamlets. The towns become provincial administrative centers subject to the capital city. The emergence of the capital over the provinces of former

complex chiefdoms is thus described as a four-tiered settlement hierarchy (Adams and H. Nissen 1972; Flannery 1999:4-5; Marcus 1993; Marcus and Flannery 1996; Wilson 1995; Wright 1986, 1998; Wright and Johnson 1975).

Although urban centers are frequently associated with archaic states, settlement hierarchies are seldom discussed in models of state formation, other than earlier mentioned. Alternatively, population size and territorial extent tend to dominate the descriptions. Yet, both of these are highly variable from one region to the next. An archaic state's population can be found as small as 5,000 people (Renfrew 1982) or as large as several hundred thousand. Many chiefdoms can be identified with populations over 100,000 and rival, at periods, the size of large states (e.g. the Qashqai of Iran—Beck 1990). Territorial extent of a polity is also not a good determinant alone for identifying archaic states since this also varies from one region to the next (c.f. Feinman 1998:97-98). As will be discussed below, there are at least two fundamentally different types of archaic states (city-states and regional states) with drastically different territorial extents. There are also other factors that can affect state size such as ecology, landscape, and cyclical oscillations or breakdown of large pristine state and emergence of more compact secondary states (Feinman 1998:109; Marcus 1993; Marcus 1998; see also Yoffee and Cowgill 1988). Universal size estimates for population and territorial extent do not work as a measuring rod of social complexity until a initial set of critical observations are made as to what settlement size should be associated with urban centers or lower tiered settlements in that particular area of study.

Studying settlement hierarchy (that essentially reflect the organizational principles of social organization) and not simply estimated population size or overall territorial scale

avoids the inherent problem of cross-regional studies. Settlement hierarchy is one of the best quantifiable markers of identifying the four tiers of state level social complexity in the archaeological record. As many researchers have shown (Adams and H. Nissen 1972; Feinman 1998; T. E. Levy 1987; Wright and Johnson 1975) by mapping site size from a dataset of surveyed and excavated sites, sites can be hierarchically ranked and partitioned into the four separate tiers. Although size contributes to the understanding of a hierarchical settlement, it is not the only factor that needs to be taken into consideration. When looking at the archaeological record, one must also take in to account the social complexity of the buildings found within each site. A three-tiered settlement would have some types of elite public structures used for the supervision of the villages and hamlets under its control, but they would not be to the same scale as that of a top-tiered city which would include palatial complexes, temples and administrative centers. (c.f. Marcus and Feinman 1998) Even if only a couple detailed excavations exist for an area they can help tremendously in defining the four different types of settlement. What needs to be examined is site size (population, territory) in conjunction with measurements of the degree of integration and complexity.

Furthermore, a localized model of site hierarchy must be developed that takes into account the average site sizes of the different tiers. In a comparison of three separate studies it becomes clear that settlement patterns of different regions yield dissimilar site sizes for each tier:

Example 1: A classic early study of site size hierarchies was conducted by R. McC. Adams and H. Nissen (1972) in their study *The Uruk Countryside*. Through a deep-time study of settlement patterns they were able to tabulate increasing social complexity in

ancient Mesopotamia from the Early Uruk to Early Dynastic III period (ca. 3500-2500 BCE). During the Jemdet Nasr/Early Dynastic I a four-tiered settlement hierarchy could be identified with Uruk as a lone 400 ha city, two small urban centers (>50ha), twenty one towns (6.1-25ha), and 124 villages or hamlets (0.1-6.0ha) (Adams and Nissen 1972:18). Later, in Early Dynastic II/III, the amount of small urban centers increased and a second city called Umma appeared at almost half the size of Uruk.[9] Adams and Nissen (1972:19) found that this settlement hierarchy also showed a common pattern of three to eight dependent villages surrounding one town. These towns in turn could be grouped under Uruk. However, there spacing was not found to follow regular hexagonal patterns as postulated by central place theory.[10]

Example 2: In Mesoamerica in their study of the Zapotec State, Marcus and Flannery (1996; see also Flannery 1998) found the settlement pattern divided into: 1. capital city (410ha); 2. towns (over 10ha); 3. large villages (5-10ha); 4. small villages and hamlets (under 5ha) (Marcus and Flannery 1996). Although the first-tier capital city is approximately the same size as Uruk, all the other tiers are half the size.

Example 3: On the Susiana Plain, in Iran, G. Johnson (1973) found that during the middle Uruk period settlements at each tier were smaller than other regions such as what

---

[9] Although not the case with the emergence of every archaic state, urbanization in the Early Dynastic II/III led to a depopulation of the two state's hinterlands (see below for a discussion of this phenomenom by Yofee 2005).

[10] Central place theory was developed by Christaller (1934) to describe the hierarchy of cities over subsidiary towns, villages and hamlets in contemporary periods. He argued that settlement patterns would reflect this hierarchy as a hexagonal lattice of evenly spaced smaller sites surrounding the central city. However, almost every archaeologist who has tried plotting hexagonal lattices has never got regular distributions (Wright and Johnson 1975; Johnson 1972, 1973, Adam 1965, 1981; Marcus 1993; Flannery 1976, 1998). In this study, the general concept of central place theory is accepted and will not be explored further, since more sophisticated methods of understanding the dynamics of site location are now possible with GIS.

was found in Mesoamerica, but follow a similar separation in site size: 1. capital (25ha); 2. towns (5-7ha); 3. large villages (2-3ha); 4. small villages hamlets (0.5-1ha). This example shows that all of the tiers are an order of magnitude smaller than the contemporary settlements nearby in Iraq.

Archaeologists must be careful in applying other regions' statistically validated measurements blindly to their data as is witnessed by these three case examples. These examples highlight the range of site size variance for similar settlement types. What is shared among all three examples is an illumination of not only the *longue duree* of social change but many other dynamics of social interaction and organization. As A. Joffee (1985;1991;2002) has shown for the Southern Levant in the Early Bronze Age, there are scalar differences between the centers of early state level societies such as Mesopotamia, Egypt and the Valley of Mexico and the Southern Levant. As will be shown in this thesis, this problem exists for the Iron Age polities of the Southern Levant also.

7. A State Finance System

An essential variable not directly discussed by Marcus and Feinman (1998) with regard to archaic states is the necessity of having an economy that finances the social institutions inherent within the state (c.f. D'Altroy and Earle 1985; Earle 1987; Johnson and Earle 2000). Finance is required to sustain a ruler, an elite class, administrative government, attached specialists, standing army and build all the public and monumental buildings within the state. Finance can be defined in this context, as the liquid assets of the government that maintain the proper functioning of the state. It is generated primarily

through collection of taxes, tribute, rent, and products of corvée labor. In contrast to capital resources, liquid assets can then be distributed across the government or exported through interregional exchange. Finance can be used to build alliances (e.g. gift-giving or un-tethered redistribution) or be used to acquire symbols of power to further legitimate the divine rule of the king. Finally, state finance is necessary not only to sustain the political and social organization of the state, but also to drive these polities towards greater complexity and differentiation within social and political organizations.

Earle (1987) argues there are two different types of finance: staple and wealth. Staple finance is the mobilization of subsistence goods to support the ruling elite and the institutions of the state. The disadvantage of relying on staple finance alone is that it is bulky and perishable making it difficult to transport over far distances. Staple finance requires a significant amount of energy to extract from the ground as well as an inordinate amount of labor to account for it and store it. On the other hand, wealth finance (prestige objects produced by specialists as symbolic or real currency) is durable, easily transportable and can easily be exchanged for subsistence goods when needed. Another advantage of wealth finance is that it removes the dependence on acquiring staple goods throughout the region. Wealth finance can be centralized within the capital where it can be monitored and distributed by the ruling elite class. It is especially advantageous for societies that may possess rare resources but reside in marginal environment where staple finance is not as economical.

Moreover it can be used as a tool by elite's and rulers to build power. For example, it can create debt thus binding patron-clients to the ruler (c.f. Levy 2007). Distribution by the ruling elites builds interdependence and alliances with local leaders

who do not have access to these important prestige building objects. Local leaders become dependent upon the controlling power for access to these objects. Or it can be displayed or used in ceremony to reinforce social stratification and imperial ideology.

In summary, the establishment of a two class system, the elevation of the view of ruler's status, the construction of a palace, the government's ability to govern centrally and enforce law, three levels of decision making, four tiers of settlement hierarchy, and the production of wealth finance are interdependent elements that have repeatedly been found operating within archaic states. When there is positive evidence (not the lack of evidence due to archaeological preservation) that suggests one of these elements was not developed it should not just be seen as a disqualification of state level society but rather a fundamental problem in the organization of the polity.

Identifying the presence of these elements of state level societies in the archaeological record is complicated and not always without bias. They can be misconstrued, in one way or another, especially in the cases where little excavation or survey has been done. Each element has its own difficulties of determination, they all may be missed by limited excavation or differing strategies of centralization in a state. In order to strive for the most complete picture of state formation and to recognize the elements they must be rigorously tested against the archaeological record. For Ancient Edom we hope to have a clearer picture of its social complexity through an examination of these essential elements.

8. Hypotheses

The intention of this study is to apply the theoretical models discussed above to the archaeological record of Iron Age II Edom. In order to accurately carry out this application, the following hypotheses present testable inferences for examination against the specific archaeological datasets used in this study. Archaeological test implications are presented for each hypothesis to indicate how exactly the hypothesis can be confirmed or rejected.

Hypothesis 1: If the society is shown to have an endogamous elite and commoner class, then the society meets the first essential element of an archaic state.

Archaeological Test Implications: Social stratification should be identifiable in the archaeological record in a number of ways: 1) The presence of elite residential structures and administrative buildings. These structures do not necessarily need to be segregated from neighboring commoner buildings, but often are; 2) Royal or elite burials reflecting distinct wealth differences with commoner burials or lack thereof; 3) The evidence of elite paraphernalia and administrative artifacts associated with a bureaucratic class; and 4) Textual documents referring to social classes or government specialists.

Hypothesis 2: If there is evidence of a ruler of the society that has legitimate right to exercise authority over individuals, then the society meets the second essential element of an archaic state.

Archaeological Test Implications: Evidences of a king must be identifiable in the archaeological record, for example: 1) Royal depictions of the ruler and others kneeling or prostrating before him. 2) Textual documents referring to activities that only a king could carry out. 3) Association of the ruler with terms that refer exclusively to a king. This means that their meaning implies a ruler that has legal authority to extract resources. 4) The presence of a palace (see Hyp 3).

Hypothesis 3: If there is evidence of a ruler's palace at the capital, then the society meets the third essential element of an archaic state.

Archaeological Test Implications: A palace should be a monumental structure segregated from commoner buildings. Palaces may only be discovered by extensive excavation at a capital city. Without a clear understanding through comparison of different architectural styles, a temple may be mistaken for a palace. There needs to be clear confirmation that the building is not a temple. It may have evidence of central throne or judgment room, living quarters for the king and his retainers, and storage rooms for the staple and prestige goods. Architectural features culturally symbolic for palaces in that region should also be incorporated.

Hypothesis 4: If the administration shows evidence of a standing military and ability to employ legal force, then the society meets the fourth essential element of an archaic state.

Archaeological Test Implications: In the archaeological record fortresses, garrisons and associated military paraphernalia should be evident. There may also be

depictions or text reflecting a standing army or economic documents referring to their payment and maintenance. An essential task is to establish who controlled these military buildings.

Hypothesis 5: If the society shows three levels of decision making, then the society meets the fifth essential element of an archaic state.

Archaeological Test Implications: If the archaic state is highly centralized then there should be evidence in the lower tiers of elite officials who interacted with the local communities and communicated back with the state's government. However, since archaic states also took advantage of previous social organizations of subordinated polities indirect rule may have occurred. In this case, other measurements of lower level control need to be identified. Possible archaeological evidence of these implications would be reflected in the presence of public buildings associated with the state and elite recording paraphernalia found in lower tiered settlement are two examples. Textual documents that reference the interaction between the central government and its deputies in provincial towns may also serve as evidence.

Hypothesis 6: If the society has a 4-tiered settlement hierarchy, then the society meets the sixth essential element of an archaic state.

Archaeological Test Implications: The first step is to determine the range in site size for each tier of a settlement hierarchy. A deductive approach is possible when the social complexity of cities, towns and lower tiers are already known for the region. Then site sizes can be measured and tabulated

for each type. Where this information is lacking an inductive method such as Adam and Nissen (1972) conducted is possible. The important element in establishing the types is to also examine the complexity and internal specialization of each type especially for the towns and large villages.

Hypothesis 7: If the society has been able to transform staple goods or prestige goods into wealth finance, then the society meets the seventh essential element of an archaic state.

Archaeological Test Implications: The evidence of prestige goods can be identified in the archaeological record through a study of the density and distribution of small prestige artifacts across a region and within individual urban centers. Direct evidence of attached craft specialization and large scale production are also clear indicators.

Null Hypothesis: If the society in question does not meet all seven test hypotheses, then it should not be categorized as an archaic state.

B. A Comparative Approach: Types of Complex Societies

Even with the use of the above essential elements as a yardstick for separating archaic states from less complex societies there are a vast number of differences between archaic states that can make it difficult to identify them in practice. In order to understand the inner dynamics of archaic states, many scholars have sought to distinguish two theoretical types: city-states and regional states (see Table 2). These types can be compared and contrasted to tease out fundamental differences in how they consolidate

their control, extract resources, and formed out of less complex societies. Second, polities will be examined that neither fit these two types of archaic states nor less complex polities such as complex chiefdoms. Using this comparative approach a set of test hypotheses will be presented for analyzing the social complexity of the Southern Levantine Iron Age polities investigated here.

1. City-States

A city-state is an archaic state that consists of a highly urbanized capital city with an immediate administered hinterland composed of towns, large villages, small villages and hamlets. City-states would be considered the smallest most compact form of an archaic state, since their domain often only encompassed an immediate hinterland of approximately 10-30 km in radius (Charlton and Nichols 1997:8). The capital city is dependent on its hinterland for the staple resources to maintain the urban population. Likewise, the agriculturally specialized towns and villages relied upon many of the important crafts produced or imported by the city, redistribution of storehouse resources in times of drought, and its military protection. The city was administered by commercial and bureaucratic elite and ruled by a king.[11] It was also a hub of interregional trade and craft specialization. These hinterlands were controlled very tightly, often functioning as estates for the royal family, wealthy city merchants, bureaucrats, and temple priests

[11] The term city-state should not be confused with non-state centers or small towns (see van den Brink and Levy 2002:6) for a short discussion of the abuses of this term in the southern Levant). Marcus and Feinman (1998:8-9) suggest abandoning the term due to the confusion it has created especially in Mesoamerican contexts. Here city-state follows Yoffee's (2005) strict use of the term to describe urbanized archaic states that only controlled an immediate hinterland. The term used in this limited sense holds value, since it can be used as a comparative term for contrast with territorial or regional archaic states. For a historical review of the many uses of the term city-state see Charlton and Nichols (1997:2-4).

(Yoffee 2005). In sum, city-states can be characterized as being highly centralized archaic states, with direct control and involvement over their immediate hinterland. The city and its hinterland were interdependent, incapable of existing without one another.

The formation of a city-state undergoes a specific process of rapid urbanization and reorganization of its hinterland. Settlement pattern studies of Mesopotamia represent one of the most classic examples of how urbanization is a central process of city-states. In the beginning of the Uruk period (4000 BCE), there were many villages spread throughout the area with site sizes no larger than 10 ha. Around 3500-2000 BCE, a process began of mass urbanization in cities such as Uruk, while the countryside was partially depopulated and the small villages disappeared (Adams 1981; Algaze 2005; Yoffee 2005). The urbanization led to a conglomeration of heterogeneous groups drawn together from throughout the region. Yoffee describes the urbanization process of the first cities as a consequence of natural advantage:

> Villages that were centers of production and exchange, that were located on trade routes and or rivers, that lay near great agricultural land, seats of temples and regional worship and defensible locations...suddenly became cities as people from the country side increasingly moved into them. (Yofee 2005:230)

Villages undergoing urbanism became a magnet attracting more and more individuals into its wall as they discovered the many economic social and political advantages to dwelling within the city. Yoffee's (2005) description suggests populations were not directly coerced by rulers or cities into urbanization and later ruralization, rather the protection from neighboring complex polities and the natural benefits of city-state's made life more prosperous for all involved. Following the urbanization of the city or perhaps

simultaneously, the demand for subsistence and prestige goods to finance the city lead to a repopulation of the hinterlands, but now more spatially organized around administrating towns, villages, and hamlets[12]. The mechanism behind this phenomenon is the economic demand created by the large population in the city which could not sustain itself without a developed hinterland. For the region of Edom these observations are significant since both in the Early Iron Age II in the Faynan area and during the Late Iron Age II in the highlands there existed a large center that possibly governed its hinterlands. The inferences made here will be tested against these data to determine whether these settlements did or did not become interconnected with smaller satellite settlements within their hinterland.

2. Regional States

In contrast to city-states, other archaic states can be classified as regional states.[13] Regional states are expansionary states that have moved far beyond the original boundaries of their initial hinterland. The primary means of expansion is through conquest and subjugation of other weaker polities. A significant contrast with city-states is that a regional state's political and economic control is created through subordination of other pre-existing archaic states and less complex societies that were once autonomous

[12] A hamlet is defined here as a small farmstead with no larger than an extended family occupying it.
[13] What Trigger (1993:10-11) calls, territorial states is a more decentralized form of regional state. The state indirectly rules 3 tier polities which handle economic affairs independently. These archaic states were less urban-centric, with smaller populations at the capital and towns, but covered a much larger territory encompassing different levels of administrative centers. The majority of the population continued to live in villages and hamlets. The Inca are another case example of this type of regional state (Johnson and Earle 1987; see below). The majority of the population continued to live in villages and hamlets.

and had emerged independently with different leaders and elites.[14] The encompassed polities may or may not share a common ideology, culture, or origin history. The clearest example of regional states include the Mesopotamian Sargon of Akkad (Postgate 1992), the Assyrian Empire (Parker 2001), Egypt (Savage 1997, 2001), the Maya (Marcus 1993; Marcus 1998), the Aztec (Brumfiel 1983), and the Romans.

Regional states differ in their centralization from city states. Their lower tiers are more commonly indirectly ruled maintaining a degree of autonomy. The majority of the population continued to live in villages and hamlets rather than depopulating the countryside to live in large urban cities. Villages continued to remain self sufficient at the basic domestic level in the sense that they produced their own food, pottery, tools, and clothing. However, the regional state extracted resources from these semi-autonomous polities through taxation, annual tribute, or labor payments. Trigger (1993:11) states "unlike the city state, the only significant economic link between rural and urban centers in territorial states tended to be payment of rents and taxes and the performance of corvées by peasants." In order to handle the many heterogeneous polities politico-economic institutions emerged. The government bureaucracy and elites handled the increasing information flow and accounting of staple and prestige finance. Laws and a standing army to enforce them were created. The military also enabled continued expansion and protection from neighboring polities' attempts to capture the regional states settlements and resources, subdued polities and expelled threats from neighboring

[14] Many regional states can be given the extra status as empires due to their scale and extensive political domain.

enemy polities. And finally religious institutions and specific ideological power strategies emerged to legitimate the state's rights to the control of resources.

A well documented example of a regional state is Early Bronze Age Egypt. The pre-dynastic period was one of many competing chiefdoms that were slowly combined into three regions and finally unified into a single state by at the latest the Old Kingdom period (Kemp 1989; Savage 1997:231). Rather than starting with highly urbanized centers that came to dominate the highlands, the majority of pre-dynastic settlements were politically united agricultural communities, later known as *nomes,* which averaged 10 hectares in size (Wenke 1997:39). Prior to the unification of the Egyptian state these nomes were chiefdoms ran by chiefs from noble lineages (Savage 1997, 2000). What is seen in the material culture is an assimilation of Lower Delta material culture in south and national religion emerging during the beginning stages of Egyptian state formation (Wenke 1997:34). These towns by the Old Kingdom period were walled and smaller than pre-dynastic periods, Memphis was the capital and thus larger. The main characteristics of this state being greater decentralization of the hinterlands. Many more nomes continued to function autonomously with the exception of its payment of foodstuffs or required state labor. Forts were found between the large towns along trade routes or the Nile and were medium-sized (Wenke 1997:42). A significant amount of the Egyptian state resources went into the legitimization of their authority over these conquered polities through ideology, greater investment of resources into monumental construction, and brute force to hold the population within their boundaries.

Finally, Marcus (1993; 1998; 2004) has noted that pristine states were consistently regional states, while city-states were always a product of secondary state

formation. A pristine state as defined here refers to a state that emerged where there were no other previous complex state-level societies. Secondary states, precede pristine states and by definition occur within a region that has contact with a current or recently collapsed archaic state. Perhaps the advantage in military power and social organization over all the neighboring, less complex societies, made these pristine states unchallengeable in preventing their expansion and subjugation of all weaker polities around them. In contrast, Secondary states from the initial formation are in direct competition with other equally powerful states or other less complex polities that have developed techniques to curb attempts at complete incorporation. Nevertheless, as mentioned above, many secondary states rose to become powerful regional states overcoming not only their peers but even states that once dominated them. Specifically, for Iron Age II Edom, it would have been in competition with Egyptian and Mesopotamian archaic states and by necessity would have developed a strategy of social organization to thwart these expansionary states encroachment in their territory or would have become subjugated by them. These two possibilities will be investigated in later chapters.

3. Betwixt and Between Chiefdom and State

A significant problem in social evolutionary models for archaeologists is that some polities do not meet the essential criteria of archaic states but at the same time are more centralized and internally specialized than complex polities such as complex chiefdoms. Archaeologists disagree on whether to still classify them as states, downgrade

them to chiefdoms, or use qualifiers to name them something in between (see Marcus and Feinman 1998 for Mesoamerica; Yoffee 2005 for Mesopotamia; Savage 1997 for Egypt; Renfrew 1972 for Greece; Levy and van den Brink 2002; Levy 2009 for the Southern Levant). These complex societies have many of the elements found in archaic states, such as kings, palaces, monumental architecture, writing, social stratification, urbanization, attached craft specialists, taxation or tribute, conscription, and a high degree of centralization within the territory. Yet, they lacked the level of social organization found in archaic states, namely three levels of decision making and a 4-tiered settlement hierarchy. This observation is not simply a data problem, because these main settlements are smaller in size (size of the 2nd tier than 1st) and in turn all settlements below them are found to be the size of the bottom tiers. Rather than seeking to find small hamlets at bottom tiers which may be missed, a study of site hierarchies should work from top down (City→Town→Village→Hamlet), since the larger settlements will be more archaeologically visible than the smaller ones. When there is a lack of a city (>20ha, respectively) but presence of small towns this is not an *argument from silence*, because the city would be significantly easier to identify than the towns. Thus, 3-tiered complex societies by definition were smaller, controlled a much smaller population and could never amass the power and resources at the same scale as archaic states to wage war, conduct trade, control peripheries, or build public works. These complex societies are betwixt and between chiefdom and state.

The initial solution would be to call them complex chiefdoms since they share many of these features and fail as archaic states. However, the fundamental obstacles that prevent complex chiefdoms from becoming states are already overcome by these polities.

The Hawaiian complex chiefdoms, for example, possess many features of these polities (c.f. Earle 1978; Johnson and Earle 2000; Sahlins 1958). The paramount chief had a very centralized polity with direct control over the region from the paramount chief down to appointed community level chiefs and their land managers. Tribute, taxation and labor could be easily extracted from the communities. All the chiefs even at lower levels were genealogically separate from the commoners, reflecting a nascent two-class endogamous society (Johnson and Earle 2000:290). The paramount chief also had a set of warriors that served for his protection, enforcement of his decisions, and expansion of the chiefdom. Nevertheless, what makes the Hawaiian complex chiefdom distinguishable from archaic states is the lack of an administration and elite bureaucracy. The paramount chief still relied on his kin to control his chiefdom. Not only did this limit the amount of officials that could be under the chief but it also led to a constant need to ensure their allegiance. There was always the potential for lower chiefs to attempt to break off and form their own chiefdom. Moreover, whenever the paramount died there was a power struggle by the lower chiefs to usurp the thrown.

This political system is in stark contrast to archaic states and the polities under discussion here. In contradistinction to complex chiefdoms, they have specialized administrators, retainers, and deputies that can handle the integration of many heterogeneous groups (Johnson and Earle 1987:323). Record keeping, recording of history/propaganda, and diversified construction of monumental architecture (i.e. several different public structures rather than just a single central building) occurred at both archaic states and these polities but never among complex chiefdoms. Moreover, when the king died, although turbulent at times, his/her direct offspring would ascend to the

throne. Rather than relying on chief led ceremonial festivals and military campaigns to justify the extraction of community resources, these polities like archaic states had the religious institutions, temples, palaces and government ideology to establish the legitimate right for ongoing taxation and tribute payments. Thus, many of the key features that make clear distinction between archaic states and complex chiefdoms occur in these polities. To call them complex chiefdoms would be to ignore the many evolutionary paradigm shifts that these polities shared with archaic states.

Joyce Marcus (1998; 2003; 2004) has presented a series of arguments suggesting that these polities are the devolved remnants of regional states, but this explanation does not completely address their occurrence in the archaeological record. While it is true that many of these polities occur after pristine states (Galaty et al. 2007:120; Marcus 2003; Marcus and Feinman 1998), they do not all come from the breakdown of former pristine or secondary archaic states. Marcus and Feinman's (1998:9) main case for these polities representing the dissolution of former states is based off their studies of the Zapotec and Maya:

> when those states break down, their former provinces become autonomous polities who for a time lack the power to incorporate their neighbors into a new state. What develops is a kind of stand off between roughly equal small polities. The rulers of those polities may continue to behave like kings (and be addressed as if they were kings), but the territories they control are no larger than a chiefdom and may have no more than two- or three-tiered settlement hierarchy." (Marcus and Feinman's 1998:9)

The local rulers of these provinces, perhaps once subordinate lords, are now autonomous and seek to legitimate their power through the same methods practiced by the state.

However the polities are not always provinces of former states. For example, after a dark age of over two hundred years around 800 B.C. Greece underwent a social revival leading to the emergence of many Greek poleis (c.f. Snodgrass 1977, 1980; Fine 1983; Hammond 1986). The Greek polis primarily consisted of a walled urbanized city with a monumental temple, palace and an average of 5,000 male citizens (Fine 1983). The polis also reinstituted many of the innovations of the former Mycenaean kingdom including writing and craft specialization. Nevertheless, these poleis like the Zapotec or Mayan polities were small lacking the type of integration found at the scale of archaic states. The average polis size was from 80 km2 to 1,300km2 (Fine 1983). The polis was connected with a few towns and villages but little centralized economic control was exerted over them. Endemic warfare between the poleis occurred but rarely led to prolonged subjection of other groups. Consequently, many opposing alliances were formed instead, such as the Peleponenesian League, Delian League, or later Achaean League (Snodgrass 1980; Hammond 1986). Not just the breakdown of former regional states but real mechanisms of social development and incorporation of former institutions led to the formation of these complex societies (c.f. Snodgrass 1986 for a peer-polity interaction model).

The case of Predynastic Egypt highlights the analytical significance for studying these complex societies as their own category, since it provides clues into the mechanisms involved in incipient state formation among archaic states. Multiple scholars have interpreted in different ways the degree of social complexity for pre-dynastic Egypt (c.f. Savage 2001:111-112). In contrast to many earlier studies, Savage (1997:259) has argued that the initial conquest of the Delta by Upper Egypt under the rule of Narmer was

"tenous at best, and there are ample reasons to suggest that it does not immediately result in the formation of the state." Savage's (1997:259-261) main argument for this interpretation was that even after Narmer's unification of the two regions, consolidation was a gradual process replete with instability, until the end of the 2nd Dynasty under Khasekhemwy. This argument would suggest a period of ca. 300 years[15] that Egypt was something "more than a chiefdom something less than a state."[16] Savage (1997: 259) notes a similar gradual process in the formation of the iconological canon and state cosmologies. However, throughout this liminal period there is clear evidence of the establishment of a kingly dynasty, deification and legitimization of the pharaoh, increasing complexity in writing, construction of monumental buildings and elaboration of religious and secular bureaucracy. Moreover, the evidence of Egyptian trade diasporas in Canaan bespeak of social complexity beyond the chiefdom level even if these may represent competitive factions (c.f. Kansa and Levy 2002:203; see also a similar discussion for Mesopotamian colonies in Algaze 2005b). Although a product of pristine development, Egypt is similar to many of the other polities studied here in undergoing a prolonged period of state-formation that should not be simply described as a complex chiefdom. The social, political, and economic elements are novel development in comparison to chiefdoms, and under the appropriate analytical lens can enlighten our understanding of the social formation of archaic states.

Finally, if these complex societies are to be studied as a category for comparison of social complexity, the question arises, "what should they be called?" Early on, scholars

[15] See de Miroschedji (2002) for a detailed chronology of this period.
[16] This quote was used by Renfrew (1972:369) to describe the Mycenaean kingdoms which did not fit into simple categories of chiefdom or state.

such as Renfrew (1972:369) suggested the term 'principalities.' Other possible names suggested in the past include petty kingdom, proto-kingdom, pseudo state, de facto chiefdom, princely state, stratified society, and balkanized province to name a few.[17] The problem with these names is that they are highly value-laden and sometimes pejorative. Marcus and Feinman (1998:9) have suggested calling them by the local indigenous name (e.g. *hesps*, *altepetl*, *cuchcabalob*, *caciacazgos*, etc). The only problem with this strategy is that they then become highly specific loosing their value for typological comparison. The other problem is that in some cases local names may not have existed or been used to describe these polities.[18]

Although not with its own problems, it is suggested here that the term 'kingdom' be used. A kingdom can be defined as a politically organized community or major territorial unit having a monarchical form of government headed by a ruling king. The term kingdom implies that it is led by a king—who is functionally different from a paramount chief. It also correlates well with a level of political organization involving the jurisdiction over a definite region. In addition, kingdoms also can connote a palace, government, military, monumental construction, and stratification, but the extent of political hegemony and size is left vague. Hence many anthropologists, sociologists, and archaeologists have gravitated towards the term state or empire to describe social organization of exceptional size and complexity. One could argue that the term 'kingdom' has also been used to describe state or chiefdom level societies, but if we disqualified a term for its abuses and misuses almost no term used in scholarly literature

[17] City-state the English translation of polis has also been extensively used for these polities, but see footnote 7.
[18] This is the case for the Southern Levant.

would suffice. Finally, specifically for the region of the Middle East, it is a literal translation of an extensively used term in textual documents by both local populations and empires to describe these polities. It is also immediately understood by scholars working in other areas in contrast to other indigenous names like *cuchcabalob*. There will perhaps never be an agreement on what term should be used in scholarly literature, but for the sake of further discussion and analysis here, the term kingdom will be used in the strictly defined meaning discussed above.

4. Heterarchy and Corporate Power Strategies

A central contention of this chapter is that there are several trajectories to social evolution and each generates different types of social, political and economical institutions (Hayden 1995; Kristiansen 1991; Johnson and Earl 2000). Thus, in seeking to understand the social complexity of the Southern Levantine polities a localized model must be developed that takes into consideration the different origins and trajectories that would have occurred. Specifically, the tribal origin of Israel, Ammon, Moab, and Edom noted by a number of scholars must be examined in order to investigate these polities' social complexity (Bienkowski and van der Steen 1991; Giveon 1971; LaBianca 1999; La Bianca and Younker 1995; Levy and Holl 2002; Levy et al. 2004; Master 2001; Routledge 2000; Ward 1972). In this section, it is argued that tribally based complex societies are different from other societies in that *heterarchy* and *corporate power strategies* dominate their political-economic organization. It is these unique features of

these polities that led to an alternative path of social evolution from their neighbors Philistia, Canaan, Egypt, and Assyria.

Heterarchy is a term that was introduced by Carole Crumley in 1979 to address the significant discrepancies found in the application of hierarchical models to the social complexity of Iron Age Burgandy, France (Crumley 1979; 1995). Crumley (1995:2-3) argued that social organization does not necessarily need to be arranged by hierarchies or in other words *ranked*. Rather, society can be organized heterarchically by an unranked system or by a counterbalanced ranking. For example, three cities within a polity may be equal in size and power but be the toped ranked settlement within their realm of specialization: "one hosts a military base, one is a manufacturing center, and the third is home to a great university" (Crumley 1995:3). Each of these three cities are coequal, since they counterbalance each other by possessing different elements of a states power. Spatially these cities do not fit into a centralized model of site hierarchy but rather share the top tier of a decentralized state. Heterarchy does not just apply to the organization of settlements but has been identified in other social and political institutions of government (Humphreys 1978, Blanton 1998; Stone; Jacobsen 1957), religion (Eisenstadt 1969), and economy (Small 1995; Zagarell 1986). Heterarchy most directly relates to the study here in highlighting that other forms of social organization can occur within complex societies that are not centralized and ranked.

In conjunction with heterarchy, complex tribal societies often develop *corporate power strategies*, which are a subset of many different types of power strategies. Power strategies can be defined as the political activities and institutions developed to maintain and expand an elites' political power over the general public (Earle 1997; Hayden 1995;

Clark and Price 1994; Claussen and Skalnik 1978a). Power is the possession of control, authority, or influence over others (Claussen and Skalnik 1978a:18). Effective power strategies are essential to rulers' and governments' ability to maintain their hold over commoner's resources and labor and counteract disillusionment or insubordination of the disparate territorial segments contained within the polity. Many scholars (e.g. Blanton 1998; Blanton et al. 1996; Feinman 1995; Hayden 1995; Renfrew 1974; Lehman 1969; Johnson 1982; Strathern 1969; Drennan 1991) have found that different complex societies take two different contradictory approaches to accumulating political-economic power. These two antagonistic power strategies have been called by many different terms, but here Blanton's (1998) terminology will be used. Blanton (1998) defines these contradictory power strategies as *exclusionary* and *corporate*. As will be discussed below, corporate power strategies are most commonly found in complex tribal societies.

Exclusionary power strategies seek to concentrate power within a central organization and further increase the class distinction between those that rule and those that serve through the exclusion of lower classes from the same sources of power. These rulers have little limitation on their execution of power. Exclusionary power is most often found in states but also occurs among chiefdoms and unstratified societies (e.g. Kristiansen 1991; Renfrew 1974; Hayden 1995; Spencer 1993). Forms of exclusionary power strategies include patron-client relationships built through political gifting, brute military force or extortion (Claussen and Skalnik 1978a), government control of prestige goods (D'Altroy and Earle 1985), control over craft production through attached specialists (Brumfiel and Earle 1985), laws limiting autonomy of secondary elite (Eisenstadt 1969), ritual sanctification of the ruler (Bloch 1980), imperial ideology

(Veyne 1990), linearization of bureaucratic administration (Flannery 1999), and indentured service. All of these strategies work towards creating greater centralization of power into the hands of the ruler.

In contrast, corporate power strategies lead to decentralization. They emphasize egalitarian principles, such as the constraint on a ruler's exertion and monopolization of power. The corporate group and its legal authority holds the chains of the rulers power by keeping close watch over his/her political actions. By corporate it refers to a group oriented decision making process based on a code that all the society generally subscribes to. The legitimate right's of the rulers to control land and labor, thus, become contingent upon their ability to remain within a prescribed code of behavior. Forms of corporate power strategies include assembly governments, corporate egalitarian ideologies, emergence of non-subordinated cultural elite, and semi-autonomy of the polity's lower tiered settlements (for a more detailed description of these examples see Blanton 1998).

At the root of corporate power strategies is an egalitarian ethos. An egalitarian ethos should not be confused with a non-hierarchical egalitarian hunter-gatherer or pastoral society. Rather it refers to a wide-spread cultural sentiment of a society that all members should be equal (even though they are not) and the power of individuals chosen as leaders or rulers should be held in check. An egalitarian ethos is something that has to be continually sought over as many pathways within complex societies exist that can generate asymmetric power relations and wealth. The description of egalitarian ethos among the Ilahita by Tuzin (2001:127) is all too relevant to this discussion: "egalitarianism is typically a rather savage doctrine, for it involves constant vigilance and intrigue among society's members as they struggle to stay equal to each other.

Competition, not harmony, is the hallmark of egalitarian systems: gossip, envy, jealousy, and accusations of sorcery are endemic to them." Egalitarianism is not a natural outcome of small scale groups living in relationship but a virtue that must be fought and competed for. Thus, in order for an egalitarian ethos to be upheld within even more complex polities, corporate groups must develop larger, more robust institutions that cannot be easily subordinated by individuals or groups seeking inordinate power.

In conclusion, heterarchy and corporate power strategies are terms describing different aspects of how complex societies are organized in a more egalitarian system. What is argued here is that these elements reflect an alternate trajectory towards state formation, which is not generated by economic and individual aggrandizers but rather is a continuation of an egalitarian ethos wrapped up in a set of institutions that employ corporate power strategies. In the following study, we will show how corporate power strategies can be traced along the trajectory of polities that have a strong nomadic tribal background. At each stage of increasing complexity, corporate power strategies dictate the institutions that evolve within these societies.

5. Tribal Confederacies

Accordingly, one social organization little explored in the literature that incorporates heterarchy and corporate power strategies into its social organization is the tribal confederacy. The discussion of tribal confederacies is an essential element of this study, since Edom and neighboring Southern Levantine polities most likely followed this trajectory rather than the typical chiefdom-state model.

The use of the term tribe has a rich history in anthropological and archaeological thought, which has caused many anthropologists studying tribes to be hesitant to present an over-riding definition to describe the many different social organizations that occur (see Tapper 1991). Nevertheless, for the sake of analysis, it is argued here that the term tribe should be limited to societies that can be distinguished by the use of a segmentary lineage system and claim a single identity, origin and founding ancestor (c.f. Khouri and Kostiner 1991:5; Tapper 1983; Tapper 1991; Beck 1991; Alon 2007; Salzman 2000; Barfield 1993). Tribes are primarily a political organization of integrated autonomous communities that often have cultural distinctiveness and a well defined group identity. Tribes do not necessarily need to be completely from nomadic pastoral origin, adhere to strict rules of segmentary theory, have a real origin or history, nor be completely egalitarian. As elaborated below, they can continue to persist within higher orders of social complexity often described as confederacies, cheifdoms or tribal states.

The tribal confederacy is a political alliance made between multiple tribes that preserves each founding tribes' autonomy but also allows a centralized leadership to coordinate the defensive, offensive, and migratory movements of the allied tribes as well as represent the confederacy politically with neighboring polities (Barfield 1990; Tapper 1990; Alon 2000; Beck 1990).

The confederacy is a conglomeration of heterogenous groups that may or may not claim shared genealogy, origin, or history (see also Chapter 6). Each of the groups maintain their semi-autonomy and control over their territory. Some historical examples of tribes that organized into confederacies are the Wahabis (Kostiner 1990), Kurds (Ozoglu 1996), the Balqa (Alon 2007; Shryock 1997), and the Qashqa'i (Beck 1990) of

Iran. There are many additional Iranian examples similar to Qashqai confederation, such as the Backhtiari (Garthwaite 1983), Shahsevan (Tapper 1979; Tapper 1988), and the Khamseh (Barth 1961), who developed paramount chiefs in response to the Safavids but were never able to conquer them, although they had the human resources to do so (Caton 1990:101).

On the refined scale of social complexity presented in this study, tribal confederacies can be considered an alternative equally complex society as a complex chiefdom (as defined above). At the head of the confederacy is a paramount chief, similar to a complex chiefdom. These paramount chiefs have moral authority and patron-client relationships with fellow tribesmen established through the control of economic resources (Alon 2007). However their legitimization does not originate through the similar mechanisms of a sedentary chiefdom. Tribal confederacies and their chiefs emerge as a specific response to external threat on multiple tribes by a more complex society (e.g. archaic states; see Barfield 1990; Khazanov 1994; Levy 2009). In other more peaceful encounters, a paramount chief may be elected to communicate with the state to maintain autonomy at the expense of the state's indirect rule, periodic taxation, and military use of tribes to protect border areas (Barfield 1990; Beck 1983; Tapper 1990).

Instead of relying on mechanical solidarity, confederacies create interdependency and solidarity through the creation of bonds of patron-client relationships and matrilateral marriages, unifying ideology and the conscious necessity to unite or be conquered. The alliance may be legitimated through an imputed common descent (e.g. the Backtiyari-Garthwaite 1983, or Pathan-Barth 1969b), but is not necessary (Tapper 1990:69). In many circumstances, the confederacy may be a conglomerate of disparate heterogeneous

tribes lacking shared descent, language or origin but rather united by shared religious, economic and/or political interests (Alon 2007; Shryock 1997). Confederacies may not only possess nomadic and settled tribes but also subdued non-tribal groups (Barfield 1993:110).

Although greater power is centralized in the hand of the paramount chief, the tribal confederacy unlike sedentary chiefdoms employ corporate power strategies and an egalitarian ethos for legitimization and solidarity. Specifically paramount chiefs aligned themselves with a series of tribal ideals. They continued to dress like their commoner tribesman. They preferred to live in tents and practice nomadic lifestyles. And they purposely seek to disassociate themselves from non-tribal cultures (Beck 1983:291). Thus, even at the tribal confederacy level an egalitarian ethos was a primary means of legitimization for tribally organized people.

According to the archaeological and textual evidence for Israel but more significantly Edom these accounts suggest these societies originated out of tribal communities (see Ch. 4 and Ch. 5 for an extended excursus on the evidence for the tribal background of Edom). Thus, an elaboration of these elements of tribal confederacies will be tested against the archaeological record of Ancient Edom in this study.

6. Hypotheses

In order to identify these three different types of complex societies in the archaeological record of the Iron Age Southern Levant the following hypotheses are

presented. Archaeological test implications are presented for each hypothesis to indicate how exactly the hypothesis can be confirmed or rejected.

Hypothesis 8: If the archaic state consists only of a single urbanized capital and only an immediately controlled hinterland showing evidence of ruralization, then it belongs to the city-state category. Otherwise, if there is evidence for a larger controlled territory that encompasses an assortment of complex societies that do not directly support the urbanized population of the capital, then it is a regional state.

Archaeological Test Implications 1) The capital of a four tiered settlement hierarchy in a city-state will show a high density of settlements and often (especially for the Southern Levant) circumscribed by a defensive wall. 2) The three lower tiers will show an organized distribution around the capital city to exploit the natural resources of the immediate area. A site catchment analysis would need to be performed to estimate the amount of area required to support the urban population. 3) For identification of a regional state we need to show evidence of other polities politically subordinated to the capital. Establishing such a connection in the archaeological record is difficult. Some possible tests include: 1) Matching public architecture at several towns/cities suggesting a preplanned template for establishing administrative or defensive structures by the state. 2) Royal stamps, bullae, and seals suggesting the presence of state administrative officials at these towns. 3) Non-historical/propagandistic textual documents that witness subordination

of other polities, such as economic transactions, letters between officials, governor or provincial lists, emblem glyphs, etc.

Hypothesis 9: If a polity shows evidence of a king, palace, bureaucracy, social stratification and other governmental institutions and specialists but lacks a 4-tiered settlement hierarchy, then the society is a kingdom but not a state.

Archaeological Test Implications 1) The essential variable that needs to be established is whether there is evidence for four-tiers of settlement hierarchy or not (see Hypotheses 6). 2) The central city/town will have evidence of a palace and other government institutions, elite residences separated from commoner, some signs of bureaucracy and monumental construction (see Hypotheses 1-3).

C. A Socio-Economic Approach: Theories on Interregional Interaction

As one seeks to examine social change in complex societies as described above, socio-economic variables must be taken into consideration. The social complexities of polities are in multiple ways a product of the interactions with their neighbors. The term 'interaction sphere' will be used to describe this regional interaction. Interaction sphere can be defined as the inter-relations of different groups within a region that had significant repercussions in social, political and economical realms (Caldwell 1964; Binford 1965: 206-9; see also Bar-Yosef and Belfour (1989) for its application to the PPNB in Israel). This study builds on Caldwell's (1964) original use of this term by arguing that interaction spheres do not simply occur among peer-polities (interaction between equals) but also among core-periphery world-systems theory (asymmetrical

interaction). In the Iron Age Southern Levant both peer and core-periphery relationships existed at the same time. In order to study the variables that contributed to increased social complexity in the Southern Levant, a robust model must be developed that addresses these two sides of interaction spheres. In this section, both types of interaction will be examined to extrapolate their core variables and apply them to hypothetical tests.

1. World Systems Theory

World-systems theory investigates how interaction spheres between polities of unequal social complexity leads to increased economic efficiency both within the superior core and the less complex peripheries. Although world-systems theory has proven to be an accurate model in some specific cases (e.g. Algaze 2005b; see Stein's (1999) critique and Algaze's rebuttal 2005b:146-149), in the study of Iron Age Southern Levant and other areas it must be modified to fully address the complexity of core periphery relations that occurred during this period. It will be argued here that WST represents only one facet of core-periphery interactions. Relationships between core and distant peripheries are more *negotiated* than dictated, innovation is two-sided, and peripheries in general have more autonomy than once thought. In the end of this section, it will be argued that WST and PPI should be combined into a more comprehensive model called the interaction sphere.

Immanuel Wallerstein's (1974) world systems theory, originally developed to describe the modern economic system, has been readapted extensively by archaeologists to understand the social relations of ancient complex societies (Algaze 1989; Algaze

2005b; Blanton and Feinman 1984; Chase-Dunn and Hall 1991; Hall 1999; Kohl 1979; Kardulias 1999b; Schortman and Urban 1987). Central to world-system theory is the notion that core states have developed an extensive economy beyond their immediate political control that encompasses many smaller peripheral polities. The core states' advanced socioeconomic, political and military system enables them to integrate these peripheral societies into their trade economy and exploit their natural resources. The result is a strong bond of economic interdependency between the core and its periphery. The core achieves greater economic production as cheaper raw sources are imported into the capital and converted into expensive exports, while the peripheries either through colonization, coercion or indirect means become specialized resource extracting areas.

The incorporation of the peripheries into the state or imperial structure also leads to increased social complexity. For example, Schortman and Urban (1987:69) argue that, besides economic resources and technological advances the peripheries inherited core social and cultural innovations in the form of ideologies and social institutions (see also Chase-Dunn and Hall 1991:19; Algaze 2005b:143-144). As the peripheries receive the economic resources and technological innovations they are able to increase intensification and specialization of production. The social and cultural resources contribute with the new economy and technological advances to the social formation of these polities into more complex arrangements. Consequently, the core and periphery co-evolve (Schortman and Urban 1987:69). In some circumstances, these peripheral polities eventually become powerful core states of their own (e.g. Parkinson and Galaty 2007).[19]

[19] Although it is suggested here that increased social complexity occurs both in the periphery and core, it does not mean that the peripheries will always adopt or develop equivalent institutions and complex societies as the core. Algaze (2005:146-149) has criticized other scholars attempts (e.g. Stein 1999) to

Thus, world-systems theory is an explanatory model for not only understanding how social interactions develop but also how polities evolve into more complex organizations.

However, the inherent problem with Wallerstein's world-systems theory is that it does not address agency of peripheries. This has led some scholars to incorrectly assume that these peripheries were always passive, weak, dominated polities. A number of scholars have emphasized the agency of peripheries in a number of possible scenarios: 1) core dominance dissipates over distance (Stein 1999); 2) the level of interdependency and information flow varies (Hall 1999); 3) multiple cores could compete over peripheries' sources (Kohl 1987); 4) peripheries often played an active role negotiating their relations with core societies (Kardulias 1999).

Gil Stein's (1999) distance-parity model calls into question the assumption that core polities always dominated their periphery (see also Hall 1999). The distance-parity model assumes that the power of core polities over their periphery decays with distance. The result is a gradual shift from asymmetrical relations to symmetric, an increase in exchange of prestige goods instead of bulk goods, reduction in pressure for peripheries to become hyper-specialized, and decrease in the ability for cores to use military, economic, or political dominance over the periphery (Stein 1999:62-3). According to Stein's model, the degree of core-periphery dominance within the archaeological record can be analyzed using measurements of distance and the nature of interregional exchange between the polities.

---

overemphasize peripheral polity's social complexity in expense of the clear asymmetrical developments that occurred between the Late Chalcolithic and Uruk periods in Mesopotamia.

Not only raw distance but the nature of what is exchanged between core and periphery may have different distributions. For example, Hall (1999:7) finds that within world-systems theory the boundaries of different elements that flow between core and periphery varied. He was able to identify separate boundaries of information or cultural flows, luxury or prestige goods, political/military interaction, and bulk good flows. These may be related to distance but can also be affected by the social complexity of the core as well as it strengths and weakness. Kardulias (1999a:xvii) argues that a discrepancy of modern world-systems theory is that "many historic and prehistoric states lacked the mechanisms to dominate the distant (and in some cases, even nearby) societies with which they interacted in order to procure various resources." In addition, core polities may not always invest the same amount of energy in theses different forms of interregional exchange. For example the Neo-Assyrian Empire allowed peripheries to remain fairly autonomous and often negotiated trade relations long before any military action was taken to more directly exploit the resources from these polities (Postgate 1992). Even when military conquest occurred, this generally involved the creation of vassal states that paid tribute rather than incorporation into state controlled provinces (Postgate 1992; Parker 2001).

Furthermore in a number of cases more than one core may be interacting and seeking to extract resources from a periphery. For example, Kohl's (1987) broad study of interregional exchange during the Bronze Age found that multiple cores competed and overlapped peripheral zones. He found that from Harrapan and Turkmenistan civilizations to Mesopotamia and Egypt competition occurred over similar sources of lapis lazuli, turquoise, and other metals. The position of peripheries between multiple

cores enabled them to negotiate the terms of exchange and switch allegiances between different cores. Kohl (1987:18) found that these peripheries "not only exercised a considerable range of options in dealing with more powerful trade partners but, in certain times and places, also developed new technique or applied nearly universal skills…that ultimately had a far-reaching broadly 'progressive' fashion that ultimately had far-reaching social and political consequences." Peripheries found between multiple cores could develop new innovations, become independently highly specialized, and dictate their economic relations by recognizing needs of different cores and appealing to each in a strategic way. Multiple competing cores create a more democratically controlled periphery where polities can pick and choose competing innovations or symbols of status.

Finally, these three separate observations highlight the potential for peripheries to take an active role in defining their interactions with core polities. Kardulias (1999b:88) has coined the term 'negotiated peripherality' to describe this dynamic (see also Parkinson and Galaty 2007). Negotiated peripherality is the concept that elites have a choice to participate in foreign ideology, symbols, and prestige goods. Polities not within the direct political domain of core states could negotiate fairer economic relations with the core (Kardulias 1990a:xviii; see also Stein 1999:4). They could choose to participate in certain foreign exchanges while disregarding others. Parkinson and Galaty (2007:121) found that for Iron Age Crete, the Near East and Egyptian core-states that "…elite in both the peripheral and core areas were actively pursuing trade to acquire low-bulk, high-value items associated with social prestige and political power." Here it is seen that motivation within the periphery to establish relationships with the core empires in the east. Rather than imposing forms of control over Crete, a trade relationship was established that

maintained the general autonomy of local production and social system while benefiting the export and import of goods. Thus, negotiated periphery should be considered a more common form of core-periphery relations when peripheries are located far from a single core or in between multiple equal competing cores. All of these qualifications can play a significant impact on how we model interaction and social change among complex societies.

Wallerstein's conception of world-systems theory represents only a small subset of core-periphery interactions. There is no doubt that asymmetric social and economic interactions occurred between some complex polities and their less developed peripheries. However, the evidence presented here supports Stein's (1999:171) assertion that the number of emendations that have to be made to the Wallerstein's original model to describe core-periphery relations has led to the term losing "any heuristic value, except as shorthand for inter-regional interaction system linking complex societies with other groups." Rather, here the term *core-periphery models* will be used to refer to various types of interactions (e.g. distance-parity model, negotiated periphery, etc) that occur between two polities of unequal scale and complexity. World Systems theory has been used by several scholars to describe the social formation of Edom during the Iron Age II (e.g. Knauf 1992). These models will be critiqued according to the caveats discussed here and further developed as testable hypotheses concerning the role they played in the social formation of the Iron Age southern Levantine polity of Ancient Edom (see hypotheses below).

2. Peer-Polity Interaction and Interaction Spheres

In contrast to core-periphery models, peer-polity interaction refers to the social interaction and external competition between neighboring polities of comparable scale and organization (Renfrew 1986; Renfrew and Cherry 1986). A number of archaeologists have applied peer-polity interaction to their respective fields of expertise (Braswell 2003; Levy and Van den Brink 2002; Schortman and Urban 1987; Stein 1999), but Renfrew's (1986) initial concepts have not been rigorously tested against the archaeological record While many of Renfrew's insights into social interaction, intensification, and simultaneity of innovation are profitable models that can be examined for state formation, the ideal that all polities within a region are equals or would remain that way is rarely found in the archaeological record. More and more studies of trade and social interaction have highlighted the different levels of interregional interaction that occur among polities that cannot be addressed with just peer-polity interaction (see Schortman and Urban 1987 and below). Renfrew's original use of peer-polity interaction is too limited of scope to address all the other processes and interactions that occurred in state formation and requires emendation to account for the evidence available in modern archaeological investigations. Here we will incorporate peer-polity interaction and core-periphery models in a more robust model of *interaction spheres*.

An essential element of an interaction sphere is that it causes polities in many realms to start to look the same. They begin to share a number of common features such as architecture, ceramics, iconography, measurement systems, language, writing, religious beliefs and political institutions. Yoffee (2005:205) writes that the "interaction sphere is a useful term in prehistory since it implies that certain material features found

over a large area reflect a set of cultural or other relations that transcend localized nets of institutions and distinct peoples embedded in them." Renfrew (1986:3) calls the many cultural traits and features that are the same across regions, *structural homologies*. Consequently, polities that would naturally consider themselves politically and even ethnically separate may appear to the archaeologist as a single large entity. The symbols and forms that make up many structural homologies cannot be explained away by simple functionalism because they are often highly arbitrary (Renfrew 1986:5). Rather, structural homologies must be seen as the product of complex social interactions between communities over a long span of time.

Although Renfrew (1986) used the term *structural homology* to describe the outcome of peer polity interaction, structural homologies occur between cores and peripheries as well. For example, in Hansen's (2000:16-7; see also Trigger 1993:8) study of 36 archaic states, he observes that a region made up of multiple city-states can share a common culture and language, but at the same time compete militarily against each other. These city-states are not always equal in size, may form alliances, federations, leagues with each other, and may be hierarchical-subordinate to larger city-states that can limit their independence and require payment of tribute, tax or military support.[20] Similarly, although Algaze (2005b) and Stein (1999) disagree at certain points it is apparent that

[20] A case example of how structural homologies can occur in both peer and core-periphery interactions is clearly seen in the Ubaid and Uruk periods of Mesopotamia. The Ubaid period represents a time where interaction spheres had grown to encompass the territory of Mesopotamia and with shared belief, literature, education, and material culture (pottery, architecture) created a second identity of the inhabitants of the region as "Mesopotamian" (Yoffee 2005:210). During the early Uruk period as competing Mesopotamian states began to establish trade colonies in their peripheries many of the features of Mesopotamian culture became adopted within the peripheries through this interaction (Algaze 2005:143-144, but see also Stein 1999:166-167).

Mesopotamia's peripheries adopted many of the iconological features, writing techniques, and administration of the more complex Mesopotamian city-states. This should not be seen as an example of simple diffusion but as a result of the complex, negotiated interaction between the core and peripheral polities. Structural homologies will always be the product of interactions between peers or unequals due to the series of mechanisms elaborated below.

Interaction spheres do not just generate similar looking polities but also lead to increased social complexity. Just as a drop of colored dye can rapidly spread throughout all sections of a contained liquid, information similarly can spread rapidly throughout the whole network of polities in interaction. The result is an appearance of simultaneous change and homogeneity throughout the region. Interaction spurs similar economic, social and political intensification as polities compete against each other and seek to avoid or escape the subordination by larger contemporaries (Yoffee 2005; Schortman and Urban 1987; Renfrew 1987). Hence, polities within an interaction sphere pull each other along in accord to greater forms of social organization and complexity.

Reciprocal interaction leads to information flow and social change both among peers as well as among complex and less complex societies. For example, Schortman and Urban (1987:70), argue that information (energy, materials, social institutions, ideas) passed between societies cause social change. This information flow becomes part of a positive feed back system where the "mutual interdependence is such that changes initiated in any one society in the network set off repercussions throughout the entire system, eventually leading back to affect the society whose initial change set the process in motion" (Schortman and Urban 1987:75). Information is not merely diffused

throughout the interaction sphere, it is transformed as societies adapt and build upon it. These mutations to the initial innovations can then flow back to the original society as they perceive the new mutations as beneficial and in turn effect new change. Therefore, the passing back and forth of information within interaction spheres, functions as a spiraling cyclical process that leads to co-evolution as these innovations affect social transformations simultaneously in both polities. For the case of the Iron Age II Southern Levantine polities these interaction spheres elucidate why all these polities appear in the archaeological record to simultaneously evolve more complex social organizations. A central hypothesis of this dissertation is that interaction spheres among Edom's peers played a more formidable role in its social change than possible assymetrical relationships that occurred in its later history under Assyrian vassaldom. This point will be elaborated in greater detail in concluding chapters.

3. How Structural Homologies Form

One of the most important contributions of C. Renfrew's work is that he presents actual testable models of how social interaction leads to structural homologies and increased social complexity. Specifically, Renfrew (1986) presents several models of how change is a product of interaction. In this section we will investigate these terms and expand their fundamental definition to address core-periphery interactions.

Competitive Warfare

Renfrew (1986:8) sees *competitive warfare* strictly as an interaction between groups that spurs greater intensification of production to resupply used up resources and

emergence of hierarchical institutions to initially administer military operations. It is endemic warfare that does not lead to conquest. Polities continue to remain autonomous. Not only does the warfare spur intensification to remain as autonomous polities, but it also can become a channel for communication between polities (Renfrew 1986:16).

In addition, warfare between cores and peripheries should not be seen as always resulting in domination but more similar to the *competitive warfare* stipulated by Renfrew (1986:8). For instance, many archaic states did not have the economic resources to directly convert their distant peripheries into dominated provinces (e.g. Egypt, Levy and van den Brink 2002; Neo-Assyria, Parker 2001). However, in many cases these archaic states went on annual campaigns that stretched to the borders of their periphery or beyond.[21] These annual campaigns often only extracted booty, but at other times, they established tributary relations with once autonomous polities. As these polities brought tribute or labor to the capitals, all forms of information could be transferred back and forth between the interacting polities. The campaigns became a channel for communication between distant polities. However, at the same time these polities would intensify military production and defensive construction in preparation to rebel and defend against the retribution of the angered super power. The core polity would then be forced to return in a follow up campaign to reassert its power. Thus, this endemic warfare spurs greater intensification of production among all the polities contained within the peripheries of the core state. Competitive warfare within the interaction sphere can be happening at multiple levels both with peer polities circumscribed within a small area and

[21] The following model presented here is primarily based off my observations of Neo-Assyrian Campaigns in the Southern Levant, which will be presented in detail in Chapter 4. However, much of what is described here can be seen in the historical activities of many regional states throughout the world during different time periods (e.g. Aztecs, Inka, Egypt, etc).

at the same time annual campaigns by powerful empires. The interaction sphere thus encompasses not only the peaceful prime movers of social change but also the violent ones. This type of competitive warfare between Edom and the neighboring polities may have played a significant role in Edom's development of a more complex social organization. A series of hypotheses presented below will be used to test this possibility against the datasets in this study.

Symbolic Entrainment and Competitive Emulation

Symbolic entrainment is when a more advanced symbolic system (text, statues, architectural styles, ceramic styles, coinage, ritual practices, kingship) comes in contact with a less advanced system and thus is adopted as a better replacement. It also entails the idea that a successful symbolic system in one society may cause the other society to view the same symbolic system as the norm and thus be more willing to accept it in their society (Renfrew 1986:8-9). Specifically, a more successful symbolic system refers to one that more effectively can be used by elites to legitimate their authority, right to land, or exclusionary control of prestige items. The mechanism behind this appropriation of neighboring systems is that elites are aggrandizers and will pursue greater methods of acquiring wealth or power.

Competitive emulation is the idea that polities spur each other on to gain inter-polity status by similar or better displays of wealth and power (Renfrew 1986:8). The competition leads to bigger and better displays of power. Competitive emulation could be seen as symbolic warfare between different polities.

First, many of Renfrew's models of interaction should not be limited to peer interaction alone. For instance, *competitive emulation* and *symbolic entrainment* should not be seen as just a product of peer relations. Peripheries seeking to assert their own power in contrast to a dominant core, can choose to adopt innovations of the core to assert their own legitimacy (e.g. Mayan states that claimed origins of state and king from Teotihuacan). This emulation of core states may actually be an attempt to assert status among peers polities (competitive emulation) with whom they were more directly in competition. Moreover, Schortman and Urban (1987:70) argue that interaction spheres have the greatest impact when it influences elites or individuals that have the power and prestige to change society. Elites can utilize the symbols of power and prestige within interaction spheres in order to legitimate their power in the eyes of their constituents (Yoffee 2005:205). The activity of elite's involvement in the interaction sphere lends itself to negotiated peripherality, since they can choose what symbols to adopt and which to reject. Thus, within the interaction sphere more advanced symbolic systems (*symbolic entrainment*) from both peers and dominant cores were available forms of information that elites could translate into sources of power (*competitive emulation*).

Transmission of Innovation and Increased flow in exchange goods

Transmission of innovation is transfer of any type of innovation (including symbolic systems) to other societies. Since many polities may adopt the innovation almost simultaneously in the archaeological record it is very difficult to isolate its origin. Thus, it is in contrast to the idea of diffusion where an innovation is seen coming from a central origin.

Increased flow in exchange of goods creates economic growth as polities participate in the export and import of trade. As discussed earlier, export-driven trade results directly in increased production. This economical intensification can be linked to the interaction of equal polities as much as core-peripheries.

Moreover, *transmission of innovation* and *increased flow in exchange of goods* both from the core as well as the periphery can serve in the feedback system to not only cause simultaneous change in the many polities contained within the periphery but also the core. Transmission of innovations created in the periphery can later be adopted back into the core. This is the essential process of import substitution described by Jacobs. The core or nascent peripheral states receive new innovations (e.g. new forms of production, popular craft styles, weapons, prestige goods, etc.) that create new or more economically efficient exports that compete against other polities within the interaction sphere. In the same way, the interaction sphere's primary function is to maintain trade relations among these polities which then results in the *increased flow in exchange of goods*. Thus, an interaction sphere that not only involves peer polities but also interactions with larger empires can result in the greatest success of these two forms of interaction.

Interregional Communication

Finally, another form of interaction not detailed by Renfrew is what will be called here *interregional communication*. As polities of equal or unequal status interact they must develop a lingua franca of not only language but cultural norms that facilitate the clear communication of the two groups. For instance, Yoffee (2005:229), speaking specifically of the interaction sphere within Ubaid period Mesopotamia, writes:

> From the environment of village life, the circulation of goods and marital partners led to institutionalized interconnections among unrelated people and to the formation of interaction spheres. Codes of communication and symbols of shared beliefs allowed and expressed new aspects of cultural identity among villagers.

As polities developed trade relations with each other "codes of communication and symbols of shared beliefs" were required to facilitate these trade interactions. Schortman and Urban (1987:74) note that a common symbolic system and shared identity first appear among elites seeking to facilitate *interregional communication*. For example, Schortman and Urban (1987:72) write that "pressures would be greatest here for at least a segment of the population to adopt salient identity to permit interaction and organized to meet the advanced chiefdom or state's demands." The shared identities "…encourage trust and communication among people who would otherwise be isolated by the absence of such bonds" (Schortman and Urban 1987:73). [22] Thus, the maintenance of interaction, as much as interaction itself, can lead to the formation of structural homologies. These structural homologies, commonly seen within civilizations, facilitate trade and interaction within them and lead to what archaeologists often ascribe to "material cultures."

In sum, all of the above interaction models hold in common the ability to spur intensification and centralization among all the interacting polities. As one polity may adapt new organizational features and new levels of complexity, in response to these interactions, the neighboring polities will, in turn, follow. The difference in an evolutionary perspective is that these are voluntary changes made by a society enabled not by external resources or imposed directives. Thus, it is seen as a prime mover in state

[22] This transformation of identity among peripheral elites is especially witnessed among elites during the Hellenistic and Roman periods but also Southeast Asian societies adoption of Hinduism and kingship from trade partners China and India (Schortman and Urban 1987:73).

formation and social evolution. The concept of interaction sphere when analyzed in light of peer-polity and world system interaction dynamics proves to be a comprehensive system for modeling complex social interaction. The many new processes involved in secondary state formation can be found in analyzing the interactions occurring with a nascent state's interaction sphere. Rather than just assuming a straight forward diffusionism (Fried 1967 and Price 1978), the model of interaction sphere provides a tool for analyzing the multivariate and complex system of information exchange and interaction. It takes into consideration the competitive nature of polities and their resistance to more advance archaic states and empires. For the study presented here the analysis of interaction spheres especially in the ceramic material culture of the region of Edom needs to be tested. In the following chapters the model of interaction spheres will be further developed for a comprehensive analysis of Iron Age Edom. Below several hypotheses are presented with specific archaeological implications that will be tested against the datasets used in the study.

4. Hypotheses

Hypothesis 10: If there is evidence of interaction between a core and the society in question, then core-periphery models of interaction should be assumed to have occurred between these two groups.

Archaeological Test Implications: The relationship between a core and periphery settlement can be established through a number of different ways. These include: 1) Trade items belonging to the core being found in the

periphery, and vice versa. 2) Evidence of trade diasporas or colonies. 3) Textual evidence of interaction, subjection, or campaigns of the core in the territories of the periphery. 4) Structural homologies of the core found in the periphery, or vice versa.

Hypothesis 11: If this interaction reflects core dominance over the society in question, then social change or dependent specialization should be seen as an affect of this type of interaction. Otherwise, the society should be seen as taking an active role in determining this interaction and models of negotiated periphery and distance-parity should be applied.

Archaeological Test Implications 1) Among core polities that document the provinces they have placed under subjection, with qualification (namely states exaggerate their power) these reference can be used as an indication that the peripheral polity was subjugated. If the polity is not mentioned but other neighbors are, then the polity was not under direct core dominance. When a polity is mentioned within the documents it must be further examined to ensure that the dominance is not hyperbole. For example, a mural or stela that depicts the ethnic group of the periphery smited or enslaved, can be interpreted in different ways. If a stela describes this same polity needing to be re-conquered in the following campaign most likely it was not fully subjugated the first time. Examples like this need to be scrutinized as any other historical document. 2) The distance-parity model, with detailed by Stein (1999:78) can also be used as a gauge.

Hypothesis 12: If multiple equally powerful cores are found to be in contact with the society in question, then models of negotiated periphery played a role in interaction.

Archaeological Test Implications: The first test is to measure the distance between known core empire or regional states and the society in question. Second, known interactions of the different cores from textual or archaeological data can be used to gauge what extent each core was involved in the area. Third, evidence of interregional trade or other forms of interaction between the periphery and both cores can fulfill this test.

Hypothesis 13: If the society is autonomous and located amidst multiple neighboring polities of roughly equal size and complexity, then there should be a set of structural homologies shared among all of them and comparable levels of social complexity. Otherwise, if the society is subordinated (see Hyp 9), it may share structural homologies but will not have a form of similarly complex social organization to oppose its oppressor.

Archaeological Test Implications 1) If structural homologies exist, their formation should be reflective of a number of different types of interaction stipulated below:

Hypothesis 13a: If the interaction is *competitive warfare*, then evidence of endemic warefare, raiding, war victory propaganda, fighter classes should be evident in the archaeological record

Hypothesis 13b: If the interaction is *symbolic entrainment*, then different types of symbolic systems (text, statues, architectural styles, ceramic styles, coinage, ritual practices, kingship) will be found shared.

Hypothesis 13c: If the interaction is *competitive emulation*, then the differential in display of power and wealth between competing polities would look similar, even if some polities are less complex in other realms. Even among core and peripheries, the less complex polity may share similar displays of power and wealth as the core.

Hypothesis 13d: If the interaction is *transmission of innovation*, then similar innovations should be found in each interacting polity and should be seen as a key element in leading to co-evolution of the polities.

Hypothesis 13e: If the interaction is *increased flow in exchange of goods*, then the artifacts found in the material record should show increasing homogeneity over time as goods become ubiquitous in each polity.

Hypothesis 13f: If the interaction is *interregional communication*, then similar codes of communication and symbols of shared belief will be seen in the archaeological record. Elites will appear through artifacts associated with them to have a similar identity of other polities that may have in general more circumscribed identities.

Finally all of the above hypotheses may be found to be in combination within any given interaction sphere.

D. Additional Models Concerning Complex Societies

Finally, several test models are presented below that this study will also consider in an analysis of Edom's social change over time. These models appear germane to this study because they both relate to specific attributes found within Edom. Specifically,

Edom's primary resource was copper and its location along several central trade routes predisposed it to exploit these two arenas, which in turn may have directly contributed to social evolutionary changes within the region. These valuable resources would have been hotly contested over and possibly would have led to warfare and conquest in order for a specific group to control them. Therefore, both models of conquest and export-d trade must be addressed.

1. The Conquest Theory Revisited

Around the beginning of 19th C., archaeologists held to a notion of conquest theory that as one group conquers another and is thus able to economically exploit the subjected, the conquering polity grows into a state. Nevertheless, the main problems with conquest theory was that it could not explain why conquest did not always lead to states nor how these societies could develop such powerful militaries without already having a state level society (Claessen and Skalnik 1978a:10). Another significant problem was that conquest required state level complexity in order to sponsor and amass such an army. According to Claessen and Skalnik (1978a:10) conquest theory became out of vogue as new models emphasizing evolutionism and ecological systems came to the forefront. In 1970, R. Carneiro's (1970; 1988) circumscription theory brought back the importance of conquest to state formation but this time it only represented one of several processes linked to population pressure. However, Carneiro's model was severely criticized (Schacht 1988; Kirch 1984; Cowgil 1979; Webb 1988; Webster 1975). Conquest became

an outdated theory of state formation and was not reinstated until more and more archaeological evidence began to show how much warfare occurred in archaic states.

Recently, some scholars have begun to reconsider the importance of conquest in the development of social complexity as increasing evidence of warfare has been discovered in the archaeological record and indigenous texts. This is not to say that conquest is argued as the single cause of progressively more complex social formation, but that it is part and parcel of that process (e.g. Webster 1975). For example, Marcus (2004:360) views conquest as an important ingredient in state formation. She suggests:

> The evolution of raiding into true warfare is yet another signature of the state, and in both regions, warfare was far too many decades ignored as an important process in the rise and expansion of early states. During the 1990's it became clear that conquests by Tikal, Calakmul, Copan, and Monte Albán were typical examples of early state expansion.

Marcus (2004:373) points out, for Monte Albán, that it specifically emerged when "one member of a group of competing chiefdoms succeeded in creating a larger polity by bringing its rivals (and other neighbors) together under its control…This was done by a long-term strategy of military force, diplomacy, colonization, and (probably) political marriages." Military and political consolidations were primary tools in Mesoamerica for creating the state from a 'forest of chiefdoms' in these areas (Marcus 2004:373). A number of scholars have noted similar conquest expansions during the initial phases of state formation in their respective areas (e.g. Zapotec-Marcus and Flannery 1996; Inca-D'Altroy 1992; Aztec-Brumfiel 1983:266-267; Early Dynastic Egypt-Savage 2001; Mongols-Khazanov 1994; see also the four case studies in Flannery 1999). Johnson and Earle (1987:316), in discussing specifically the Inca conquest, note that it was the

consolidation of former chiefdoms that enabled the Inca to indirectly rule an expansive empire. The incorporation of functioning chiefdoms into the state brought a new level of integration to a regional interaction sphere resulting in exponential growth in available finance for the Inca state (c.f. D'Altroy and Earle 1985).

Returning to the discussion of secondary states, evidence suggests that military usurpers with knowledge of state craft were common catalysts to forming secondary states. Marcus (2004:370), for example, argues that these usurpers initiated secondary state formation in a number of documented cases, such as the Mexica of Tenochitlan, the Copan, and Mixtec of Tututepec, among others. A similar circumstance is recorded for the secondary state in Mesopotamia, where foreign semi-nomadic Amorites chiefs conquered the Ur III civilization and established a new dynasty (Yoffee 2006).

Marcus (2004:368-9) suggests that for Mesoamerica these state founders came from other states as young princes not earmarked for succession in the former state. [23] Their social position drove them to leave the state and found their own at core towns in other regions. The main tactics exemplified by the Mixtec ruler (8 Deer Jaguar Claw) was to expand his initial usurped town and consolidate the region to becom the top tier of a state. He accomplished this through a combination of military conquest, sacrifice of rivals, and royal marriages of these subjugated towns (Marcus 2004:368-9). The emergence of Copan suggests a similar process where K'uk'Mo' "arrived" at Copan and took the throne (currently researchers do not know whether he was invited or usurped the throne). Analysis of the texts referring to ascension along with strontium isotope bone

[23] Likewise, Stone (1997:22) notes many of the founders of Mesopotamian states were outsiders (e.g. Sargon, Ur-Nammu, and Hammurabi and Rim-Sin were originally from Amorites).

analysis reveal that he originated from another region outside of Copan—possibly from the area of Tikal (Marcus 2004:370). Following his ascension he began a campaign of conquering other towns within a 50 km radius and eventually militarily expanding the state over 10,000 km2 (Marcus 2004:371-2). He similarly combined military expansion with legitimizaation of power by marrying local noble women, constructing monumental architecture, and issuing of public texts (Marcus 2004:371). As will be shown below, these data are important for Iron Age Edom because succession lists available in the Hebrew Bible reflect a similar situation to that of the Mexica discussed by Marcus.

Finally, conquest plays a formidable role in the emergence of tribal confederacies. As mentioned above, tribal confederacies and their chiefs emerge as a specific response to external threat on multiple tribes by a more complex society (e.g. an archaic states; see Barfield 1990; Khazanov 1994; Levy 2009). Social organization of tribal groups above the egalitarian model appears to be a consequence of adaptation by tribal groups to external political forces. Tapper (1990:67-68) who studied several Persian tribal confederacies, sees tribes' political organization and ideology constantly transitioning and adapting to the external circumstances of neighboring states sometimes "evolving" to confederacies other times "devolving" back to lineage segments. Similarly, Khazanov (1994:179) argues that to the degree tribe's need to protect their "livestock, pasture and water source," control large territories and handle external relations with peasants and neighboring states will determine the "forms of institutionalization," and "centralized power" to emerge. Speaking specifically about the Yarahmadzai, Salzman (2000:311) states "a population that is intimately and immediately engaged with a powerful external presence, but that does not erect a political organization that can compete with the

external presence on a more or less comparable level, will become dependant on that external force or be absorbed by it, the only alternative being retreat and escape." Overall, these anthropologists have found the threat of conquest as a consistent mechanism towards the creation of tribal confederacies. Therefore, this model will be further examined for the case of Iron Age II Edom where tribalism and external threats from numerous more complex polities existed.

2. Export-Driven Trade Model

Guillermo Algaze's (2001) model of export-driven trade needs to be tested against the archaeological record of the southern Levantine polities. The high degree of social interaction that would have occurred between the polities and more distant cores would have resulted in an extensive interregional trade economy. Yet, little is understood how this economy would have impacted each of the polities who possessed different natural resources that could be exchanged or converted into wealth finance. Thus the export-driven trade model will be examined in detail and tested in later chapters.

Where export-driven trade occurs, increased centralization and internal specialization are common by products, which lead to ever increasing social change and complexity. For example, Algaze (2001) argues that exponential economic growth occurs within a polity through the combination of production and export of products through trade. Here this occurrence is called the export-driven trade model. The necessity for labor and capital "creates co-developments in the form of an increasingly large, skilled, and diverse workforce (i.e. human capital), and this, in turn, creates the potential for

further economic diversification by adding new types of work and new ways of working" (Algaze 2001:205). One of the most fundamental ways of multiplying the annual finance of a polity is to export a portion of its staple and wealth finance through trade. In many cases, urban centers emerge because of the exponential economic growth of trade along its central or critical nodes of transportation that pass through multiple regions (Algaze 2005a:7). Not only is their position predisposed to economical success but they often are located in resource rich regions that can generate the type of surplus to participate in the trade (Algaze 2005a:7). These cities are able to combine imports through their trade, local resources, and human labor or finance to manufacture export goods. The profits can then be reintroduced into the economy of the city to acquire more imports and employ more labor or wealth finance to produce even more export goods. Hence, trade that results in the export of prestige goods should be seen as a driving force of state formation, urbanization and procurement of increasing amounts of wealth finance crucial to the growth of the state. For Edom where trade and exports could be exploited this observation may have significant implication for how Edom increased in social complexity over time.

For exponential economic growth to occur, archaic states must substitute imports for local specialized production. Ellerman (2005:55) notes that communities that do not input imports into production or replace fully processed imports are dissipating the resources through direct consumption rather than using these resources to create greater profit. In order to have trade multiplier effects in the economy of states, there needs to be a transition to diversifying the economy of production to reverse consumption of imports to export of many substituted products. When imports are replaced with local

production “a second burst of economic expansion” occurs (Algaze 2001:205). This means that if a state is simply using the natural resources for consumption and sale, and not using their own resources to create product goods for local use as well as tradable exports, they will not see exponential economic growth. This type of exponential takeoff has been documented for a number of modern states (c.f. Jacobs 1969; Ellerman 2005) but also by Algaze (1989; 2001; 2005a) in Mesopotamia. In the case of Iron Age II Edom, this model will enable us to gauge whether the copper metallurgical production in the Faynan district underwent a similar economic expansion.

This replacement of imports for local production in turn creates diverse specializations within a city and motivates the increased growth of population as more specializations open for individuals. The utilization of human labor to create these exports in turn creates an ever increasing specialized and diversified workforce (Algaze 2005a:8). This whole theory is in contrast to views that see each city specializing in only a couple products that it does best (“comparative advantage”) and then exchanging these with others for imports specifically produced by those cities (Ellerman 2005:62). Thus, the export-driven trade model functions as a positive feedback loop generating more and more economic diversity, producing the necessary administrative institutions to manage it, and intensified urbanization.

In sum, export-driven trade economies should be seen as an essential force leading to state formation. It may belong to a combination of factors including conquest in order to gain control over trade and resources. It can be used to examine the different products of export and import of a state and identify whether it was undergoing exponential growth or was heading towards stagnation. The identification of large

production center's participation in the construction of prestige goods can be used as a measure of the intensification of a states economic production. Moreover, export-driven trade can be examined in the context of interregional interaction to understand how trade and production between these states led to the transmission of innovations and how rivalry and competition drove greater intensification.

3. Hypotheses

These models of conquest and exort-diven trade should not be considered as givens within the region of Edom. Therefore, a series of hypotheses and their test implications are presented below that will enable the later chapters to validate whether these two models played a formidable role in Edom or not.

Hypothesis 14: If conquest is identified in archaeological or textual sources, then it should be seen as a principal element in the consolidation and development of that society's social formation. Also, the polity will appear, temporally at least, decentralized over its total regional domain, since it has incorporated many autonomous societies that could be indirectly ruled.

Archaeological Test Implications: Intense fortifications buildings or construction or occupation on naturally defensible areas is evidence for at the minimum raiding. Conquest can be seen in the archaeological record most clearly when stratigraphy shows a destruction layer and establishment of a new settlement above that can be linked with a

larger polity. A chronological examination of settlement patterns that may show an encroachment of a polity onto another polities region also may support conquest. Textual documents recording the conquest and subordination of polities can also be used. Another form of evidence could be transaction letters documenting attempts of the polity encroaching on another polity.

Hypothesis 15: If there is evidence for foreign military control over the society in question, then it should be seen as a principal element in the creation of a two-class endogamous society and a prime mover of increased social complexity.

Archaeological Test Implications: 1) Iconography and textual documents is evidence that can be used to test this hypothesis. Even though this limits the information, there are a number examples in the Old world and New of the this being recorded (e.g. Stone 1997; Marcus 2004). 2) The evidence of military architecture and outposts in the archaeological record is another clear that connotes a military control of an area. The artifacts found within these settlements would be expected to contain a high percentage of non-indigenous elements if it was controlled by foreigners. Otherwise, these outposts can be considered a local regional control of the population.

Hypothesis 16: If the society controls a key trade route, then models of export-trade driven economy should have played a role in its the social formation.

Archaeological Test Implications: The first step is to establish that trade routes ran through a territory. It is assumed that when earlier and later natural

routes are documented for an area then periods in-between could have also used this route as well. 2) trade nodes outside of the society in study but marking an entrance or exit that could have passed through the society can lead to indirect inference of involvement in that trade route. 3) If certain settlements belonging to the society show artifactual evidence of interregional exchange and even high mixtures of different polities ceramic assemblages these can possibly be interpreted as trade nodes or caravanserai.

Hypothesis 17: If a society has access to the raw resources to create prestige goods and has become specialized in their production, then models of export-trade driven economy should have played a role in its social formation.

Archaeological Test Implications: A study of the geology and geomorphology of a region can determine what raw resources were available to a polity. Similarly wealth finance can be identified from the presence of artifacts associated with craft production that converts local products (e.g. wool, shell, bone) to prestige items. However, the distribution of the tools and raw resources must show predominance in the capital, if it is to be assumed that these were being used to finance the state and not for market exchange between unattached specialists. Also, a significant amount of prestige goods produced locally or acquired from abroad will also show the intensification of trade.

III. Conclusion

This chapter has focused on testable models that enable examination of social complexity in the Southern Levantine Iron Age polities. It has been argued that the level of social complexity of a polity can be distinguished by comparing it to the seven proposed components of archaic states. The null hypothesis states that if all these seven components are met the society in question should be considered an archaic state. If it fails to meet any of these components, then it is a reflection of a complex society that has developed along a different social evolutionary trajectory than traditional archaic states. The category of kingdom and tribal confederacy has been presented as alternative social evolutionary models to account for these complex societies that are neither states nor chiefdoms. They are a category that has developed within a complex web of secondary interaction processes including symmetrical and asymmetrical relationships. The term interaction sphere is suggested as an overarching term to describe the system of interactions that generate the many different forms of complex society witnessed after pristine states. Complex societies within this environment undergo both peer and core-periphery related exchanges. A number of interactions have been presented as hypothetical models to examine why structural homologies and evolution of these societies occurred the way they did. Conquest theory has been revisited, not in a deterministic way, but to examine how warfare and conquest is intertwined within the other interactions discussed. It is argued that the threat of conquest plays a formidable role in motivating tribal groups to merge into a tribal confederacy. Finally, the export driven trade model has been proposed for testing against the southern Levantine polities. In the following chapters the models and hypotheses developed here will be tested

against the following datasets: 1) Settlement patterns from previously unpublished excavations and surveys from the lowlands and highlands of Edom; 2) Special finds and products related to craft specialization and convertible raw resources; 3) Ceramic petrographic data relating to imports and locally produced products; 4) The ceramic assemblages recovered from these sites.

Chapter 3:

Identifying Social Boundaries in the Archaeological Record: Implications for Iron Age Edom

I. Introduction: Previous Archaeological Studies of Ethnicity

Since the mid-20th century, the endeavor by archaeologists to identify ethnic groups in the archaeological record has been an arduous task. Unlike ethnography, which can directly observe and record the practices of a culture, archaeology can only indirectly capture the reflection of past cultural practices through material remains. Many of the methodological and theoretical approaches developed to tackle this problem have proven to be either equivocal, or in application unfeasible. The unpredictable expression of ethnic identity in the archaeological record has led many archaeologists to see attempts at identifying it as an unreachable goal. However, ignoring ethnicity in the archaeological record can be detrimental to our interpretation of the past, especially when dealing with historical archaeology. Socio-political reconstructions of past cultures that do not take into account how groups were socially organized and interacted with each other on an intra-regional scale can lead to many false depictions of the past. It is therefore imperative to develop an approach that can accurately distinguish social boundaries in the archaeological record. For areas where ancient written texts record in rich detail the social interactions of different ethnic groups, the inability to identify these groups and their activities in the archaeological record, often leads to contradictory reconstructions of the past. In some cases even bold claims are made that the archaeology more accurately reflects social reality than what is extracted from the texts.

In the Southern Levant the corpus of ancient literature makes many references to ethnic groups who resided in the region. A survey of the most recent scholarly literature shows a discrepancy between archaeological interpretation and ancient textual interpretation is readily apparent. The main textual data for the Iron Age (ca. 1200 – 500 BCE) Southern Levant includes the Hebrew Bible, 2nd and 1st millennium BCE inscriptions (McCarter 1996; Pritchard 1969). Researchers have utilized these ancient textual sources to identify ethnic groups in the material cultural record with varying degrees of success and much debate. Most of the work in this area has focused on the nature of ancient Israel. Archaeologists' views on issues concerning Israel's identity and ethnogenesis have directly influenced their interpretations of Israel's history, origin, and state formation (c.f. Albright 1961; Aharoni 1979; Bloch-Smith 2003; Bunimovitz and Faust 2001; Dever 1991, 1992, 1995a, 1995b, 1995c, 2003; Faust 2006a 2006b; Finkelstein 1988, 1996; Joffe 2002Kletter 2002; Levy and Holl 2002; London 1989; Mazar 1990; Small 1997; Thompson 2000). Similarly, models of state formation and the evolution of Iron Age complex societies have been influenced by inferences of social boundaries for Israel's neighboring polities such as the Philistines (Bunimovitz 1990), Moab (Routledge 2000, 2004), Edom (Bartlett 1989; Bienkowski and van der Steen 2001; Finkelstein 2005; Levy 2009; Whiting 2007) and more distant neighbors such as the Amorites and Assyrians (Emberling 1997; Emberling and Yoffee 1999; Kamp and Yoffee 1980).

Furthermore, states form very differently when originating from tribal societies as opposed to chiefdoms (see chapter 2). The depiction of Edom in both the Hebrew Bible and ancient Egyptian texts as being a tribal confederacy similar to Israel in the Hebrew

texts would suggest that some kind of tribally based state formation model should be applied for the study area discussed here (see refs. in Chapter 4). The role tribal identity may have played in this formation and the ability to detect tribal confederacies through the lens of studying social boundaries is little explored. Bienkowski and Van Der Steen (2001:26; see Ch.4 for a detailed discussion of there hypothesis) suggest that the clearest indication in the archaeological record of Edomite tribalism are the ceramic assemblages which reflect a high degree of regionalism. This suggestion until now has been untested and lacked the systematic stratified excavations or cross-regional ceramic typology to conduct such a study. This chapter presents the first testable model for identifying Iron Age social boundaries and interaction in Edom based on stylistic variation in ceramics.

Over the past two decades, the ethnoarchaeological studies have provided a new depth to our understanding of how material culture relates to the people who produce it. These studies have revealed the complex relationship between ethnic identity and material culture. They also pinpointed some of the limitations of ethnographic data and provide important 'cautionary tales' related to the ability to apply these models to the archaeological record. As will be argued below, many of these ethnoarchaeological studies show repeatedly that social boundaries are indirectly reflected in the technogological stylistic differences. It thus becomes imperative to apply this new stream of ethnoarchaeological data against the archaeological record of the southern Levant and specifically the ceramics of ancient 'Edom.' By taking into consideration the entire scope of ethnoarchaeological data and modern cognitive anthropological theories, several patterns emerge that open a window into investigating ethnic identity in the archaeological record. Additionally, the study of ethnoarchaeological data increases our

understanding of the dynamics of trade, production, consumption and craft specialization reflected in the archaeological record.

In this chapter, a new theoretical approach to identifying social boundaries in the archaeological record will be presented in order to address the quandaries discussed above concerning Iron Age II Edom's formation of a complex society and possible development of tribal or ethnic identity. First, the past approaches to delineate social boundaries in material culture will be critiqued and their drawbacks will be assessed. Second, social boundaries will be defined according to socially based approaches that originated from F. Barth's (1969) seminal work on the subject. Third, the attempts by archaeologists to apply Barth and other social anthropologists' models of social boundaries to the archaeological record by examining style as 'ethnic communication'. It will be argued that despite presence of communicated ethnic markers in the material record, none of these studies have successfully developed an approach that can validate which of these stylistic traits communicated social boundaries and which did not. Fourth, a new approach will be presented that re-examines the importance of culture in creating and maintaining social boundaries. Central to the approach is an examination of insights derived from ceramic ethnoarchaeological studies and cognitive anthropology. A new definition of ethnicity and social boundaries is presented that takes into account these studies. It is then argued that certain technological styles 'mimetic models' are regularly circumscribed by social boundaries among pottery producing communities. Finally, the issues of distribution and consumption which impinge on the ability for archaeologists to appropriately determine the original social boundaries of producing communities will be accounted for. At the end of the chapter a series of archaeological test methods will be

presented for applying this approach specifically to Iron Age II Edom's ceramic assemblages.

A. Archaeologists and Ethnicity in the Past: Problems with past approaches

During the first half of the 20th Century, a culture-historical approach dominated archaeologists' interpretations of the archaeological record. It presupposed ethnicity or cultural groups had a direct one to one relationship with the distribution of material culture. Cultures were seen as geographically distinct entities with unique combinations of traits that were normatively homogenous (Eriksen 1993; Trigger 1998; Webster 2008; Jones 1997; Jones 2008). Cultures could be divided into "blocks," "units" or "culture areas" with clear cultural boundaries (Webster 2008). Behind this assumption, was the idea that distance allowed these groups to remain separated and culturally distinct from each other. If groups did come into close contact, such as immigrants settling in the area of a dominant culture, they would be acculturated and eventually assimilate into single homogenous unit. In archaeology, it was viewed that by a systematic classification and typology of stylistic traits discrete ethnic groups or "archaeological cultures" could be isolated (Child 1956:111-134; Lyman et al. 1997; Trigger 1998; Webster 2008). Child (1956:121) argued that the distribution of diagnostic styles would follow an "intelligible pattern and cluster around one" definite territory which would represent the extent of that specific archaeological culture. These stylistic groups could be further synthesized to classify geographic regions. Nevertheless, studies of stylistic distribution proved complicated and often led to either a reduction of diagnostic types to just a few out of a

sea of variation or the movement to classify units according to more regional boundaries (Webster 2008:17; Lyman et al, 1997). This simple assumption soon proved problematic as increasing contradictory evidence showed that the distribution of material culture could not easily be divided up into these distinct groups and were more the creation of the researcher than groups being studied. It was at this same time, around Late 1960's, that both the fields of anthropology and archaeology began to reject the cultural-historical approach for more sophisticated models.

The New Archaeology or Processualist approach characterized the new paradigm. The focus shifted away from a concern about particular cultural and historical groups towards predictable testable models extractable from cultural processes of environmental adaptation (Binford 1962; Willey and Phillips 1958). Material culture was seen first and foremost as an adaptation to one's natural environment. Variability in material, construction and shape of artifacts was a product of both its function and the technological knowledge of the culture. Since these artifacts were based on function and technology they could be expected to occur in particular environments. Two groups living in completely different locales but sharing similar environmental conditions were expected to develop analogous material cultures. Style, on the other hand, was seen as unpredictable and representative of that which was added on to artifacts; thus, style became synonymous with decoration (Binford 1964:205-6; see below).

Although the processual approach was a step forward in studies of material culture by recognizing that artifact variability was a product of a number of factors, artifacts and specifically style was still seen as direct markers of cultural groups. The cultural-historical view of ethnicity still lingered in the background (Jones 1997:111).

Binford (1962:120) argued decorative style's primary function was to provide a "symbolically diverse yet pervasive artifactual environment promoting group solidarity and serving as a basis for group awareness and identity." Following this vein of thought Binford (1962:120) along with others "believed that stylistic attributes are most fruitfully studied when questions of ethnic origin, migration, and interaction between groups is the subject of explication." Thus, decorative style and a study of their temporal-spatial distribution continued to be viewed as the primary tool for isolating ethnic groups.

In sum, both the culture-historical and processual paradigms of archaeological research promoted a simplistic view of material culture and its relationship to ethnicity. These researchers assumed that ethnic markers had a one to one correlation stylistic traits and their distribution across a landscape. However, these assumptions were beginning to be called into question by social anthropologists also working in the late 1960s and early 1970s. In 1969, *Ethnic Groups and Boundaries* edited by Fredrik Barth (1969) became the defining work that forever changed how anthropologists viewed the construction of ethnic groups. It exposed the error in assuming that culture equals ethnicity, and put in its place a theory that ethnicity is purely defined by the interaction and social organization of groups that is irrespective of culture. Any archaeological study that seeks to delineate social boundaries in material culture must address the discoveries made by F. Barth's social anthropological work.

II. The Social Approach to Ethnicity: Toward a Social Boundary Model for Archaeology

A. Ethnic Groups and Social Boundaries

Perhaps the most significant ground-breaking observation made by Barth (1969) was that social boundaries were not created through social and geographic isolation, but rather through social interaction. Lack of mobility, contact, and information flow were not primary triggers in social boundary construction. As defined in chapter 1, a *social boundary* is a collectively-constructed identity that groups use to define who is included among them and who is excluded. Social boundaries occur at multiple levels, ethnic identity represents only one of these levels. Social boundaries continue despite the travel of individuals and cultural products across them (Barth 1969:9). Ethnic groups themselves play an active role in formulating their social boundaries, as discussed below. These discoveries not only changed how anthropologists viewed ethnic groups but also archaeologists. As will be discussed below, a social approach to the study of ethnicity in the archaeological record has become the primary approach over the past two decades.

Ethnic identity is created by the interaction of groups that lead to self-ascription and ascription by others. In other words, individuals actively and passively classify themselves as part of a specific ethnic group in contrast to others through inference of certain shared cultural characteristics with that group (e.g. bloodline, origin, language, behavior, dress etc). Similarly, individuals not belonging to that ethnic group will ascribe other individuals into that ethnic group according to their semblance to certain perceived characteristics associated with that ethnic group.

Although, in many cases self-ascription and ascription by others match up, they do not always do so. This highlights the subjectivity and arbitrariness of perceptions of individuals' relationship to an ethnic group (Barth 1969; Vermuelen and Grovers

1994:2). The interaction between groups generates processes of self-ascription and ascription as individuals seek to align themselves properly in relation to the world and others. In many cases ethnic identity is formed as "decision-making, strategizing individuals" seek to operate within a large regional interaction sphere (Jenkins 2008:13; see Ch. 2 on interaction spheres). Thus, ethnic identity is a product of social interaction between groups where individuals practice self-ascription and are ascribed by others to this identity according to their assumed similarity to a specific ethnic group.

Ascription is constructed by emphasizing several 'arbitrarily' selected traits (ethnic markers) from within the culture of the ethnic group. These ethnic markers represent a select portion of the total cultural traits belonging to a group. Markers of ethnic affiliation can come from all parts of culture, such as costume, speech, music and dance, house type and furnishings, etc (Lockwood 1984:88).[1] Ethnic markers are not 'objectively' determined, but 'subjectively' because they are only what the "actors themselves regard as significant" (Barth 1969:14; Eriksen 2000:195). Barth (1969:14) writes: "one cannot predict from first principles which features will be emphasized and made organizationally relevant by the actors…ethnic categories provide an organizational vessel that may be given varying amounts and forms of content in different socio-cultural systems." Differences in linguistic boundaries, culture, material culture, or religion do not always correspond one-for-one with ethnic markers (Eriksen 2000:186; Jenkins 2008:12).

[1] For example, Barth (1969b:119) notes three emic categories of ethnic classification among the Pathan ethnic group: 1. Patrilineal Descent; 2. Islam; 3. Pathan Custom. The last category consists of many arbitrary ethnic markers such as Pashto dialect, hospitality, generosity, tribunal council, seclusion of women. Within each of these ethnic markers are a host of random behaviors, duties, and values viewed as unique to the Pathan.

Ethnicity is an emic category of ascription (Eriksen 1993:11). [2] Barth (1994) states "the cultural differences of primary significance for ethnicity are those that people use to mark the distinction, the boundary, and not the analyst's ideas of what is most aboriginal or characteristic in their culture." For example, many unique cultural traits that an outsider (i.e., anthropologist or archaeologist) would recognize among an ethnic group as significant differences may not in fact be considered relevant demarcations of ethnicity by that group or even other groups interacting with them. Two individuals living within the same area may share the same language, dress and religion but still distinguish themselves from each other by other arbitrary traits (Barth 1969; Eriksen 2000:186; Lockwood 1984:94)). On the other hand, individuals with distinctive cultural practices and lifestyles such as mountain farmers verse lowland farmers in Norway may still see themselves as belonging to the same group (Eriksen 2000:186).

In addition, ethnicity may emerge as a second classification within social classes, but it does not commonly function to distinguish ethnic groups (Jones 1997:85). Classes may be endogamous, have significantly different lifestyles, and dress very differently but still regard themselves as part of a larger ethnic group. Furthermore, overt traits of a specific ethnic group that "reflect the external circumstances to which actors must accommodate themselves" are not always the same as the ascribed ethnic identity (Barth 1969:12). In sum, ethnic markers mobilized for ascription and self-ascription should be seen as arbitrary and subjective.

---

[2] *Emic* refers to the native's point of view, while *Etic* is the analyst's inference and observations of the culture (Gobo 2008).

Since ethnic markers are only a subset of a culture, they cannot be determined *a priori* by outside observers. They are social in the sense that they are not dependent on physical boundaries or culture. By this definition, culture has little to do with social boundaries. Three different scenarios of overlap between Social Boundaries and Culture/Material Culture (see Figure 3.1). A. Two groups can have distinctive social boundaries but share a culture/material culture. B. Two groups may share a social boundary but have a different culture/material culture. Or C. two groups that have distinctive social only overlap in culture/material culture in a few traits. This is a significant obstacle for delineating social boundaries in the archaeological record of Iron Age II Edom, which has led to a number of approaches to redress this problem (see later sections). More important, as will be discussed in the following sections, this social approach made a crucial error in its rejection of culture as an agent in social boundary construction.

Social boundaries are just as arbitrary as the ethnic markers that make them up; they must continually be maintained in order to avoid confusion and blurring of two ethnic groups. As culture is always in flux never stable so also social boundaries must continually be generated and reified to be maintained (Barth 1994:15; Jenkins 2008:13). Eriksen (2000:190) writes "social integration was not 'natural': It had to be fought for, defended, postulated time and time again for members of society to imagine their community as a bounded, homogenous and rooted entity." Where ethnic markers cease to be practiced and two group's culture blend into one, the boundary will erode away (Eriksen 2000:195) (Figure 3.1:B). Conversely, as social and economic stress between

two groups becomes accentuated social boundaries can become intensified and imbued with greater emotion and hostility (Eriksen 1993) (Figure 3.1:C).

These boundaries are a social product; their social importance and nature can change over time and according to social organization between groups (Eriksen 1993:38; Jenkins 2008:14). Over time, the cultural features that mark social boundaries can change but new ethnic markers can be reified to maintain it. Thus, social boundaries can persist over long periods of time amidst many cultural shifts and changes. Social boundaries are not directly dependent on culture, the variables of culture may change while a social boundary remains fixed (Eriksen 1993:38). Thus, social boundaries can outlast changes and the flux of culture yet at the same time are a social product subject to the vicissitudes of human agency and social interaction. In the study of Iron Age II Edom, the roles agency and social interaction play in the production of social boundaries must be accounted for if a valid study is to be conducted.

B. The Complexity of Social Boundaries within Social Interaction

Until now social boundaries have been discussed in relation to ethnic identity and ethnic groups. However, a social boundary do not just occur at the ethnic level but many social boundaries may exist within a region (see Figure 3.2). Specifically, social boundaries become even more complex within regional or global interaction spheres where an individual may develop multiple levels of social boundaries, which A. Cohen (1978:383) argues is a result of *situational ethnicity*. Situational ethnicity is based off the observation that individuals do not develop just one social identity, but according to the

situation have degrees of social boundaries, levels of group association and overlying loyalties. In a sense, they have multiple identities. Take for example this observation by Cohen (1978:382):

> Group X may see itself as A in specific circumstances and be labeled as B by others. A and B are invariably related but not necessarily congruent. Thus, Kanuri people refer to congeries of non-Muslim people to the southeast as Kirdi. But Kirdi see themselves as a number of quite distinctive ethnic groups. The problem becomes more complex when it is realized that in Kanuri-dominated towns such people often accept the dominant group's term and claim they are Kirdi. Only much more closer questioning elicits their home-based subjective identifications.

The Kirdi possess two identities which they ascribe to themselves according to their situation. When they are a minority amongst a large group they band together and accept the identity as Kirdi, but when they are amongst other Kirdi they identify themselves according to their distinctive lineage or village group. Thus, at a more general level they have a social boundary that distinguishes them as Kirdi (an imposed 'ethnic' identity) from other groups but at a lower and more personal level a social boundary that distinguishes them from other villages and lineages persists.

Situational ethnicity is more common than the historical and ethnographic literature has portrayed. For example, the Nuer actually call themselves Naath, the name Nuer was ascribed by the neighboring Dinka. Evans-Pritchard chooses to take the more general ascribed name by non-members of that society. Moreover, he does not even mention that within the Nuer was a whole set of named ethnic groups (Cohen 1978:383). Many of the ethnic groups categorized today and in the past by outsiders may only be recognizing the exterior social boundary that contains within it much more varied and differentiated groups (Emberling and Yoffee 1999).

Situational ethnicity highlights the importance of social boundaries in organizing groups in differing degrees of relatedness to each other. It is in this light that "…classification can thus be seen as a practical way of creating order in the social universe" (Eriksen 1993:61). As an individual navigates different levels of social interaction with groups, self-ascription and ascription by others occurs in order to situate their place in relation to others.

These different levels of social identity and boundaries are considered by Jenkins (2008:171) as *hierarchically segmentary*. As an individual interacts with more and more distant groups they ascribe members of that group with a more abstract social identity (see Figure 3.2). This stereotyping first and foremost occurs because other groups cannot make the more detailed classification, since they do not know or care to learn the emic social identities and ethnic markers of a group (Vermeulen and Grovers 1994:5). Eriksen (1993:61) argues "ethnic taxonomies tend to become less detailed with increasing perceived social distance from oneself,"… it is "…unpractical (and in most cases impossible) to make hundreds of fine distinctions between categories of people: usually, one will limit oneself to making those distinctions which are socially relevant." Therefore, at each higher order (e.g. lineage, tribe, ethnic group, nation), groups who normally differentiate themselves from each other are combined together into a greater whole. Based upon the situation an individual is in they ascribe to themselves or others the appropriate nominal identity to meet the established social boundary at that hierarchical level. These segmentary identities, in turn, enable social organization and interaction to function properly with other groups that would not have the knowledge or concern to make greater distinctions of a group. Thus, this segmentary framework helps

the individual to navigate their social relations and determine how to properly behave, interact and react to others at each level.

Although, these segmentary social boundaries function to organize every individual into their proper social place, these boundaries are often manipulated or transcended by individuals. Since, social boundaries and ethnic identity are a social product subject to the vicissitudes of human agency and social interaction, individuals and groups practice self-ascription to an ethnic identity according to what suits their social and political pursuits. They use social boundaries as an instrument for political or economical gain. Identity is a strategy for individuals to include or exclude themselves from social groups. It can be manipulated and used as an advantage in social arenas (Lockwood 1984:92). Individuals can select, according to the situation, the ethnicity that is most beneficial. This model of how ethnicity is created or practiced has been called *instrumentalist* ethnicity as opposed to *primordialism* (Cohen 1978; Eriksen 1993; Jenkins 2008; Jones 1997; Vermeullen and Grovers 1994).[3] For example, Cohen (1978:395) the main opponent of this model argues that the categorizations of ethnic identities fluctuate according to changing relationships of power. Individuals who seek to legitimate their power may assimilate or reject social identities. This manipulation can be accomplished through the practice of stereotyped behaviors and utilization of salient symbols of the desired identity. This knowledge and ability to behave accordingly and acquire the essential goods enables an individual to even transcend social boundaries they normally would be categorized in or establish new social boundaries to distinguish themselves from others (Eriksen 1993:40). Thus, according to this social approach there

[3] For a detailed definition of these two terms please see the beginning of Section IV.

are no fundamental constraints to an individual selecting an identity. Although all of these observations are corroborated by numerous ethnographic examples, it will be argued in later sections that this emphasis on the social aspects of identity is an in complete picture for how social boundaries persist within communities.

C. Summary: Defining Ethnic Groups from a Social Anthropology Perspective

Thus far, this discussion has focused on explicating how social boundaries are employed in creation of ethnic groups. It has shown that ethnicity is defined by social relationships with outsiders and is situational. Not one social boundary exists but rather a multitude. However, this social approach makes defining an ethnic group elusive. Social boundaries are hierarchically segmentary encompassing multiple local, communal, genealogical, city, migrant and national identities not just one "ethnic identity" (see Figure 3.2). It becomes difficult to draw the lines between what is personal, local, ethnic or national (Jenkins 2008:42). For example, Cohen (1978) takes an extreme position by arguing that any "interest group" is an ethnic group. He considers stock brokers who practice endogamy as an 'ethnic group' (Eriksen 1993:34). By this definition an ethnic group is any "…*collectively* organized strategy for the protection of economic and political interests" (Jones 1997:74). Jones (2008:xiii) defines an ethnic group as "any group of people who set themselves apart and/or are set apart by others with whom they interact or co-exist on the basis of their perceptions of cultural differentiation and/or common descent." Thus, *ethnicity* is any group's subjective method to define themselves and their interaction with others (c.f. Cohen 1978:383).

Although this definition of ethnicity accounts for the arbitrariness and social constitution of social boundaries, it deconstructs the term ethnicity to such a loose category that almost any type of group can be placed within it. It drains the term of its analytical significance for anthropological and archaeological comparative studies. Yet it highlights an important question: where is the line drawn between ethnic identities and other identities such as national, tribal, communal, and occupational.

Part of the solution is to find an adequate definition of an ethnic group. In this study an *ethnic group* is defined as a social organization of an endogamous[4] community with clearly established social boundaries and self-ascribed identity that transcends the necessity to create group solidarity through kinship, shared activities and pursuits, or regular social contact. This definition excludes the village, lineage or clan level, since social identity is established by kin relations, economic interdependency and shared territory (Emberling 1997:302). Stock brokers and guilds (e.g. merchants, shoe makers, craftsmen) would also be excluded, since these relationships are maintained by a shared occupation and set of values associated with it.[5] There is a fine line between the definition of ethnic identity and tribal identity. Tribal identity requires genealogical segmentation in order to create social solidarity[6] Tribes may, at later points in there social interactions with states, take on an added ethnic identity and develop ethnic markers to

[4] Although Endogamous marriage should be seen as the standard practice, ethnic groups generally have a number of solutions (e.g. invention of shared ancestor or origin, cultural amnesia) to resolve exogamous marriages or assimilation of other groups into communities. Especially in patrilocal societies, new brides may be socially pressured by their husband and new relatives to conform to cultural practices of the group (see an example of this in Dietler and Herbich 1998).

[5] However, it is important to note that minority ethnic groups encompassed within an urban center may be forced into specific occupations not deemed acceptable by other ethnic groups.

[6] Tribal identity should not be confused with past ethnographic uses of the term tribe, which was applied to many groups that lacked genealogies enabling segmentation, tribal notions of solidarity, or a complex political organization (see Chapter 3II).

oppose assimilation by the state and defend their rights on a political stage, but this is a later occurrence directly associated with state processes (c.f. Beck 1990; Tapper 1988). Ethnicity, therefore, can be seen to create solidarity on a wider, more inclusive scale than is capable by tribes and other transegalitarian societies. (c.f. Beck 1990:196; Emberling 1997:302; Eriksen 1993:68). Ethnicity creates a system of shared identity, behavior, and belief that can unite mass groups over a far distance and intense social interaction.

This definition, however, is not complete, because it cannot explain how ethnicity can persist amidst radical social change (e.g. migration, social evolution, conquest, deportation, etc) and under extreme social and economic pressure. It also fails to distinguish between overlapping identities that occur as ethnic groups interact with each other in higher forms of social organization (e.g. confederacy/league, urban town, city, state, region, nation). When the role of culture is taken into consideration in forming group identity a primary ethnic identity can be isolated from other social boundaries. As will be shown below a purely social approach to this problem is inadequate when applied to the archeological record. Following a critique of archaeologists that have sought to identify social boundaries purely within this social frame work and new approach that reconnects culture to this debate will be presented.

III. Style as Ethnic Communication

The Barthian social approach to the study of ethnicity has played a significant role in the past three decades of archaeological research. Barth's work informed archaeologists that the ethnic markers selected from material culture were arbitrary. They

were a social product that could not be isolated by simply differentiating various cultural traits between two ethnic groups. Since archaeologists cannot directly study the social interaction of ethnic groups or question informants about what parts of material culture were used as ethnic markers, many turned to a completely new approach to study ethnicity in the archaeological record. This approach became known as the "information exchange" model and it became the *sine qua non* of the majority of ethnicity studies in archaeology from the 1970's (Binford 1982; DeBoer 1990; Hodder 1979, 1986, 1990; 1991; Jones 1997; Plog 1990; Schortman and Urban 1987:67; Shanks and Tilley 1987; Wiessner 1983; 1985, 1990; Wobst 1977). Although many of these studies enhanced archaeologists' knowledge of how ethnic identity is expressed through material culture, in the end they only served to further emphasize the complexity of social interaction, the particularity and flux of material culture, and the arbitrariness of ethnic demarcation. The information exchange models and their derivatives had difficulty isolating objective cross-cultural methods that could be tested against the archaeological record.

In 1977, H. Wobst (1977) argued that ethnic markers in contrast to other objects were produced purposefully with unique stylistic features that could actively communicate an individual's self-ascription and distinction from other groups. Style, synonymous with decoration, was seen as a form of "information exchange." Decoration was seen as a method ethnic groups use to inform others about social boundaries. Rather than ethnicity being seen as formed through isolation, it was the exchange of this 'information' that silently enabled and maintained social boundaries. Wobst (1977:326) argued that style could serve as a measure of social boundary maintenance since it is 'added on' to technological/functional products at a cost in time and labor. Investment in

decoration, a time consuming procedure, was deemed cost worthy only when it was employed for communication of identity and ethnic boundaries with others. Conversely, products occurring only in daily use that would only be seen by the remote community should lack decoration. Thus, the measurement of labor and time invested in decoration could be used as a gauge of the intensity at which groups sought to communicate their ethnic distinction from others.

The inherent problem with Wobst's approach was that he sought to explain style as an economically determined behavior that could be measured according to assumed scales of energy expenditure. In many ways, Wobst's (1977) information exchange model was an attempt at welding processualism to the debate on style. However, many scholars found Wobst's economic approach to style deterministic and unrealistic when compared to ethnographic examples (Dietler and Herbich 1998). The measurement of labor intensity in relation to decoration is highly subjective. First, labor costs in decoration across regions and periods differ significantly making a normative "law-like statement" too narrow to account for the many particularities of decorative traditions in different social groups. Moreover, Wobst's model, along with many other economically deterministic models, make the false presumption that all cultures measure energy expenditure the same and act purely on economic terms of efficiency and time saving. Finally, many studies (for a review of this point see Dietler and Herbich 1998 and Hegmon 1992) directly contradict his model in that local domestic wares which are not used for ethnic demarcation are, in many cultures, highly decorated. Conclusively, the Wobst model failed not because "information exchange" applied to style was a bad

theory but the method he used to identify it in the archaeological record was too deterministic and tautological.

Recognizing the inherit problems in this deterministic model other scholars have used ethnoarchaeological studies to develop models of how stylistic behavior is used to signal ethnic identity. P. Wiessner's (1983; 1985, 1990) studies of the Kalahari San projectile points provided a major contribution to proponents of the stylistic information exchange theory. Her studies showed that, decorative style was actively used to express social boundaries and that in specific cases style has an 'emblemic' purpose "that has a distinct referent and transmits a clear message to a defined target population about conscious affiliation or identity" (Wiessner 1983:257). Agents of a culture purposely manipulated the production of decoration to overtly express ethnic identity within a group (Wiessner 1983).

Wiessner also found that active style may be utilized by an individual to distinguish themselves from within and ethnic group. Wiessner describes this application of style as assertive purpose "which is personally based and which carries information supporting individual identity" (Wiessner 1983:257-258). Assertive style may be specific to an ethnic group but it can also cross set social boundaries making distinction of these styles highly arbitrary and thus difficult to identify in the material record (Wiessner 1983:259). In some cases, both emblemic and assertive styles are depicted on the same artifact (Wiessner 1983:259).

Wiessner's model fits very well in the conception of arbitrary ethnic marking described by Barth but at the same time highlights the significant problem of using information exchange to identify ethnic identity. Despite Wiessner's informative studies,

differences between emblemic or assertive styles, cannot be validly distinguished in the archaeological record. Her study is affective when the producer can be interviewed, but helps little with extinct ethnic groups. A significant problem with the study of active style is the determination of which stylistic attributes purposefully communicated identity and those that did not (Dietler and Herbich 1998:242; Jones 1997:129). The complexity of many overlapping and varying stylistic boundaries between groups makes mapping out styles that could serve multiple purposes exponentially more complex. As Weisner (1985; see also Sackett 1985) has shown, the meaning underlying material cultural can change over time or in different contexts. As Jones (1997:126) points out, meaning in stylistic information exchange is multivocal and every changing.

Concurrently, with Wiessner's ethnoarchaeological work in the Kalahari, Ian Hodder (1979; 1982; 1986; 1990; 1991) presented similar ethnic studies of information exchange or iconological style in the Baringo District, Western Kenya. However, Hodder's (1986; 1992) post-processual approach embraced the multivocality of stylistic symbolism and argued that the various meanings of style could be "read" or "interpreted" with an appropriate understanding of style. Specifically, style is seen by Hodder (1990:45) as "a way of doing." . Style communicates the themes of culture and all elements of an individuals "thinking, feeling, [and] loving" (Hodder 1990:45). It is involved in not just communicating identity but also creating relationships and ideology and generating power of an individual through their controlling of a styles meaning (Ibid.:46). According to Hodder, by understanding the context in which this event of "doing" occurs one can read all these meanings from an event such as decoration. Thus, in application of this model Hodder (1986; 1990) argues the Baringo decoration of the

calabashes has a number of meanings that can be extrapolated from context. The context of studying Baringo culture reveals a number of dichotomies of cultural signification such as white/red, milk/blood, female/male, inside/outside as well as the meaning of symbols such as "V" for sexual attraction to men (Hodder 1991:79; 90). From the combination of this context to observations of decoration on calabashes he interprets their stylistic meaning to be a comment such as milk has higher value than grain (ibid.:80), environmental stress (1977; 1979) or even assertion of a women's control over the household (1990:89).

Although, Hodder may be an extreme case of these interpretive strategies, Shanks and Tilley (1987), and many others (see Hodder) adopt a post-processual approach to interpretation of style. For example, Goodby (1998:176) argued that women potters amongst New England Indians had a "unity in ceramic design" that was a commentary on the growing colonialism of groups and their desire for unity.

There are, however, significant problems with this kind of post-processual approach to style and specifically this discussion of social boundaries in archaeological contexts. Despite, Hodder's excellent ethnographic detail of the peculiarities of the Baringo and their artifacts and use, one may question the objectivity of his interpretations. Post-processualists that study style in this method hold to an antiquated idea that every symbol is an unconscious comment on a society's ideals or problems. Although there are certain cases where this may be true, Hodder's writing makes highly abstract interpretative claims always with an unwarranted confidence in these interpretations. In many cases another researcher could interpret the stylistic meanings in a completely different way (c.f. Wiessner 1990:111). The post-modern elements of

Hodder's theory finds no problem with multiple interpretations but rather they are to be expected. Hodder (1991:80) acknowledges that in his study when asking the Ilchamus social group about the meaning of the decoration of calabashes they respond "… it is meaningless; the decoration is just beautiful." The fundamental problem with post-processual methods is that they take the liberty to interpret styles and cultural contexts in way that appears the most logical way to them. The post-modern approach, however interesting, or theoretically complex, is still highly subjective. Given these problems, this approach is problematic for archaeologists who seek to use the scientific method because it lacks both repeatability and corroboration.

One of the most complete studies and theoretically developed archaeological models for studying ethnicity from this approach, is by S. Jones (1997). However, even Jone's model of studying ethnicity from a social approach is problematic. Jones (1997:84) recognizes the importance of culture and social practice (*habitus*) in influencing stylistic communication, but approaches the identification of ethnic identity from a completely different angle. Jones (1997:84) argues that social boundaries, which are constructed within individual's minds, must be *objectified* for them to be reproduced and understood by others. However, the objectification of style is not a robotic repetition of culture but rather part of *habitus* (see below); individual actors can consciously choose to modify conventional social practice and thus achieve social and economic goals – something that Jone's (ibid.) model does not account for. According to Jones (ibid.) ethnic markers are produced as a product of culture but not to express feelings about social stress or why milk has a greater value than grain, but because it is wrapped up in the reproduction of social boundaries.

Despite Jones's (ibid.) greater emphasis on culture, her study is still dependent on finding a method to extract emic understandings of ethnic identity. After a detailed discussion of all the pitfalls of other archaeologists attempts to identify ethnicity in the archaeological record she is only able to optimistically suggests "within a diachronic contextual framework it may be possible to pick up the transformation of habitual material variation into active self-conscious ethnic symbolism, and vice versa, on the basis of changes in the nature and distribution of the styles involved" (Jones 1997:126). (Jones 1997:131). goes on to argue that "The analysis of stylistic variation in material remains needs to be based on a chronological framework established through a critical examination of stratigraphic and contextual associations, in conjunction with historical dating. Such an approach to dating serves to undermine the circularity of relative typological dating on the basis of a single class of artifacts. Moreover, it is only by such an approach to the dating of sites and archaeological contexts that the kind of 'untidy' distributions of particular styles of material culture potentially associated with the construction of ethnicity may be indentified." Unfortunately, this suggestion is never operationalized and tested by Jones. Furthermore, Jones (ibid) does not present a methodology for identifying how ethnic markers should look differently when "active self-conscious ethnic symbolism" is occurring instead of when these markers over time become under-communicated or lose all connections to social boundaries. Nor are there any suggestions on how artifact distribution and consumption should be modeled to identify ethnic signaling over time. In the end, Jones (ibid.) thesis presumes ethnicity as information exchange, which leads to the inevitable conclusion that despite many efforts by multiple scholars to identify ethnic signaling it is still highly subjective.

In discussing style as an integral part of ethnic communication, we have seen the fundamental problem with trying to identify ethnic markers in the material culture record. There are no set rules that can easily determine which styles a an ethnic group mobilized for communication of ethnic differences and which were under-communicated. The work of ethnographers and ethno-archaeologists has revealed over the past two decades just how arbitrary and particular artifact style production and their use in ethnic signaling can be among ethnic groups. Studying artifact style under the rubric of trying to "read" what they communicated about culture has proven to be highly subjective. In the case study of Iron Age Edom presented here another approach must be taken. In the remaining sections of this chapter culture is reemphasized as an essential variable in the distinction of social boundaries. Why culture should be re-introduced into the debate of social boundary identification and the specific implications of its addition will be the central focus in the following sections.

IV. Re-examining the connection between Style, Ethnicity and Culture

Until now, this discussion has focused on the literature rooted in F. Barth's (1969a; 1969b) social anthropology, which views ethnicity as a social response to resolving problems and defining boundaries of interaction between opposing groups. Archaeologists' adoption of this purely social conception of ethnicity has led them to seek only socially communicated stylistic markers. Yet, as was argued above, this approach has proven to be highly problematic. This section argues that a resolution to this problem is to re-examine the role culture plays in generating identifiable social

boundaries through specific types of passive stylistic traits unique to an ethnic group. The models developed here are essential to the later discussion on how social boundaries can be identified in the Southern Levant.

The fundamental problem with many anthropological and recent archaeological studies that focus on social aspects of ethnicity is the tendency to divorce and stigmatize the role of culture in primary identity formation. Studies that view culture as influencing ethnic identity are labeled as "primordialist" (e.g. Cohen 1978) and associated with old-conceptions of culture being monolithic and immutable. *Primordialism* is the idea that ethnicity is derived from a group's culture that in turn generates a shared awareness of identity, loyalty and self-ascription. On the other hand, the Barthian social approach that has been thoroughly discussed so far is labeled instrumentalism. *Instrumentalism* is the view that ethnicity is a social response involving a group's shared interest to oppose threats against their control of land and resources. All the cultural traits championed as indicators of an ethnic identity are purposely selected to create social cohesiveness. An instrumentalist would argue that since self-ascription is purely social, individuals only continue to practice ascription to a specific ethnic group as long as it serves their interest. Therefore, an individual at one point in their life can claim one ethnic identity and at another point in their life cross over to another ethnic group. And according to the circumstance will practice *situational ethnicity* selecting the most appropriate 'identity'. Instrumentalists criticize the "primordial" view for its lack of ability to explain the constant flux of culture. They argue it is falsified by blatant examples of individuals who manipulate or switch ethnic identities on a regular basis (Barth 1994; Jenkins 2008:48). In many ways, the primordial view has been caricaturized as antithetical to the

instrumental nature of ethnicity originally argued by Barth. Despite these major criticisms, recent studies (DeVos 1995; DeVos and Romanucci-Ross 1975; Emberling 1997; Eriksen 2000; Jenkins 2008; Jones 1997; Roosens 1994; Schwartz 1995; Smith 2000; even Barth (1994) has conceded this point) have shown a strong correlation between cultural beliefs, self-identity and social boundaries. In many cases, what instrumentalists champion as examples of individual self-interest are found in retrospect to be actions derived from cultural sentiments. It is argued below that culture contributes in three primary ways to the formation and maintenance of social boundaries that cannot be accounted for with only an instrumental social approach.

First, ethnic identity is internalized from childhood to adulthood long before identity begins to be consciously manipulated (Eriksen 2000; Jenkins 2008). Through childhood internalization (sometimes called socialization), cultural categories of group identity become incorporated into a child's identity (Eriksen 1993:60). The result is the development of deep rooted sentiments of self-identification with a specific group that cannot be consciously and rationally ignored or replaced (Jenkins 2008:48-9). These sentiments appear natural and make assumptions that are rarely examined (Vermeulen and Grovers 1994:4; Bentley 1987). One of G. DeVos's (1995:25) major contributions to the study of ethnicity is his observation that humans have a psychological need to define oneself and their belonging to a cultural group. This conception of ethnicity is called a psycho-cultural approach. Individuals need to feel as though they belong to a real or imagined group and when they do not it generates emotions of discontentment and anxiety. Some of the most common psycho-cultural feelings that group identity creates are: a feeling of harmony, affiliate belonging, nurturance and care, appreciation or self-

worth, pleasure, significance, and endurance of suffering (DeVos and Romanucci-Ross 1975:373-377). At a larger scale, these feeling contribute to the pursuit to maintain a group's social cohesion. A threat to the continuity of one's group in turn can create strong motivations to assert and fight to protect the social boundaries of the group. Put another way, these deep rooted cultural sentiments (primordialism) drive 'instrumentalist' pursuits to maintain and manipulate social boundaries. In the same way, they also constrain an individual's motivation to pursue self-interests. Thus, even though a decision to identify oneself with another ethnic group may benefit oneself in a number of ways, the deep rooted sense of self and identity constrain one from considering this possibility. They become the *primary* understanding of one' self, and in relations with others this identity will normally take first order, value, and rank. This does not mean that selective identity (instrumentalism) does not occur, but that there is a fundamental identity created from childhood and reinforced through adulthood that is not easily changed. This observation highlights the fundamental problem in relying on a purely social approach to ethnic identity and that there is another approach to identify ethnicity in the material record that is not dependent upon stylistic information exchange.

Second, a social approach to ethnicity cannot account for the important role cultural conceptions of origin play in the maintenance and formation of ethnic identity. For example, E. Roosens (1994:84) argues that ethnic identity is not only "an interplay of opposition with outsiders" but also "an internal source of identification." This 'internal source of identification' which unites a group together is rooted in cultural constructions of common origin. Origins can take different forms, such as a shared ethno-history and/or an imagined genealogical descent through a shared ancestor. A. Smith (2000:105) states

that ethno-history has "preserved and transmitted to future generations a store of shared memories and myths; tales of 'our heroes and bards', 'our victories and defeats' and 'our achievements in our own land'…." and "…enabled the guardians to enrich the cultures of their ethnic communities and demarcate them from others." Similarly, genealogy is in essence an 'ideology of descent' in that it constructs a notion of imagined kinship that appears fixed, essential and intrinsic (Eriksen 1993; Vermeulen and Grovers 1994:4; Roosens 1994). Cultural origin creates a strong persuasive sense of inclusiveness that in many ways precedes and reinforces social boundaries based purely on differentiation. According to this discussion, one element of ethnic identity that must be present is either a cultural belief in common origin or descent. The lack thereof, would suggest identity at the ethnic level has not been fully developed. Thus, for the study of ethnicity in the Southern Levant the issue of historical origin and notions of descent is an essential element that must be taken into consideration.

Third, a social approach to ethnicity fails to recognize how cultural institutions and ideology play a formative role in locking an ethnic group into specific styles of behavior and action. In later work, Barth (1994:16) concedes to the point that institutions create "a widely embraced code or value" that individuals within a group "struggle to excel" resulting in a convergence of behavior and style. This convergence is most clearly seen in religious institutions. For instance, the rituals and practices of religion bind the community of believers together. Religion creates a specialist class (e.g. scribes, priests, monks, prophets, etc.) that preserves tradition, history and the values of the ethnic community. It adds awe and sacredness to elements of ethnic distinction (e.g. landscapes, language, gender, history, origins). Similarly, sacred texts enshrine a sacred

ethnicity-"a model of ethnic community that takes its meaning from an imputed relationship between the community and its deity; from this conception flows the ideal of a communion of the faithful, living according to a moral and ritual code which regulates their lives by reference to divine commands" (Smith 2000:107). Moreover, religion reinforces the "myths of ethnic origin, migration and election which help to set apart and undergird the sense of uniqueness of the community" (Smith 2000:108). And finally, religious institutions can play a major role in binding individuals together and forming ethnic communities not only on the local level but even at the national level (Smith 2000:112).[7] Taken as a whole, these outcomes from an institution of religion and ideology play a considerable role in the formation and maintenance of social boundaries. Religious, political, and/or economic institutions all represent culture in practice and perpetuate a symbolic system of cultural values that individuals within the group feel compelled to conform. This is important for the study here because the presence of a unifying ideology and other socially binding institutions serve as one important indicator that an ethnic or even national identity has been developed. Therefore, combined with the previous two cultural elements we can create test for their presence in the archaeological record of the Iron Age Southern Levant.

This discussion of cultural aspects of ethnic identity demonstrates that 'social' boundaries are not purely a social construction that can be manipulated according to political or economic pursuits. There are embedded cultural factors that generate self identity and reinforce social boundaries. However, a significant theoretical problem that

[7] Individuals have an inherent need to associate themselves with something that is bigger than themselves, to find significance, meaning, and purpose. They often look for this deep rooted need to be met in seeking after truth in a higher being. Thus religious institutions are founded around this need and a social community is developed as a result of individuals seeking after this truth together.

in many cases has polarized researchers into either the "primordialist" or "instrumentalist" camp is explaining the co-occurrence of these two contradictory processes of social boundary formation within the ethnographic record. This discussion of culture and ethnicity leads us to a series of questions that need to be addressed concerning how culture impacts social practice and vice versa. For example, how can individuals both have a root primary identity and yet so easily manipulate genealogy and ethno-history to meet political and economic goals? How does social interaction with other groups lead to cultural differentiation and vice versa? How does culture distinctiveness enable social boundaries? How do social boundaries fluctuate over time from very clear distinct boundaries to a more relaxed fuzzy nature? How do conceptions of identity change from initial childhood socialization to adulthood? How do social boundaries persist amongst the constant flux and temporal change of culture? And finally how are certain stylistic forms more permeable to movement across cultures while others are not?

A. Drilling Down: A Technical Discussion of the Inner Workings of Culture and its Impact on Social Practice

This thesis argues that the instrumentalist and primordialist dichotomization is an artificial distinction that is rooted in a more complicated debate concerning the definition of culture between structural approaches (primordialism) and agent based approaches (instrumentalism). A more holistic definition of culture than can account for both structure and agency as presented by Bourdieu's (1977) *habitus*, Giddens (1984)

"structuration", or cognitive anthropology's Schema theory (D'Andrade 1995; Shore 1996, 1998; Strauss and Quinn 1994; Holland and Quinn 1987). These theories address both dichotomies and as a result provide a deeper explanation of the interaction of socially and politically motivated actors and the limiting or generative factors of culture. These theories of culture are at the heart of this dissertation's approach to identifying social boundaries in the archaeological record of the Iron Age Southern Levant.

The implementation of *habitus* as a solution to the primordialist versus instrumentalist dichotomy has been explored by a number of anthropological archaeologists (Bentley 1987; Dietler and Herbich 1998; Hegmon 1992; Jones 1997; Routledge 2000; Stark et al. 1998). On the other hand, Schema theory or mental models, which resolve many of the inherent problems with *habitus*, have not been explored by archaeologists. It will be argued here that this cognitive anthropological approach to culture improves upon recent uses of the *habitus* in archaeological theory. It can explain in a more dynamic way both how social ascription is created and maintained and also how identity becomes instantiated in material culture.

Although the application of *habitus* for studies of ethnicity has been discussed in detail elsewhere (c.f. Dietler and Herbich 1998), a brief description is presented here in relation to its use for studies of social boundaries. Bourdieu (1977:72) defined *habitus* as:

> … systems of durable, transposable dispositions, structured structures predisposed to function as structuring structures, that is, as principles of the generation and structuring of practices and representations which can be objectively 'regulated' and 'regular' without in any being the product of obedience to rules."

Perhaps a simpler way of defining *habitus* is to conceive of it as a set of dispositions (the inclination of someone to act in a certain manner under given circumstances) stored in one's mind that constrain how one will act but do not function as hard-and-fast rules. These dispositions can be consciously modified or manipulated according to the circumstance a person is in. The second important ingredient of *habitus* is that these dispositions are learned (internalized) through the day-to-day (i.e. habitual) practices of one's community. Humans have an inherent ability to recognize repeated patterns of action (practice) that result in an ability to store them as dispositions without even consciously recognizing, reasoning or remembering that this was done (Bentley 1987:27). Moreover, dispositions are 'fuzzy' or imprecise because everyday practice is ununiform. This is how dispositions are different from the past anthropological understanding of 'structures' which were seen as unchanging, coherent understandings of how one is expected and will act in culture (e.g. Lévi-Strauss 1969). Dispositions are dynamic rather than static--constantly shaping and being constructed by social practice. Their imprecision also enables one to react flexibly to new practices that do not fit exactly into past experiences. Thus, what makes the definition of *habitus* different from other conceptions of culture is that these dispositions both structure behavior and, at the same time, are transformed by the practice of behavior. Most importantly for the study of social boundaries, *habitus* presents a model for how ethnic identity is both a product of learned root sentiments of self-ascription (primordialism) but also at the same time enables individuals and groups to pursue personal interests (instrumentalist) through practice.

The concept of *habitus* builds on what was discussed earlier about childhood internalization. Root sentiments of ethnic identity are internalized through *habitus* at an

early age, which later in life play a formidable role in constraining one's perceptions of self and the other but does not result always in hard and fast rules. Socialization throughout one's lifetime can both reinforce these early dispositions but also change them through new experiences and encounters with another culture or ethnic group. Jones observes that "…the strong psychological attachments often associated with ethnic identity and ethnic symbolism, are generated by the critical role that the *habitus* plays in inscribing an individual's sense of social self" (Jones 1997:91). It plays a direct role in creating self-identity and influencing practices related to that self-identity but at the same time does not create immutable rules at how the identity is conceived thus not strictly limiting individuals from manipulation of identity in certain realms for social or political purposes.

Much of self-ascription and 'interest driven' behaviors associated with the maintenance of social boundaries is a product of unexamined dispositions (*doxa)*.[8] An unexamined disposition is a culturally learned practice internalized through *habitus* that is acted out by an individual on a daily basis, but cannot be consciously explained by the individual why it is practiced. It refers to the perception within society that certain dispositions are "natural" or inherent. The most clear example of an unexamined disposition is seen in language, where someone can fully speak with perfect sentences and grammar but be fully inept in their ability to explain why certain sentences are 'perfectly acceptable' while others are unacceptable. They cannot explain the structure that generates and dictates the composition of those sentences and grammar, "it just

[8] In order to avoid adding more terms to this discussion this section will plainly refer to Bourdieu's term *doxa* as unexamined dispositions.

sounds bad." They do not question why it must be this way or why another would not be perfectly just as acceptable. More important to the study here, these unexamined assumptions are found even in interest seeking behavior, often viewed by 'instrumentalist' as conscious deliberate acts by individuals. Bentley (1987:28) argues that interest-seeking behavior is more often than thought to be a habitual response "an acting out of objective constraints encoded in unexamined assumptions about what is reasonable and unreasonable." In other words, within different cultures the degree individuals will pursue their own interests and associate themselves with different groups is constrained by their *habitus.* Within some cultural groups there is no moral or 'ethnic' dilemma to their understanding of self when they act outside their ethnic groups boundaries (they may not even consciously be aware they have left these boundaries), while among other groups their *habitus* heavily constrains what they view as reasonable behavior and individual pursuit. In sum, individuals that appear to manipulate situational identities are not always making deliberate, conscious decisions to be countercultural. True 'instrumentalist' action is the questioning of these unexamined dispositions and acting purposefully in opposition to them, which is the next topic.

The concept of unexamined dispositions explains the common occurrence when individual dispositions and essentially self-identity respond to external encounters with other social groups. In other words, when cultural contact occurs and an individual's perceptions of the world and culture are challenged by another they are thrown into a dilemma of unorthodox or heterodoxic views. The result is a need to rationalize and systemize practices that were once thought to be innate to being arbitrary. The conscious realization of the unexamined assumptions results in new solutions "either in

rationalization and systematization of what was formerly an unconscious set of dispositions, or in overt social conflict" (Dietler and Herbich 1998:247). Jones (1997:95) states "a set of cultural practices and beliefs which had previously formed part of the domain of *doxa* [unexamined dispositions] becomes reified as a coherent and concrete object in opposition to specific 'others.'" It is in these circumstances of social interaction that ethnic categories are produced. It is the exposure of these dispositions that arbitrary cultural traits may be over-communicated to express social boundaries.

Although the concept of *habitus* resolves a number of the problems anthropologists find in modeling ethnic identity, it makes assumptions about internalization and practice that simplify a much more complex and varied human phenomenon that has now been extensively researched by cognitive anthropologists. For example, Bourdieu's theory of *habitus* does not explain how dispositions are stored and configured within the human mind and the various physical and psychological factors that impinge on the ability to accurately retrieve them. Second, the theory of *habitus* presupposes that the observation of human practice is a sufficient means to internalization of cultural dispositions. However, cognitive anthropologists (e.g. Shore 1996; Strauss and Quinn 1994) have found that internalization rarely occurs in certain circumstances. Some dispositions can only be learned through teaching, direct positive and negative reinforcement, and physical participation in social practices (e.g. specialized pottery production). *Habitus* does not model what activities create the durability of dispositions that make self and ethnic identity so resistant to change (Strauss and Quinn 1994:96). And finally, the motivational state of the observer can affect their ability to internalize experiences or practice them within their community (e.g. Strauss and Quinn 1994). It is

these nuances of culture, unexplored by Bourdieu, that become essential to this dissertation's delineation of social boundaries in the archaeological record. Cognitive anthropological studies that have examined the internalization of dispositions especially during these encounters with other groups disclose how culture and the human mind play a direct role in ethnic demarcation. Thus, we must now turn to the theoretical work and scientific discoveries made by cognitive anthropologists to gain a more comprehensive understanding of culture, ethnicity, and their expression in the archaeological record.

Cognitive anthropologists use the term "schema" or "mental model" to more technically define how dispositions are recorded in the mind (D'Andrade 1995; Shore 1996, 1998; Strauss and Quinn 1994; Holland and Quinn 1987). Roy D'Andrade (1995: 179) defines a schema as "the organization of cognitive elements into an abstract mental object capable of being held in working memory with default values or open slots which can be variously filled in with appropriate specifics." This highly technical definition basically states that the limited room within the short-term memory of the human mind requires it to categorize several detailed observations or experiences of the world into simpler idealized concepts. Within the mind, a schema is made up of a many interlinked networks of layered neurons that take neural inputs (e.g. A student encounters a female 35 year old professor outside of class) and pass them through a series of other connected neurons to produce a proper interpretation of how one should act (e.g. how to address the professor)(Strauss and Quinn (1994) . Each connection is weighted (positively or negatively) and the sum totals of all the combined inputs against the various interconnected neurons inhibit several paths and activate others eventually leading to a

final answer (see Figures 3.3 and 3.4).[9] The significant point for this discussion of ethnicity is that these 'weights' which determine the paths and outcome of an individuals' interpretations of meanings in the world are created through their life experiences (i.e. what Bourdieu has described as *habitus*). As infants these connections are first started and over childhood and later adulthood the weights of these connections become stronger or more reinforced and whole new systems of experiences and other schemas become interlinked to handle more complex problems. This process of 'schematization' that occurs within the brain is what produces the root individual sentiments of ethnic identity and how other ethnic groups are distinguished (see above; Eriksen 1993; Jenkins 2008:170; DeVos 1995). Schemas serve as an underlying tool of individuals to formulate their social and cultural identity and differentiate themselves from the world around them.

Moreover, since the connections are simply 'weights' and not hard-and-fast rules they can be highly flexible in determining a proper response in situations that a person has never experienced before (i.e. determining one's social boundary in a new encounter; how to categorize someone's ethnicity when they do not behave as expected). B. Shore (1996: 47) notes this form of information processing found in schemas results in the production of prototypical examples, such as a bluejay being the idealized 'bird' to represent all other birds with predominately blue plumage. Thus, schema theory explains very clearly why stereotyping and classification are such a ubiquitous activities among humans. Most important, schematization make humans predisposed to generate 'ethnic'

[9] It must be noted that even this description is a simplification of the process going on in the human brain. Schema theorists use different approaches to describe this process, and the one used here is called a connectionist model. Please see Strauss and Quinn (1994) for a more detailed explanation.

stereotypes on a regular basis. In sum, a major contribution of cognitive anthropology's schema theory is its scientific validation of Bourdieu's concept of *habitus* and, for this study specifically, a more accurate way to model how social boundaries are produced, maintained, and transformed through a study of culture and material culture.

Although Bourdieu argued that dispositions are durable, it is not until we study them as schemas that it becomes clear why dispositions such as ethnic identity are so resistant to change even amidst social upheaval and the benefits of identity change or assimilation. Strauss and Quinn (1994:89-98) argue that the durability of schemas is a product of several variables that must be detailed below:

1) Physical neural change: The 'weighted' connections between neurons are very resilient and thus cannot be easily reconfigured or erased. Even when change does occur, that leads to new neural patterns the old connections remain. An individual can easily revert back into the old schemas when returning to a past environment or under new or complicated life situations. One final point is that these connections are much more malleable at a younger age then older, thus making it that much more difficult for adults to change their behaviors and schemas late in life.

2) Schemas tend to be self-reinforcing: schemas ability to fill in the gaps of information (e.g. prototypes) also leads to blockage of new information that may be contradictory. They filter out new antithetical experiences but retain those that reinforce

the schema.[10] The inability of individuals to see past their stereotypes of other ethnic groups even when contradictory evidence is right in front of them is a typical example of this self-reinforcement.

3) Negative stereotypes (fear, insecurity or disgust) lead people to purposely avoid encounters that would lead to a realization that these stereotypes are false. Although it is argued that social boundaries are created through interaction with other groups, this does not mean that these interactions are not often constrained to only certain types of encounters. It is perfectly acceptable to meet in a market to exchange goods, but often people will avoid situations such as inviting others to their home or participating with them in more personal social activities due to these negative stereotypes. The avoidance of these interactions also serves to further reinforce the schemas involved in producing the stereotypes.

4) Emotional arousal during schematization, especially through teaching. A number of cognitive scientists (c.f. D'Andrade 1984; Spiro 1987; Strauss and Quinn 1994:93 for a list of references) have argued that neural connections are strengthened by emotional arousal. Positive and negative feelings as well as evaluations of one's good or bad behavior become interlinked during schematization. Part of the blockage to new

[10] It is important to emphasize that although blockage does occur, if new information becomes repeated or focused upon by the individual this is one of the main ways new schemas are produced. See the discussion earlier concerning unexamined assumptions. The main focus of this section is to show how dispositions can become durable but it should not be inferred that they are unchangeable. The underlying assumption is that all of these examples presented can be changed when they undergo new specific experiences and encounters with contradictory information, but in the absence of these encounters they remain durable.

information or exposure of stereotypes is a product of the strong emotions that arise preventing rational thought and only further strengthening the connections of these schemas. In addition, Strauss and Quinn (1994:93) argue that the reason the strongest schemas are created during infancy is because they are "linked to exceptionally strong feelings related to survival and security." Most important, teaching, which commonly employs emotional arousal, tends to produce enduring cultural schemas. Since in many circumstances a child or adult can have many inhibitions to learning, many teaching environments are geared towards providing repeated exposure, devices for focusing attention, and emotional laden awards/punishments. The coupling of teaching and emotional arousal of good or bad feelings through awards/punishments is thus a very important ingredient to internalization of important cultural schemas such as self/ethnic identity often overlooked by followers of *habitus*. In a similar vein, Jenkins (2008:170) states "children know who they are, in large part, because others *tell* them" (Jenkins 2008:49). Children develop there self-identity and their ascription to other groups not only indirectly through observation but directly through lessons taught by their parents, relatives, teachers, and community. Thus, in the archaeological record we should expect the most durable expressions of shared culture and social boundaries will be those that were learned through teaching and significant emotional arousal. This will be a central presupposition for what is argued later for mimetic models and the *chaînes opératoires.*

In addition to this discussion of durable dispositions we must also focus on how schemas can result in their repeated enduring cultural reenactments. It is argued here that the motivational state of a schema affects the willingness of the individual to practice them over and over again within the community. Schemas that are highly motivated are

the ones that are most clearly taught and passed on to the following generation. First, practices observed and taught are often reenacted since there are no other conflicting schemas or imagined alternatives. But on a deeper level, as discussed especially for teaching, many of these practices were reinforced in society and by teachers through awards and punishments and social evaluations of good and bad behavior. These same methods to create durable schemas also result in individuals to have a motivational force to want to enact them to re-experience the good feeling and positive evaluation by others or avoid bad feelings and condemnation (Strauss and Quinn 1994:105). The early infantile and childhood schemas, which have been shown to have very strong motivational force, then in later life become connected with many other schemas powerfully influencing their outcome, sometimes even to the detriment of the individual (e.g. a deep feeling of need to be self-reliant inhibits individuals to seek help from others when they need it most (Strauss and Quinn 1994:107)). More importantly, self-ascription and appropriate behavior by an individual within an ethnic group are often connected with these highly motivational schemas that inhibit them from acting differently (this is similar to DeVos's (1995) psycho-cultural model). A recognition of motivational force is, therefore, very critical to our understanding of why social boundaries are continually practiced and maintained. Most important is that schemas with motivational force are not only the most commonly practiced within the community, but they are prevalent in how parents and teachers train the younger generation. Strauss and Quinn 1994:106) note that parents (also applicable to teachers) will "deliberately design the environment and structure their own behavior in it, to give the child experiences that will motivate these values." Cultural behaviors related to ethnic and group identity, especially in situations of

extreme conflict with other groups, become purposely taught to children further reinforcing strong durable dispositions of self-ascription to ethnic identity. In the archaeological record, schemas with strong motivational force should be expected to be the most ubiquitous expressions of the culture and their social boundaries. This explains the fundamental problem that theorists following Wobst could not explain---practices of culture that are bound within ethnic groups but are not produced by the community for 'information exchange.' These practices that are highly motivational within a culture and reinforce ethnic identity are not consciously produced to assert it to others. This will be an essential tenet explored later.

Juxtaposed to schemas with motivational force are 'foundational' schemas that are ubiquitous within a culture. They link a variety of schemas and what appear on the surface to be unconnected genres (Shore 1996:54; Strauss and Quinn 1994:118). They tend to monopolize other models and warp them to their fitting. Also, their presence in multiple contexts also serves to reinforce the schema and broaden its definition (Strauss and Quinn 1994:118). Its multiple occurrences in different arenas of a society builds coherence and verification of the schema's importance. They can thus often but not necessarily become linked as a schema with motivational force. Additionally, the popularity of these foundational schemas also leads to consumer demand. As mentioned above, consumerism undergoes a unique dialectic between the expected models of the consumer and the actual instituted models made by the producer. Foundational schemas appear to have a major impact in influencing the consumer preference for specific types of styles and forms. Products appear to be produced to meet the demand of these foundational schemas. A producer's success is found in their reworking of traditional

models with foundational schemas in order to meet demands of the consumer (assuming that breadwinning is a highly salient model for the producer). Craft specialists and elite groups attempt to capitalize on these schema's material and ideological reproduction. Their ubiquity in multiple activities and products makes them much easier to discover than other schemas that may only be externalized in discourse. Artifacts can be compared across multiple genres according to hypothesized foundational schemas. The discovery of these foundational schemas can further be corroborated by the study of historical texts that may record these schemas in stories, myths, and repeated phrases or words of discourse. Although these grand schemas have the potential to cross social boundaries they are important to any archaeological study of material culture and may reflect the structural homologies witnessed within regions. This concept will be explored further at the end of this chapter and in later chapters.

Finally, a very important aspect of how cultural and ethnic schemas are internalized is the creation of 'public artifacts'. These are the public (outside the mind) expression of cultural schemas, but must not necessarily leave behind a material residue (Shore 1996:51). They are "social institutions—conventional, patterned public forms such as greetings, calendars, cockfights, discourse genres, houses, public spaces, chants, conventional body postures, and even deliberately orchestrated aromas" (Ibid.: 51). These 'public artifacts' are very important because they ensure that multiple people have similar, shared experiences. This avoids the idiosyncrasy that would arise if every individual always had different experiences. More important, it is in social practice that these 'public artifacts' can play a role in creating inclusiveness, solidarity and a shared identity of an ethnic group. In other words, they produce, as 'primordialists' would claim,

deep rooted sentiments of group identity. For the archaeological study of Edom, these 'public artifacts' may leave behind material objects associated with these performances such as incense burners, costumes, written scripts, or game pieces; they are very important part in the reconstruction of the cultural and ethnic schemas of a group. Rather than just viewing these artifacts as simply objects that reflect a 'culture' they need to be analyzed to extract how they are related to various schemas and even fundamental schemas discussed above.

B. A Solution Identifying Ethnicity in the Archaeological Record: Mental Models and Identifying Primary Ethnic Identity

A cognitive anthropological approach provides the clearest understanding of how schemas participate in the formation and maintenance of social boundaries and has important implications for archaeological studies of ethnicity. As argued above, cultural schemas account for the many observations made by anthropologists studying ethnicity. Namely that the nature of ethnic schemas make them extremely durable to radical social change (e.g. migration, social evolution, conquest, deportation, etc), perpetuations of ethnic stereotypes and unexamined dispositions, an intense emotional sentiments towards one's ethnic group, and necessity for teaching and public artifacts to reinforce ethnic identity to the group not just the other. In light of these nuances of culture's influence on ethnic identity of the definition provided for ethnic groups must be presented.

A *ethnic group* can be defined as an endogamous community that not only possess clearly defined social boundaries with a shared primary self-ascribed identity, but

also individuals within it have a fundamental understanding of one's ethnic identity that takes first rank in importance and is created through internalization of cultural schemas, shared traditions of origin and/or descent, and continued reinforcement of that ethnic identity through the participation and observation of public artifacts. Although interest seeking behavior can be seen to contribute to the creation and maintenance of ethnic groups, this behavior is not purely a product of rational conscious decisions but in numerous cases is constrained by cultural schemas with strong motivational force. Second, below ethnic identity are many other situational identities (tribal, village/community, occupation, class) culminating with an individual identity. However, all of these are not purely social, but rather are interconnected within internalized cultural schemas that enable individuals to navigate through them and appropriately situate themselves in relation to others and respond appropriately (e.g. the student knowing his place in relation to his professor and how to address her properly). Thus, the model presented here of schemas allow us to model various social boundaries at different levels of identity and importance.

For the archaeologist, the identification of circumscribed *public artifacts* in the archeological record is the key to linking social boundaries and *ethnic identity* with the stylistic variability of material culture. Although numerous cultural schemas may cross social boundaries due to prolonged social interaction between ethnic groups[11], several cultural schemas that require teaching and repeated day-to-day observation remain circumscribed within ethnic communities that live together. These would be the very

[11] Or conversely, a community with once shared culture and social boundaries that split in the past into two separate ethnic groups.

durable cultural schemas with strong motivational force first reinforced by parents but later the community. Since endogamy and local residence is a product social boundaries, it is difficult for these cultural schemas to spread to other ethnic groups. Other ethnic groups may only see the final public artifacts produced by these underlying cultural schemas, but because they do not possess the same childhood socialization, attached emotional arousal and motivational force, the motivation and ability to internalize these public artifacts and reenact them is unattainable. Also, as was argued above, these other group's own cultural schemas and stereotypes would further inhibit their internalization and the 'otherness' of these public artifacts would function to only further reinforce the perceived difference between them. It is important to realize, that these circumscribed public artifacts do not all serve an assertive purpose to communicate social boundaries between groups, but many are passive, unexamined dispositions. In fact, many of the material products of these public artifacts may be exchanged with the other ethnic groups. Since they are non-assertive their use is not viewed by the consumers as socially inappropriate even though it is known that they are another ethnic group's products. The important distinction being made here from 'information' exchange approaches is that social boundaries are distinguishable in the archaeological record by all styles that can only be reproduced through teaching and repeated day-to-day observation from childhood to adulthood. The issue is not whether they are assertive or their material product is exchanged, but rather whether the immaterial cultural schemas that produce them can cross social boundaries or not. Only the specific public artifacts that cannot be internalized and purposely reproduced can be used as indicators of social boundaries. It will be presented below that this model for identifying social boundaries in the

archaeological record has been repeatedly supported by ethnoarchaeological examples. By examining these studies, a series of sophisticated multivariate hypotheses can be constructed for identification of social boundaries in Iron Age Edom.

V. *Chaîne Opératoire* and Mimetic Models: Toward an Integrated Understanding of Ceramics and Society

An examination of numerous ethnoarchaeological studies provides a comprehensive picture of the complexity involved in the production and distribution of public artifacts and prevents against a single study driving the archaeological hypotheses developed here. From these studies it will be argued that there is a series of corroborating evidence that suggest socially bounded public artifacts are most commonly products of learned motor habits that are not easily modified through individual choice. When the specific stylistic traits produced from these motor habits are compared between groups with distinct social boundaries they have very little overlap. Most important, the reproduction of cultural motor habits is most commonly seen among ceramic producers and thus this method for identifying social boundaries becomes a powerful tool for the analysis of the ceramic assemblages recovered from Iron Age II Edom. This section will be broken down into several parts: 1) a discussion of how motor habits and specific technological stylistic traits are connected with social boundaries; 2) the specific conditions that influence the movement or restriction of these technical styles between communities; 3) how and why the actual products cross social boundaries; 4) Techniques

for untangling socially bound production of stylistic traits from distribution zones; 5) Archaeological test methods for conducting this type of study on the ceramics of Iron Age II Edom.

A. Social Boundaries Expressed Through Motor Habits and Technological Style

Similar to the anthropological concept of unexamined dispositions, stylistic variability is often a passively produced reflection of learned cultural schemas. For example, P. Lemonnier's (1986:160, 1990,1992) ethnoarchaeological study of material culture among the Anga in Papua New Guinea found that at every stage of product production, a number of equally possible decisions could be made concerning its manufacture. The majority of these decisions were not made purely based on technological efficiency but more commonly were a result of cultural concepts and decisions of the producer. The first archaeologist to connect this with ethnicity, J. Sackett (1982; 1985; 1986), called this behavior 'isochrestic' variation or passive style, since the artisan makes 'unexamined' technical choices because of his or her enculturation. This passive style was argued through scholarly discourse (see Sackett 1986; Wiessner 1985) to be as important for the identification of social boundaries in the material culture as the archaeologists who promoted the assertive, 'information exchange' model of style discussed earlier. P. Lemonnier's (1986:160) took this concept of passive style one step further by arguing that every product is imbued with a host of potential cultural (passive) and individual (assertive) influenced stylistic choices, which could be studied as a

chaînes opératoires (operational sequence).[12] The *chaînes opératoires* can be modeled as a sequence of steps involved in the manufacture of any product from the collection of its raw materials to the final paint applied to it. The decision to combine certain materials over others, the way an object is held while it is shaped, or the tools that were chosen to inscribe it are all arbitrary and often learned from one's culture. Throughout the operational sequence the manufacturer both passively chooses to repeat manufacturing techniques of his or her culture and may also actively choose to improvise upon those techniques to solve specific problems of ideological, social, economic, or political importance. Thus, there are a number of technical choices that produce various unique traits to an artisan's work. These technical choices do not all 'communicate' social boundaries and are often not based purely on individual caprice but commonly are a product of learned techniques passed down from one generation to the next of producers that are not consciously seen as marking an ethnic distinction between them and other groups. In other words, a *chaînes opératoires* is a *public artifact*—the communal practice of a series of learned cultural schemas. In addition, the *chaînes opératoires* of a group may not be known by others or knowledge of other groups objects do not always lead to adoption but often the choice is made to not copy other groups manufacturing 'stylistic' techniques (Lemonnier 1986:161). Several ethnoarchaeologists, specifically seeking to elucidate social boundaries in the archaeological record, have identified similar technical choices in their specific regions and have come to call this occurrence "technological style" (c.f. Childs 1991; Deal 2007; Dietler and Herbich 1998; Gosselain 1998; Lecthman

[12] The majority of Lemonnier's models including the concept of the *chaînes opératoires* was developed from A. Leroi-Gourhan's (1943) pioneering work in the 1940s.

1977; van der Leeuw 1993; Stark 1998; Stark et al 1998). The term technological style connotes that style is not just reflected in the final stages of painted decoration but every technical decision that occurs in the *chaînes opératoires*. Most important for this study, the analysis and modeling of every product's *chaînes opératoires* and its numerous resultant technological styles provides a new methodological approach for the identification in the archaeological record of various cultural schema's material expression (i.e. public artifacts). Once several culturally influenced technological styles are delineated they can be compared across a region to determine the extent of these culturally learned behaviors.[13] The application of these techniques to the ceramic assemblages of Edom will enable us to make inferences about the social boundaries within its region.

Despite the potential that the *chaînes opératoires* and specifically technological style has for the identification of public artifacts and social boundaries, there are a number of variables that need to be considered to differentiate the products of learned cultural schemas from those that can be influenced by individual innovation or emulation. Therefore, the specific types of technological style important for this study must be restricted to those that are produced from learned complex motor habits, since these are the most difficult for an individual to alter or emulate later in life (numerous ethnoarchaeological studies attest to the rigidity of motor habits in material production; see Arnold 1989; DeBeor 1990; Deal 2007; Dietler and Herbich 1998; Gosselain 1998; Levy et al 2008; Pryor and Carr 1995; Stark et al. 1998; Stark 1999). A motor habit is a

[13] It will be argued below that a distinction needs to always be made when measuring distribution of an object between its sphere of production to its sphere of consumption.

habitually practiced unexamined schema that is learned only through repeated training, practice and development of the necessary muscles and physical dexterity (Arnold 1985:147). They represent only a subset of all possible technological styles within the *chaînes opératoires* of a product. Decoration, such as painting or engraving, may not fit under this category, since many of these styles do not require complex motor habits to learn or emulate (Childs 1991:332; Stark 1999:29; Stark et al. 1998:212).[14] The most common motor habits are seen in morphological form and earlier processes of selecting clays and firing (see Figure 3.5 which is an example of how morphological differences can be distinguished between communities). Thus, motor habits can most clearly be linked with the most durable, emotionally charged, and motivated cultural schemas detailed in the last two sections on cognitive anthropology.

From a cognitive anthropological approach a motor habit is a specific type of highly motivated and durable cultural schema produced through what has been called *mimetic modeling* (Shore 1998:66; see also Lave 1990 and Rogoff 1990). A mimetic model is a very unique form of cultural schema because it can only be internalized effectively through the close imitation of a teacher by an apprentice. The apprentice learns how to produce the object through repeated intimate interaction with the teacher, continually being supervised, taught, and corrected. For example, O. Gosselain (1998) has described this learning process for neophyte potters in southern Cameroon. The

[14] The exception, of course, are the intricately complex decorative styles that cannot be learned by observation. Often attempts at emulating these complex designs betrays the unskilled hand of the imitator (c.f. DeBeor 1990; Stark 1999). A number of previous studies (see Section III) that sought to use style to identify social boundaries viewed 'decoration' or 'iconography' as the totality of an artifact's stylistic traits. The emphasis on the term technological style, here, is to show that many other aspects of a product besides just its decoration should be considered reflective of a group's style. Thus, technological style = techniques of production, material composition, morphology, and decoration.

neophyte starts his or her career first by simply assisting the teacher in collection of materials and firing of the pots, but soon develops into formal training with the teacher "working beside her or him, correcting gestures, rectifying errors, and even taking her or his hands into her or his own, until the apprentice is able to work alone…at the end of this period of time, all gestures and postures related to the fashioning process will have become integrated as motor habits" (Gosselain 1998:94). As Gosselain's example shows, the internalization of these motor habits is accomplished through a significant amount of repeated attempts at imitating the teacher. As the apprentice comes closer to proficiency in the craft they mentally develop a very clear prototypical (schematized) image of how the end product should look (Shore 1998, see above). As the apprentice develops the required motor habits to achieve the desired end product their actions become more rapid and routine requiring less conscious effort and thought-what Sackett has called 'passive' style. As the teacher either chastises or applauds the apprentice for his or her work, these motor habits become associated with self evaluations of good or bad practice, which in turn become highly motivational within the apprentice to desire to repeat the specifically learned complex motor habits accurately. The apprentice seeks to reproduce these culturally learned technological styles not only to be approved by the master potter but also by the community. Although within some communities producers may not learn a craft until they are adults (c.f. Dietler and Herbich 1998), the majority of mimetic models are learned from childhood and reinforced throughout their life (Arnold 1989:180). Several ethnoarchaeological studies have further emphasized that mimetic models are primarily learned from the community and specifically one's parents or closest relatives (e.g. Arnold 1989; DeBeor 1990; Pryor and Carr 1995). Therefore, like other childhood

learned schemas they have strong motivational force and become part of the child's self-identity as they define themselves in relation to their community. These early learned schemas are durable also in the sense that they will be self-reinforcing and attach negative stereotypes to technological styles found among other groups. All of these factors inhibit producers from acting outside of these internalized schemas and at the same time highly motivate master artisans to teach their new apprentices these same mimetic models. Thus, these mimetic models can come to have longevity as they are passed on from one generation to the next within a community through these series of highly motivated feed back loops. Most important to the archaeological study of social boundaries, because of the requirement of close interaction and co-residence, these mimetic models over time become circumscribed within the producer's social boundaries. Despite the correct observation that many cultural schemas can cross social boundaries due to high interaction between different ethnic groups, this assertion must be qualified that it is only the more easily internalized and in vogue cultural schemas that are easily exchanged.

As will be argued below, only an archaeological study of mimetic models' material expression (i.e. a sub-set of various technological styles within a product) can effectively be used to reconstruct the social boundaries of the producer or producer's community.

B. The Cultural Movement of Mimetic Models

The advantage in studying the technological style of mimetic models is that they are generally circumscribed within the boundaries of an ethnic group. This circumscription is a product of two factors. First, internalization of mimetic models rarely occurs outside kin relations. Seldom do master teachers of a traditional or hereditary craft specialization teach outsiders, especially non-residents, their techniques of manufacture (Levy et al 2008: 36-43). Rather they train family members, children, relatives and other individuals belonging to their local community. Thus, the particular mimetic models of craft specialization of an ethnic group has a much more limited distribution often falling within a group's social boundaries in contrast to the distribution and consumption of those same artifacts (c.f. Arnold 1989; DeBoer 1990; Dietler and Herbich 1998; Gosselain 1998:92). Secondly, even when individuals outside the community become aware of another group's technological styles the ability or motivation to emulate them is uncommon. For instance, Bentley (1987:35) speaking on the simplest imitation by an individual of another ethnic group's behavior makes an important point:

> The lack of a naturally "correct" demeanor can be partly mitigated through conscious selection of appropriate behaviors, but, like learning a second language in adulthood, the process is exhausting and the results usually far from perfect. As in the case of Berreman's villager, the problem often is not one of ignorance of behavioral standards but instead is one of not being able to live up to them in practice.

This observation can be more persuasively applied to what was argued above for mimetic models, namely, that the internalization of new cultural schemas as an adult is very difficult. Not only the required muscles and dexterity have never been developed from childhood but also the numerous mimetic models were not continually reinforced by a

master teacher. It is definitely possible with great effort and strong motivation to learn these cultural schemas, especially if in later life the individual comes to reside within the producing community, but overall it is a very exhausting process. Moreover, as Bentley points out even when individuals attempt to consciously imitate these behaviors they rarely live up to them in practice. This observation is similar to how a foreigner can learn through great practice to speak another language with accurate grammatical structure and even pronunciation but still betray their foreign upbringing by their accent. In sum, the imitation or emulation of other group's material culture is rare and when it is it often fails to match or meet up to the standards of the place that the style originated from. It is hard to learn new styles or desire to learn them even when you are conscious of the underlying structures that created them. It is in this manner that mimetic models have such a strong correlation with socially bounded producing communities. The nuances of this argument will now be demonstrated through a more detailed examination of several ethnoarchaeological studies that have focused on potting communities.

M. Dietler and I. Herbich's (1998) ethnoarchaeological work among the Luo of Kenya provides a good case example of how mimetic modeling is often circumscribed within social boundaries. The Luo's political organization is subdivided into many different subgroups, which follow a segmentary lineage system (Ibid.:249; see Chapter 2). Within each sub-group are potter-communities with their own distinct local "micro-styles," who employ Luo women in pottery production. The "micro-styles" are passed on from one generation of women to the next. Women learn how to produce pottery through rigorous mimetic modeling as they work within the potter community, being tutored and evaluated by the elder women. Although decorative motifs vary within the same potting

community, technical and morphological stylistic traits (i.e. learned mimetic models) are shared and uniform for each community, which allowed the researchers to directly isolate them from other communities (Dietler and Herbich 1998:254). As was discussed above, these specific types of technological style were found to be more enduring and do not undergo the same degree of experimentation and innovation as seen among other stylistic features, such as decoration. Thus, these micro-styles of each community are a clear example of how mimetic models are circumscribed within social boundaries of these groups. In this specific example, the social boundaries were distinguished with high precision between sub-ethnic groups of the Luo. In the analytical study of Edom's ceramic assemblages this study attests to the need to examine the material expression of social boundaries at not only the ethnic level but the sub-ethnic levels.

M. Stark's (1999) ethnoarchaeological work among the Kalinga villages of the Philippine highlands is very similar to Dietler and Herbich's (1998) study of potting communities.[15] This study is another example of how ceramic technological style follows marked social boundaries within producing communities. Stark (1999:38) found in her study that morphological styles, that required the learning of specific motor habits, could be used to distinguish social boundaries at both the ethnic and sub-ethnic level. For instance, Dalupa cooking pots could be distinguished from Dangtalan cooking pots among the Pasil primarily by morphological form. At a larger scale, however, Pasil pots (Dalupa and Dangtalan) styles could be separated from the Balbalan and Tanudan regions. Stark (1999:42) concludes "Technical choices that Kalinga potters make reflect

[15] The Kalinga differ from the Luo in not having a Segmentary Lineage System but do still have multiple situational levels of identity: village, tribe/province level (Stark 1999:35). The root Kalinga social structure consists of the *Ili* (local system) which is a group of villages and satellite settlements located along a drainage system bonded together by endogamous extended kin groups.

an internalized understanding that they pass on (with or without modification) to the next generation". Just as among the Luo, the Kalinga technological styles reflect producing communities, not because of an overt assertive communication of the group, but because of the intensive mimetic modeling that has occurred within these groups.

What is important to realize about the circumscription of mimetic models is that they persist despite a high degree of regional social interaction among many ethnic groups. Among the Kalinga regions, potters and individuals from each community regularly travel between these regions and even at occasions sell there wares as they pass through other communities (Stark 1999:40). Similarly, the Luo women intermarry between different potting communities and regularly interact with neighboring groups within the region and at local markets. For both groups, consumers and especially neighboring potters can readily distinguish these morphological differences and assign them to the proper producing village. Despite this technical knowledge and awareness of deviating technological styles, it does not result in dissemination or assimilation of these technological styles by other ethnic groups. Moreover, the products being produced do not serve as assertive ethnic markers, they are consumed within local markets by other ethnic groups. Therefore, the mechanism that prevents the transmission of technological style across social boundaries is not, lack of exchange, social isolation or the use of these styles as ethnic markers, but rather the inability or lack of motivation by other ethnic groups to internalize the mimetic models that produce the technological style.

Furthermore, what these studies also highlight is that despite strong evidence that these potters did modify techniques, experiment with new innovations, and imitate high demand ceramic vessels from other groups, the potters' locally learned mimetic models

continue to dominate the manufacturing process. Among the Kalinga (Graves 1991; Stark 1999), Luo (Dietler and Herbich 1998) and other groups (Deal 2007; Gosselain 1998; DeBeor 1990) studied by ethnoarchaeologists, experimentation is very common, especially when the innovation does not require significant alteration of already present techniques. Certain popular fads may also sweep temporarily through a community. Additionally, as producers become more skilled and aware of other techniques they choose at times to deviate from their original teaching. Among the Luo, innovation by elderly or well-renown potters (the master teachers) of a community are most commonly the ones that are the most uninhibited to experiment, try popular styles or imitate select styles of other groups (Dietler and Herbich 1998). Often it is their respect as master potters that give them the liberty within the community to experiment and influence change even among the younger potters. Similarly, Kalinga potters observe and occasionally imitate neighboring styles of pottery technology. Stark (1999:41) notes that in the Philippines, Dalupa potters have recently emulated Binontoc and Lubo style pots. These emulative forms were easily adopted because they did not require significant alteration of the motor habits they developed as apprentices. Stark (1999:41) argues that the continuation of the Binontoc form was based on wide consumer demand while the Lubo style was "just a passing fancy" among consumers. Despite all the evidence for actors' roles in the experimentation with technological style, they are still only periodic, do not involve the alteration of motor habits, and tend to betray a local imprint. The technological styles that are culturally learned through mimetic models are most abundantly found within these potters workshops (see Levy et al 2008). Experimentation, rarely results in a complete abandonment of all the local technological styles that will

continue to be produced in a much larger quantity. Often only one popular form (e.g. Binontoc cooking pot) is grafted into the indigenous assemblage. The large economic demand for certain styles among traditional potting communities results in a specialization of a couple of their popular forms for larger markets but the potter continues to produce all the other vessel types for the local community and household (c.f. Kramer 1991). More important, as both studies emphasized, experimentation tends to occur only on technological styles that do not require a significant alteration of motor habits. Most important, they tend to be adaptations and refinements to present mimetic models that at one sense are an imitation of neighboring styles and at the same time hybrids with a local imprint. Therefore, for the study of social boundaries in Edom, caution must be taken to always conduct a quantitative analysis to determine the dominant technological styles of a group as well as to not confuse easily learned technological styles or local imitation for products derived from mimetic models that required complex motor habits.

Furthermore, many potting communities are not open to full scale change even when presented with more economically viable technological systems. Technological styles are often interlinked with psychological schemas of self-identity and stereotypes. In interviewing Tanudan potters after watching them successfully imitate a Dalupa pot, Stark (1999:41) writes “I asked them why they did not abandon their Tanudan style for the easier Dalupa style; the Tanudan potters laughed and responded that being from Tanudan, they must make Lubo-style pots.” These potters held strong cultural sanctions against changing a particular technological style. To be a Pasil potter, one must make pots according to Pasil methods. This account highlights one that the Dalupa had a strong

sense of self-identity ascribed to their particular technological styles and negative stereotypes of other groups' styles. The response with laughter by the question of the anthropologist highlights that the Tanudan never examined their cultural schemas according to their 'economic efficiency' nor could give a 'logical' explanation why they should not adopt Lubo style pots. Second, this example demonstrated that imitation of other groups' technological styles seldom has the same motivational force as community learned mimetic models. The Tanundan's explanation for not producing Lubo style pots is a perfect example of self evaluation—their community would frown upon such behavior. Despite the economic motivation to save time and energy, it does not provide the necessary motivational force to adopt the technological styles of Lubo pots. Rather, the strong ethnic sentiments of the Tanundan constrained possible interest seeking behavior. Their psychological schemas of self-identity and stereotypes functioned to make this 'choice' to appear absurd. Therefore, it can be safely assumed in a study of technological style in the archaeological record that the adoption of foreign forms, although possible, will be strongly constrained within a community. This phenomenom will be reflected by a dominance of indigenous forms and either a few imitated forms or none at all, which is dependent on the degree at which different groups consider imitation an acceptable practice (e.g. the Dalupa and Luo) or unacceptable (e.g. the Tanundan).

In summary, a number of important observations can be extracted from these ethnoarchaeological accounts. First, mimetic models are circumscribed by social boundaries. The technological style influenced by these mimetic models can be detected in the archaeological record and enable accurate interpretations of producer identity. These styles are primarily seen in morphological shape or complex patterns rather than

decoration. This approach can be directly applied to study of the Iron Age Edom ceramic assemblages. Second, multiple social boundaries can be detected at both the ethnic and sub-ethnic levels. For Edom, this point is very important since multiple levels of social boundaries may have persisted within the village and tribal level. Third, when emulation or innovation does occur it does not result in the complete abandonment of the indigenous technological styles learned from their community. The producer can consciously deviate and imitate other forms as they wish, but there mimetic models continue to define what is natural, typical, and even expected from a pottery specialist of that community. Often technological style that is most permeable to change and imitation is not related to mimetic models. The transmission of foreign styles is often compartmentalized into only a few popular forms. In Edom, we should expect to find experimentation of new styles and imitations of foreign styles but these can be distinguished from local products by both not belonging to mimetic models and representing only a very minute proportion of a site's total ceramic assemblage. All these different variables must be taken into consideration in order to construct accurate testable hypotheses for the detection of social boundaries in Iron Age Edom.

C. The Role of Marriage Patterns and Physical Mobility in the Spread of Mimetic Models

A significant variable that still needs to be taken into consideration is how mimetic models move within and outside social boundaries. The major factors that affect the spread of complex technological styles are marriage patterns and physical mobility.

Both of these affect where individuals will grow up and live later in life and thus will enable their prolonged exposure and ability to be taught new technological styles. Thus, the extent mimetic models are distributed is strongly connected with the back and forth movement of individuals as they settle in different communities throughout their lifetime. Although the movement of individuals through marriage patterns and physical mobility generally are contained within a social boundary, this is not always the case especially when exogamous marriage is common or social boundaries are not sharply defined leading to migration and assimilation of different groups into an ethnic group's territory. Therefore the model being developed here must be refined to account for these variables.

For example, one of the main reasons Dietler and Herbich (1998) found such clear socially bound 'micro-styles' within the different Luo communities was because the knowledge and training of these mimetic models never left the patrilocal community. The women who produced these styles came from neighboring villages through exogamous marriages, but did not learn the styles until they came to reside within their husband's village. Once they joined this community their mothers-in-law and women belonging to the husband's community trained these young women how to produce pottery. Therefore, these mimetic models were passed from one generation of married women to the next, but since these married women rarely moved with their husbands outside of the community the mimetic models never spread either.

In situations where potters learn their craft from childhood, marriage patterns and physical mobility tend to keep the knowledge of the craft within group's social boundaries (c.f. Gosselain 1998; DeBeor 1990; Pryor and Carr 1995). Gosselain's (1998:94) study of the movement of potters found that they primarily learned their craft

from nuclear, extended and less common collateral family members. Out of the 77 potters interviewed throughout the region 67% learned the craft from their mother or father with only other small percentages represented by the remaining (Gosselain 1998:95). The result was that the linguistic affiliation of the potter and their teacher was the same. However, 45 percent of the potters sampled moved from the origin of their learning place to a new residence due to kin-based marriage exchange or movement of a family to a related village. All of these movements remained within the linguistic boundaries of the group (a 50km radius). In fact, the majority of these movements did not exceed a range of 25 km (Gosselain 1998:97). Due to this limited movement of the potters the technological styles never left the linguistic group. In addition, it can be assumed from Gosselain's data that mimetic models were spread but only within the linguistic groups. Potters who learned their natal community's technological styles during childhood, continued to produce these forms after they married into their host communities. Since marriages were exogamous these mimetic models would have come to be practiced within all the communities that marriage exchange occurred. Also, the potters long residence within their host community would have enabled them, if motivated, to assimilate their new host community's styles. Similarly, their relatives may have observed these foreign techniques and may have requested to be taught these techniques. From an archaeological perspective this technological styles of the linguistic group may appear uniformly spread throughout its territory, while in reality it is a reflection of the fluid movement of marriage partners and individuals between the communities.

Thus mimetic models are circumscribed within social boundaries under three specific conditions of marriage patterns and social mobility: 1) When communities are

highly endogamous and neither male or female move outside several close knit communities. 2) The society is patrilocal and practices exogamy across multiple communities but still within the social boundaries of an ethnic group. 3) Exogamous marriage or capture of wives from outside the ethnic group occurs, but the women are resocialized once they come to live within the host community (e.g. Dietler and Herbich 1998; DeBoer 1990). [16] When these conditions are not present and producers either are trained in different locales from which they reside or there is continual social movement of an individual it is near impossible to find clearly delineated boundaries.

S. Maceachern's (1998:119) study in Papua New Guinea is a case in point of how marriage patterns that cross social boundaries lead to a much wider and confusing distribution of technological styles. Women who are the soul producers of pottery, marry outside their community and may remarry after divorce "three to ten times" that can lead to them living in "many different communities" (S. Maceachern 1998:123). These women learn their potting techniques primarily from mothers in their birth community. When they move into their marriage community, S. Maceachern (1998:123) notes that they continue to practice the techniques learned before marriage from their mother and female relatives, but the opportunity for these women to learn intimately the host community's technological styles will lead to them adopting vessel styles that are popular in the markets. In turn, if the female potter who comes to reside in the host community is a producer of popular market styles the local women will request to learn them. However S. Maceachern (1998:123) remarks that these "women often have problems in learning to

[16] DeBeor's (1990) study of female potters among the Ucayali showed that even women captured from other groups came to learn the local potting styles from their adopted mother-in laws or relatives-in law and pass it on correctly to their children.

make new types of ceramics, and may not become proficient in producing vessels with correct proportions or in making local types of roulettes for decoration." The inability of these women to learn these technological styles fits into the model discussed above. They require the development of complex motor habits and mimetic modeling which can only occur through a prolonged residence within these communities. Yet many of these women divorce and move away from a community within a few years so that they never have the opportunity to become proficient at learning their marriage community's potting styles. Moreover, since the women in each community come from exogamous marriages with little re-socialization in the married community, only highly motivated women may seek to adopt their new communities technological styles. These factors result in each community possessing a random set of pottery styles that cannot be easily untangled by the anthropologist let alone later archaeologists. Thus, even though there is clear evidence of local technological styles and mimetic modeling in S. Maceachern's study area, they are distributed so randomly across different ethnic communities through exogamous marriage, divorce, and remarriage they cannot be used to identify the ethnicity of different groups.

In sum these variables entailed within marriage patterns and social mobility play a major role in the proper identification of social boundaries among potting communities of Iron Age Edom. It has been argued in the previous chapters that the inhabitants of Edom most likely shared similar tribal practices of their neighbors, especially Israel. Therefore, the assumption made here is that Edom was a patriarchal society that practiced endogamy. Marriage patterns should reflect the exchange of women across tribal lineages and they should come to reside in their husband's extended homes. These studies would

suggest that complex ceramic technological styles developed from mimetic models would thus have been circumscribed at different levels within the social boundaries of Edom's clans, tribes, and possible tribal confederacy.

D. Distribution and Consumption

In extracting mimetic models from ceramic technological styles, it should be emphasized that artifacts have at least three separate stages of use: production, distribution and consumption. The first stage in the life of an artifact concerns its *chaînes opératoires* of production and all the associated technological styles imbedded within it. Only the first stage can, thus, be clearly related to mimetic models and the identity of the producer. The second and third stages, however, relate to the exchange and consumption of the artifact by others. Although many of the studies mentioned earlier demonstrated a strong correlation between technological style, social boundaries and the producer, several of them also found that this correlation ceased once the product was exchanged and consumed (Arnold and Nieves 1992; Bey 1992; Goodby 1998; Gosselain 1998; Graves 1991; Hodder 1982, 1986; Kramer 1991; Longacre 1991b; Nicholson and Patterson 1992; Rice 1987; Welsch and Terrell 1998). An examination of the ethnoarchaeological literature reveals that distribution and consumption of artifacts (material culture) are not constrained by social boundaries, but rather other social factors play a primary role: 1) Economic interdepency; 2) The method of exchange; 3) The social complexity of the interacting polities; and 4) The degree of craft specialization involved in the production of the artifact. The task of the archaeologist must be to distinguish the

production centers of technological styles—which have a strong correlation with social boundaries—from *patterns of exchange and consumption*—which are associated with these other social factors (see Figure 3.6). A failure to make this distinction would only result in a return to the culture-historical approach that blindly equated the distribution of a material culture as coterminous with the social boundaries of an ethnic group. In this section, a model for later application to the Iron Age ceramic assemblages of Edom will be developed to prevent the mistake of associating a technological styles' spatial distribution with the extent of a community's social boundaries.

1. Economic Interdependency of Ethnic Groups

Once artifacts enter into the second and third stage of their life (distribution and consumption), the economic interdependency between ethnic groups leads to a high degree of exchange that tends to mask any social boundaries originally attached to these artifacts. First, this is a significant problem, even when some highly assertive products (ethnic markers) may exist between groups. A classic ethnoarchaeological study often quoted as an example of ethnically demarcated products is Hodder's (1982; 1991) work in East Africa among the Njemp, Tugen, Mbunda and Lozi. Hodder (1982:48-54) observed that despite the access to Njemp stools by neighboring Tugen, they did not purchase them on the grounds that they were for "Njemps only." Similarly, although there was daily interaction between the Mbunda and Lozi ethnic groups, Mbunda spoons were never made or used by the Lozi (Hodder 1982:111-117). The Njemp stools and Mbunda spoons perhaps reflect strong assertive ethnic markers, but these are only two

arbitrary objects. With the exception of these 'ethnic markers' these groups were economically interdependent and had intense interaction between each other, which Hodder (1982:115-117) demonstrated by noting the exchange of a multitude of objects between these groups. Without the prior knowledge of how these groups marked their social boundaries there would be no means to determine which artifacts recovered from spatially bounded areas were ethnic markers of a single ethnic group or reflected two or more ethnic groups that exchanged the product so regularly that it was distributed evenly across social boundaries. This was the inherent problem, discussed earlier, that archaeologists faced who took a purely social approach to identify social boundaries. Second, the more common scenario of artifact distribution that will be emphasized here is that despite recognition by consumers that certain technological styles were produced by other social groups, they have little social constraint to purchase these products (Graves 1991:142; Dietler and Herbich 1998; Holl and Levy 1993; Stark 1998; Stark et al. 1999; Welsch and Terrell; 1998; Mohr-Chavez 1992; Kramer 1991; Deal 2007). In many cases the *sine qua none* for this exchange is the economic interdependency of these groups. Especially in the case of pottery, only a couple settlements may produce pottery for a whole region. Consumers in other settlements who are dependent on these ceramics for domestic activities will seek out these products by gift exchange, purchase from the local producing settlements, or from local public centers, village markets, towns and fairs. For the consumer, these domestic products may have no social significance but serve only functional needs of the household. For example, Welsch and Terrell (1998:69) found that even though "there is an abundance of stylistic variation that undoubtedly has significance to producers" the distribution of these objects over large exchange networks

(200km) of differing ethnic groups completely masks these observations. Even though communities may not participate directly in exchange or even be hostile to each other, their products are still purchased by others at local markets, fairs, silent trade, through middlemen, or down-the-line exchange (see Figure 3.6). In this example, consumers do not attach any ethnic significance to the objects received and generally due to the nature of exchange receive the objects from groups outside their direct lineage. Similarly, Dietler and Herbich's (1998:254) study of ceramic micro-styles among the Luo, mentioned earlier, "…cut across important social and cultural boundaries, including Luo subgroup boundaries and the border between the Luo and neighboring Bantu-speaking Luyia." Thus, they concluded "Even when the community of origin of a particular micro-style is clearly recognized, this is of little concern to the people who use the pots: ceramic style plays little role in the expression of group identity in the context of consumption" (Dietler and Herbich 1998:254). The exchange of ceramics in these cases and others (Graves 1991; Mohr-Chavez 1992; Kramer 1991; see below) demonstrated clearly that rarely are they linked with consumer identity. Since we cannot purely depend on the spatial distribution of artifacts to determine their social boundaries, other techniques must be used to extract this information if we are going to seek to use ceramics in Iron Age Edom as indicators of groups' technological styles influenced by mimetic models. In the following three sections these techniques will be presented as other factors that influence distribution are addressed.

2. The Complexity of Exchange

The extent of distribution of any artifacts is influenced by the method and complexity of exchange networks that existed within a region (see Figure 3.6 for a description of each increasingly complex methods of exchange). If products are only exchanged through less complex systems (i.e. reciprocity through gift-giving or barter) then the distribution may never extend beyond several settlements. On the other hand, if large social networks exist with presence of local markets[17] of exchange and middleman that sell to multiple markets, then these forms of central place and freelance (middleman) trade can be distributed considerable distances. For instance, Gosselain (1998) found the distribution of domestic products occurred primarily as intra-community reciprocal exchange through gift-giving and most often bartered for produce. Similarly, Siltware pottery produced in Egypt by small pottery workshops located along the Nile, had a much more limited distribution because of direct exchange in local markets (Nicholson and Patterson 1992:44-5). Although in both cases the ceramic styles traveled little distance and remained within the ethnic boundaries of the producer, in other cases where two ethnic groups live in close proximity to each other reciprocal exchange could result in the crossing of products across social boundaries. In contrast to these examples, P. Nicholson and H. Patterson (1992) found that Ballâs pottery produced among a small community of neighboring groups was primarily handled by middleman who sold the pottery to multiple markets throughout Egypt. Nicholson and Patterson (1992:42) noted that Ballâs pottery could be seen in use throughout Egypt. Although consumers living within the

[17] The use of the term 'market' here should not be confused with modern markets with a monetary system. All the central place markets discussed here use a barter system (exchange of staple goods, raw resources, and specialized products not coinage). This terminology is derived from Renfrew (1977; and later Renfrew and Bahn 2006).

vicinity of these workshops did purchase pottery directly, production was primarily focused on market distribution not local use (ibid:43). Similarly, Mohr-Chavez's (1992) study of the Raqch'i potters located near Cuzco, Peru, for example, shows that distribution of pottery can occur over even longer distances when connected with annual fairs.[18] The fair locations are all considerably far from Raqch'i with the closest being 35km and farthest 125km (Mohr-Chavez 1992:76). The fair is made up of primarily domestic producing potters who work in small workshops adjacent to their home. These fairs serve as an avenue for domestic potters to sell their wares to a much larger consumer market. Another form of trade that may lead to extensive distribution, but with less social complexity than these last two examples is down-the-line trade. As mentioned earlier, Welsch and Terrell (1998:69) discovered that products were exchanged over distances of (200km) through down-the-line-trade. This was possible because these communities were all located along a river which enabled an individual to make stops at each community as they travelled down the river and exchanged locally produced gifts. In between these two extremes of very short or long distances, many of the ethnoarchaeological studies that have focused on domestic production have noted that products are usually sold through small local centers (a form of central place market/barter exchange; see Figure 3.6) within ca. 5 km of the producer and 10km of the consumers (see Figure 3.7) (e.g. Deal 2007; Dietler and Herbich 1998; Mohr-Chavez 1992; Stark et al. 1998; Stark 1999). In sum, the method and complexity of exchange affect the extent of distribution of any

[18] Multiple annual fairs occur in the region with the majority occurring during the period of summer harvest in August and September. These fairs are connected with Catholic ritual calendar and are located near Catholic shrines-thus these primarily economic transactions are organized around religious festivals. Despite these fairs being driven by Catholicism, it is not hard to see similar fairs being organized in other regions and time periods around indigenous annual religious festivals.

artifact. With the exception of direct access exchange with one's community, the distribution of an artifact can mask the social group from which it originated. The distributions of the artifacts do not necessarily represent social boundaries but rather the extent of social networks. These social networks in themselves may be important for reflecting "interaction spheres" that make a region archaeologically look homogenous; however, they should not be confused with ethnic groups. The primary ethnic identities of a group and the artifacts specific to them are mixed at the regional level creating perhaps a collection of "traits" unique to a region but masking the root identities of groups. In order to get around this problem we must examine one more case study and then present several techniques of spatial distribution analysis.

M. Deal's (2007) ethno-archaeological study of the Mayan Chanal is perhaps the best approach to tackling the problem of distinguishing the origins of the production of pottery and its distribution through exchange. The Mayan Chanal practice domestic pottery production and belong to an interregional exchange network with a central place market exchange system. Despite the presence of these markets, Deal (2007), found that only 25% of the ceramics produced by a potter leave the home. The remaining 75% are exchanged within the community.[19] Similarly, the presence of non-local wares that could be acquired from markets or distant contacts were purchased and consumed by the community but they represented less than 25% of assemblages. Market exchange did occur and perhaps had a similar radial pattern of distribution from the center as found among the Luo and Kaling (see Figure 3.7), but when examined quantitatively from the settlement it becomes clear that the majority of ceramic assemblages in a settlement are

[19] Graves (1991) found similar results for the Kalinga.

acquired primarily through exchange between the producers themselves and those in their settlement and neighboring settlement. However, the pots acquired from outside the community are the minority. Therefore, one should expect to equate the *predominate forms* of an assemblage to styles of the local community of neighboring settlements and the *minority* to social interaction and exchange that crisscrosses many communities and social boundaries. According to this single case example, it would suggest that over 75% of an assemblage found on site will come from intra-community exchange with a significantly smaller percentage from local markets and other forms of importation. Since it is easier for consumers to exchange goods for vessels produced nearby than further away, it can be logically assumed from this data that locally accessible vessels will be more abundant near their locus of production and become less common the further they are from this origin. The significance of this study for a study of Iron Age Edom's ceramic assemblages is that it shows that when a quantitative study of all possible technological styles is combined with spatial distribution a regression analysis (e.g. Hodder 1974; Renfrew 1977) and/or trend surface (e.g. Ericson 1977) can be constructed to show how traded material declines over distance from its source of production (see refs. below). By conducting a multivariate regression analysis of many stylistically different vessels the mechanism behind their distribution can be determined and the origin of production extrapolated with a high degree of confidence.

The concept of using a fall-off curve (regression analysis) to identify production centers is not new (Findlow and Bolognese 1982; Alden 1982; Earle 1982; Hodder 1974; Hodder and Orton 1976; Renfrew 1977; Torrence 1986). The importance of its use here is the potential to combine this analytic technique with a study of technological style

rather than simply the exchange of whole products (e.g. obsidian, stone axes) across a region. A survey of a number of ceramic ethnoarchaeological studies shows that regression analysis has significant potential for identifying local markets. These researchers have noted a radial pattern of distribution that falls-off significantly after 15km (Dietler and Herbich 1994; 1998; Stark 1999; Deal 2007). For example, among the Luo, Dietler and Herbich (1998; 1994) found that the distribution of pots sold in a market are dispersed by consumers in a radial pattern with the highest concentration (40%) being within 5km of the market and (90%) contained within 15km (see Figurre 3.7; Dietler and Herbich 1994:466). The Luo consumers purchase their pottery from the local markets and then bring it back to their settlements. A distance of less than ca. 15 km from a local market from satellite villages reflects a round trip (ca. 30km in total) walking distance (c.f. Levy et al. 2007) and can support the assumption that consumers primarily buy their utilitarian goods from the closest local market to their territory if not acquired directly through local exchange. Similarly, potters tend to sell their wares at local markets within a shorter walking distance often 5 km away (c.f. Dietler and Herbich 1998; Stark 1999; Kramer 1991). In general, local ceramic forms are not distributed over distance of more than two days walk from their origin. The only exception is when middlemen may purchase wares from one market to be resold in adjacent areas that lack local markets (this scenario will be discussed further in V.D.4.). These down-the-line exchanges have also been extensively modeled using regression analysis (See Figure 3.8; Renfrew 1977). Since ceramic workshops are not found in every settlement, another significant question that needs to be addressed is, “what is the quantitative difference in ceramic assemblages found within specialized producing settlements and neighboring consumer settlements?”

It could be assumed that producing settlements would be less dependent on other settlements for ceramic wares and perhaps only acquire other forms through gift giving.[20] In contrast, consumer settlements will show a higher level of variability in its ceramic assemblage since they could acquire their products from various producer communities or a local market. In sum, the ethnoarchaeological data preliminarily suggests regression analysis is a useful tool for delineation of different distribution patterns and production origins. A more detailed methodology for the application of a regression analysis to the ceramics of Iron Age Edom will be presented in Chapter 7.

Finally, a central ingredient to developing a fall-off curve addressed in this thesis is the use of quantitative measurements of differences in the distribution of ceramic styles rather than presence/absence studies.[21] [22] Archaeologically, presence/absence studies should be avoided as much as possible, since at certain points in time highly popular vessels may have reached beyond their regular exchange network-through down-the-line exchange or patron-client gifts from a regional leader. Rather, quantitative data should more clearly reflect distributional patterns of exchange networks. It would be expected that the quantitative density of ceramic styles from a central place market will dissipate in

[20] Another possibility is that producing settlements may become highly specialized and only produce a couple forms of ceramic types and be dependent on other villages for other forms. Mohr-Chavez (1992) found this to be the case among the Raqch'I.

[21] Not just Deal's study but a number of the ethnoarchaeological studies mentioned here noted that producers not only sell their wares in local markets but also exchange their ceramics within their community and with individuals that travel from neighboring villages to purchase their products (c.f. Mohr-Chavez 1992; Nicholson and Patterson 1992; Kramer 1991; Dietler and Herbich 1994). Unfortunately, Deal's study is the only one that mentions the quantitative differences in methods of exchange.

[22] Dietler and Herbich's (1998:255) study examines the extent of distribution from a local market but not the quantity of household vessels acquired from these local markets in comparison to vessels from even closer locals (e.g. from near by production centers). By answering this question, it should be possible to determine whether a higher proportion of a nearby production center's pottery exists within these villages or come from the local market. If there is a significantly higher proportion from within the community or neighboring villages than these local markets, then production centers can be narrowed to within 5km. Areas of production can then be compared to local market distances to determine their statistical relevance.

a radial pattern with fluctuations seen primarily by topography, geomorphology and the location of settlements within the region. Once the central places of exchange are determined a more close analysis of the more abundant forms around these centers and its satellite sites would allow a pinpointing of where the predominance of specific styles initiated. This is of course assuming that central places of exchange did exist in Edom, however more diversity would be seen if only reciprocal forms of trade between communities occurred.

3. Social Complexity and Pottery Distribution

Social complexity of a region can also play a significant role in the distribution of pottery and thus must be accounted for in the regression analysis discussed above. C. Kramer's (1991) work, one of the few studies that extensively examines ceramic distribution within state level societies, will be discussed in detail here, since her evidence can help in refining the model of distribution discussed so far. Kramer (1991) conducted an ethnoarchaeological study among two Indian cities in Rajasthan and collected a wealth of information on how pottery distribution is affected when an urban center is present. Kramer (1991) discovered that cities and large towns provide many opportunities for different types of vendors to sell pottery. She discovered that within an urban center distribution of ceramics occurred by a number means: local permanent shops, potter workshops located within the city, short-lived roadside shops, seasonal itinerant vendors (Kramer 1991:216). Even though the vendors within the urban center distribute ceramics in a number of ways the majority of pots are sold to local consumers;

thus, many of the pots remain within the urban centers. The competition between shops and demand of a large consumer base leads many shops to acquire their pottery from a number of different sources within the city itself and the hinterland. Kramer (1991:217-8) lists some of these sources: work relationship with one or two local city potters, long-term orders from out-of-town potters, purchase of leftover wares from itinerate potters, purchase from other shop keepers, patron potters hired to produce pottery along with providing needed materials, and visits to annual fairs. The reliance on commissioning village potters and the purchase of "leftovers" suggests that town potters do not meet the full demand of consumers within the city (Kramer 1991:220).

In many cases, especially when down-the-line exchanges occur, shop keepers within the city loose track of the original location of the pots produced (Kramer 1991:217-8). The city essentially becomes a melting pot for ceramic styles of different settlements and groups within the region. Any technological style referring to initial social boundaries of the rural area it was produced becomes lost in the sea of ceramic styles being sold by vendors in the city. Moreover, consumption is not based on ethnic or religious boundaries despite the presence of ethnic enclaves of Hindus, Muslims, and Jains from different castes within the city. They all consumed similar vessels (Kramer 1991:228).[23] Thus, archaeologically ceramic styles might appear evenly distributed throughout a city masking social boundaries that may have existed within. The ceramic

[23] This example can serve as a 'cautionary' tale, since it is generally assumed that ethnic enclaves would have very clear marked social boundaries. It may be the case here that ceramics were not used by consumers as ethnic markers, since vendors collected vessels from many different groups. Since consumers did not purchase directly from the producer they had no way of knowing from which group a vessel would have originated.

styles would be a mix of both local urban pottery workshops and wares from the hinterland.

The nature of ceramic distribution in the hinterlands is often different from the urban center despite a demand for increased craft specialization by the center. Kramer (1991) found that rural potters continued to produce pottery primarily for neighboring communities within a 10 to 15 km, as seen above from the majority of ethnoarchaeological studies. These potters brought their pottery to the city only occasionally when they were visiting for other reasons. The majority of hinterland pottery brought into the city was not from neighboring satellite sites but settlements located from over 50 km away. Importation of rural potters' wares into cities appears to be related more strongly to social relationships and demand of specialized wares by town consumers than purely cost-distance equations. Kramer (1991:223-4) found that the imported hinterland pottery by shop keepers could be linked to either trade/kin relations, ease of transport or popularity of certain vessel forms by consumers of the city. Within these hinterland pottery workshops not all of the ceramic forms were being imported but just those popular among consumers. These rural potters continued local production of all their ceramic forms for neighboring settlements but produced a surplus of the popular forms for export. In sum, the hinterlands potters primarily continued to practice traditional pottery manufacture, but certain workshops with connections with relatives and shop keepers in the village supplemented local production with an increased surplus. Archaeologically, the pottery found in the hinterlands would continue to appear very localized and unaffected by the city, while the city would possess a surplus of select forms from the hinterland. Thus, there would be discrepancies in the distribution of

certain forms and a distinctively cosmopolitan appearance of ceramics in the urban centers in contrast to more local circumscribed forms in the hinterlands. Any study of state level societies should take into consideration how ceramic distribution differs between urban centers and rural settlements. One should expect to find many forms unique to the settlements in the center along with many specialized forms perhaps even coming from specific areas in the hinterlands. Although this is only one case example, it is important to this study of Edom's ceramic assemblage because it presents a worst case scenario of how distribution and production can be blurred within societies with urban centers. If we can model for this scenario then situations where social boundaries are more clearly defined within cities will be clearly contrasted.

4. Craft Specialization and Ceramic Distribution

Finally, craft specialization and consumer demand can play a major role in the distribution of ceramics in the archaeological record. Arnold and Nieves (1992) have shown through ethnographic data that craft specialization and standardization is a response to greater demand by middlemen for products that will be sold to a large market of consumers. Unlike local domestic ceramic styles, these styles become highly standardized to meet certain requirements of the middlemen and their consumers. Potters move from part-time to full-time workshops outside domestic settings in order to meet the demand for increasing surplus and standardization of the product. The result is a production of standardized vessels at a mass scale. Nicholson and Patterson's (1992:33) work among the Ballâs Egyptian potters (mentioned above) shows that when craft

specialization, standardization, and middlemen are combined, it can become a vehicle for saturating a region with a ceramic style originating from a nucleated rural pottery industry (e.g. Ballâs). Thus, specialization is not only related to a greater standardization and mass production but also a wide distribution of these products through middlemen and markets (Welsch and Terrell 1998:51; Arnold and Nieves 1992; Nicholson and Patterson 1992). Multiple markets could be saturated with the same workshop's characteristic vessels, which in the archaeological record would give a more homogenous appearance to the region but in reality, just as in the other examples, mask social boundaries and ethnic identities.

The first step in untangling production from distribution is to differentiate between these widely distributed, high demand, standardized ceramic vessels and less standardized vessels from local domestic workshops. Both should show a marked difference in distribution and standardization (c.f. Feinman 1991:244-245; Renfrew 1977). As discussed by Nicholson and Patterson (1992), popular vessels with high demand may be distributed across a region through middlemen and multiple central place markets in comparison to local workshops that at most catered to neighboring communities a central place market within 15 km (see above). More important, these popular forms should be most abundant in urban centers where the demand would have been the highest and the resources were present to commission pottery specialists to mass produce them (Kramer 1991; Renfrew 1977). Some of these vessels may have been high value commodities, such as fineware or non-utilitarian vessels that were associated with prestige or patron-client relationships and circulated between numerous communities and elite (Stark 1999:29). But as Kramer's (1991) study showed they may also have been

simply well constructed utilitarian forms that have become popular among consumers. Since these vessels were mass produced (a high intensity of production) in either single workshops or nucleated industries and purchased by middlemen or urban vendors, these vessels would have been highly standardized with only minute variation in technological, morphological and decorative design (see Figure 3.9; for an number of studies that support this assertion see: Arnold and Nieves 1992; Costin 1991; Nicholson and Patterson 1992; Peacock 1982; Rice 1987; Roux 2003; Welsch and Terrell 1998:51). Therefore, an analysis of the technological styles imbedded within the product's *chaînes opératoires* would disclose various high precision technical operations that only occurred among highly skilled potters working within a large workshop or nucleated industry. The highly standardized forms can then be differentiated from less standardized imitated forms or local styles that were produced within local domestic workshops.

These imitated forms will share many of the same morphological and decorative characteristics of the mass-produced vessel style, but can be distinguished by less standardization and a localized imprint which would indicate unfamiliarity with the mimetic models of the mass-produced prototypes. Imitation of a popular form is still limited by knowledge of mimetic models and the developed motor habits of the producer. The imitation of a popular form will not only be seen in different access to fabrics and firing, but each potter imitating the form will vary in their skill to imitate the form and this may be directly related to their learned cultural schemas of how to produce ceramics (c.f. Roux 2003; Stark 1999;). Moreover, potters may choose to deviate from the known form by adding elements of their own individual or community learned style. The end result from many different potters attempting to imitate a form is a distribution of a style

that is not as standardized as would be expected if produced at a mass scale from a single origin. Imitated forms may give the allusion of being spread throughout a region, but under examination will betray the local imprint of the producer and lack the same level of standardization.

The identification of popular forms that permeate a region is very important to this study. First, if a region is saturated with popular forms that are either products of mass production or popular imitated forms then they would represent a structural homology indicating a high degree of social interaction between groups within an interaction sphere (Schortman and Urban 1987:73; Yoffee 2005:208; See Chapter 1). The spatial extent at which these forms predominate would demarcate the boundaries of the regional interaction sphere. This interaction sphere most likely will encompass a number of social boundaries at the tribal and village level and thus should not be incorrectly assumed to reflect an ethnic boundary. Over the *longue dureé* these popular forms could fluctuate between being purely a reflection of intense interaction and at other periods asserted as ethnic markers, but this fluctuation is very hard to identify within the archaeological record. Moreover, it cannot be determined purely by the evidence of these structural homologies, that groups outside this regional interaction sphere may have assigned an ethnic stereotype to the region based on these forms. Even if this did occur, groups within the interaction sphere may not have practiced self-ascription to an overarching ethnic identity and would have continued to primarily define their identity at the tribal, clan, or community level. The only way that an overarching ethnic boundary could be inferred is if it is found that the imitated forms are associated with mimetic models that share elements that could only be learned through co-habitation. As was

argued earlier, technological styles influenced by mimetic models tend to not cross social boundaries since they only can be spread through the movement and resettling of individuals that retain this knowledge. If a region of many communities conduct extensive marriage exchange and individuals resettle into different communities freely than it can be assumed that an overarching social organization had developed in which other lower level identities (e.g. tribe and village) no longer served to maintain social boundaries between these groups. These identities would surely have still persisted but would not have played as formative role as in the past in maintaining the integrity of the group. The movement back and forth and constant mixture of would have created shared cultural schemas across the region, which in turn would have led to a shared ethnic identity. In sum, for the study of Iron Age Edom the distinguishing of popular forms origin (i.e. several nucleated workshops or local domestic imitations) and whether the technological styles were products of mimetic models will be a central part of the following analyses developed in the following chapters.

5. Petrographic Clay provenience

Determining clay provenience is one method of differentiating market centers and production centers, though the resolution of the data achieved can only pinpoint sub-regions and rarely specific settlements or communities.[24] (Goren 1996; Goren et al 2004; Porat 1989; Whitbread 1995; London 1995) For instance, petrographic thin section analysis is one common approach to determining provenience of ceramic artifacts. By

[24] See "Chapter IV: The Geology of Edom and Petrographic Sourcing of its Pottery" for a more thorough discussion of this technique and its implications.

examining how fabric corresponds to vessel form it can be determined whether a specific technological style was created in multiple places or a unique locale. Where it is possible, known clay sources can be compared with the sites to get an idea of the most likely candidate that it originated from. Despite the advantages to this technique and the numerous studies that have been performed, the results generally suggest that the precision can only locate regional formations, which are still too large and extent to pinpoint exact origins. In contrast to petrographic thin sections, INAA and XRF can distinguish between different areas of the same formation but there is significant debate concerning whether these determinations can be adversely affected by presorting and tempering of the clay (c.f. Arnold et al. 2007; Rice 1987). In sum, clay provenience studies are important and can help in refining the provenience of forms when they are distributed over large distances and cross geomorphological boundaries. An extensive petrographic and ware analysis will be conducted on the excavated Iron Age ceramics from this dissertation. This study presented in chapter 6 and 7, will be used as a control on the morphological study of technological style.

6. Summary

As shown in the survey of the ethnoarchaeological data above, the distribution and consumption of artifacts, in this case ceramics, follows social boundaries only under certain conditions. With increasing levels of regional exchange, social complexity and specialization, artifacts reflecting mimetic models of a generation of related craft specialists become more widely dispersed throughout a region and loose their initial

reflection as products of a specific ethnic group. The presence of similar vessel styles within a region does not necessarily equal shared culture, ethnicity, or close relations between groups, but rather mark an *interaction sphere* created through networks of exchange that in some cases, may even cross hostile social and political lines. Barth (1969a; 1969b) mentioned this observation in his original study of the Pathan where he noted that resource flow is not restricted across social boundaries (see also Eriksen 1993:39). The essential challenge to the archaeologist is retracing the origin of artifacts back to their producer communities. As has been argued throughout this chapter, an artifact's technological style does reflect the instituted cultural models of the producer and more importantly (and *indirectly*) the social boundaries in which that producer lived. This is the beginning point of our investigation of social boundaries in the archaeological record.

Each technological style of a ceramic vessel should have its origin within the boundaries of a social group, whether it is part of the domestic mode of production or even a nucleated pottery industry. All models of ancient social boundaries should be geared towards unraveling the distributional patterns of the artifacts to find the origin of the products and ultimately the possible locations of the producers that supplied exchange networks and markets. In other words, the initial production center of an artifact must be separated from its secondary and tertiary use in distribution and consumption. This is why regression analysis will be a key tool in the analysis presented here and has been so successfully employed by archaeologists interested in the social dimensions of technology (cf. Schiffer, 1992,1975). By identifying an artifact's point of origin, it may

then be used to understand the economic, social, and political dimensions related to its production. Unfortunately, the newness of the method presented here implies few ethnoarchaeologcial studies have considered the core variables needed to understand and correlated together, production, distribution and consumption. Based on these studies several key factors emerge that allow us to begin to disentangle these variables from each other: 1) Mass produced products can be distinguished from locally produced forms because they have a much larger distribution and degree of standardization; 2) The distribution patterns of local markets can be estimated based on various fall-off curves; 3) Petrographic thin section analysis and INAA (Instrumental Neutron Activation Analysis) clay provenience studies provide course estimates of product origin; 4) A comparison of quantitative measurements of ceramic assemblages between many sites within sub-regions should show a disparate difference in the amount of ceramics exchanged between the local community and those acquired from outside. All of these factors can be used together to establish a set of testable hypotheses for investigating the relationship of social boundaries, technological style, and interaction spheres within the archaeological record and with the exception of INAA, all these factors are applied to the study of the Iron Age ceramic assemblages of Edom in this thesis.

VI. Application: Archaeological Test Methods for Iron Age II Edom

An archaeological study of social boundaries and ethnicity will be most productive when artifact assemblages, in this case ceramics, is studied from a quantitative approach so that multiple sites within a region may be compared. The study of multiple sites in this area is critical because it gives a regional perspective of ceramic

assemblages and interaction within the region. This will allow the presence and quantity of certain technological styles at different sites to be correlated with distribution patterns and possible identification of the most likely centers of production. The recent excavations conducted by the ELRAP project in the lowlands and L2HE project in the highlands of Southern Jordan presents a new large dataset for conducting a quantitative typological and petrographic study of the ceramic assemblages for determining the origin of technological styles. The ELRAP project focuses on two key lowland sites, Khirbat en-Nahas (KEN) and Rujm Hamra Ifdan (RHI; see Chapter 5 for larger discussion). KEN and Sounding A at RHI are contemporary sites, dating to the 10th-, that contain a large sample of indicative pottery sherds. RHI is unique in that it is the only excavated stratified site that contains both 10th - early 9th c. BCE strata and 8th – 7th c. BCE ones in the lowlands (Levy et al 2008 – PNAS). These sites are located on adjacent wadi systems and are within a half a day walking distance of each other. They both belonged to larger regional systems of sites that may be related to 10th - 7th c. BCE oscillations in copper production of the Faynan district. The four soundings conducted on the plateau under the L2HE project [Tawilan (TW), Khirbat am-Malayqtah KAM, Khirbat al-Kur KIJ, and Khirbat al-Iraq (KIS)] are all contemporary single period sites dating to the 8th-7th c. BCE. They are located within a 10km radius of each other. The close proximity of KAM, KIJ, and KIS to each other will allow an examination of how similar ceramic assemblages are to each other within an intra-community. The more distant, large village site of TW is a day's walking distance from the other sites. This would have allowed it to easily interact with these sites but also many other sites and markets that would not have been as accessible to the other sites. Sounding B at RHI, which is contemporary with all

of these sites, is significantly located in the lowlands approximately a 2 day journey from these highland sites. It is important to emphasize that this study does not assume that all these sites represent one phase of the Iron Age. To date, researchers have distinguished two main phases of occupation (10th-9th and 8th – 7th c. BCE; Levy et al 2008). The model testing to be carried out in this thesis will reflect this diachronic perspective. Since all of these sites have been excavated with similar recording techniques (Levy and Smith 2007), the ability to compare quantitative measurements of the ceramics is possible. The rich data at these sites enables us to conduct a micro-technological style study that goes well beyond existing ceramic studies for Southern Jordan. Also, the data makes it possible to examine the social dynamics of production, distribution, and consumption of the Iron Age II ceramics for the 10th-7th C. BCE for the first time.

It is the goal of this study to delineate different morphological styles of ceramics and their clay provenience amongst these sites and determine their distribution patterns to help identify social boundaries. An analysis of the distribution of stylistic variability across a region based on quantifiable data rather than "presence/absence" is the best approach to identifying social boundaries. Specifically, it can be used to pinpoint producer communities and the ethnic groups they belong to by identifying predominant style types and their radial patterns. Fluctuations in this radial pattern of distribution may also show how behavioral patterns affected the purchase of these vessel styles, rather than the economic cost-benefit reasons they would be purchased. By cross-comparing each style's distribution intra-site and inter-site, models can be tested to understand both the theoretical economic extent of styles and how social boundaries were formed. It can focus on social boundaries and take into account that there should not be just one

boundary but layers, and pinpoint the different layers that the styles fall into. It also will allow an investigation into mode of production and exchange. By connecting these styles with quantitative data we can determine possible local market extents and even present results that may show what forms were produced onsite or by the intra-community of sites. The following outlines the test procedures and basic methods that will be applied in this study:

A. Test Procedures and Methods:

1. A detailed typology based on ceramic vessel morphology, petrography, ware and surface treatment will be created that incorporates a study of all the sites excavated along with all published ceramic data collected from the region of the Southern Levant (see Chapter 7). The typology will focus on distinguishing prototypical forms that reflect distinct technological styles.

2. Petrographic thin section analysis and ware analysis will be conducted on a significant sample of each vessel sub-type identified in the typological study. These results will allow the different types to be geographically located and determine whether similar styles originated from a similar origin or multiple origins. Since the geological formations in the lowlands and highlands are quite similar, this study may only be able to distinguish forms produced locally in contrast to forms imported from outside the region.

3. Once the typological and petrographic studies have divided vessels into distinct styles, these forms will be compared with all the excavated and surveyed sites from the ELRAP and L2HE projects based on quantitative data and published sites from other excavations and surveys. The distribution of technological styles will be measured quantitatively for the three neighboring sites (KAM, KIS, KIJ) within close proximity of each other (1km), one site 5km from these sites (TW), and one site 10km in the lowlands (RHI). It can be assumed that all these sites were close enough for regular economic and social interaction, but would reflect a different distribution pattern according to the regression models discussed above. A similar scenario should be expected for the earlier period from KEN and Sounding A at RHI, which are less than 5km apart.

4. From this study the frequency of styles can be compared at each site to see if a pattern emerges that reflects circumscribed mimetic models. Shared morphological styles across the sites can be a reflection of either shared technological styles or an exchange of commodities (which can be modeled using regression curves discussed above). Comparing each style and its predominance at each site will provide information on how

significant these typological differences are. The technical aspects of this study will be elaborated further in Chapter 7 the ceramic analysis.

VII. Conclusion

This chapter has sought to redirect the study of social boundaries to a viable testable approach. It has focused on the various theoretical treatments and applications of social boundary studies in anthropology and archaeology. In this thesis, the study of social boundaries in the archaeological record is seen as the most productive way to investigate ethnicity in the ancient world. This survey has revealed that many of the hindrances to extrapolating social boundaries from the archaeological record have been a result of the methodological underpinnings of the approaches taken. Accordingly, a number of research strategies in the past were all hindered by the arbitrariness of these ethnic markers and their predisposed view of ethnic groups' style being only reflected in decoration. However, more recent work among French and American scholars have sought to escape these pit falls by using ethno-archaeological studies as a tempering agent to reveal the variability of how social boundaries are expressed in the material record and possible patterns that may emerge out of this abyss of possibility. One major contribution of these studies is the recognition that technological styles are part of the *chaînes opératoires.* These technological styles in many cases reflect mimetic models passed down from a community of ceramic producers to younger generations. The ethno-archaeological and cognitive anthropological studies presented above reveal that technological style most often reflects the identity of the producer and is principally

circumscribed within social boundaries under specific conditions. It presents the best approach to connecting style with social boundaries. The fundamental problem becomes developing a typology to elucidate these technological styles and the recording of quantitative data that can be subjected to a host of studies to find patterns of technological styles across sites. In sum a petrographic provenience study and a typological quantitative analysis of Edom's ceramic assemblages shows the greatest promise for identifying these technological styles. In chapters 5, 6, and 7 the archaeological data recovered from this study will be used as datasets for testing the models developed here.

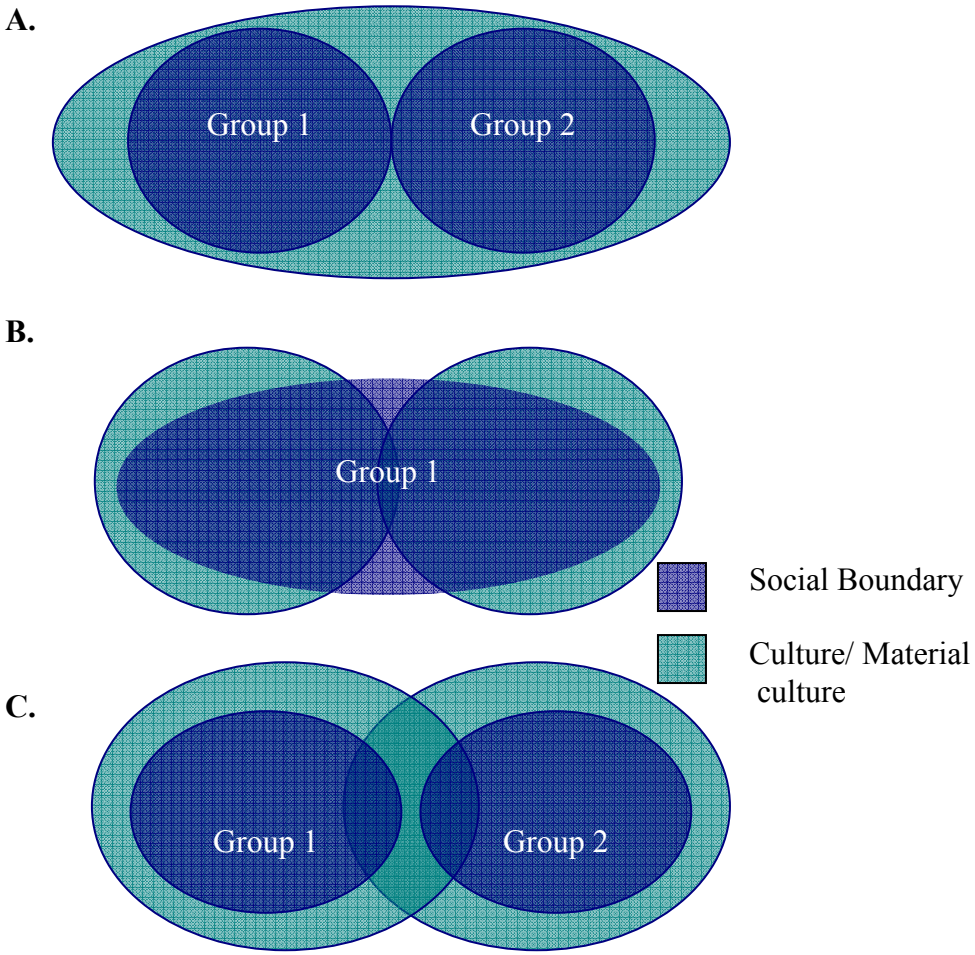


Figure 3.1: Three different scenarios of overlap between Social Boundaries and Culture/Material Culture. A. Two groups who have distinctive social boundaries but share culture/material culture. B. Two groups who share a social boundary but have a different culture/material culture. C. Two groups that have distinctive social boundaries and only overlap in culture/material culture in a few traits.

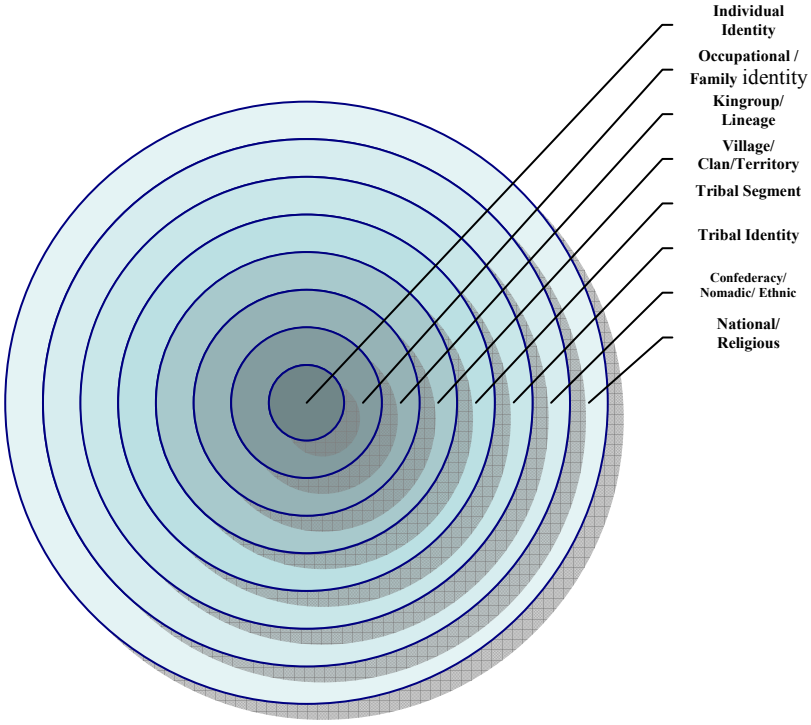


Figure 3.2: A Hierarchy of Social Boundaries from Family to National Levels

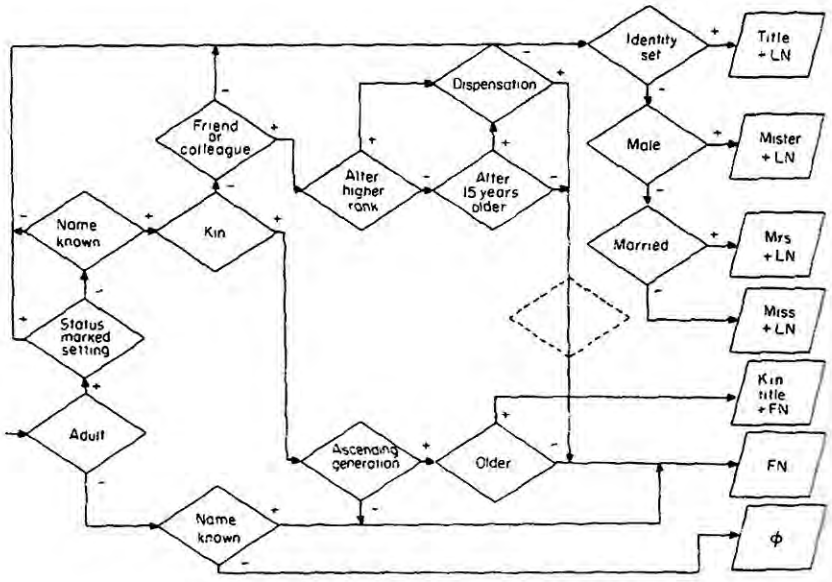


Figure 3.3: Classic Model of US American address system (From Strauss and Quinn 1997:62).

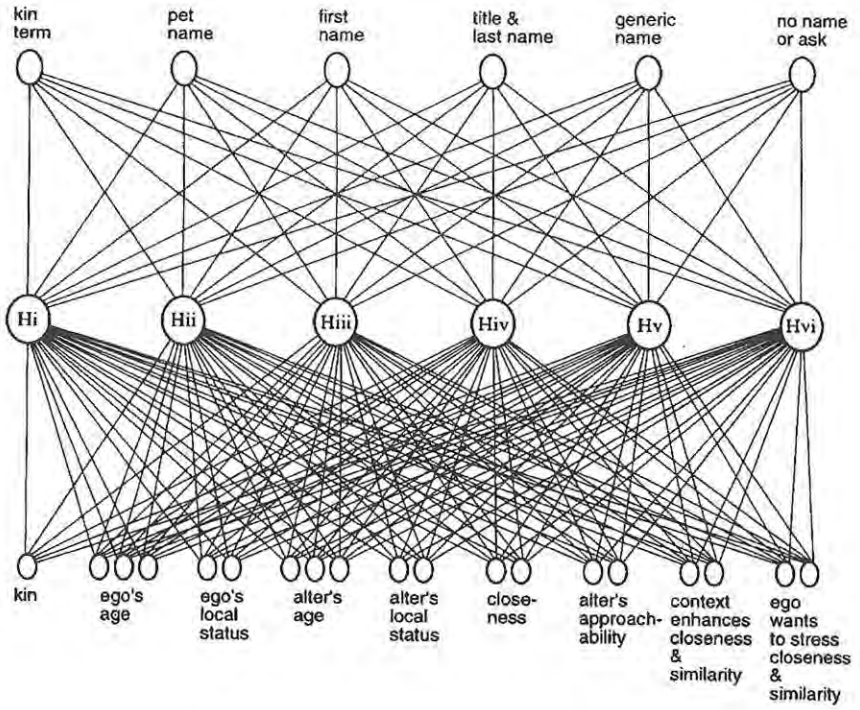


Figure 3.4: Connectionist Model of US American address system (From Strauss and Quinn 1997:63).

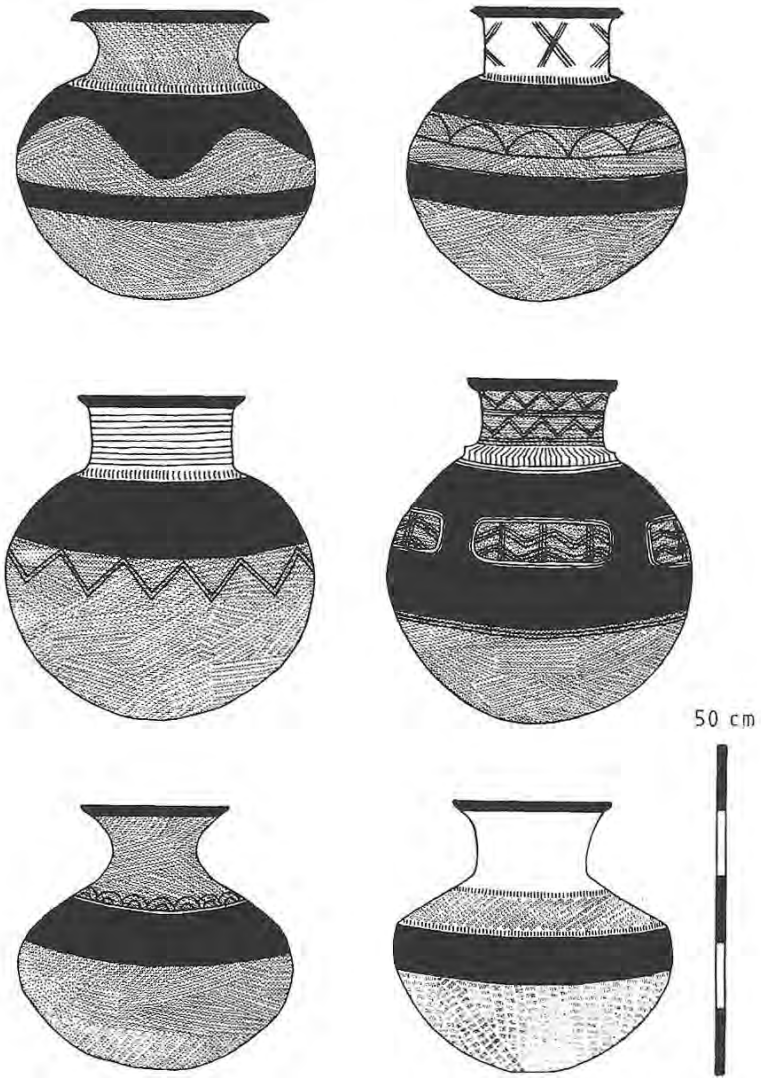


Figure 3.5: Examples of morphological and surface treatment difference between potting communities (From Dietler and Herbich1998:251)

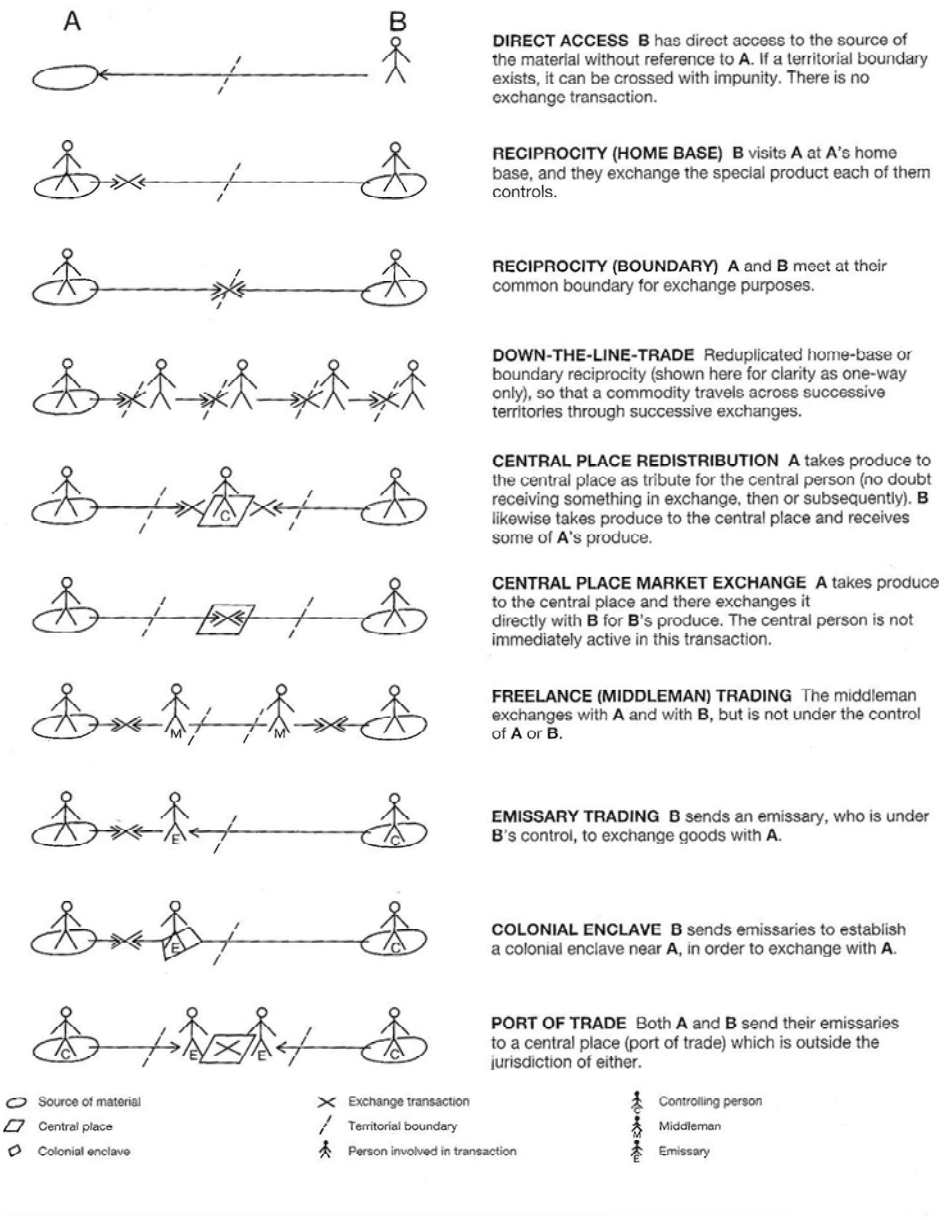


Figure 3.6: Methods of Exchange (From Renfrew and Bahn 2008:375).

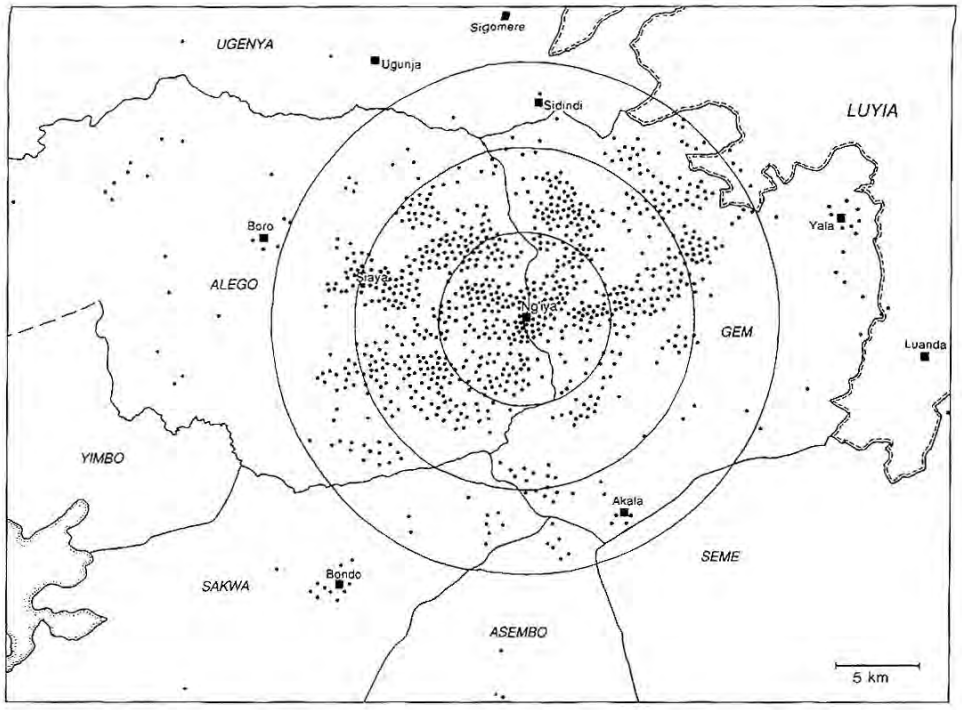


Figure 3.7: Distribution by primary consumers for Luo pottery (From Dietler and Herbich 1998:255).

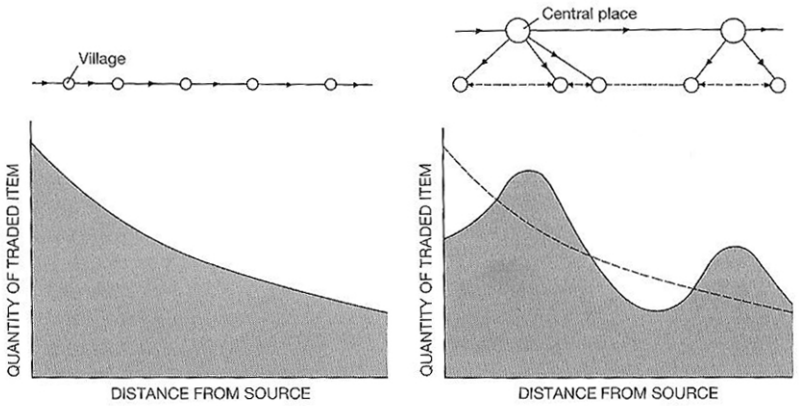


Figure 3.8: Regression Curves comparing down-the-line exchange to central place markets (From Renfrew and Bahn 2008:376).

Costin (1991)	van der Leeuw (1977)
Individual specialization	Household production and Industry
Dispersed Workshop	Workshop industry
Community specialization	Village industry
Nucleated workshops	Workshop industry (aggregated)
Dispersed corvée	Household or village industry working on a part-time basis for an elite or governmental personage(s) or institution
Individual retainers	Individual industry, but attached to an institution
Nucleated corvée (part-time labor recruited by a government institution, working in a special-purpose, elite, or administered setting or facility)	No precise equivalent
Retainer workshop (working for an elite patron or government institution)	Something less than large-scale industry-Manufactory*

Figure 3.9: Typologies of Craft Specialization (From Levy et al. 2008:20).

Chapter 4:

Case Study: Social Boundaries in the Southern Levant

I. Introduction

The goal of this chapter is to tie the models that have been developed in the previous theoretical chapters dealing with social complexity, tribalism and ethnicity in order to develop specific testable hypotheses for application to the archaeological, ceramic, and textual record. It was mentioned at the beginning of chapter 3 that the subject of ethnicity has been an especially contentious topic among archaeologists and biblical scholars working within the Southern Levant. Scholars' views on the issues of ethnic identity and ethnogenesis from the Southern Levantine polities have directly influenced their interpretations of their respective history, origin, and state formation with varying results. There have been numerous studies on ethnicity in the Southern Levant primarily concerning ancient Israel (Dever 1993, 2003; Edelman 2002; Esse 1992; Finkelstein 1997; Hesse 1990; Levy and Holl 2002; London 1989; Mullen 1993; Sparks 1998; Stager 1985), but also Philistia (Bunimovitz 1990; Bunimovitz and Faust 2001; Stone 1995), Moab (Dearman 1989; Miller 1989; Routledge 2000; Routledge 2004), and Edom (Bienkowski and van der Steen 2001; Levy 2008a, 2008b, 2009; Levy et al. 2004; Whiting 2007). Many of these studies have relied upon models of ethnicity and style derived either from processualist or information exchange approaches (c.f. Ch.3). While the majority has noted the complexity involved in the proper identification of ethnic markers within the archaeological record, few have found a viable solution to systematically verify the interpretations that they make. Only a few studies (e.g. Faust

2006; Levy 2009) have developed comprehensive interpretive models that take into consideration the nuances found in the ethnographic literature, complexity of tribal identity formation, and modern theories of socio-political development. Many of the approaches taken by other scholars make assumptions that cannot be verified or often lead to conclusions that cause them to force the data within their interpretive framework. Consequently, the understanding of ethnicity and social boundaries in the Southern Levant has remained relatively underdeveloped and sometimes misguided. In this chapter, the various theoretical models concerning social complexity, tribalism, and ethnic social boundaries, rigorously examined in the previous chapters, will be applied to the Iron Age Southern Levant. Although many of the models presented in this chapter also apply to the regions of Israel, Philistia, and Moab. This study will focus on testing hypotheses related to these issues on Iron Age Edom. In the first section, the difference between tribal identities and ethnic identities will be clarified and a set of characteristics will be delineated for their identification in both archaeological and textual sources. In the second section, the concept of ethnogenesis will be examined within the context of state formation and interaction spheres. In the third section, the archaeology of Edom will be used as a case study for examining the inferences made concerning tribal identity, ethnic identity and ethnogenesis. Finally, a set of test implications will be presented to further examine these inferences using the original ceramic and archaeological data presented in this dissertation.

II. Tribalism and Ethnic Identity: an Anthropological and Biblical Analysis of Edom

A. Introduction

An essential goal of this dissertation is to understand the role of social boundaries in the formation of tribes and states in the Iron Age Southern Levant. A clear understanding of tribal identity and its relationship to ethnic identity must be developed. To rely purely on a single anthropologist's model of ethnic identity without taking into consideration the nuances of the ethnographic record or how identity may be influenced by tribalism has led to a number of erroneous interpretations. Additionally an equally important issue that must be addressed is whether ethnic identity develops when a tribal identity already exists. In this section these issues will be addressed. First, tribal identity will be defined. Second, this section will delineate the internal identities that exist within a tribe. Third, the relationship between tribal identity, ethnicity and the concept of the tribal confederacy will be outlined.

B. Tribal Identity

Tribal identity has a number of unique characteristics that distinguish it from other forms of identity construction. For instance, tribal identity is continually reconstituted through the use of genealogical segmentation, claim to shared descent, and recounting of one's ancestors' mythical and/or historical origins and achievements. This practice culminates in the tribe taking on the name of their founding ancestor (see

examples from Lienhardt 2001). Even though other group identities may have a notion of common descent and/or a distant founding ancestor it is not elaborated by a segmentary genealogy nor emphasized to the same extent an agnatic ancestor.

Equally important, tribes not only consider themselves culturally distinct (Beck 1990; Tapper 1983:6; Khoury and Kostiner 1990) but their self-image and identity are rooted in an ideology of uniquely shared tribal values (honor, autonomy, generosity, military prowess, etc.) and practice of an egalitarian ethos (Caton 1990; Eikelmann 1998; Dresch 1986, 1988). In other words, identity for tribespeople is rooted in their ability to embody this ideology. And it is these tribal values and egalitarianism that are continually reasserted as a distinguishing factor. Hence, the elaboration of the tribal value of honor, as seen in tribal feuding, is important (Dresch 1986, 1988), for if it is injured or brought into question the very identity of the tribespeople becomes contested. In the same manner, the legitimacy of the sheikh (in Middle Eastern Islamic societies) is founded in the personification of tribal values and his ability to successfully mediate between tribal segments to restore their honor and the honor of the tribe. Thus, the retelling of the legends of great sheikhs has become, amongst many tribes, an assertion of their tribal distinctiveness and superiority over other tribes (e.g. Shryrock 1997). To conclude, tribal identity has a number of unique characteristics (e.g. segmentary genealogy, agnatic ancestor, tribal values) that distinguish it from other social identities. These characteristics serve as a 'tribal' social boundary--a collectively-constructed identity that enables them to clearly define who is included among them and who is excluded.

C. Identities within a Tribe

Furthermore, tribal identity encompasses several lower level *situational identities* associated with the segmentary lineage system. For example, a tribesperson at the most basic level will distinguish oneself as belonging to a specific lineage, but at higher levels in relation to ones clan, secondary segment, or primary segment.[1] Depending on the genealogical knowledge of the individual they are interacting with, the tribesman can define himself with increasing detail. As was discussed in Chapter 2, this ability to describe oneself through the segmentary genealogy allows two interacting tribespeople to determine their appropriate social obligations and relation to each other. The more removed one tribesman is from the other 'genealogically' the less likely they will know how the other's clan or lineage is delineated (Salzman 2000:237). Stereotyping and lumping together of lineages within a tribal segment or clan occurs within tribal segments as much as among ethnic groups.[2] When tribesmen interact with a member of another tribe they may only ascribe the identity of their tribe or a well known primary segment. Thus, tribesmen do not develop just one social identity but according to the situation are embedded within various social boundaries, levels of group association and overlying

[1] The amount of levels may vary between one tribes specific segmentary genealogy to another. But in most cases a lineage, clan, and several levels of segment are common (e.g. Wilson 1977; Lienhardt 2001; Salzman 2000; Shryrock 1997).

[2] Unlike how segmentary lineage theory would predict (Evans-Pritchard 1940), Salzman (2000:237) argues that few tribespeople know tribal segments' internal subdivisions outside of their own segment or retaliate in equally opposed force. The retaliatory actions of the offended tribal segment often are targeted indiscriminately at any individual within the other tribal segment that is thought to be connected with the injurer even if they may be genealogically distant. It can be deduced that "members of lineages were considered to be not unique individuals, but interchangeable equivalents" (Salzman 2000:275). Within large tribes the potential for tribal segments to oversimplify and merge disparate lineages into stereotypical groups is high.

loyalties (i.e. situational identities). As attested by the Kirdi and Nuer mentioned earlier by Cohen (1978; see Section IIB), tribesmen possess multiple identities which they ascribe to themselves according to their situation. When they are a minority amongst a larger ethnic or tribal group they band together and accept the stereotyped identity placed upon them, but when they are amongst other fellow tribesmen they identify themselves according to their distinctive tribal segment, clan or lineage. Many of the 'ethnic' and 'tribal' groups categorized today and in the past by outsiders only represent the broadest social identity of a tribesperson within which a more varied and situationally determined ethnic and tribal identity persist.

Accordingly, for tribes and tribal confederacies, the names and labels used to refer to them by states and other groups should not be seen as consistently harmonious with the self-ascribed identity of that group. Tapper's (1988) work is a case in point of the inherent problem that exists when researchers attempt to identify ethnic and tribal groups among the tribal inhabitants of Afghanistan and Iran. For example, Tapper (1988:27) notes that the indigenous terms to describe a tribal or ethnic identity do not have one to one correspondence but are often polysemic. Within Afghanistan the term *qaum* is used to denote common origin, cultural unity, and shared identity. This term is used primarily to represent tribal identity but it is also just as commonly used for the linguistic or ethnic groups. Moreover, it is used according to context to refer to nationality, descent group, sect, caste, or family. In Iran, *qaum* is used very differently. It is restricted to only referring to a linguistic identity or affinal kin-group. Thus, the indigenous term *qaum* found in both Iran and Afghanistan not only is used within each region in multiple ways but also connotes different meanings across the region.

A similar problem has been noted among Arab/Semitic tribal groups with the use of the word for tribe: *qabila* (c.f. Caton 1990; Eikelmann 1998; Lienhardt 2001; Khazanov 1994). Or in the Late Bronze – Iron Age eastern Mediterranean, the Egyptians referred to the nomadic peoples of the desert region of the southern Levant as 'Shasu' – a term that tribal peoples themselves most likely did not use (c.f. Giveon 1971; Levy and Holl 2002; Levy et al. 2004;Ward 1972). Equally important to Tapper's (1988) study, is that the use of names and labels as primary means of differentiating ethnic identities in Iran and Afghanistan leads only to a high degree of ambiguity. Names are often applied by other groups onto individuals that may contest the label. Other names may be overly inclusive including many 'ethnic' or tribal groups within them (e.g. Pashtun or Baluch). For instance in Iran, tribal names can be loosely applied to nomadic groups in general rather than referring to a specific ethnic or tribal identity. Consequently, names, labels and indigenous terms are subject to manipulation and gross overgeneralization. In order to overcome these inherent problems, anthropologists and archaeologists must examine how tribal identity and the identities it encompasses are constructed and maintained through the model of tribal identity discussed above. By doing so, a clearer understanding of the complex web of identities and social boundaries that are expressed in the archaeological and textual record can be achieved.

D. The Difference between Tribal identity and Ethnic identity

The difference between tribal and ethnic identity must be clearly delineated. In Chapter 4 section IID, it was noted that there is a fine line between the definition of

ethnic identity and tribal identity. The primary distinction between the two is that ethnic identity creates solidarity on a wider, more inclusive scale than is capable by a single tribe. (c.f. Beck 1990:196; Emberling 1997:302; Eriksen 1993:68). This is due to the ability of ethnic membership to create a system of shared identity, behavior, and belief that could not be accomplished by genealogical segmentation or tribal values alone. Thus, a single tribe should not be called an ethnic group with the exception of one that has been severely subordinated by a state to the point where its tribesmen begin to define themselves according to their minority status rather than by genealogical segmentation and tribal values (Beck 1986).

The most common form of ethnic identity formation should be seen at one step above tribal identity (i.e. among tribal confederacies). For example, the Alawites confederacy in Syria, now rulers of the modern State, make up four tribes: Matawira, Haddadin, Khayyatin, and Kalbiyya (Tibi 1990:138). This conglomeration of four tribes instituted a myth of common descent and origin that no longer specifically relied upon a segmentary lineage system. Ethnic affiliation, thus, superseded each individual tribe's identity and enabled this large population to unite together under a new form of social organization. Comparable to this example is the Qashqa'i (Beck 1986; 1996). Although the Qashqa'i confederacy, in Iran, consisted of many tribes with different origins, they recently asserted/invented their ethnic unity by adopting distinct attire (e.g. felt hats), dialect, music, dance, and support of their paramount (Beck 1990:198). The adoption of the felt hat became a symbol for the Qashqa'i of their united confederacy and opposition to the shah (Beck 1990:189). Other tribal confederacies such as the Shahsevan, of Iran, claim a shared identity through a recently invented historical origin (Tapper 1988). Even

the Pathan, the classic ethnic group studied by Barth (1969b), is made up of various disparate tribes who have created a shared genealogy, historical origin, and cultural customs. What is important about all these case examples is that tribal identity continues to persist within the confederacy but functions as a subethnic (Tibi 1990:140) identity subsumed under an overarching ethnic identity. Ethnicity thus functions as "a wider, more inclusive construct than is tribe, and it can encompass different kinds of principles, structures, and organizations" (Beck 1990:196). The necessity to integrate a diverse collection of large tribes into a confederacy can result in a transformation of not only the political organization of these tribes but also their self-consciousness.

However, it must be stressed that not every tribal confederacy undergoes this socio-cultural transformation. In many confederacies, tribal integration remains more a political organizations held together by fragile alliances without any attempt to claim a shared identity (c.f. Tapper 1988; Beck 1990). Few tribal confederacies represent a homogenous socio-cultural group, but rather the majority remains a conglomeration of heterogeneous tribes that never undergo significant socio-cultural alteration (Tapper 1988:28). These politically defined confederacies allow a much greater amount of social mobility between tribes; therefore, there is little difficulty switching from one confederacy to another or for the individual tribesperson to claim different identities according to context (i.e. situational ethnicity) (Tapper 1988:29). These confederacies cannot be strictly defined by the term ethnic group as used in this paper. They may hold to a level of cultural and political distinctiveness but are not bound to the same degree by a psycho-cultural sentiment (DeVos 1995) that would make it difficult to switch allegiances between other tribal confederacies.

These confederate tribes lacking an overarching ethnic identity switch their self-ascription according to personal interest rather than a belief in shared descent or past (i.e. their actions can be considered 'instrumentalist'—see ch.6). Origin, history or descent become avenues for dispute at the confederate level in order to determine superiority and claims to rule. This observation is most clearly documented among the Balqa tribal confederacy in Jordan studied by Shryock (1997). The Balqa tribes, centered on the region of Salt ca. 30 km west of Amman, form a "community of disagreement," and "the points of contention among them—the remembrance of tribal wars, conflicting claims to the shaykhdom, genealogical controversies, and quarrels over land—are the points at which their respective identities are most fully elaborated" (Shryock 1997:17). Oral tribal history is by nature oppositional. In contrast to the tribal confederacies above, the Balqa reinforce their tribal identity at the expense of confederate unity. In many cases these contestations remain behind closed doors because if published they would only divide the tribes (Shryock 1997:17). Where origin, history, and genealogy are hotly contested and used as assertions of one group's dominance or elevation, an ethnic identity comes to play a less important role among such a tribal confederacy.[3]

In sum, ethnic identity in its clearest sense among tribal groups emerges at the confederate level most often due to opposition with a state. However, this is based on modern ethnographic examples, with many ethnographers noting that ethnic identity had only been formulated in the past few centuries. In this light, one cannot assume when a tribal confederacy has formed that it also has developed a shared ideology of descent,

[3] In the case of the Balqa tribes, they would not contest if asked whether they are 'Arab', 'Jordanian', of Muslim—but these are more labels of association than essential to their primary identity.

origin, and history. There may still be multiple contested views of these three elements. Thus the term ethnic identity should only be reserved for groups that have adopted these three elements along with a set of marked cultural traits. Although, this chapter does not agree with Tapper (1988:31) that the term *ethnic group* should not be used in analysis of these groups, it is in agreement that in order for a proper analysis to be conducted these subtleties must be accounted for and conclusions must be made on solid grounds. When tribal confederacies are examined in a way that accounts for varying social organization, self-consciousness, cultural beliefs and ideologies, and emic expressions of identity, the term ethnic group and tribal identity can be validly identified. This method will be applied to the new archaeological data recovered for the lowlands and highlands of Iron Age Edom in chapters 5-7.

III. Ethnogenesis and Nationalism in Ancient Israel: A Critique and Implications for Edom

A. Introduction

The Iron Age in the Southern Levant was a period of complex social interactions that involved intense competition between the local polities and the Egyptian and Assyrian regional states. The inhabitants of Edom participated in these complex interactions which led to a need to define themselves in respect to their neighbors and the larger opposing powers. The extent and nature of how these conditions may have led to ethnogenesis have just begun to be deciphered for these polities (e.g. Faust 2006; Levy and Holl 2002; Levy et al. 2004; Levy 2009). In this section, a close investigation into

what initiates ethnogenesis among many modern and past societies will be carried out with the goal to develop testable models that can be applied to the archaeological and textual record of the Iron Age Southern Levant. Ethnogenesis needs to be modeled in two different ways. One way examines ethnogenesis outside state subordination and the other within the incipient archaic state. First, ethnogenesis will be defined and several misconceptions concerning the elements that cause it will be addressed. Next, a revised model of ethnogenesis for ethnic groups that were never subordinated by the state will be proposed. Following this discussion, the focus will turn to ethnogenesis that occurs within archaic states. Finally, a set of test hypotheses will be presented for the following case study of Edom and the later chapters.

B. Defining Ethnogenesis

Ethnogenesis (as implied by the name *ethno* "people or nation" and *genesis* "bringing to life") is the formation of ethnic identity and social boundaries through the social interactions between groups. The formation of ethnicity is most often described as groups being driven together by competition over resources or territory where a threat to the livelihood of a group becomes apparent. In Barth's (1969:19) original work, he suggested that ethnogenesis occurs through interaction and competition over resources between groups who hold separate territories and distinct ecological niches. Since these groups occupy separate niches enabling them to be specialized in specific resources they become interdependent as they conduct trade along the borders; thus, it is through the

high degree of social interaction along their territorial boundaries or trade centers that these groups define and maintain their social boundaries.

Other scholars have argued, that ethnogenesis is a product of a state's encroachment and/or subordination of these groups. They view ethnic identity as a product created through opposition to the state or as an imposed minority label on the group once they were integrated into the state. While many scholars do not strictly define ethnogenesis as a product of the state (Eriksen 1993; Barth 1969a, 1969b; Bentley 1987; DeVos 1995), several scholars consider it an essential element (Comaroff and Comaroff 1992; Emberling 1997; Shennan 1989; Gellner 1983). Since the latter view directly impinges on our understanding of the formation of Edomite ethnic identity, the assumptions behind this viewpoint must be weighed according to their actual impact on ethnogenesis.

First, it must be clarified that it is rare to find an example of ethnogenesis that was never in association with a secondary state. For example, in the Southern Levant, after the emergence of the pristine states of Egypt, Mesopotamia, and Anatolia, this region experienced peaks and valleys of these complex societies' economic, political, and military penetration (c.f. Marcus 1998). It is difficult to find an ancient or modern example where states did not play some role in a group's identity formation. Even in Barth's (1969b) study of the Pathan ethnic identity, this ethnic group bordered the Afghan and Iranian states. On the other hand, there are numerous examples where ethnic identity did not form even though states were present and made attempts to subordinate less complex polities (e.g. the tribal confederate groups discussed above). Therefore, what must be determined is what types of interaction between states and other complex

societies lead to ethnogenesis. In other words, how intense must the threat and competition be between these polities to generate ethnogenesis?

One model that seeks to address this point has been proposed by S. Shennan (1989). He argues that ethnogenesis does not occur until "pre-existing forms of identity" (i.e. methods of mechanical solidarity—kinship) begin to be broken down through the activities and encroachment of a complex society such as the state (Shennan 1989:16). By this definition, it is only when the threat becomes significant enough that the original social structures holding a polity together begin to unravel that ethnic identity becomes a tool for the polity to redefine how they are connected.

Although this concept, explains why ethnic identity occurs so often in relation to more complex societies, it still does not provide a measure for determining when a threat is significant enough to cause this breakdown or evolution. Does it occur when a state begins to attempt to seize territory from the group or not until this group has been conquered or subjugated? Must it be a state or can a warring chiefdom or alliance of neighboring peer polities generate the same type of threat? It is these questions that have divided scholarly opinion and have led some to make overly simplistic generalizations of ethnogenesis. However, these issues must be addressed, especially, in the case of the Southern Levantine polities, because some of the more recent studies for this area have adopted a myopic model of ethnogenesis.

Specifically, Comoraff and Comoraff (1992)'s discussion of ethnogenesis, which has been adopted by A. Faust (2006) and Small (1997) for their work in the Southern Levant must be challenged. Comoraff and Comoraff (1992) take the extreme view of ethnogenesis that it is not until a state has subordinated a polity that ethnic identity is

formed. They argue that self-identification among groups always exists but ethnic identity does not occur until asymmetric relations develop (e.g. State and less complex societies) (Comoraff and Comoraff 1992:51-54). This asymmetric relationship involves dominance by the state and control over the property of the now dependent nascent ethnic group. Moreover, they argue (1992:55) this inequality generates a pejorative view of the groups on both sides as less human or possessing animal like traits (e.g. they are viewed as barbarians, thieves, cattle, beasts or insects for slaughter). Despite the fact that Comoraff and Comoraff's definition of ethnicity is witnessed among some states, it is a narrow view that ignores a number of modern and historical examples where ethnogenesis has been documented between the state and ethnic groups but where subordination and control of land never occurred (c.f. Bentley 1987). Equally important, Comoraff and Comoraff's model is constructed primarily from their study of African colonialism and ethnographies made in the first half of the 20th Century. There is no attempt to handle cross-regional studies of ethnicity. It is surprising that the definitions of ethnicity and case studies presented by leading scholars are never addressed. Barth is only mentioned in passing. [4] In sum, this contracted view of ethnicity and its formation should not be used as the axiom for distinguishing between ethnic identity and other forms of identity among ancient societies—they will only lead to false interpretation of the archaeological record.

One final issue that must be addressed concerning Comoraff and Comoraff is their faulty view of groups lacking ethnic identity. Unfortunately this view has been used by

[4] While Faust's (2006) discussion of ethnicity and totemism is derived from Comoraff and Comoraff, he does not whole heartedly adhere to their definition. For example, nowhere does Faust suggest that the Philistines subjected Israel, rather Israel was always independent. Comoraff and Comoraff would not, in their definition of ethnicity, say that Israel ever evolved form the totemic level.

many scholars working in the Southern Levant. (Faust 2006; Small 1997; Hesse and Wapnish 1997). Comoraff and Comoraff's (1992) model generalizes all non-ethnic identity into the category of totemism. The term totemism comes from the work of anthropologists such as C. Levi-Strauss (1963). In these studies, totemism was used to describe hunter-gatherer and transegalitarian societies' need to distinguish themselves in contrast with other groups through the adoption of plant or animal totems as an emblem of their group. Comoraff and Comoraff (1992) follow Levi-Strauss in adopting the concept of totemism to describe the universal process of classification seen among groups who see themselves as a collective and portray others as "similar yet different." They (1992:55) argue that this 'totemic consciousness' is the driving force behind every identity that is created through the interaction of groups that have equal relations, autonomy, and retain control over their property. Some minor inequalities may exist but as long as they are not subordinated and retain their integrity they fall under this category.

According to this definition, every group that has this independency is not an ethnic group but one that has 'totemic consciousness'. Despite the solid evidence that classification and group identification is an essential part of human activity (see discussion on Schema Theory in Ch. 3; D'Andrade 1995; Shore 1996, Strauss and Quinn 1994), their concept of totemism conflates many identities into a simple dichotomy of 'symmetric vs. asymmetric relationships' and thus fails to acknowledge the many other particular processes that influence identity formation. For instance, at each level of identity formation (e.g. kin-group, village, cultic, tribal) different social institutions are activated to facilitate self-ascription and cultural distinctiveness. For example, according to Donald Tuzin's (2001) research, Ilahita identity was founded in their dual moiety

structure and men's cult.[5] Additionally, as discussed above, tribes' tribal values and segmentary lineage system played a primary role in self-ascription. These examples, highlight that identity formation is not a simple arbitrary classification of 'us' verses 'them', but involves many other factors notwithstanding the development of new social and political organizations. If a researcher wants to grasp why identity formation occurred and what form it took within a specific society, it should not be approached through a simplistic conception of 'totemism' but rather seek to delineate how political organizations, social structures, historical events, and actors participated in the construction of that identity. In the case of the Southern Levant, to describe the Iron Age inhabitants prior to state domination as 'totemic' is too simplistic, in that it does not take into consideration all the unique differences in identity that occurs below the ethnic level of classification.

C. A Model of Ethnogenesis Outside the State

In an attempt to bring clarity to the forces that cause ethnogenesis outside of state subordination, it is suggested here a structural approach must be taken.[6] Ethnogenesis occurs only when multiple groups become simultaneously threatened with the loss of their territory and autonomy by a more organized polity necessitating the creation of new social institutions and political organization. As was argued by Shennan (1989), ethnic identity supersedes other identities when the former social structures (e.g. kinship) could

[5] See a discussion of this system in Chapter 3.
[6] As used here, 'structural approach' refers to the need for societies to form social organizations in order to define their relations with others and regulate problems between individuals within the society (e.g. Levi-Strauss 1963). The model developed here primarily follows the work by D. Tuzin (2001), which takes a structural approach to social change within societies.

no longer provide the 'social glue' to bind the group together. Ethnogenesis is a structural solution to this problem. It can be identified by a number of social evolutionary processes that emerge to create a highly cohesive social organization on a much wider, more inclusive scale than was possible with former social organizations. Ethnicity functions to unite disparate groups that otherwise would naturally have no reason to combine at such a large scale. Three forms of structural change occur during ethnogenesis that can be used as indicators for its identification in the archaeological record.

First, the measure of threat that leads to ethnogenesis can be identified as one where an expansionary complex society (most likely a state, but less often an extremely predatory alliance or complex chiefdom) begins to attempt to seize territory from several different groups at the same time forcing these groups to unite and form a new social organization.[7] It is not argued here, that these groups were isolated from a pan-regional interaction sphere that involved these more complex societies, but that the neighboring complex polities had not taken an interest in dominating these groups until now. The most important point is that it is not the presence of states within the region that cause ethnogenesis but rather the critical step where these complex societies shift from raiding or conducting symmetric trade to trying to directly control or dominate the territory. This explains why ethnic identity so often follows the encroachment of powerful states in a region. Prior to their encroachment disparate groups had no motivation to unite for any prolonged period of time to thwart another local chiefdom's periodic raids. When the power balance shifted from peer polities competing against each other to one where a

[7] Another possible means associated with the state that can generate the consolidation of groups is the predatory advantage they may gain over states. The classic example is the Mongolian empire which could have never formed if not for the lucrative benefit gained through conquest and control of the Silk Road and Chinese protection payments (c.f. Khazanov 1994).

more complex polity began to threaten all of these groups' autonomy, one's local enemy became one's ally against a larger threat. In sum, as ethnogenesis is considered for Southern Levantine polities the factor that must be examined is at what point either Egyptian, Assyrian, Philistine, or other complex polities within the Southern Levant exerted this form of threat on Israel, Edom, and the other Transjordanian polities.

Second, one of the key structural changes that occur in ethnogenesis is the mobilization of ethnic markers from a number of structural homologies found within a groups' regional interaction sphere. For example, settlements inhabiting similar niches and socioeconomic lifestyles suddenly find a commonality and mutual interdependence that is seen to distinguish them from this greater threat. The structural homologies found in their culture and deep rooted mental models (e.g. architecture, ceramics, iconography, measurement systems, language, writing, religious beliefs and political institutions) now become ethnic markers for boundary maintenance and self-ascription. Shared but conflicting genealogies and myths of descent and origin are standardized by elites into a single ethnic descent and origin. Thus, their shared interest in pursing a similar goal of defending their territory and autonomy becomes a unifying symbol. This is why an analysis of structural homologies is so important to this study since they play such a great role in not only social evolution but also ethnogenesis.

Third, ethnogenesis creates a more unified organization that builds off of political organizations such as tribal confederacies, complex chiefdoms, or an alliance of disparate villages but also develops a number of new unifying social structures. For example, often alongside notions of shared ethnic identity a number of social structures emerge to unite together these groups (e.g. unifying religion, elite exogamous marriage alliances, patron-

client relationships, prestige exchange, stratification, formation of a paramount leader, administration). It is these factors alongside ethnic markers that must be identified in the archaeological record if we are going to attempt to identify ethnogenesis within complex societies outside state control.

D. Ethnogenesis within States

Now that ethnogenesis outside state subordination has been clarified, we must investigate polities that undergo ethnogenesis within an archaic state. The formation of an archaic state leaves in its wake transformations in social boundaries of the heterogeneous groups it incorporates as well as the neighboring powers that it seeks to control. States by nature are multicultural heterogeneous socio-political organizations (c.f. Cohen 1981; Toland 1993). The same can be argued for any large complex polity such as confederacies, kingdoms, and even complex chiefdoms that have incorporated, through conquest or alliance, diverse groups with their own individual primary identity, history, and origin. However, unlike these less complex societies where temporarily subordinated polities could easily break away or switch alliance, archaic states had the available administration, military strength, legitimization, and wealth finance to prevent the loss of incorporated groups. States and kingdoms also possessed urban centers which drew many different groups from its hinterland into close proximity as they were forced to live, labor, and interact together. Thus, the initial, natural outcome of the state or other complex society was the formation of ethnic minority groups and a dominant ethnic identity. Among archaic states there were several trajectories that different subordinated

groups' ethnic identity could have taken. These were both influenced by the strategies taken by the state and the subordinated groups (Emberling 1997). These trajectories become essential as we seek to study social boundaries for the Southern Levantine polities in their later periods of social formation when they may have formed into archaic states.

First, cross-cultural studies of archaic states show that the creation and stereotyping of minority ethnic groups is a primary strategy of state control. This is a central point that has been elaborated by G. Emberling (1997:308). For example, in the Old World, this was a common strategy of the Assyrian and Babylonian deportations and stereotyping in royal propaganda (c.f. Oded 1979; Parker 2001; Postgate 1992), while in the New World archaic states such as the Aztec (Brumfiel 1983) and Inca (Johnson and Earle 1987) were known for moving populations to new provinces to create new ethnic categories, promoting ethnic stereotypes among their other subordinated polities and creating new ethnic categories for newly integrated provinces. Stereotyping and ethnic identities emerged to allow states to organize these groups more effectively and at the same time for individuals to determine their ethnic membership and thus know how to behave and interact with each other. Stereotypes are multifaceted. At one point they can be used by others in a pejorative way but at the same time by the group as a way to see themselves positively (e.g. Creoles were seen by others as "Lazy, merry, careless" while they saw themselves as "Funloving, compassionate, friendly" (Eriksen 1993:23)). Thus, stereotypes and other activities within the state were both imposed from the outside but also the inside from the groups themselves. Rather than creating homogenization it is clear from these examples that the majority of archaic states had an agenda to create

segregation between commoner groups that were conquered and the ruling class. Not only the overarching ruling class may have had this agenda but also the commoner groups themselves.

Accordingly, depending on individual group's motivation to minimize or emphasize commonalties to an ethnic identity different outcomes could have occurred. Following the initial incorporation of new groups into a complex society groups can follow several different trajectories: assimilation, acculturation, or segregation. These three trajectories should be seen as different places along a continuum of ethnogenesis. They are not static but can shift back and forth over time (Emberling 1997). At one end of the scale is assimilation where the group abandons the ethnic markers and behaviors that once were used to maintain social boundaries and begins to adopt the customs of the community they have been integrated into. Segregation is at the other end of the scale, groups become even more distinct from others within the society as social boundaries are reinforced, over-communicated and invigorated with greater passion. In the city, the result is the creation of ethnic quarters or enclaves where endogamy becomes the norm (c.f. Eriksen 2000). Between these two extremes is acculturation, where groups modify, adapt, and borrow traits from the host community but still seek to maintain many of their 'distinctive' practices and beliefs. Acculturation is a hybrid of the two extremes.

It is important to note that these processes are not always fully chosen by the group but also conditioned by the host community, and the economic and political position of which these groups eventually become a part (c.f. Eriksen 1993:19). An important point to be extrapolated from this observation is that ethnic labels may or may not match up with how group's responded to their incorporation. A straightforward use of

the state's textual documents to identify ethnic groups has a number of inherent flaws. People have many identities that are used at different times. Identity can be negotiated and manipulated. Yet at the same time, where deep rooted sentiments have developed ethnic identity is often maintained through many social upheavals (Eriksen 1993:68). In the analysis of Edom's social boundaries and social complexity, we cannot purely depend on outside textual sources to determine ethnic identity or assume under emergence of new social complexity that ethnic identity emerged. A number of trajectories exist that must be investigated carefully through evidence in the archaeological record.

Finally, we must address a third possibility of ethnogenesis under a state often called nationalism, which many scholars argue did not occur until modern periods. The creation of a national identity is a means by states to politically legitimate its rule and become more centralized through the creation of a national consciousness and identity that promotes an idealized shared culture and origin of both elites and commoners. Inherent to this formation is a strategy by the state to promote a national ideology, invented history, and national markers and propaganda (Eriksen 1993:118). These states should be considered significantly different from other states in having only one dominant ethnic identity that is uniform throughout its political boundaries (Emberling 1997:305). In the same manner, a common practice of these states is the homogenization of national culture (Gellner 1983). However, the many characteristics described here are strategies identified for modern nation-states. As was argued above, if archaic states had a strategy of identity formation it was focused on segregation not homogenization. Some scholars have argued that there are documented examples of archaic states that asserted state level ethnic identity but it is not known whether commoners outside elite circles also

accepted this identity (c.f. Jenkins 2008:151; Emberling 1997; Goodblatt 2006). Thus, although there is a possibility national tendencies occurred within archaic states, they should be considered rare exceptions. This assertion would imply that homogenization of material culture and identity should not be used as a distinguishing feature in the identification of a centralized archaic state. The norm for archaic states was a heterogeneous material culture, persistence of ethnic/tribal/local identities, competing religious ideologies or non-elite folk beliefs and disparate claims to descent or origin. There may be evidence of state level ideology that claims unified descent (e.g. as seen for Egypt or the Inca) and even a set of material culture marketed throughout its political territory, but it cannot be assumed from this evidence that the incorporated groups had developed a national consciousness or concept of citizenship. In the study of Southern Levantine polities we should not assume *a priori* that homogenous material culture was a characteristic of the archaic state while heterogeneity was a product of extreme regionalism.

IV. Hypotheses

Now that the essential models of tribalism, social complexity, and ethnogenesis have been delineated a series of test hypotheses will be presented for identification in the archeological record related to southern Jordan's Edom region.

Hypothesis 1: If unique characteristics of segmentary genealogy, agnatic ancestor, tribal values are found embedded within different social groups, then these societies maintained a tribal identity.

Archaeological Test Implications: Although this evidence would most clearly be seen in textual documents (and these materials are considered in this doctoral thesis) that reflect these conflicting histories or genealogy, several methods can be used to investigate this in the archaeological record: 1) Identity at the tribal level can be seen in a high degree of regional variability in material culture, as discussed in Chapter 3 (and see associated bibliography there). Not only at the tribal level but also material expressions of lower level social boundaries (i.e. between clans and lineages) will also be distinguishable; 2) Mortuary practices that delineate one tribal group from another and territorial boundaries between them; 3) Evidence of a general egalitarian ethos and tribal values expressed through archaeological evidence (e.g. lack of monuments depicting rulers, large dispersion of prestige goods rather than exclusive control, competing ritual centers).

Hypothesis 2: If there is evidence of names and labels are used by a society with written documents to describe certain territorial groups, then it can be assumed there is at least a development of a situational ethnic identity within the group. However, it can not be fully

determined if Hyp. 2 is true, whether this identity became the primary identity of the group or whether tribal identity predominated.

Archaeological Test Implications: Despite evidence in textual sources that label groups in the Southern Levant (e.g. Edom, Israel, Moab), an essential task of archaeology is to determine whether this is the case. If hypothesis 1 is shown to be true, then these labels should be seen as purely stereotypes of neighboring groups rather than the primary identity of groups within a region. At most they can be considered a situational identity used when interacting with other groups but not a primary ethnic identity attached to deep rooted mental models, as discussed in Chapter 3.

Hypothesis 3: If there is evidence that a complex society begins to attempt to seize several different groups' territory at the same time and there is evidence these groups have developed social institutions to unite themselves socially and not just politically together, then it can be inferred that ethnogenesis has occurred. For Edom specifically these external threats need to be juxtaposed with the archaeological evidence that would show a transformation in new unifying social structures and actualization of ethnic markers. Also, specifically for tribal confederacies there should be evidence of a unified genealogy or claim to common origin. Otherwise, tribal integration at the confederate level is more of a political organizations held together by fragile alliances.

Archaeological Test Implications: This hypothesis needs to be examined in light of the test implications of Hypothesis 1: 1) There needs to be archaeological or historical evidence that shows a state or other complex society (maximal chiefdom, tribal confederacy, league of city-states) was capable and active in conquering its peripheries and conducting widespread military campaigns against whole regions; 2) Evidence of social institutions created in response to these incursions that serve to unify a population together. These may include evidence of a central religious temple, unifying belief in a single religion, and mobilization of ethnic markers across the region seen redundantly not just in ceramics, but styles of dress and paraphernalia, burial practices, and architecture (see below); 3) Tribal identity can still be an important element but now there should be a unifying story of origin and a segmentary genealogy that encompasses all the groups--this may only be identifiable through textual sources.

Hypothesis 4: If there is evidence that a social group was integrated into a state or kingdom, then it can be inferred that one of three different forms of ethnogenesis has occurred: assimilation, acculturation, segregation.

Archaeological Test Implications: Each of these will show different signs within the material record and need to be studied over an extended archaeological time period: 1) If it is assimilation, then there will be evidence that a

group that once had culturally distinct material culture later abandoned these practices and appears archaeologically as the same as the dominant group; 2) If it is acculturation, then there will be evidence of certain portion of the original material culture if even on just a domestic level persisting after incorporation; 3) If segregation occurred, then there will be clear evidence of ethnic enclaves in urban areas with a distinct material culture and practice that can be distinguished from the dominant group.

Hypothesis 5: If there is evidence that a complex society's material culture is internally homogenous across once heterogenous groups, then a form of national consciousness can be argued to have occurred.

V. Case Example: Preliminary inferences of Social Boundaries in Edom

A. Introduction

The discourse on tribal identity and ethnogenesis has a direct bearing on how the study of social boundaries in the archaeology of Edom and the study of the Hebrew Bible is approached. Assuming that the inhabitants of Edom and Israel originated from tribally organized groups (see Ch. 2), tribal social boundaries would have continued to have been maintained even if the tribes formed into a confederacy, kingdom or state. These points must be taken into consideration to address the previous attempts to identify ethnicity in

the archaeological record for the Iron Age Edom. Since only three scholars have directly dealt with the issue of ethnicity for Iron Age Edom, they will be treated individually. This approach will enable us to isolate their arguments from the data and then examine them in light of the inferences developed in this chapter. Although some conclusions can be drawn here, many of the observations made will be presented as additional test hypotheses for the following chapters and future research.

B. Debate over the Late Iron Age II Ceramic assemblage and Ethnicity

1. Tribalism and Ethnicity according to P. Bienkowski and E. van der Steen (2001)

In a paper seeking to delineate the tribal nature of Late Iron II Edom (8th-5th c. BCE), Bienkowski and van der Steen (2001) rightfully question the ethnic/national label for Edom in light of what they see to be a high degree of internal variability within the ceramic assemblages of the region. The authors (ibid.:26-27) suggest three lines of ceramic evidence to claim that there was no 'Edomite' identity or centralized state during the late Iron II. First, they argue that painted pottery does not show a homogenous distribution across the territorial region of Edom. It is scarcely found in any of the ceramic assemblages from the mountain top sites. Even though these sites were located on treacherous escarpments making access difficult, they were within close proximity of open villages. Therefore, these groups had the physical ability to acquire painted pottery, but for some social or economic reason they did not. Second, some popular ceramic types occur only in the north while specific popular kraters and pithoi in the south are rare in

the north.[8] Third, sites such as Tel el-Kheleifeh and ‘Ein Haseva have a mixture of late Edomite, Negevite, Greek, Midianite, Arabian and Egyptian forms. Similarly, Iron II Negev sites show a similar mixture of Judean, Coastal, Edomite, Assyrian-style, and Egyptian wares. From these three observations, Bienkowski and van der Steen (2001:36) argue that the heterogeneity seen across the region and by site locale is “perhaps implying relatively separate, isolated communities.” Additionally, the mixture of Edomite ceramics with other regions at sites along the border of Edom reflects the exchange of Edom’s nomadic group’s pottery with these settlements during their seasonal movements and encampments in their respective territories. Consequently, the heterogeneity of the ceramic assemblages is one piece of evidence against a centralized Edomite state with Busayra as its capital in Late Iron Age II (8th -7th c. BCE). Rather, Bienkowski and van der Steen (2001:38) follow similar arguments of LaBianca and Younker (1995; LaBianca 1999) that within Late Iron Age II Edom there were many tribes loosely connected by a confederation and held allegiance to a supratribal monarchy but did not find their core identity in it. They conclude (ibid.) that the pottery often identified as ‘Edomite’ “has no connection at all to our modem concept of ethnicity or to "the Edomite state." Put starkly, such pottery was probably produced by people who regarded themselves as members of particular tribes, and not as "Edomites".” These inferences made by Bienkowski and van der Steen present major implications for how we understand the social complexity and social boundaries of Late Iron II Edom, but they make a number of assumptions that cannot fully support their evidence.

[8] Bienkowski and van der Steen (2001:26) do not reference which types these may be that show this regional difference, so the assemblages they are referring to must be interpreted by the reader.

The first assumption made is that regionally specific distributions of ceramics reflect tribal groups rather than a centralized state. At first glance, the ceramic variability found within Edom would appear to be a smoking gun against any idea of state level centralization. However, as was argued above, from the historical and ethnographic sources, archaic state centralization was not concerned with the homogenization of material culture nor generated it on a regular basis. Variability or regionalism of ceramic styles, therefore, is not the best indicator for state control or for that matter less complex societies' (e.g. kingdom or complex chiefdom) dominance over a region. Likewise, the evidence of a tribal confederacy may be hard to identify through material culture, since these organizations' cohesiveness is based chiefly on political alliances and only secondarily later creations of shared descent, origin and cultural distinctiveness. As was shown in Chapter 3, certain ceramics styles associated with the mental models of groups from a single workshop or ceramic producing village often lose their group-association once exchanged and consumed by other villages. The extent of these ceramics' distribution is determined by what forms of exchange they were involved in (e.g. gift-exchange, market exchange, down-the-line-exchange (c.f. Renfrew and Bahn 2008). These types of exchange can cause what appear to be 'regional' or social differences. Thus, for Edom the northern-southern variability in ceramic style may mask not only producer identities but also the clan or tribe to which they ascribe their identity. Further investigation must be made into the ceramic variability found between the stronghold settlements and the open villages and towns. In sum, Bienkowski and van der Steen (2001) make an important observation concerning tribal and village level identity that needs to be rigorously tested. Although variability in ceramic style could possibly be

proven it can not definitively refute the formation of a state level society or ethnic identity.

Accordingly, in their attempt to detail the internal variability of the ceramic assemblage Bienkowski and van der Steen (2001) downplay the apparent 'culturally' distinctive aspects of the pottery when compared outside the region of Edom.[9] Whether these cultural distinctions can be associated with the activities of a confederate or kingdom political organization or even ethnic identity must still be investigated; however, the apparent 'cultural distinctiveness' of the rgion is unmistakably a product of its more inclusive interaction sphere. Although pan-regional interaction spheres (Israel, Ammon, Moab, Edom) played a role in the adoption of ceramic morphological and decorative styles, the more intensive interaction within each of these regions would have created the most distinctive structural homologies (see Chapter 2).[10] Despite the evidence that Edom interacted in a global economy and specifically with its neighboring peer polities, it still was a geo-morphologically bounded region (see Chapter 7). [11] It was at this regional level that the most intense social interaction would have occurred between the different settled and nomadic tribes, clans, and landholding groups. The result would be a number of structural homologies specific to the region of Edom. Thus, although potting communities may have unique styles and techniques that allow us to distinguish one group from the other, there are also a number of traits that have been assimilated to

[9] In Chapter 7 it will be discussed in detail which types Bienkowski and van der Steen (2001), Whiting (2007), and this dissertation consider regionally distinct in comparison to other regions.
[10] This development of structural homologies would have occurred over the *longue durree* starting in the Late Bronze Period (14th-13th c. BCE) and continuing into the late Iron Age II (5th c. BCE). Bienkowski and van der Steen (2001) hardly take into consideration these earlier periods in their analysis, which we now have strong archaeological and ceramic evidence for in the lowlands (see Chapter 7).
[11] A further distinction that cannot be fully elaborated here is that a blending of styles may be just as intense on the border of two regions as those contained within borders. This scenario must also be accounted for in a regional analysis of ceramic variability.

facilitate exchange, meet consumer mental models, and engage consumer and producer fads that occur on the regional level. It is a constant dialectic between learned mental models of how ceramics are produced and individual/community innovation and adoption. Certain styles such as decoration which is less dependent on habitual motor habits would be most permeable to consumer demand and innovation (see Chapter 3.V). As a result, the many ceramic forms that appear 'culturally' distinctive to the region of Edom should be seen as the result of a regional interaction sphere (see Ch. 2.II.C; Caldwell 1964; Schortman and Urban 1987). The essential task of the following chapters will be to investigate whether the structural homologies of the Edomite region became actualized as a means towards binding groups into greater political organizations and/or legitimization of an ethnic identity.

In conjunction with these interpretations, the mixture of ceramics at sites on the borders of Edom needs to be re-investigated. Bienkowski and van der Steen's (2001) conclusion that the 'Edomite' ceramics found on these borders reflect exchange between travelling nomadic pastoralists and the local settlements is both unsupported and, as will be argued later, misconstrues one of the clearest indications of a possible 'Edomite' identity. The presence of Egyptian, Assyrian Cypro-Phonecian, Midianite (Qurayya Ware), and Coastal pottery is not interpreted as a direct exchange between nomadic groups, why should Edom be the exception? Additionally they encounter the problem of explaining how Edomite pottery was acquired by the town dwellers. This would assume that the nomadic tribes were selling the ceramics to the town. Although there are some ethnographic examples of nomadic groups producing pottery these are the rare exceptions. It does not stand to reason that these pastoral groups specialized in wheel-

made pottery production often associated with workshops and found this a lucrative trade in these centers. Rather the ethnographic examples (Lancaster 1981; Marx 1967; Shryock 1997) suggest the reverse--nomadic groups were dependent upon towns to acquire goods such as ceramics and other specialized crafts, and in exchange, towns received pastoral groups' livestock, secondary products and, in historical periods, military protection.

If the nomads were in fact trading their pottery, it would be for one of two reasons that are both unlikely possibilities given the available evidence. First they could be using pottery as a vessel in which to exchange secondary goods. However secondary products among nomads were generally stored in perishable items such as goat skin bags or baskets. There is, of course a possibility that these secondary products were stored in indigenous vessels and then traded. However this argument is not supported in the archeological record. The 'Edomite' pottery identified at these sites is almost all table-wares or cooking pots and not storage vessels, which would be expected to be the primary vessel forms for the export of secondary products (c.f. Whiting 2007). Secondly, they could have been simply selling empty ceramic vessels. However if this was the case what significant profit could they expect to receive in trading them to a town that produced equally equivalent local pottery that could serve a similar function? There was simply no demand for more pottery.

Moreover, the transport of the pottery, an easily breakable item, for trade would have limited their mobility—especially if these groups should be viewed as pastoralists that moved camp on a frequent basis and did not follow a direct route to the nearest trade center. Although there is strong archaeological and textual evidence for nomadic

tribalism in the region of Edom (Giveon 1971; LaBianca 1999; La Bianca and Younker 1995; Levy and Holl 2002; Levy et al. 2004; Ward 1972), the interpretation of the high percentage of Edomite ceramics in these towns as an indicator of tribal groups is untenable. As noted earlier, 'Edomite' table-wares or cooking pots are not the types of ceramics that would be expected to have participated in long distance interregional exchange. Rather, the presence of these 'Edomite' forms suggests several other possible explanations to be tested in this thesis: itinerant 'Edomite' potters, trade diasporas, or 'Edomite' settlers who produced their own pottery on-site or acquired it from kin relations across the Wadi Araba. These three possibilities will be elaborated further as we discuss Charlotte Whiting's (2007) contribution to our understanding of Edom's social boundaries.

2. C. Whiting's approach to understanding 'Edomite' ceramics in Cisjordan

In an attempt to bring clarity to the issue of 'Edomite' ethnic identity or lack there of, Whiting's (2007) published a study, based on her doctoral dissertation, that examined the distribution of 'Edomite' ceramic types within the region of Edom and the Negev. Although this study is commendable for its quantitative analysis of the 'Edomite' ceramic distributions across multiple settlements, the conclusions reached do not fit the data and thus necessitate another explanation. Whiting (2007:110) begins her analysis with a quantification of the various 'Edomite' vessel families found within the Negev.[12]

[12] In order to conduct the quantitative analysis, Whiting (2007) gained permission to study a number of the Negevite ceramic assemblages, but a number of these were from older excavations that did not always keep the type of quantitative information that would benefit her study. This problem affects the validity of the

According to Bienkowski and van der Steen (ibid), the majority of 'Edomite' ceramic types found in the Negev were bowls (ca. 73%) and cooking pots (18%) while jugs and jars (5%) form the minority. This is in stark contrast to the region of Edom, where Whiting (ibid.), examining sites on the plateau region, found the breakdown of vessel families had more balanced proportions. Similarly, the study of the Negev's local indigenous pottery was more evenly distributed across the different vessel families.[13] Even though every Negev site differed in the proportion of 'Edomite' sherds it had in relation to other sherds, Whiting's (2007:109) quantitative analysis suggested that the imports (e.g. 40% of the pottery assemblage form H. Qitimit was 'Edomite', and 20% from Tel Malhata) were not simply periodic.[14] Furthermore, each Negev site had a particular sub-set of forms that did not evenly overlap with the dominant 'Edomite' types at other sites. Whiting (2007:112) cogently supports the observation that these types of pottery were different from the local material but further highlights the actual complexity of ceramic distributions at these sites that is often overlooked by scholars. [15]She (2007:120) concludes that this 'untidy' evidence contradicts a culture-historical interpretation of the data as a homogenous monolithic material culture and therefore a distinct ethnic group. Whiting (2007:120) argues, that "the late Iron Age pottery

---

percentages that Whiting gives. Nevertheless, despite inaccuracies in field recording the data is still complete enough to give the general impressions observed by Whiting in her study.

[13] Whiting (2007) leaves out this important observation, but it can be clearly seen using the statistical data presented in figures 59-63.

[14] Beer-sheva and Tel Ira may not fall into this category since only ca. 5% can be considered 'Edomite'. However the petrographic study at Beer-sheva showed that these Edomite forms were locally produced (Singer-Avitz 1999). There is still the possibility they could have been imported form one of the other Negev sites that had a much larger proportion of 'Edomite' sherds (e.g. H. Qitmit). Aro'er can now be added to this list as another example of a high proportion of 'Edomite' pottery within the assemblage (Na'aman and Thareni-Sussely 2006 ASOR).

[15] A detail that cannot be elaborated here is that a number of the sites have had petrographic studies conducted on these Edomite vessel types and they have shown that with the exception of the cooking pots, they were made from local clays (c.f. Whiting 2007 and Ch. 9 for further discussion and references).

assemblages of the Southern Levant represent a selective adoption of certain ceramic forms in circulation at that time." In other words, the indigenous groups of the Negev appropriated a selective group of 'Edomite' ceramic styles for their own production and use. Whiting's (2007:127-130) justification for an assimilation model can be summed into two arguments: 1) A shift in new eating and drinking practices led to the adoption of 'Edomite' serving and cooking utensils; 2) The lack of a real geographical barrier between the regions of 'Judah' or 'Edom' would have enabled these groups to easily adopt these 'Edomite' styles. However, these arguments are not supported by the ceramic data.

Whiting's first argument goes against a wealth of ethnographic studies that demonstrate the converse. For instance, foodways are often the most culturally conservative forms of practice and a primary means of expressing group identity and ascription (c.f. Dietler and Herbich 1998; Stark 1999). They are associated with local domestic cultural practices and can be highly affected by shared notions of what is socially acceptable to eat or drink. Moreover, because they are domestic processes it is rare that other groups would have an opportunity to learn of them unless they live within the same community or are invited to these foreigners homes (see Ch. 5 for the reasoning behind this assumption). For an indigenous population to begin to adopt culturally foreign practices of eating and serving there must be a strong compulsion to do so. However, Whiting provides no evidence to account for such a social upheaval. Equally important, the local indigenous serving and cooking ceramic vessels continue to dominate the Late Iron Age II assemblages at all the sites. These data would suggest that the majority of the inhabitants' foodways remained constant. Unless one is willing to

entertain the idea that certain peasants in these small settlements towns liked to periodically indulge themselves in foreign cuisines or show their 'cosmopolitan' identity by serving their food to their neighbors with foreign table-ware, the most logical explanation is that these serving and cooking ceramics represented a foreign presence. Most important, numerous petrographic and Instrumental Neutron Activation Analysis (INAA) studies have shown that the 'Edomite' cooking pots were not of local manufacture (see note 15). Thus, one would have to make the assumption that the local inhabitants purposely sought after the acquisition of distant cooking pots rather than relying solely on the abundant locally produced indigenous cooking vessels found at the site. This evidence begs the question, if the local Negev inhabitants never developed the knowledge to produce these cooking pots they probably were also not familiar with the cuisine cooked within them and thus would have no motivation in the first place to start using foreign cooking pots to cook their local foods. As opposed to Whiting's argument, the data indicates that some inhabitants from the east side of the Wadi Araba both brought with them their cooking pots and produced their own indigenous tablewares (bowls) at the Negevite settlement. They had distinctively different foodways in contrast to the local inhabitants of the Negevite sites, as witnessed by the utensils they used to cook and serve in. Whether they also used these utensils to communicate ethnic identity cannot be demonstrated directly from these data alone.

The second argument Whiting provides to explain the presence of 'Edomite' pottery at these Negevite settlements is insufficient along similar lines. Although it is correct that the interaction of groups enables an exchange of 'ideas' and innovation (c.f. Schortman and Urban 1987; Renfrew and Cherry 1986), the assumption that the local

Negev Iron Age potters would have been able to successfully adopt Edomite potting techniques requiring the development of complex motor habits or have a motivation to do so is contradicts a number of ethnoarchaeological studies discussed in Chapter 3 (see specifically— Arnold 1989; DeBeor 1990; Gosselain 1998; Stark 1999). First, it was already argued above that the indigenous inhabitants of the Negev settlements never adopted the production of 'Edomite' cooking pots. The exchange of 'ideas' or 'ways of doing' was not as simple as Whiting implies. A similar conclusion can be made concerning the appropriation of the 'Edomite' bowl forms. As discussed in Chapter 5, pottery production is learned through mimetic models that require the development of specific motor-habits and regular correction by a teacher. These motor-habits are learned most effectively amidst a resident community. The process of learning these new motor habits at later points in life is an exhausting process that rarely occurs or results in perfect replication of the artifact—especially when imitated outside of the community (Bentley 1987:35; Gosselain 1998; see also Chapter 4 here). In the case of the 'Edomite' bowl forms found in the Negev there is clear evidence that potters could not easily imitate these styles even though they may have seen these forms through interregional exchange. For example, these bowls are not only distinguishable from local styles by their intricate decoration but also by their morphological form.[16] With especially the fine razor-thin wheel-made carinated bowls, only a skilled master potter could produce such forms. Many of the other forms, though they may not have required the same level of mastery, still required specialized motor habits for the construction of the body and rims.[17] These

[16] See Chapter 7 for a detailed analysis of these morphological ceramic forms.
[17] See Chapter 7.

characteristics of the 'Edomite' pottery would suggest they would not have been adopted by the inhabitants of the Negev unless under conditions that 'Edomite' potters were living within the settlement or members of the Negev settlements made regular visits to the homes of the inhabitants on the east side of the Wadi Araba. Both of these scenarios Whiting does not entertain. Based on provenience studies showing that the cooking pots were from Edom and the ethnoarchaeological data that 'Edomite' bowls would not have been easily appropriated contrary to Whitting's (2007) study, the data indicates that the producers of the 'Edomite' bowl forms found in the Negev region were probably potters (or descendants of potters) who originated from the east side of the Wadi Araba in the 'heartland' of Edom. The evidence suggests the most likely explanation for the presence of 'Edomites' at this site is that they belonged to a trade diaspora.

3. Trade Diasporas and Alien Inhabitants: A testable model for understanding the presence of 'Edomite' ceramics in the Negev

The presence of a foreign contingent of settlers associated with 'Edomite' pottery in the Late Iron II (8th-5th c. BCE) leads us to consider to what purpose these groups resided in the Negev. A survey of the archaeological literature would suggest that the high concentration of foreign ceramic forms, not just presence/absence, may depict the occupation of trade diasporas (c.f. Stein 1999; Algaze 2005; Cohen 1971; Emberling 1997). This observation is most germane to the study of the Negev settlements which were located along a central trade route that led from Eastern Arabia to the Mediterranean coast. Trade-diasporas are specialized merchant groups that reside within a host

community in order to facilitate the exchange of goods across multiple regions and long distances. They are generally considered culturally distinct and socially independent from their host community (c.f. Cohen 1971:266-267). But there are examples such as the Assyrian merchant class that resided in Anatolia who assimilated into their host community to the point that if not for the discovery of cuneiform tablets within the archaeological record they would not have been recognized as foreigners by the excavators (c.f. Emberling 1997:316; Emberling and Yoffee 1999; M. Larsen 1976, 1987; Ozgu 1963). Trade diasporas emerge where "communication and transportation are difficult" or state institutions are too weak to control the trade directly (Stein 1999:47). They function as intermediaries between the host community and their homeland. Stein (1999:49) argues that the success of trade-diasporas is related, amongst other things, to their ability to maintain group cohesiveness; thus they may deliberately invent and maintain social boundaries and identity that is "not only distinct from their host community, but even, on occasion, from their community of origin." Put another way, these groups may regularly "over-communicate" distinctive cultural markers to maintain their social boundaries. The ethnic markers they select come from distinctive cultural traits of their homeland but may not be used in the same way by the homeland's inhabitants to mark social boundaries. Unlike the trade-diasporas, the groups living within their homeland may not have needed to develop a sense of ethnic identity (Emberling 1997, 1997; Emberling and Yoffee 1999 ; Stein 1999). However, as witnessed above, trade-diasporas vary in both their social cohesiveness and how they are integrated within their host communities. They may at one extreme be subject to exploitation and taxation by their host community and at the other extreme control their

host settlement (i.e. asymmetric core-periphery relations) (Stein 1999:71-72). Thus, the concept of trade-diasporas holds great potential for explaining the mixed ceramic record at these IA Negev settlements, but before any comparisons can be made the evidence used to identify these 'ethnic' enclaves must be considered.

A number of archaeologists in both the Old and New world have identified trade-diasporas within their areas of research. An examination of the main attributes found among trade diasporas that remained ethnically distinct can be extracted from these studies. First, the most common element to identify these groups was the evidence of a large proportion of foreign ceramics within the host community (Algaze 1995; Emberling 1997; Emberling and Yoffee 1999; Flannery and Marcus 1996; Stein 1999). Equally important, was that these ceramics also coincided with other non-local variables such as foreign architectural styles, foreign writing systems, other foreign domestic artifacts (c.f. Emberling 1997; Flannery and Marcus 1993; Santley et al. 1987; Stein 1999).[18] Emberling (1997) argues that it is the redundancy of culturally distinctive traits that most clearly marks off these groups as ethnically different from the indigenous population. Second, evidence of foodways and their preparation are a very distinct from the host community (Stein 1999:72). Third, trade-diasporas commonly show evidence of public rituals and ceremonies (e.g. burial practices, ceremonial structures, cult artifacts or emblems) different from the host community (Stein 1999:72; Emberling 1997:315-317). Fourth, and perhaps most important, ethnic enclaves are consistently identified as having

[18] It is important to stress prestige items should not be used as indicators of trade diasporas, because these highly portable items could have easily been acquired through trade. However, one method to possibly distinguish between emulation by a host community and an ethnic enclave is whether these items were limited to high status households or not (Stein 1999:72).

spatially discrete areas identifiable by a localized material culture (e.g. Emberling (1997:323) found that an ethnic enclave was identified in Uruk by the localization of Hamrin Polychrome in one area and representing 25% of the assemblages). These four archaeological correlates should be supported by the archaeological record if one is to argue that an ethnic trade diaspora enclave existed. When these variables lack the segregation noted in point four above, they represent trade diasporas that either were only loosely developed from the beginning or after a long period of occupation assimilated into their host community.

The study of the material culture of Nahal Tillah is an example of a trade diaspora that was more integrated into the community (van den Brink and Levy 2002; Kansa and Levy 2002; Levy et al. 1997). Unlike Tel Erani (c.f. Kempinski and Gilead 1991; Rosen 1988) and other Southern Levantine sites (e.g. Amiran and van den Brink 2002) that had Egyptian style architecture, domestic storage, and utilitarian flints, the only distinguishable material correlate of Egyptian presence at Nahal Tillah was the ceramics and a limited number of small finds (Egyptian serek signs, mace heads, etc). However, Kansa and Levy's (2002) study of the ceramics enabled them to clearly identify Egyptian presence at the Halif Terrace. The consistent "vessel form, fabric-type, surface-treatment, and manufacturing technique" rules out any local appropriation of Egyptian styles (ibid.:198). One of the more common vessel forms was the Egyptian bread mold, highlighting that not only a material culture but also foodways were distinctively different. Rather, they argue the evidence supports either the occupation of Egyptian potters in the area, or native potters that were trained in the Nile Valley/Delta who returned to these communities. The most important observation, however, made by the

authors was that their spatial analysis of the Egyptian pottery was not segregated from the Southern Levantine pottery. Simultaneous deposition patterns of both Egyptian and Southern Levantine/Early Bronze I sherds in the same area suggests that the Egyptian potters and inhabitants were well integrated with the host community--regular day-to-day close interaction and activity occurred between these two groups. Kansa and Levy (2002:204-205) interpret this data as evidence for a symmetric relationship between the Egyptian inhabitants and the indigenous population. At the most, a possible Egyptian estate conducted interregional trade between Egypt and this settlement. Similarly, addressing the overall evidence for Egyptian and Southern Levantine interaction Levy and van den Brink (2002:28-9) suggest a symmetric trade diasporas existed, "as the administration of trade seems to have been controlled by relatively small groups of Egyptians, perhaps Cohen's (1971) trade diaspora model resonates closest with the archaeological data from southern Palestine." Egyptian trade and interaction with the Southern Levant, and specifically the evidence from Nahal Tillah, can serve as a model for examining other trade diasporas that did not pursue the same level of segregation. This model will now be preliminarily applied to the archaeological data of the Iron Age Southern Levant and developed further later.

The mixture of 'Edomite' ceramics at the Negev sites should be modeled not as indigenous appropriation but rather evidence of varying degrees of integration of a trade diaspora. First, as was noted with the Egyptian ceramics at Nahal Tillah, the 'Edomite' ceramics found in the Negev are not local imitations but rather are nearly identical to the morphological and decoration styles found in Transjordan Edom. They, thus, are a product of foreign 'Edomite' inhabitants living within the settlement. Equally important,

these Negev sites were not distributed randomly but are all located on the primary trade route that passed through the possible gateway town of Beer-sheva (Singer-Avitz 1999). The presence of these 'Edomite' groups in the Negev can be inferred as directly related to the mediation of this trade between the two regions. What still requires further investigation is the level of integration or segregation that occurred at these settlements. For example, studies of the spatial distribution of the 'Edomite' ceramics have not been conducted for the excavations of the Iron Age Negev settlements. In addition, little is known concerning the evidence of other artifacts that could be associated with a foreign presence. With the exception of pottery, architecture, burial practices, utilitarian products and zooarchaeological materials have, as yet, not been fully examined within the region of Edom or the Negev to note any regional differences. For Edom, specifically, this lack of data has been hampered by a dearth of modern extensive excavations in the area (see chapter 5). Another arena of investigation that needs to be conducted is to examine whether some 'Edomite' forms underwent hybridization with indigenous styles (see Kansa and Levy 2002). Thus, for the time being it can be asserted that 'Edomite' trade diasporas existed within the Negev settlements, but to what extent they were segregated from the local community and developed social boundaries with an 'Edomite' identity cannot be fully understood until a more comprehensive future analysis of these site's archaeological data is conducted.

However, the recent ceramic analysis of the northern Negev site of Aro'er by Na'amman and Y. Thareni-Sussely (2007, ASOR;) may provide the clearest evidence that indeed 'Edomite' trade diasporas with ethnic enclaves were active during the late Iron Age II in the Negev. Thareni-Sussely (2007, ASOR) argues that a spatial analysis of

the ‘Edomite’ ceramics at Aro’er shows a clustering without a mixture of indigenous ceramics on the outskirts of the main settlement in a small domestic building. Similar to the other Negev settlements, the petrography shows that the ‘Edomite’ ceramics are primarily local (see above), however, the cooking vessels are from the region of Transjordan Edom. This evidence strongly supports the concept of a trade diaspora that maintained strong social boundaries, cultural distinctiveness, and lived in a separated building. Whether Aro’er may be the only Negev site that such a clear ethnic enclave can be distinguished, this evidence strongly suggests that a trade diaspora to some extent was involved with the various Negevite sites that were located on this trade route. The ‘Edomite trade diaspora may have been negotiated differently the extent of interaction between each Negevite site. Thus, at some sites foreign ethnic enclaves may be identified while at others a more ‘assimilated’ ‘Edomite’ merchant class was preferred. In short, during the Late Iron II the necessity to maintain the well established trade route that ran through Edom and the Beer-sheva valley, a merchant class coming from the region of Edom settled within the primary trading settlements along this route to facilitate the proper flow of this trade. In contrast, to interpretations of other scholars that Edom was encroaching upon foreign territory, the evidence suggests a close peaceful economic interaction that occurred between these two groups. Cultural difference between the ‘Edomite’ merchant group and the indigenous population may have been noticed by both groups, but whether these differences became socially communicated as ethnic markers is still open ended. The evidence of an Edomite trade diaspora in the Negev is important to the Late Iron Age II ceramic study conducted in the following chapters because a number of the vessels discussed above are paralleled at the sites excavated for this dissertation.

These vessel types can be quantitatively studied at the new excavated sites and compared to Whiting's research for the Negev. We can determine how similar or different morphologically the 'Edomite' vessels were in the Negev from our excavated sites and make a more conclusive assessment of the statement by Whiting that they were appropriated 'Edomite' forms. Furthermore, the evidence of this trade diaspora suggests that Edom had an active role in the transport and trade of prestige goods along the main east-west trade route that passed through its territory. This evidence has significant implications in the later chapters where it will be investigated how the Edomite kingdom accumulated wealth to finance its elites, ruling class, and administration.

One final observation that must be addressed is that the most popular 'Edomite' ceramics found throughout the region of Edom are also the only forms found in the Negev. It is interesting that both the bowl types identified by Whiting (2007) and the cooking pots are also the only forms that are found consistently within all the Edomite settlements. What may this tell us about social boundaries and interaction spheres—both important aspects this dissertation seeks to investigate? There are a number of testable possibilities that can be put forward that will be analyzed in the following chapters:

1. The fine ware bowls need to be examined specifically to determine their degree of standardization and specialization. Bienkowski (2002) refers to these as 'Busayra' painted bowls. He prefers this term to avoid 'ethnic' labeling of these forms. However, calling them 'Busayra' painted bowls is also problematic since there is no strong evidence to support centralized attached production of these vessel forms. Contrary to the INAA studies these vessels were also locally produced in the Negev and at other sites (see Chapter 7). The emergence of these ubiquitous types at many sites may reflect some

form of social change that led to an increased craft specialization. They may not have been seen by the consumers as ceramics that demarcated an ethnic social boundary, but they definitely are a product of intense interaction that has resulted in the appearance of these forms as at a certain stylistic level homogenous. A study of standardization, especially one comparing those found in the Negev to those in Edom may indicate internal nuances and different groups slight variation or different cultural practice of these popular vessels. These studies may also help identify from where and how the potters in the Negev acquired these potting styles. It might also indicate whether the potters in the Negev accentuated any styles or forms to communicate social boundaries or conversely down played certain aspects and adopted hybrid forms to emphasize integration.

2. Similar to the fine ware bowls, the ridged rim cooking pots can be distinguished as indigenous to the region of Transjordan Edom. They occur at every site excavated and most that are surveyed (see Chapter 7). A major question that needs to be investigated is whether these cooking pots were produced by part-time craft specialists living in domestic contexts or whether these also were produced in full-time workshops. These data will enable a determination of whether these forms had become a marketable commodity in the region of Edom or whether individual communities were highly self-sufficient and produced the pottery they needed for daily activities. Coupled with this study, variations or groupings of different cooking pot volume may reflect the different cuisines produced within the vessels. How these types were then distributed across the region will provide important insights into the heterogeneous groups interacting within Edom. Also the location of possible distribution and production centers may give insight

into both social identities but also whether there was a form of control over these popular cooking pots. A determination of the specific sub-types of 'Edomite' cooking pots imported into the Negev may show evidence of specific kin groups and territories involved in this trade rather than just Edom as a whole.

3. A new typology of the ceramic assemblages found in Edom may allow other forms found in the Negev to be considered 'Edomite' in stylistic origin. This data, which will be investigated in chapter 7, may reveal previously unidentified forms in these assemblages that show a less disproportionate sample of vessel types.

4. Cross-cultural studies need to be conducted to see how trade diasporas' ceramic assemblages may depict different organizational patterns associated within the specific functional and social realms that they participated.

In summary, the critiques of Bienkowski and van der Steen (2001) and Whiting (2007) have allowed us to enumerate several important hypotheses for examining ethnogenesis and tribal identity in the Late Iron Age II Southern Levant. In the following chapters these hypotheses will be used for testing the new archaeological data from the ELRAP and L2HE projects.

C. The Early Iron II Social Boundaries of Edom: An examination of T. Levy's contributions to our understanding of ethnogenesis

Until this point, the discussion of Edomite social boundaries has focused on the late Iron II. However, the recent UCSD excavations and surveys in the lowlands of Edom

(Edom Lowlands Regional Archaeology Project – ELRAP) at the Iron Age sites of Khirbat en-Nahas, Rujm Hamrat Ifdan, and WFD40 coupled with three seasons of extensive survey demonstrate an early Iron II (and earlier) occupation of the lowlands (see Chapter 5). The social boundaries of these groups have not been largely discussed before these discoveries. Recently, T. E. Levy (2008a; 2008b; 2009) published several articles with preliminary observations concerning the early IA II ethnogenesis in Edom. His arguments will be briefly examined here and amended according to the models developed above and the recent discussion on the later Iron II presented above.

First, Levy (2009:156) argues that ethnogenesis should be seen as a multivariate process that not only involves conflict with state-level societies but also peer polity interactions. Specifically, for Iron Age Edom, Levy argues that resistance promoted ethnogenesis in Edom. In an earlier publication (Levy 2008a:13) this argument is developed by presenting a hypothetical model of competition and resistance amongst a Trans-Jordanian tribal confederation sparking ethnogenesis through its fission into Edom and Israel. Levy (2008a:13) proposes that one portion of the confederacy moved into Cisjordan and became what is known as Israel and the remainder conquered the local populations of Seir and established control over the lowland Faynan district. Although Levy's (2009) premise that ethnogenesis can occur between peer polities is supported by the study presented in this chapter, it does not take into consideration other possible outcomes of peer polity interaction. For example, competition between peers can result in cultural homogeneity as much as cultural distinction as argued by Renfrew and Cherry (1986) and discussed extensively in Chapter 2. These peer polities remain equal peers because one has not developed the social organization to conquer the other. Therefore, it

cannot be presumed that resistance directly resulted in the development of 'ethnic' identity. Equally important, as was argued earlier, ethnic identity does not necessarily always occur at the same time as the formation of new political organizations. This assertion was most clearly seen among the many tribal confederacies in the Middle East which never developed an identity above the tribal level even though they belonged to tribal confederacies in response to state encroachment (see II.D. this chapter). The distinguishing factor that should be used to identify ethnogenesis is the evidence of both political resistance and, at the same time a development of unifying social structures that promote an ethnic identity (see IIIC above). Finally, the fission, migration, and changing of allegiances of tribal societies (i.e. Israel and Edom) between one confederacy to another should not be seen as having a bearing on ethnic identity formation.

In light of these inferences, the argument made by Levy should be slightly amended. The earlier study of ethnogenesis found that ethnic identity formation can occur not only through subordination or conquest by a state level structure but also through an extensive simultaneous threat on the territory and property of multiple groups by a highly organized polity. This polity must pose a threat that the local groups would perceive as a large-scale comprehensive danger to their entire territory and their neighbors. This is why competitive warfare and periodic seizure of territory commonly seen among peer polities does not generate ethnogenesis (see Ch. 2.II.C.2 and 2.II.D.1). For the case of Edom the social processes that should be associated with possible ethnogenesis should be linked to the 14-13th C. BCE attempted conquest and deportation by the Egyptian state (as documented in their encounters with the Shasu and Asiatic

People of the region), and later the Israelite Kingdom's attempted conquest of Edom.[19] These are the type of threats that should be associated specifically with 'ethnic' identity formation. Prior to these incidents identity formation had no motivation to develop beyond the tribal and clan level. Peer polity interaction, during these early stages of Edom, played its greatest role in developing tribal identities and creating structural homologies between these competing tribal entities that in later periods enabled them to coalesce into a more unified tribal confederacy to oppose threats such as Israel. Furthermore, these external threats need to be juxtaposed with the archaeological evidence that would show a transformation in new unifying social structures and actualization of ethnic markers. This will be further investigated and tested through an examination of the ceramic assemblages in Chapter 7.

Finally, Levy (2009:161) argues that the continuation of many indigenous ceramic forms in early Iron II into the late Iron II reflect "*aesthetic cultural patterns* between the lowlands and highlands of Edom." He suggests these cultural patterns indicate a process of ethnogenesis. This observation comes out of the preliminary study of the Khirbat en-Nahas ceramic assemblage conducted by Levy and Smith (2009). In chapter 7, a more extensive analysis of these ceramics and recent excavations on the plateau will be conducted.

D. Hypotheses

It was not the goal of this case study to answer all the current questions concerning tribal and ethnic identity of Iron Age II Edom. Thus, a number of the

[19] According to the tradition recorded in the Deuteronomistic History, the attempts to seize Edomite territory did not occur until the reign of David. Prior to these accounts the tribes of Israel were more concerned with the internal problems within their territories and the Canaanites.

observations and arguments discussed above need to be more rigorously tested in Ch. 7 and 8 using the new data extracted from recent excavation on the lowlands and highlands of Edom. Here a number a hypotheses will be presented to facilitate this process.

Hypothesis 6: If the model of interaction spheres and regional structural homologies holds, then for the region of IA Edom a series of structural homologies in different forms of material culture should be identified throughout the region.

Archaeological Test Implications: 1) Although the test implications from Hypothesis 1 hold, an interaction sphere should be seen certain elements more conducive to regional demand and popularity being more common. These forms will have a wide distribution and appear very standardized. They may in reality be coming from one or two main production centers but due to high degree of trade within the regional interaction sphere they appear ubiquitous. They also should be the most common forms found outside the region but as a very small minority within the indigenous Negevite sites.

Hypothesis 7: If these structural homologies show mobilization for use in self-ascription, then it can be claimed that the group doing this had developed an ethnic identity.

Archaeological Test Implications: This is an elaboration from point Hypothesis 2.2. 1) This hypothesis suggests that certain elements will be used to actively communicate ethnic differences. Identification of actively communicated forms of style was deemed extremely difficult to decipher in Chapter 3. See Chapter 3: Test Implications for some situations where this can be identified. 2) The evidence of specific types of pottery used to mark ethnic identity within trade-diasporas may be a good indicator of this elaboration.

Hypothesis 8: If there is evidence of a significant amount of locally produced foreign-style material culture in a predominantly indigenous settlement, then it should be considered evidence of some form of trade-diaspora.

Archaeological Test Implications: 1) There must be evidence first that the foreign material culture is produced locally (i.e. petrography or INAA). 2) It needs to be ruled out that the pottery was not part of periodic exchange. There should be a high proportion of these forms suggesting a significant part of the population used it over an extended duration. 3) There should be foreign material culture that is domestic based (i.e. cooking or storage vessels and generic tableware) and not related to elite practices or prestige goods—therefore the possibility of elite emulation or hiring of attached specialists is ruled out.

Hypothesis 9: If there is evidence within a trade-diaspora of redundant material forms segregated from the host community, then it should be considered an ethnic enclave. Otherwise, if there is evidence this settlement is related to trade and a spatially distributed foreign material culture exists, then it reflects a less cohesive trade-diaspora. If there is no relation to trade this foreign population may be related to some other form of social interaction from migration to significant inter-member exchange. This evidence however should necessarily show a greater degree of hybridization over time as the community shared cultural practices and sought to find common identity.

Archaeological Test Implications: 1) A spatial mapping of all material culture must be done to determine whether there is a clustering of multiple foreign elements within one place. This can be difficult in situations of high erosion. 2) If the foreign ceramics can also be located within different types of functional places this can help elucidate the intended purpose of the ceramics and possible occupation of the foreign inhabitants. 3) Generally enclaves should be visible since they should be located in separate buildings or outside the main settlements' walls (e.g. Tell Aro'er).

Hypothesis 10: If 'Edomite' fineware bowls show a high degree of standardization and specialization, then it reflects some form of social change that led to an increased craft specialization.

Archaeological Test Implications: These will be further elaborated on in Chapter 7.

Hypothesis 11: If not all 'Edomite' fineware bowls are shown to be produced from Busayra, then they should be seen as evidence of intense interaction leading to a structural homology.

Archaeological Test Implications: These will be further elaborated on in Chapter 7 where the specific methodology for distinguishing ceramic proveniences will be discussed.

Hypothesis 12: If 'Edomite' cooking pots show a high degree of standardization and specialization, then they should be considered produced in full-time workshops and be considered a marketable commodity in the region of Edom. Otherwise the lack of standardization suggests this domestic product was a reflection of highly self-sufficient groups that were not interdependent for access to domestic products, but at the same time interacted extensively enough that structural homologies formed.

Archaeological Test Implications: These will be further elaborated on in Chapter 7.

Hypothesis 13: If 'Edomite' fineware bowls show are shown not to all be produced from Busayra, then they should be seen as evidence of intense interaction leading to a structural homology.

Archaeological Test Implications: These will be further elaborated on in Chapter 7.

VI. Conclusion

The goal of this chapter was to integrate the models that have been developed in the previous theoretical chapters into unifying, multi-variable hypotheses that can address the areas of social complexity, tribalism and ethnic identity. In the first section, it was argued that specific differences exist between tribal identities and ethnic identities that must be delineated for their identification in archaeological and textual sources. It also cannot be presumed that tribal identities cease once an ethnic identity crystallizes nor that every political organization above the tribal level developed an ethnic identity. In the second section, the concept of ethnogenesis was examined and two models were developed to handle the differences between groups that remain independent of states and those that become subjected to it. A number of test hypotheses were presented that take into consideration the affects of social change, social structure and interaction spheres. In the third section, the archaeology of Edom was presented as a case study for examining the inferences made concerning tribal and ethnic identity and ethnogenesis. It was argued that preliminary data suggests that during the Late Iron II the region of Edom had developed a number of structural homologies primarily seen in the ceramics. However, a number of regional styles were also clearly identifiable. On the main trade routes on the border of the region of Edom a mixture of local and 'Edomite' pottery was shown to not be purely a result of just exchange. Rather different types of 'Edomite' trade diasporas were identified in these settlements. From this chapter as set of test hypotheses have been developed that now allow us to properly model the formation social boundaries in Edom and their relation to tribalism and social complexity. These hypotheses will be tested in

the following chapters where the ceramic analyses (Chapter 7) and petrographic analyses (Chapter 8) are presented.

Chapter 5:

The Lowlands and Highlands of Edom: The Archaeological Context

I. Introduction

The Southern Levant is situated between the two major centers of ancient Middle Eastern civilization – Egypt and Mesopotamia. Consequently, this transition zone provides an important locus for exploring the emergence of complex societies. During the 10th -7th C. BCE, southern Levantine polities (Israel, Moab, Ammon, Philistia, Edom; see figure 5.1) reached the apex of ancient social complexity – what many scholars (Joffe 2002; Levy 2009; Marcus 2004; Master 2001; see Chapter 2) refer to as secondary state formation; however, the processes that led to these regional social changes to establish these kinds of polities is not fully understood.

In this chapter, a new body of previously unpublished archaeological excavation data is presented for the lowlands and highlands of Edom to lay the groundwork to illuminate mechanisms underlying social change and social boundary formation within Edom in the later chapters. The four excavations described for the highlands were carried out by the writer as part of the field research for this doctoral dissertation. First, the geographic and environmental boundaries of Edom will be discussed and related to the comparative study that seeks to elucidate differences and similarities between the two sub-regions (i.e. the lowlands and highlands). Second, a brief review of the current issues that have arisen over the last century concerning the chronology and social complexity of Edom will be presented along with a short discussion of previous excavations, soundings, and surveys that have been conducted in Edom. In the last the section the new

archaeological data recovered from the ELRAP and L2HE excavations at seven sites will be presented for the lowlands (Khirbat en-Nahas (KEN), Rujm Hamra Ifdan (RHI), and Khirbat al-Jaryia (KAJ) and the highlands (Khirbat al-Malyqtah (KAM), Khirbat al-Kur (KIJ), Khirbat al-Iraq Shmaliyeh (KIS), and Tawilan (TW) (see Figure 5.1). These seven sites will be the primary sources for the following chapters' ceramic petrographic and typological analyses. Although major UCSD excavations have taken place at the Iron Age cemetery of Wadi Fidan 40 in the research area, the paucity of ceramic remains found there preclude it being included in the study presented here.

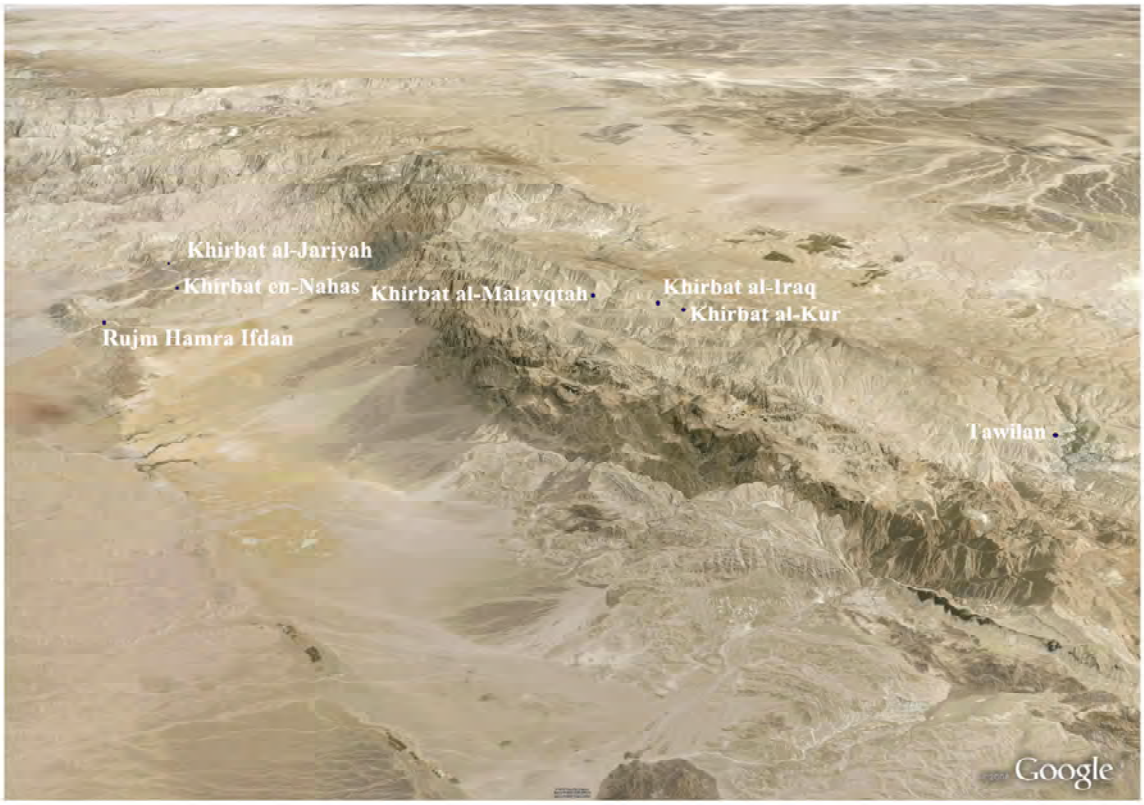


Figure 5.1a: Aerial Google Earth© Map of sites studied within Research Area

Figure 5.1b: Aerial Google Earth© Map of KAM, KIS, KIJ sites studied in the Highlands

Figure 5.1c: Aerial Google Earth© Map of All sites studied in the Lowlands

II. Geographic and Environmental Boundaries in Ancient Edom

Geography and environment played an important role in defining the territory and subsistence of ancient Edom – a region referred to in the ancient Egyptian texts (Kitchen 1992, 2003; Levy and Najjar 2006) and the Hebrew Bible (Avishur 2007, Bartlett 1989) . Within the historical, geographic and environmental boundaries of Edom there is a highly diversified and unique landscape, which has generated multiple ecosystems requiring different human adaptation strategies for survival. It is these signature landscapes that distinguish Edom from its neighbors and perhaps contributed to the social evolutionary trajectory that Edom took.[1]

The region of Transjordanian Edom is traditionally bounded on the west by the Araba Rift Valley, on the east by a gradual transition zone, on the north by Wadi el-Hasa and the south by the Gulf of Aqaba. However, some scholars (c.f. Bartlett 1982; 1989; Beit-Arieh 1989; Bienkowski 2002) have suggested from evidence in the Hebrew Bible and archaeological sites in the western Negev that contain abundant 'Edomite' pottery, that the Edom polity may have also extended further west across the Wadi Arabah into modern Israel. Today, modern Jordanian sub-district administrative organization designates the Faynan region as part of the governorate referred to as Aqaba. As the research presented here focuses on the ancient world, the term 'Edom' is used.

Within the geographic and environmental boundaries of Edom there are three highly diversified and unique geomorphologic areas, which have required different

---

[1] A more detailed discussion of the geological setting and soil morphology will be discussed in Chapter V as these environmental variables contribute directly to understanding the petrographic study presented in that chapter.

human adaptation strategies for survival (Bender 1974). Below these three geomorphologic areas are described.

A. Edom Lowlands

The Edom lowlands refer to the hyper arid valley bottom (ca. -90m to 100m above sea level) on the east side of the Wadi Arabah from the southern tip of the Dead Sea to the Red Sea and is situated in the western-most portion of the research area. From north to south the lowland is typified by a series of east-west wadi systems that flow down from the highland mountains out to the Wadi Arabah. These wadis cut through volcanic, granitic, and sedimentary rock formation creating mountain formations between each wadi, especially in their eastern reaches. It is primarily a marginal Saharo-Arabian desert climate with several natural springs and oasis's (Danin 1983; Bender 1974; Rudich and Danin 1978). Rainfall between December and March averages 17 mm while in the summer months from June to September there is virtually no precipitation (0.0-0.1mm) (Palmer et al. 2007:27). The average annual rainfall in the lowlands is less than 100 mm (Centre 2001). Thus, vegetation and agriculture is primarily confined to depressions, seasonally flooded wadis, and springs where run-off systems of irrigation have been required from as early as the Iron Age (Barker et al. 2007). Due to the arid nature of the land most sites are located on the banks of the wadis near these springs and oases. Tamarisk and acacia trees are native to the area and were used for both house construction, heating and metallurgical activities. Specifically in the Faynan area, rich copper ore sources are found all along the Dolmite-Limestone-Shale (DLS) rock formations.

B. Steppe

To the east, the intermediate steppe zone, between the lowlands and highlands, is characterized by a semi-arid climate only suitable for pastoralism unless there is intensive irrigation (Bender 1974:189; Zohary 1962). The steppe's topography contains many outcrops and spurs cut by the wadis. During the Iron Age and later periods (see below) these areas were used to create naturally defensible strongholds. The yellow steppe soil has Irano-Turanian vegetation that includes steppe forest, thorny and broom-like brush woods and dwarf shrub communities (Zohary 1962). Annual rainfall averages c.100-300mm enabling this vegetation to grow. As one ascends the steppe more vegetation can grow such as grass and *Artemisia* (Palmer et al. 2007:37) , but further up (c. 100-600m) trees such as *Acacia*, *Moringa, Juniperus, Retama*, and *Phoenix* emerge. At the transition zone between steppe and plateau (c. 600-1100m) trees such as *Juniperas*, *Amygdalus, Pistachia, and Retama* can persist (Barker et al. 2007:38).

C. Highlands of Edom

The highland plateau (ca. 600-1,700 m in elevation) is comprised primarily of a Mediterranean climate suitable for agriculture. This Mediterranean band is circumscribed to the western edge of the plateau. The soils are capable of supporting cereals, tomatoes, melons, tobacco, grapes, olives, kernel and stone fruits (Bender 1974; Zohary 1962). This zone is an environmentally rich island when compared to the abutting eastern dessert and steppe region. This sub-region is unique to the Levant in being forested with the conifer, juniper tree, in association with evergreen oak trees (*Juniperus phoenicia* and *Quercus*

calliprinos, respectively) (Zohary 1962:51, 114). The juniper and oak forests, now nearly destroyed, were once a unique element of the Edomite region. Orni and Ephrat 1971 have suggested these forests may have generated the vivid depictions of Edom in the Hebrew Bible and the association with 'Seir' meaning hairy. However, as Glueck (1940; 1968) points out, most of the Juniper forests were cut down prior to World War I by the Turks to construct the Hijaz railroad. Further east on the plateau, large grasslands and rolling hills cover the territory. In many areas such as Showbak large tracks of this land have been bulldozed and cultivated. Further east the area returns to a hyper arid desert environment.

D. Discussion

The proximity of the lowlands, steppe, and highlands to each other is significant for understanding which trajectory of increasing social complexity it took in the region of Edom during the Iron Age sequence. The sharp vertical shift in elevation between the lowlands and highlands with traversable wadis makes it possible to travel by foot in one day (Orni and Ephrat 1971; Ozment 1999; Levy 2007). Thus, multiple ecological zones can be accessed within Edom by individuals living in the lowlands, steppe, or highlands.[2] Even though Edom was geographically bounded by these natural zones their proximity meant that Edom and its sub-regions were always able to participate within a larger interaction sphere. Thus, the ability to traverse these different landscapes would have facilitated increased social complexity in the forms of trade and specialization (c.f.

---

[2] The transition area between these ecological systems (e.g. ecotones (Odum 1971:278)) is not fully discussed in the ecological literature for Jordan.

Chapter 2). As chiefs or elites became involved in interregional trade, the potential for harnessing these three ecological zones for financing their own consolidation of power would have become of central concern.

Until the UCSD research projects in Edom, little archaeological excavation work was carried out in the lowlands of Edom. Thus, one of the goals of this study is to bridge the gap between how scholars view the highlands and lowlands (Bartlett 1989; Bienkowski 1992, 2002; Bienkowski and van der Steen 2001; Knauf 1992; Knauf-Belleri 1995; LaBianca 1999; LaBianca and Younker 1995; Levy et al. 2003; Levy et al. 2005a; Smith and Levy 2008). This will be achieved by comparing the ceramic assemblages from recent archaeological excavations in these different ecological zones to determine how they relate chronologically, socially, politically, and economically.

III. The Archaeological Evidence for the Iron II in Edom

A. The Iron Age Chronology of Edom: Issues and Resolution

Prior to the University of California, San Diego (UCSD) – Department of Antiquities of Jordan (DOAJ) Jabal Hamrat Fidan (JHF), Edom Lowlands Regional Archaeology Project (ELRAP) and the Lowlands to Highlands of Edom project (L2HE), large scale archaeological excavations in Transjordanian Edom were limited to excavations on the highlands that produced only late Iron Age II (IAII) dated material. Iron Age pottery and inscriptions from the excavated highland sites such as Umm al-Biyara (Bennett 1966), Busayra (Bienkowski 2002), Tawilan (Bennett and Bienkowski 1995), and Ghrareh (Hart 1989b) all yielded a late Iron II date (c. late 8th-5th C. BCE). Surface surveys and small soundings in the highlands conducted from Wadi Hasa to Ras

an-Naqb similarly found that 12th- through 9th-century B.C.E. occupation was scarce with the majority of Iron Age sites dating to the late Iron II (MacDonald 1988; 1992; MacDonald et al. 2004; Hart 1989; All Lindner).[3] The only archaeologist that opposed this view at the time was I. Finkelstein (1992a; 1992b), who proposed in the early 1990s that the sites excavated in Edom were considerably older than the seventh century B.C.E., based upon a comparison of the published examples of collared-rim pithoi found at most of the Iron Age excavations from the highland plateau sites of Edom and many in Cisjordan. However, P. Bienkowski (1992) strongly argued that these forms were late—an interpretation later supported by stratified examples of similar pithoi found in Iron IIC sites in Transjordan by L. Herr (2001). Tell al- Kheleifeh, originally excavated by N. Glueck (1938; 1939), and located near the modern town of Aqaba was thought by Glueck to date to the early IA II. However, G. Pratico (1993), basing his dating framework on that proposed by M. Oakshott (1978) reexamined the mixed ceramic assemblage from the site found it to be late IA II, as many of the ceramic parallels could be found at the sites excavated on the highlands.

In the lowlands it had been suggested by a number of scholars (Bienkowski 2002; Knauf 1992; MacDonald 1992; Hauptmann 2000) that an IA I and early IA II occupation

---

[3] From the beginning of systematic archaeological investigations in Transjordan by Nelson Glueck (1940), he recognized a paucity of Late Bronze Age archaeological remains in Edom. Although, Egyptian inscriptions attest to the presence of Shasu, nomadic pastoralists and merchants, in Edom and Seir during the LBA and Iron I (1200-1000 BCE) (Kitchen 1992), the presence of LBA and Iron I materials has been limited to only a few surface survey finds (c.f. MacDonald et al. 1988; Bienkowski 1992). Soundings at Ash-Shorabat and Khirbat Dubab, two sites identified by survey to be Iron I (Macdonald et al. 1988), were found after excavation to also be Late IAII (Bienkowski and Adams 1997, Bienkowski et al. 1999). The limited Iron I sherds has led archaeologists to suggest that the ancestors of the late Iron II inhabitants were nomadic (Bienkowski 1992; Bienkowski and van der Steen 2001; Knauf 1992; LaBianca 1999; LaBianca and Younker 1995; Levy et al 2004; Levy 2009).

was present. However, only two small probes were carried out by V. Fritz's (1994; 1996) at the small site of Barqa el-Hetiye and Khirbet en-Nahas where he underestimated the extent of early IA II occupation at these sites. Some scholars (Bienkowski 2002; Knauf 1992; Crowell 2004; Porter 2004) assumed many of the lowland sites such as Khirbet en-Nahas, although having some earlier occupation, were predominately late, and thus contemporary with the highland sites at the end of the IA II (ca. 7th-6th c. BCE). The result was the incorporation by researchers of the lowland sites into highland models of social complexity and administrative control during Edom's generally agreed late IAII Assyrian vassaldom (see below).

Outside of the traditional boundaries of Edom, west of the Wadi Arabah, a number of sites have been excavated in the Negev desert that contained a percentage of 'Edomite' ceramic assemblages in late IAII stratigraphy, such as Horvat Qitmit, Tel 'Ira, Tel Aroer (Biran and Cohen 1981), Horvat 'Uza (Beit-Arieh and Cresson 1985), 'En Hasevah (Cohen 1995), Tel Malhata (Kochavi 1993), Tel Masos (Cohen and Bernick-Greenberg 2007), Tel Arad (Singer-Avitz 2002), and Beer-Sheba (Singer-Avitz 1999). Until recently, it was assumed that 'Edomite' ceramics at these Negev sites dated to the 7th c. BCE and perhaps later. However, a more recent analysis of Iron Age foreign ceramic traditions in the Negev at Tel Beer-Sheba and Tel Arad by L. Singer-Avitz (1999; 2002; 2007) have pushed the presence of "Edomite" ceramics in the Negev earlier, to the end of the eighth century B.C.E. Ceramic petrographic analysis from the Negev sites has shown that with the exception of cooking pots, the Edomite ceramic types were not imported but rather, produced locally (Meshel 2002; Singer-Avitz 2002; Na'aman Tharaeni-Sussely 2006).

In sum, until the UCSD ELRAP – L2HE projects discussed in this thesis, the general consensus amongst archaeologists working within the Southern Levant was that Iron Age Edom had no significant occupation or social organization prior to the late 8th C. BCE (Bartlett 1989; 1992; Bennett 1982, 1983; Bienkowski 1992b, 2002; Hart 1989b, 1995a; Knauf 1992; Knauf-Belleri 1995; LaBianca and Younker 1995; LaBianca 1999; Oakeshott 1978; Porter 2003; Routledge 2004). If there was a Late Bronze Age-Early Iron Age II (10th – 9th c. BCE) presence in Edom, it was limited and most likely associated with small nomadic and semi-nomadic groups. Moreover, the sedentarization of these groups in the 7th c. BCE was seen as an external force connected with direct or indirect Assyrian vassaldom.

However, this scholarly consensus must now change. As a result of the recent excavations and surveys in the lowlands of Edom in Jordan's Faynan with interdisciplinary excavations at Khirbat en-Nahas (KEN), Rujm Hamra Ifdan (RHI), and the Iron Age cemetery site at Wadi Fidan 40, by the ELRAP project directed by T.E. Levy and colleagues, a network of Iron Age sites related to industrial scale craft specialization in copper production reflecting complex society investment and control has been demonstrated for the 12th- 9th C. BCE (Higham et al. 2005; Levy et al 2001a, 2003, 2004, 2005 Levy and Higham 2005a, 2005b; Levy, Najjar, and Higham 2005, Levy et al. 2008; Smith and Levy 2008). This dating is confirmed by survey and multiple stratified excavations correlated with a program of high precision radiocarbon dating from these sites carried out with the Oxford Radiocarbon Accelerator Unit. This new Iron Age dating framework that has evolved for Edom has been summarized by Levy (2009) and presented in the graph illustrated below (Figure 5.2). When the ceramic data and

analyses presented in this thesis are coupled with this new chronology, the rise of Iron Age social complexity in Edom seems certain to have emerged in the lowlands prior to the widespread 8th c. BCE Assyrian presence in the Levant. Thus, Iron Age social complexity emerged early in the Iron Age II, during the 10th – 9th c. BCE through a variety of local and peer related interaction processes described in the social models presented in Chapters 2 through 4 and tested in Chapter 7. It is in the context of the new dating evidence that it is possible to test the different social evolutionary and social boundary models presented here. In the next section the various excavated, sampled, and surveyed sites will be discussed and related to the theoretically models developed in previous chapters.

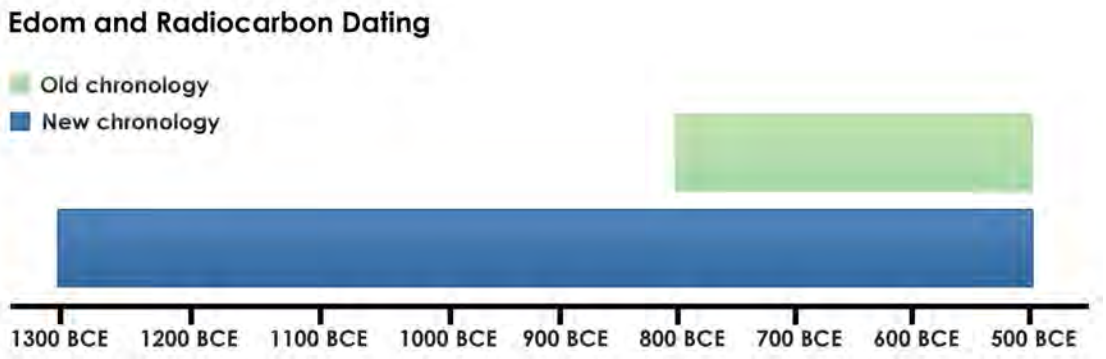


Figure 5.2: The new Iron Age chronology for Edom based on high precision radiocarbon dating (Source: Levy 2009)

B. Past Iron Age Excavations in Edom

As alluded to above, only several large scale Iron Age excavations have been conducted in Edom prior to the beginning of the UCSD ELRAP and L2HE excavations in 2002.

The first site to be extensively excavated in Edom was Tell el-Kheleifeh by Nelson Glueck from 1938 to 1940 (Glueck 1938, 1939, 1940) located at the southern tip of the Gulf of Aqaba near the modern Jordanian city of Aqaba. In a number of his preliminary reports, Glueck concluded that the site dated to the 10th c. BCE, was associated with Solomon's mines, and continued to be an Edomite stronghold until the 7th c. BCE. A reassessment of the pottery from Tell el-Kheleifeh was conducted by Pratico (1983) in which he re-dated the site primarily to the late IA II (7th c. BCE) and contemporary with Iron Age sites on the plateau of Edom and sites in the Negev desert. However, due to Glueck's collection strategies none of the pottery could be connected with the known stratigraphic levels at the site. Of significance to this study, Tell el-Kheleifeh was a fortress that contained a four-chambered gate similar to what was found at Khirbat en-Nahas (c.f. Levy et al. 2005 for a comparison).

Approximately, thirty years after Glueck's pioneer work, Crystal Bennett (1966; 1974, 1975, 1977, 1984) carried out the first large scale Iron Age excavations at three sites in the highlands of Edom. The first site excavated, Umm al-Biyara, is located on a mountain top stronghold some 300 meters above the Petra basin. A final publication has still not been released on the excavations conducted at this site. Later, Tawilan and Busayra (discussed in more detail below) were excavated over several seasons from 1968-1970, 1982 and 1971-1980, respectively. P. Bienkowski has published final publications of both of these sites (e.g. Bienkowski 2002; Bennett and Bienkowski 1995).

The only other large-scale excavation project carried out after Glueck and Bennett's projects was Steven Hart's work at Ghrareh (Hart 1988; 1989). Although this was an extensive excavation exposing a large area of the site (Areas A-E), only a

preliminary report was published by Hart (1988, 1989). Its large exterior wall, four towers, location on a naturally defendable spur, and command over the main southern route connecting the highlands to the lowlands through the Wadi Delaghah led Hart (1989) to postulate that it was a small military garrison. He dated the site to the 7th-6th c. BCE based on ceramic parallels with Bennett's work and two late 7th c. BCE seals.

C. Archaeological Soundings

More recently, several small scale soundings have been conducted in the region of Edom. The limited scale of these soundings and the general practice of only publishing a preliminary report of these soundings has limited the utility of these soundings for understanding the architecture and material culture of Iron Age Edom. The majority of these soundings were carried out on the plateau in the vicinity around Petra, such as Ba'ja III (Linder and Farajat 1987; Jabal al-Khubtha; Kh. Al-Mu'allaq (Linder et al. 1996); Jabal al-Qseir (Linder et al. 1996); Umm el-'Ala/Es-Sadeh (Lindner et al. 1988); Kh Ishra (Hart 1989); Kh al-Megheitah (Hart 1989). Bienkowski and Adams (1997; 2002) conducted two small probes on the plateau in the north near Wadi Hasa at Ash-Shorabat and Khirbat Dubab. Finally, V. Fritz conducted soundings at Khirbat en-Nahas (Fritz 1996) and at Barqa al-Hatiyah (1994). In Chapter 7, these sites will be referred to when ceramic parallels are found between them and the sites excavated and sounded for this study.

D. Archaeological Surveys – Iron Age settlement patterns

Despite the limited number of soundings and excavations in the region defined as Edom, there has been extensive survey work conducted in both the lowlands and highlands. Edom was first surveyed by early explorers at the beginning of the 20th C. BCE (cf. Musil 1907). Although a number of the surveys focused on the lowland areas these were non-systematic and generally only identified the most visible sites; representative pottery was rarely published (e.g. Glueck 1934, 1935, 1939, 1951; Frank 1934). Following these studies a number of systematic regional surveys were conducted (Hauptmann 2007; Lindner et al. 1988; Lindner 1992; MacDonald 2004; MacDonald et al. 1987, 1988; Hart 1985; 1987; 1989; Hart and Falkner 1985; Barker et al. 1998, 1999, 2007). However the first large-scale problem oriented survey and excavation project aimed at understanding the Iron Age settlement in Edom was carried out by the UCSD – DOAJ team beginning in 2002 and described below.

IV. New Excavations and Survey Data for Testing Iron Age Social Models

The following discussion presents an overview of the seven archaeological sites that were excavated from the lowland and highland regions of Edom that provide the ceramic assemblages used in this dissertation. These new data sets are contextualized here and enable us to draw a number of conclusions at the end of this chapter and in the concluding Chapter 7 where the ceramic assemblages from these sites are analyzed. The excavations are presented according to the lowland and highland geographic zones described above.

A. Lowland Excavations - Overview

1. Khirbat en-Nahas - Copper Production Center in the Faynan District

Overview of Excavations

Khirbat en-Nahas (KEN) has been known as a significant Iron Age site since A. Musil (1907) discovered it at the beginning of the 20th century. Multiple surveys followed by Frank (1934), Glueck (1935, 1940), and McDonald (1992:73,76). Glueck (ibid.) dated the primary occupation of the site to the beginning of the 10th c. BCE. The significance of this Iron Age site for archaeometallurgical research came to the forefront when the German Mining Museum (Deutsches Bergbau-Museum [DBM) under A. Hauptmann carried out the first long-term archaeometallurgical investigations in the Faynan region, collecting metallurgical remains and radiocarbon samples from KEN (Engel 1993; Engel and Frey 1996; Hauptmann 2007) as part of their technological study of ancient metallurgy. However, the radiocarbon samples collected by Hauptmann were sampled using geological 'pick and grab' methods rather than by stratigraphic excavation. V. Fritz was the first to (1996) make a small archaeological probe at the site. He published a short report on the excavations and a sample of the ceramic assemblage discovered. However, the stratigraphy for this probe is poorly described and subsequent researchers were not able to use this data for chronological or social modeling of Iron Age Edom.

To understand the socio-political and social evolutionary role of mining and metallurgy in Iron Age Edom, the first extensive excavation of Khirbat en-Nahas was carried out in the fall of 2002 by the UCSD-DOAJ team where three areas were excavated (Levy et al. 2004; Levy et al. 2005; Levy, Najjar, and Higham 2007; see

Figure 5.3). A second season in 2006 extended the previous seasons' excavations and exposed two new areas. Both seasons occurred over 8 week periods.

In the 2006 season, the extended time allowed the supervisors to open more than one area achieving both a broad collection of vertical stratigraphy as well as horizontal. The excavations to date have now exposed some of the major complexes on the site. A detailed discussion of the 2002 and 2006 seasons' stratigraphy and radiocarbon dates has recently been published (Levy et al. 2008; Smith and Levy 2009). The main goals of the 2006 season were all related to understanding the shifting role of metal production in the Iron Age social evolution of Edom. Thus, the most recent work at KEN focused on finalizing the dating of the fortress (Area A), sampling its interior (Area F), exposing two large-scale building complexes (Areas T and R) and excavating an industrial slag mound to virgin soil (Area M). These areas' ceramic assemblages will be examined and discussed in the following two chapters on the ceramic petrography and morphological analysis. Recently, an extensive pit mine field was found less than 1 km north of KEN that was probably one of the main sources of copper ore processed at the site (Ben-Yosef, Levy and Najjar 2009).

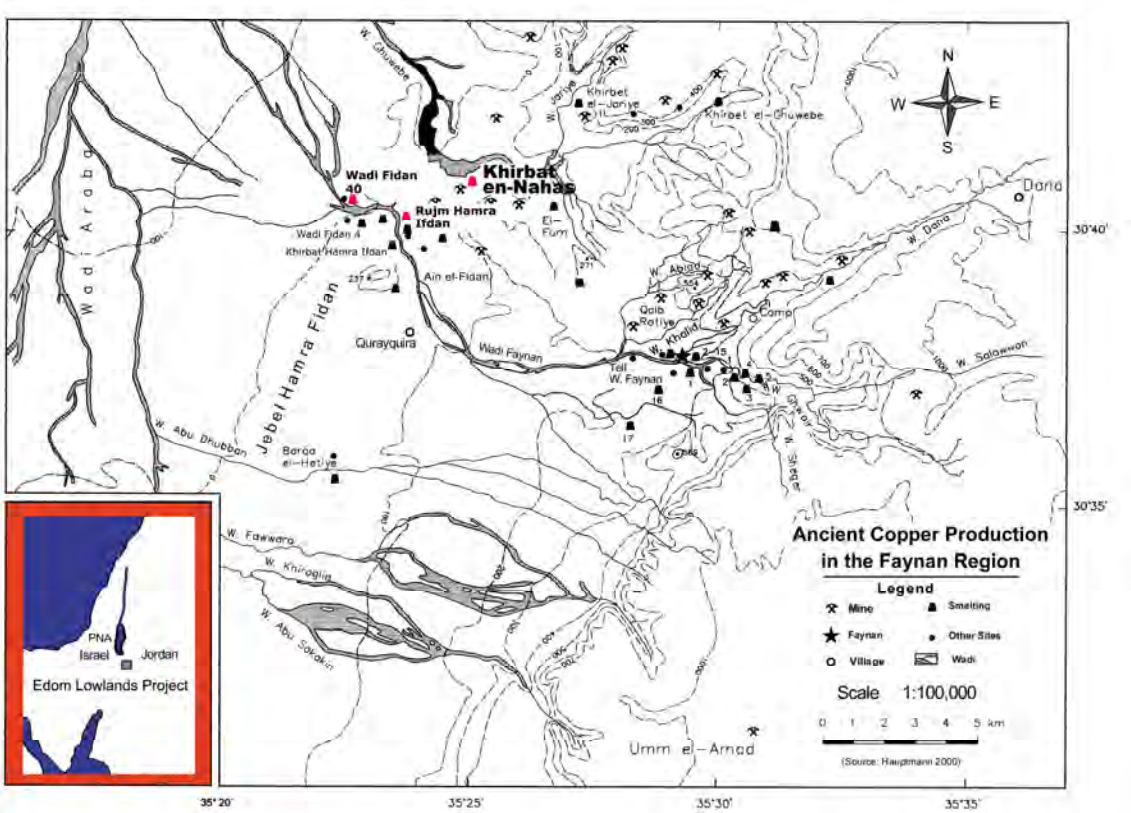


Figure 5.3: Overview of Faynan District and Khirbat en-Nahas relationship with copper mines.

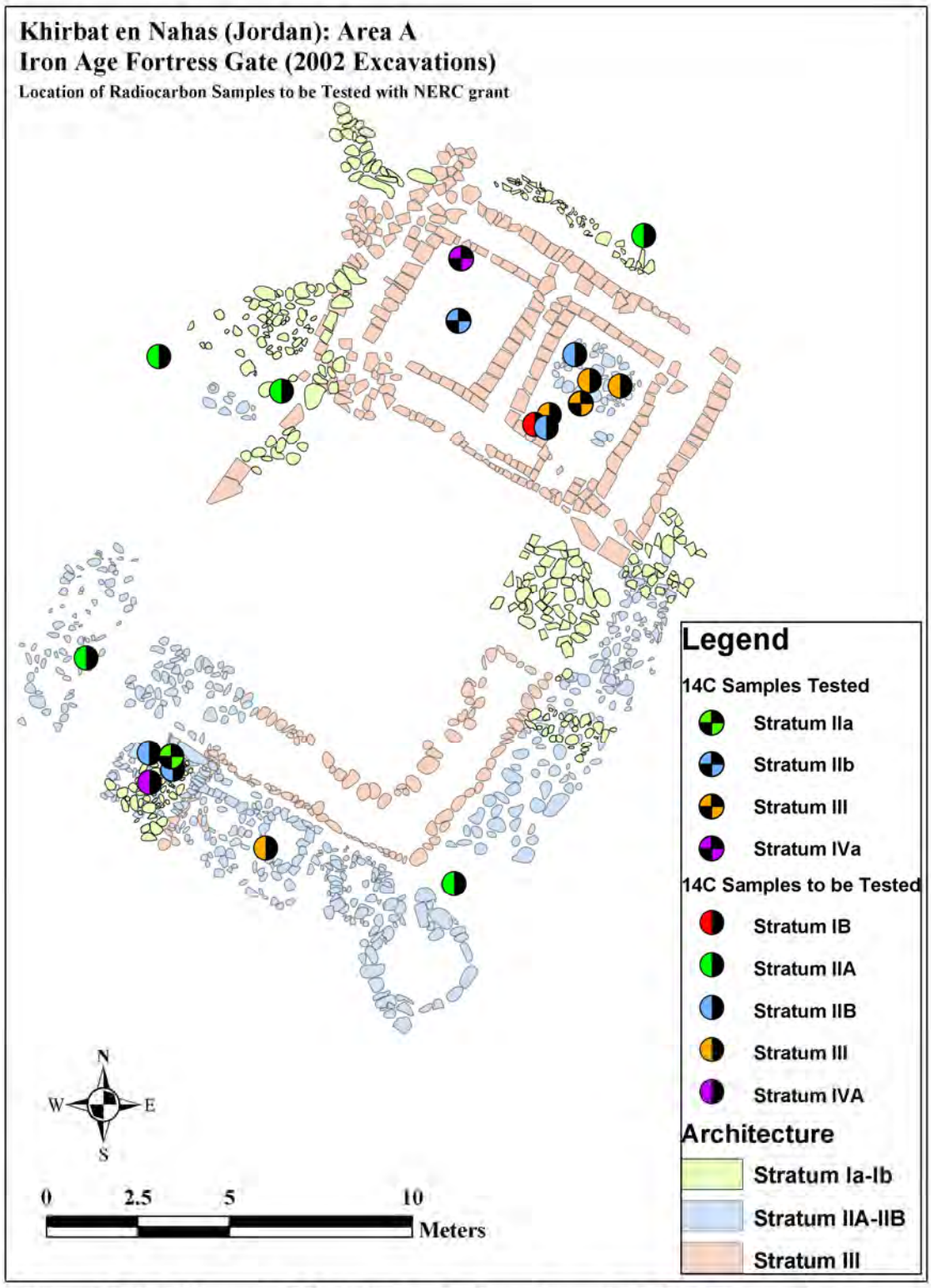


Figure 5.4: GIS map of Khirbat en-Nahas: Area A (2002) Excavations

The Stratigraphy of KEN

In order to correlate the relative stratigraphy and chronology of the seven areas excavated during the 2002 (A; see figure 5.4 above,S) and 2006 (A,F,R,T,M) seasons, an integrated phasing was created (Table 5.1) by the UCSD ELRAP team. This phasing correlates the stratigraphy of all the areas excavated and enables comparison across the various excavation areas (see Levy et al., in prep; for a detailed discussion of the methodology that underlies the creation of the general site stratigraphy for KEN and a detailed description of each phase). For a discussion of the stratigraphy for most of these areas and their radiocarbon dating see (Levy et al. 2003; Levy et al. 2005, Levy et al. 2009; Smith and Levy 2008). In this study, the integrated phasing illustrated in Table 5.1 will be used for all the quantitative studies and ordering of the ceramic plates presented in Chapter 7.

Table 5.1: Integrated Phases for Excavated Areas at Khirbat en-Nahas (Source: Levy et al., in prep).

General Stratum	RC Dates	KEN-A	KEN-M	KEN-F	KEN-S	KEN-T	KEN-R	KAJ-A
I		A1 a -b		F1 a ; 1 b	S1a; 1b	T1a	R1a	KAJ-A1a
II	9th	A2 a	M1 ; 1a	N/A	S1	N/A	N/A	
	9th	A2 b	M2a	N/A	S2a	N/A	N/A	
III	Early 9th	A3 a	M2b	F2 a	S2b	T1b; 2a	R2a; R1b?	KAJ-2
IV	10th	A3 b	M3 [IV-V]	F2 b	abandonment	T2b	R2b	KAJ-3;4 [IV-V]
V	10th	A4 a		F2c	S3	T3	R3a; 3b	
VI	11-13th	N/A	M4	N/A	S4	not excavated	not excavated	KAJ-5;6
-	-	A4b	M5	F3				KAJ-7

2. Khirbat al-Jariyah

Khirbat al-Jariya (KAJ) is located ca. 3 km northeast of KEN (30.707°N, 35.452°E, ca. 150 m above sea level), in the upper portion of the Wadi al-Jariya and was discovered by Glueck (1940a) during his pioneer survey of Edom. It is a large metallurgical complex measuring ca. 5 ha. This site was carefully surveyed in 2002 by the ELRAP project and a map was produced detailing the presence of building complexes, slag mounds, and possible towers/public residences (Levy et al. 2003; Ben-Yosef et al. in prep). In 2006, E. Ben-Yosef under the direction of T. E. Levy and M. Najjar sounded this site with the help of the entire ELRAP staff and volunteers. Radiocarbon dates from soundings at one of the slag mounds in 2006 date KAJ to the 11th-10th c. BCE. Its later occupation is contemporaneous with the initial use of the fortress and other public residences (Area T, R) at KEN. It was also discovered in 2007 that a main road could be accessed from KAJ that led up to the highlands, which terminated at Busayra.[4] KAJ (Ben-Yosef et al. in prep) is also located in close proximity to the copper rich areas that were mined during the IA II.. It is tentatively proposed here that KAJ may have been a satellite site of KEN that served a dual role of initial metallurgical processing and administration or defensive control of the mines. However this hypothesis must be tested by a full scale excavation at KAJ, hopefully in the near future by the ELRAP project.

---

[4] The relationship between the Faynan sites and Busayra during the IAIIA is currently unknown as there has been no stratigraphical periods found dating to this period yet at Busayra. However, there may have been a smaller occupation of the site during this period outside the acropolis area.

3. Rujm Hamrat Ifdan

Overview of Excavations

Rujm Hamra Ifdan was sampled by the UCSD – DOAJ team in 2004, in part to gain a more refined understanding of the Iron Age occupation in the lowlands of Edom. By acquiring radiocarbon samples and ceramics associated with controlled stratigraphic excavations, the soundings shed light on the late IA II occupation in the lowlands of Edom. Rujm Hamra Ifdan is especially important because it is the only site excavated in Edom (both highland and lowlands) thus far that provides a stratified anchor with Iron Age deposits that span the 10th through 7th centuries BCE (Levy et al 2008). Accordingly, a study of this site and the other surveyed lowland late sites provides a new picture to the interrelationship between the highland and lowlands during the Iron Age IIa - IIc sequence. As this site plays a key role in the ceramic study presented here, a more detailed description of its significance is presented below.

Significance of RHI in archaeological literature

This site was first identified by Nelson Glueck (1934) as Khirbet Hamrat Ifdan (Adams 1992). Glueck dated the site to the Iron Age I-II according to the ceramics collected on the site surface. He identified traces of a tower at the top of a site on a small hill associated with a lower retaining wall on a wadi terrace located on the northern end of the site, concluding that it must have been a watchtower. Later surveys and reconnaissance revealed that the actual Khirbat Hamra Ifdan dating to the Early Bronze period was located approximately 800 m downstream in the Wadi Fidan (Adams 1992; Levy et al. 2002). Ceramic evidence from Glueck's Khirbat Hamra Ifdan, however,

appeared to confirm his dating of the site when it was surveyed by the SIGNAS project (Macdonald et al (1999); Macdonald 1992) and later by the JHF 1999 survey (Levy et al. 2001). Since this site had no local name in the literature besides 'Glueck's Khirbet Hamra Ifdan' (Adams 1992) and the original Nabatean Rujm Hamra Ifdan never materialized in future surveys, the name Rujm Hamra Ifdan was selected to identify this site (Levy et al. 2009).[5]

Geographic and Geological Location

Rujm Hamra Ifdan is located ca. 5km southwest of Khirbat en-Nahas (30.671867°, 35.390019°, ca 25 m above sea level), on the northern bank of Wadi Fidan at the entrance of the southern approach to Wadi al-Guwayb. The peak of the Rujm Hamra Ifdan site is situated on a tiny mesa made from Pleistocene conglomerate that rises ca. 25 meters above the wadi bed and stands as a small island on the edge of the wadi making it an ideal control point and natural viewshed for the Wadi Fidan (c.f. Figure 5.1c). The surface of the northern face of the hill is densely strewn with Iron Age pottery and architectural features, presenting strong evidence that the site was occupied for a long duration. It no longer preserves well-defined architectural features of a tower that Nelson Glueck identified as the watch-tower, however, its location at the entrance to the main southern approach to the copper mines of the Wadi Guwayb and the route to Khirbet Faynan would have made it an ideal watchtower or small habitation area to alert the settlements near the copper mines of encroaching enemies.

---

[5] This site is also referred to as WF77 by the JHF project (Levy et al 2001) and WFD20 by Macdonald 1992.

Excavation Methodology

Two 5x5 meter probes were excavated to bedrock on the northern face of RHI (Sounding A and B, see fig. 5.5). Additionally, in order to determine whether the slope was terraced, the topsoil and first 20 cm of rock collapse were removed from the 5 meter transect connecting Sounding A to B. The stratigraphy, pottery and radiocarbon dates all suggest that both of the soundings consisted of separate single occupation periods. Overall, the soundings were successful, achieving its goal to collect a sample of pottery and material culture information substantial enough to understand its relation to KEN and the Plateau sites. Over 300 kg of pottery was collected and approximately 1000 diagnostics sherds were found. Moreover, evidence of small scale copper production was found in Sounding A, along with copper artifacts and crafted beads similar to those found at WFD 40.

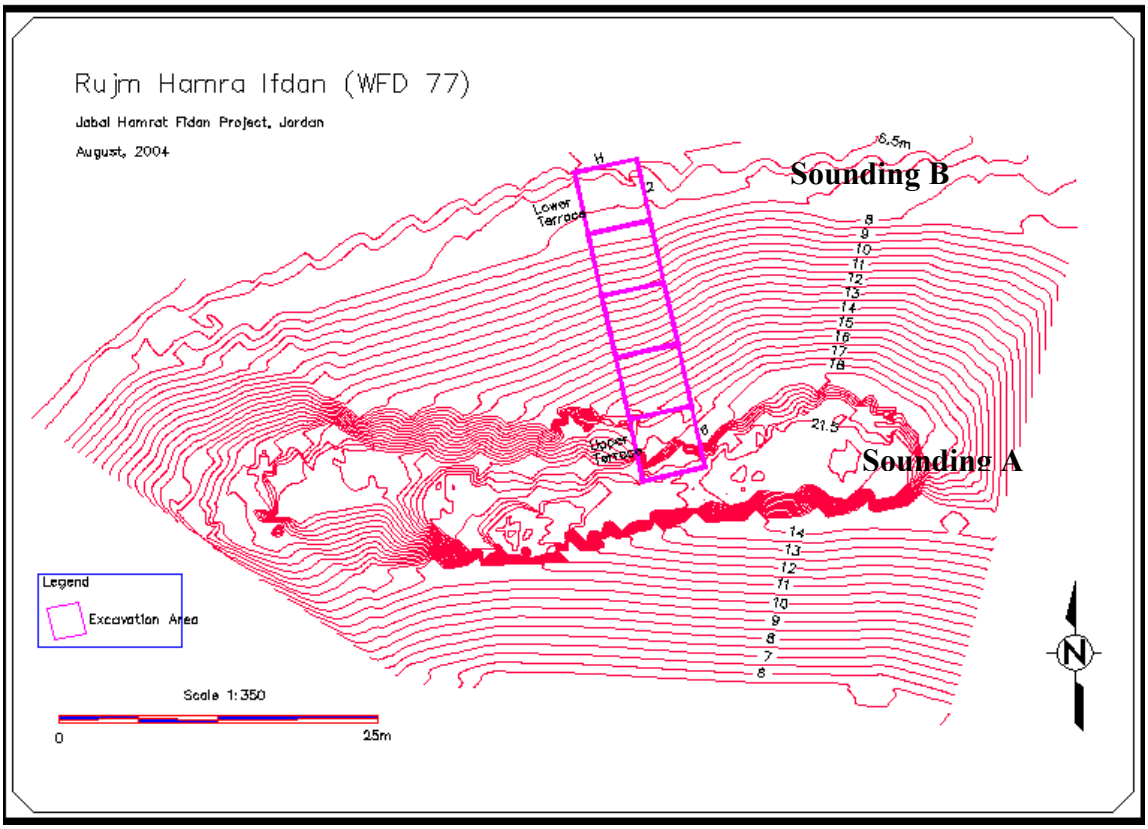


Figure 5.5: Topological Map of Rujm Hamra Ifdan Soundings A and B.

Sounding A: Square H6 (see Pls. 5.7.3:A)

In the ELRAP survey of Rujm Hamra Ifdan, architectural features and high concentrations of pottery was primarily found on the northern face of the hill. There was also evidence of occupation on the top of the flattened hill (Glueck's tower), but it had almost been completely eroded away only with evidence of collapsed building stones eroded into the crevices of the conglomerate hill. At the ledge of the northern face of the hill was a natural overhang made of conglomerate that created a small shelter. This conglomerate overhang ran from east to west, following the northern face of the hill.

Cultural deposits and pottery were found underneath the overhang on the surface. At the eastern end of the shelter was an area ca. 10 m long by 5 m wide that was bounded on the west by a visible wall line. This western wall and another possible northern wall suggested that this area may have been a temporary shelter occupied during the Iron Age period. The eastern half of the area (5 x 5 m) was excavated, allowing the western half to be used as a baulk to control for stratigraphy. The probe sloped downward from the inside of the shelter.

In order to stay level due to the slope, a probe (Sounding A) was excavated here in stages moving from inside the shelter to outside. Below the topsoil, an accumulation of powdery, ashy sediment with a light grey color was removed to the conglomerate bedrock. This accumulation was mixed with a high quantity of wheel-made and hand-made pottery. After the removal of the accumulation it became clear that the bed rock was stepped rather than sloping. The bedrock created a natural smooth bench for sitting and working, which was shaded by the conglomerate roof. All cultural deposits were sieved through a 3 x 3 mm sieve.

A hearth (L. 501) was found adjacent to the eastern wall and contained charred bone, ostrich egg shell, cooking stones, and a large concentration of ash and charcoal. In addition, we found in the hearth iron metal, copper metal, prills, and a small (5-7cm) globular piece of slag (see Plates 5.7.4-5.7.5). Minor smelting or remelting activities probably occurred in the hearth alongside domestic cooking. The pottery found inside the hearth consisted primarily of handmade slag rich pottery (See Chapter 6, Ware A2).

Excavations confirmed the presence of a three course high wall (L. 513) built northwest to southeast made of large rounded stones (from the wadi) and mud plaster.

This wall, probably, at its original height touched the ceiling of the conglomerate roof. A perpendicular wall (L. 526), only preserved at its foundations, sealed the room and may also have provided entry into the building on the western side. The material remains suggest Sounding A was a domestic habitation that in which its occupants also participated in small scale part-time copper metallurgical activities.

Sounding B: Square H2 (see Pls. 5.7.3:B)

Sounding B was established on the flat terrace at the base of the conglomerate hill adjacent to a large enclosure wall at the base of the site (Figure 5.5). This sounding was made to investigate the more extensive occupation of the lower area in relation to the shelter in Sounding A. Although Soundings A and B represented different elevations and locations of the site, it was assumed that separated by around 20 m from each other they would belong to the same occupation period. Therefore instead of assigning it a new area it was differentiated as a separate square (H2) and the initial loci assigned to it were subsequent numbers following the first probe (ie. L.531 to L.539).

Excavation of Sounding B was of a completely different nature from Sounding A. Mass amounts of wheel-made pottery (10 x the amount found in Sounding A, > 100 kg), ground stone artifacts, and brown clayey charcoal rich sediment filled this probe until reaching bedrock (see Pl. 5.7.1-5.7.2 for special finds). A compacted level surface was reached ca. 1 m below the top soil. Imbedded in the floor were many ground stone artifacts and more complete pottery sherds (ca. 25% of a large vessel). No installations or architectural evidence besides the northern enclosure wall was found. Due to time constraints, the eastern half of the surface (L.534) was sectioned and excavated to

bedrock (L.536). The southern portion of L.536 remained sterile, while the northern half, abutting the terrace wall (L.532), had a small depression above bedrock. The depression contained soft ashy brown sediment and several ceramic sherds, charcoal, and a half of a painted ceramic platter bowl (Pl. 5.7.1:A; see also Ch. 7, BL2). It is assumed that Sounding B penetrated a rubbish deposit near the enclosure wall where pottery, discarded ground stone artifacts and other waste associated with the later occupation at RHI were deposited.

Radiocarbon Dating Results

A series of radiocarbon samples were submitted for absolute dating of the two soundings. For a detailed description of the methodology used here, see (Levy et al. 2004; Levy et al. 2005). From sounding A, two charred seeds (*phoenix dactylifera*) were submitted for dating. One was taken from a hearth—L.501 (OxA-14849), and the other from a slightly lower light ashy sediment above the bedrock (L.509;OxA-14850; See Table 5.2). According to the radiocarbon results this occupation dates to the 10th-9th C. BCE (See Figure 5.6). From Sounding B, three charcoal samples (*Tamarix sp*.) were submitted from L.533 (OxA-14851), L. 534 (OxA-14852) and L. 536 (OxA-14853). Despite the inherent problems in the calibration curve for the late Iron Age II, all of these dates fall within the 7th -6th C. BCE (See Figure 5.6). These results were exciting because RHI is now the first stratified Iron Age site in the lowlands of Edom where two important Iron Age II phases are found – the 10th – 9th c. BCE and the 7th -6th c. BCE.

Table 5.2: Radiocarbon dates and calibrations for Rujm Hamra Ifdan, Faynan District, Jordan.

							Calibrated dates (cal BC)			
							68.2% probability		95.4% probability	
OxA	Sample	Material	Species	Date	+/−	$\delta^{13}C$ (‰)	From	To	From	To
14849	WFD77-L501-B54-EDM10045; Sounding A	Charred seeds	*Phoenix dactylifera*	2747	28	−20.6	914	842	974	821
14850	WFD77-L509-B96-EDM10092; Sounding A	Charred seeds	*P. dactylifera*	2849	28	−21.2	1050	941	1115	926
14851	WFD77-L333-B207-EDM10238; Sounding B	Charcoal	*Tamarix* sp	2537	27	−26.7	791	595	796	547
14852	WFD77-L534-B258-EDM10295; Sounding B	Charcoal	*Tamarix* sp	2473	28	−24.7	752	524	764	416
14853	WFD77-L10305-B265-EDM10305; Sounding B	Charcoal	*Tamarix* sp	2495	28	−25.6	761	546	778	516

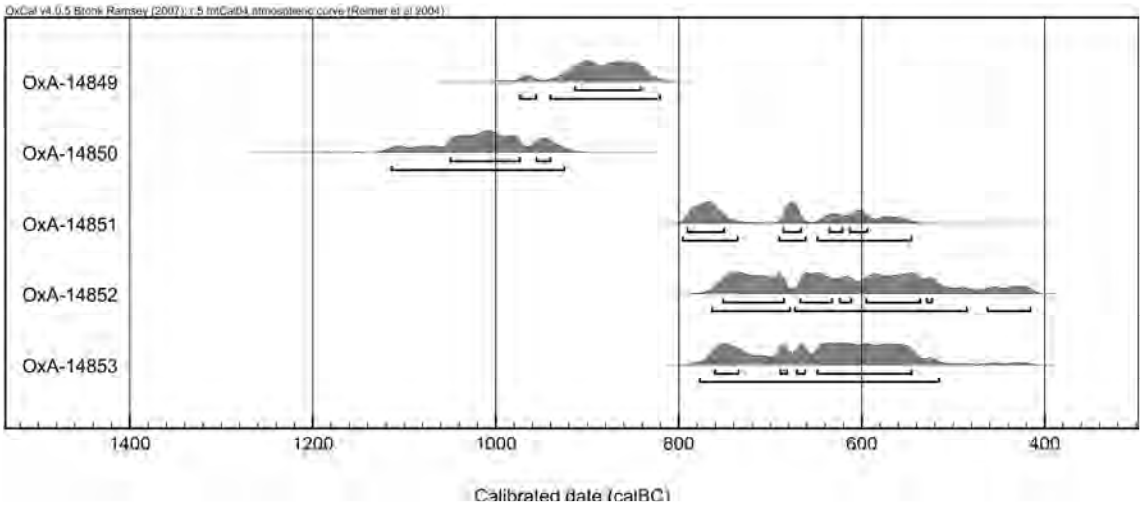


Figure 5.6: Calibrated radiocarbon dates from the Iron Age excavations at Rujm Hamra Ifdan, Faynan district, Jordan.

Contrast between Sounding A and B

Soundings A and B present a good test example for comparing ceramic traditions from the 10th-9th c. BCE occupation of the lowlands with that of the 7th-6th c. BCE. The significant temporal contrast between these two soundings reflects the dating discrepancies originally noticed between KEN (10th – 9th c. BCE) and the plateau sites (7th – 6th c. BCE). In short, RHI is now the first locale in Edom where it is possible to study virtually the full Iron Age II sequence at one site.

Sounding A revealed a portion of a 10th C. BCE small habitation area possibly linked to the watch-tower described by Glueck and related to metallurgical activities at KEN and its surroundings. This is in contrast to Sounding B, which was a rubbish deposit area of a larger settlement that may have served as an animal enclosure linked to 7th – 6th c. BCE pastoralism, agriculture, trade or some other as yet undefined activities. Sounding A's naturally shaded conglomerate shelter would have been a prime habitation area during the heat of the day. The evidence of the construction of walls to enclose the shelter suggests that this site was not just temporarily occupied. The eastern wall may have also served as a support of a roof for an extension of the sites natural shade to block the sun during later parts of the day. The evidence of hearths suggests frequent cooking activities.. It should also be noted that some of these hearths may have been used for small-scale metallurgical processing. Some evidence of re-melting of copper is seen by the occurrence of copper bits. The inhabitants may have acquired the copper metal from KEN or nearby sites and attempted to refine it for personal use or very small scale trade. The primary activity of the inhabitants cannot be fully clarified through the sounding. From this room just below the site summit and Glueck's watch tower, the southern approach to the Wadi Guwayb is in full view. This was also the easiest place to climb to the summit of the site. Once on top, a clear view is possible of the other side of the Wadi Arabah and the main routes heading towards KEN and Khirbat Faynan. In this light, the idea that the room discovered in Sounding A was the habitation area for individuals in charge of keeping a lookout is not unreasonable. Taken together with the evidence of a large fortress at Khirbat en Nahas, it is safe to assume RHI was indeed a small watch-

tower that was part of a defensive system to protect the lucrative copper production in the area.

The function of RHI most likely had changed in the 7th-6th c. BCE. Sounding B was located at the bottom of the hill just above the wadi bed in full exposure to the sun. Although Sounding B had an exterior wall and compacted floor surface, there is no clear indication that this was a room. The general character of deposition reflects a dumping area for pottery and other rubbish brought from a nearby location. The enclosure wall may have served as protection against seasonal flooding or support for adjacent buildings. Since the foot of RHI is adjacent to the wadi bed, much of the architecture has either been eroded away or covered by sediment making identification of other wall lines on the surface difficult. To the east of RHI a large enclosure was found possibly for controlling water runoff coming from the east or as a chorale for pastoralism (c.f. Macdonald 1992).

In Chapter 7, the ceramic assemblages recovered from Sounding A and B will be compared. RHI is special because both phases of IA II occupation are clearly distinguished at one site. In addition, the radiocarbon dates from the two soundings provide absolute dates for the ceramic typology developed for this thesis.

B. Steppe and Highland Surveys Conducted by L2HE

1. Introduction

In an attempt to understand in greater detail the late Iron Age II occupation of the highlands of Edom and connect it to the work in the lowlands, N. G. Smith, T. E. Levy

and M. Najjar started the Lowlands to Highlands' of Edom Project (L2HE). This is a new and ongoing project that is currently investigating anthropological archaeology issues, such as the manipulation of social boundaries, trade, copper production and secondary state formation in the Southern Levant – specifically in ancient Edom (southern Jordan) during the Iron Age period (ca. 1200-500 BCE). The first stage of the L2HE Project was to conduct a purposive reconnaissance survey[6] of the rarely studied Showbak region in order to identify significant IAII sites for excavation (see Figure 5.1 of the area's relation to the Faynan district). In 2006, the project's reconnaissance survey located multiple sites yielding high concentrations of Iron Age pottery with little representation from other periods. Of the 48 sites identified during the survey, three sites were selected for the soundings along with a control sounding at Tawilan in Wadi Mousa.[7] The second stage, conducted in 2007, focused on the excavation of 4 sites in the highlands of Edom, in the region between Showbak and Wadi Mousa. The soundings were carried out in two and three week intervals from April 4th to June 14th. As will be presented below, the ceramics, architecture, and material finds show a high level of inter-village interaction in the south of Edom. Although these villages appear to have been self sufficient in agricultural and domestic production, they participated in local exchange of many goods, possibly including items produced by a local archaic state/kingdom.

---

[6] A purposive reconnaissance survey is a survey that relocates sites that have been identified during previous surveys or are known to exist by local in habitants , and resurveyed them in order to determine specific dating of the sites.

[7] Soundings are small scale excavations also referred to in this text as probes. The UCSD ELRAP-L2HE project is grateful to Prof. Piotr Bienkowski for his support and encouragement to sample Tawilan.

2. Survey Methodology: Creation of Lowlands to Highlands of Edom Project

The reconnaissance survey revisited key Iron Age highland sites from Dana and Ash-Showbak originally identified by the Dana Archaeological survey (DAS) (Findlater 2000; Findlater and Baird 1995)[8] and other projects (Glueck 1934; Hart 1985, 1989; Hart and Faulkner 1985). Specific new data was collected (site size, environmental context, ceramics) from these sites to establish comparable datasets with the JHF lowlands project. As this was a highly focused survey aimed at identifying sites suitable for archaeological soundings, regional random sample survey methods were unnecessary (Judge et al 1975).

One kilometer radius site-catchment areas were generated in a Geographic Information System (GIS) around known Iron Age sites to understand the relationship of these sites to their surrounding terrain and undiscovered neighboring sites. The site-catchment areas provide a controlled method of documenting the relationship of the central known Iron Age site on the plateau survey area to neighboring settlements, past agricultural activities, paths and trade routes, metallurgical activities, soils, topography, natural springs, vegetation communities, and unique geological formations (cf. Dennell 1980; Flannery 1976; Levy 1987; Smith and Levy 2008; Vita-Finzi and Higgs 1970). This information will be used to reconstruct the natural environment and how its resources were exploited by the Iron Age settlements. It will also yield settlement pattern data needed for understanding site hierarchical structure.

---

[8] G. Findlater kindly provided his appendices of the sites that were surveyed along with their coordinates. C. Whiting's determination of the site periods in this report was also invaluable.

The GIS was constructed in ArcGIS using satellite/aerial photography (LandSat 7 ETM+ Pan Sharpened images and RJGC Aerial Photography 2m resolution), digital elevation data (USGS ASTER DEM and vectorized 1:25K scale topographic maps), and digitized soil and water system maps from the RJCN. Iron Age sites identified by DAS and past surveys were then imported as point layers into the ArcGIS in order to understand their location in relation to the other imported imagery. One kilometer site-catchment circles were created around each DAS Iron Age site. Additional site-catchment circles were created around possible sites identified from high resolution aerial photography or wadi routes linking one site-catchment area to another. A total of 19 site-catchment areas were constructed for the survey.

A streamlined version of the GIS database was then uploaded to the field handheld GPS unit running ArcPad surveying software. The GPS enabled the survey to quickly locate the specific known site located at the center of each site-catchment area. Originally, full transects of each site-catchment area were planned but after the first two days of surveying this strategy was found to be ineffective. The majority of the survey area consisted of agricultural plains that had been heavily bulldozed and cultivated. In each cultivated area, stones originally found in the field would be moved to the edge of each area to serve as dividers or rock piles. However, larger significant archaeological sites were generally avoided by the bulldozing and were treated similar to rock piles in that they were bulldozed up to their perimeter. Thus, in each catchment area one could identify from a distance rock piles either from modern construction or ancient ruins eliminating the need to traverse the entire catchment area to identify sites. Each prospective site identified from a distance was then driven to and investigated on foot by

smaller evenly divided transects. This method allowed a comprehensive coverage of each catchment area and enabled more than one catchment area to be surveyed in a day. A wide range of cultural and environmental variables were recorded for each site. Digital photographs were taken of each site and its architectural remains. Site coordinates, perimeters and architectural features were recorded using ArcPad software, which was later imported into ArcGIS for spatial analysis.

Since the primary focus of the survey was to identify the site period and collect a rich assemblage of Iron Age ceramics on the plateau for comparison with lowland sites only diagnostic pottery and a few exemplary cases of lithics or groundstones were collected. The general impression of body sherd density at each site was noted in the field diaries. In the larger sites where buildings and different areas of occupation could be identified, the pottery was collected in separate bags. Each day after the survey the pottery was washed and stored in crates for later study. A preliminary ceramic analysis and count was conducted on site to determine the primary periods: Early Bronze Age, Iron Age, Nabatean, Roman, Byzantine and Islamic. Where possible, the ceramic analysis sought to determine the dominant period of occupation at the site.

3. Survey Results

The survey located within the site-catchment areas 48 sites (Figure 5.7; Table 5.3). A total of 17 sites discovered within the site-catchment areas contained Iron Age ceramics as a dominant or as a component part of the overall collection. Nine sites yielded a high concentration of Iron Age pottery with little representation from other

periods (L2HE: 20, 24, 26, 30, 32, 33, 35, 45, 46, 47, 48). These sites met the survey's primary goal of identifying key Iron Age dominant sites for further exploration.

Table 5.3: Surveyed sites during Showbak-Dana L2HE Survey.

Site	Local Name	Easting	Northing	Elevation	Size (m2)*	Main Occupation**	Secondary Date	Tertiary Date	Site Type	References
1	Kh. Sihan				62500.000	Late Islamic	Roman	Iron II	Town/Large Village	Glueck 1935, 89 (site 152); Hart 1985, 270 (Site); Findlater 2000 (Site 378)
2	Kh. Al-Buweitrah	741912.246	3382152.219	1555.600		EB	Byzantine		Round Structures	Glueck 1935, 94 (Site 174, Khirbat Al-Beweitrah); Findlater 2000 (Site 176)
3	Kh. Umm Lozah	742547.648	3381639.193	1492.900	12500	Late Roman	Iron II		Medium Village	Glueck 1935, 94 (Site 173); Findlater 2000 (Site 175)
4	N/A	N/A	N/A	N/A		Roman			pottery scatter	
5	N/A	N/A	N/A	N/A		Roman			Wall Lines	
6	N/A	743422.176	3381951.329	1559.900	9000	Islamic			Small Village	
8	Kh. Shbeika	740514.791	3381738.710	1542.700	25000	Middle Islamic	Iron II	Nabatean	Large Village	Hart 1985, 270 (Site 103); Findlater 2000 (Site 282)
9	Site East of Abu Maktoo	748143.484	3381350.219	1146.100		Islamic	Roman		Terracing	
10	N/A	748131.281	3381233.462	1114.200		Islamic			Stone pile and terracing	
11	N/A	748329.995	3381305.322	1114.200		Islamic	Roman		terracing	
12	N/A	748509.999	3381411.330	1108.200		Islamic	Roman		terracing	
13	N/A	750121.403	3382835.336	1081.700		?			wall lines	
14	N/A	750262.571	3383324.306	1104.600		?			Circular Stones	
15	N/A	750650.644	3383756.514	1137.700		Modern			Circular Structure and terracing	
16	N/A	750752.214	3385494.058	1123.600		Islamic	Iron II		Hamlet with rectangular structures	
17	Upper Beda (Top sectio	752044.434	3387264.726	1178.800	52500	Middle Islamic	Early Islamic/Byzant	Iron II	Town	Findlater 2000 (Site 293)
18	Upper Beda (Lower Sect	751903.758	3387172.137	1149.800					Large Village	
19	Kh. Al-Webdah	741225.543	3375587.360	1457.300	20000	Roman	Modern		Large Village	Glueck 1935, 93 (Site 163); Hart 1985, 270 (Site 89); Findlater 2000 (Site 291)
20	Kh. Shamakh (Usdar El-I	741166.675	3376038.063	1375.100	12500	Iron II	Early Islamic	Modern	Medium Village	Glueck 1935, 93 (Site 167); Hart 1985, 270 (Site 94); Findlater 2000 (Site 289)
22	al hadidi	741680.396	3378485.408	1495.100	600	Nabatean/Late Roma	Iron II (non found by L2HE)		Hamlet	
23	Kh. Azum	744314.000	3379431.000	1426.900	15000	Nabatean/Late Roma	Iron II		Medium Village	Glueck 1935, 93 (Site 170); Hart 1985, 270 (Site 104); Findlater 2000 (Site 172)
24	Kh Zubariya	745617.149	3378590.501	1424.900	14400	Roman and other Cla	Iron II (Dominant in NE area)		Cistern/Medium Village	Glueck 1935, 92 (Site 156); Findlater 2000 (Site 171)
25	Kh. Wamiya	746810.872	3378917.355	1382.700		Iron II	EB/Roman		Watchtower	
26	Imtat	750666.722	3398321.685	1528.200		Iron II			Bulldozed	Glueck 1934, 77 (Site 19); Findlater 2000 (Site 159)
27	NN located at Spring ne	750931.247	3397736.754	1536.500		Roman			Hamlet	Findlater 2000 (Site 110)
28	NN located near road to	747915.059	3399678.718	1450.500		Roman	Iron II		Rectangular Structures	
29	Garmeh	751410.000	3394905.000	1554.000	600	Roman	Iron II	Islamic	Watchtower	Findlater 2000 (Site 3)
30	N/A	754871.702	3393124.912	1402.200	2025	Iron II	Nabatean		Hamlet	Findlater 2000 (Site 366)
31	Atata	750764.042	3395855.079	1620.800	3400	Roman	Iron II		Fort	Glueck 1934, 77 (Site 17); Finlayson & Baird 1995; Hart and Falkner (Hart 1985: 270; Site 111)
32	N/A	745515.830	3398711.562	1278.600	1200	Iron II	Roman		Hamlet	Finlayson & Baird 1995; Findlater 2000(Site 43)
33	N/A	745515.830	3398711.562	1278.600		Iron II			Hamlet	
34	N/A	736274.527	3378373.237	725.000	15000	Roman	Iron		Caravanasai	
35	Grayt Mansur	735690.180	3378232.382	761.600	37500	Iron II	Middle/Late Islamic		Large Village/Outpost	Findlater 2000 (Site 263)
36	Tel Axdar	745593.924	3385161.744	1165.100		Roman/Byantine			Stone piles and wall lines	
37	N/A	746813.171	3386354.503	749.400		Roman			Hamlet	
38	Rujm Aragib	747113.313	3386372.834	846.000		Roman	36		Tower	Findlater 2000 (Site 130)
39	Nwayja	747606.714	3385113.801	868.500	22500	Islamic			Large Village	
40	Ain jerab	747351.253	3385203.530	889.300		Islamic			Terracing	
42	N/A	751882.254	3386174.699	1174.300		Roman			Rectangular Structures	
43	lower beda	750618.220	3386937.708	1057.800	22500	Roman	Nabatean		Large Village	
44	N/A	750618.220	3386937.708	1057.800		Roman			Hamlet	
45	Kh. al-Iraq	738836.000	3373219.000	1428.000	624	Iron II	Islamic		tower/fort	Gleuck 1935, 88 (Site 141); Hart 1985, 270 (Site 88); Findlater 2000 (Site 286)
46	Kh. Jeneinah	739748.000	3374238.000	1291.000	1250	Iron II	Roman/Byzantine	Islamic	pottery scatter	Glueck 1935, 88 (Site 142); Findlater 2000 (Site 280)
47	Kh. Am-Malayqtah	739930.000	3376360.000	1238.000	10500	Iron II	Late Roman/Early Byzantine		Medium Village	Findlater 2000(Site 281)
48	Kh al-Kur	739907.040	3372036.000	1441.000	11250	Iron II			Medium Village	2000(Site 277)

* It was decided to keep the same site size for sites recorded by the Dana Survey except in cases where the survey found an extreme difference (possibly due to differing approach)

** Although multiple site periods can be identified for a site generally one period in both pottery and architecture tended to dominate at a site; secondary and tertiary dates were determined based on the frequency

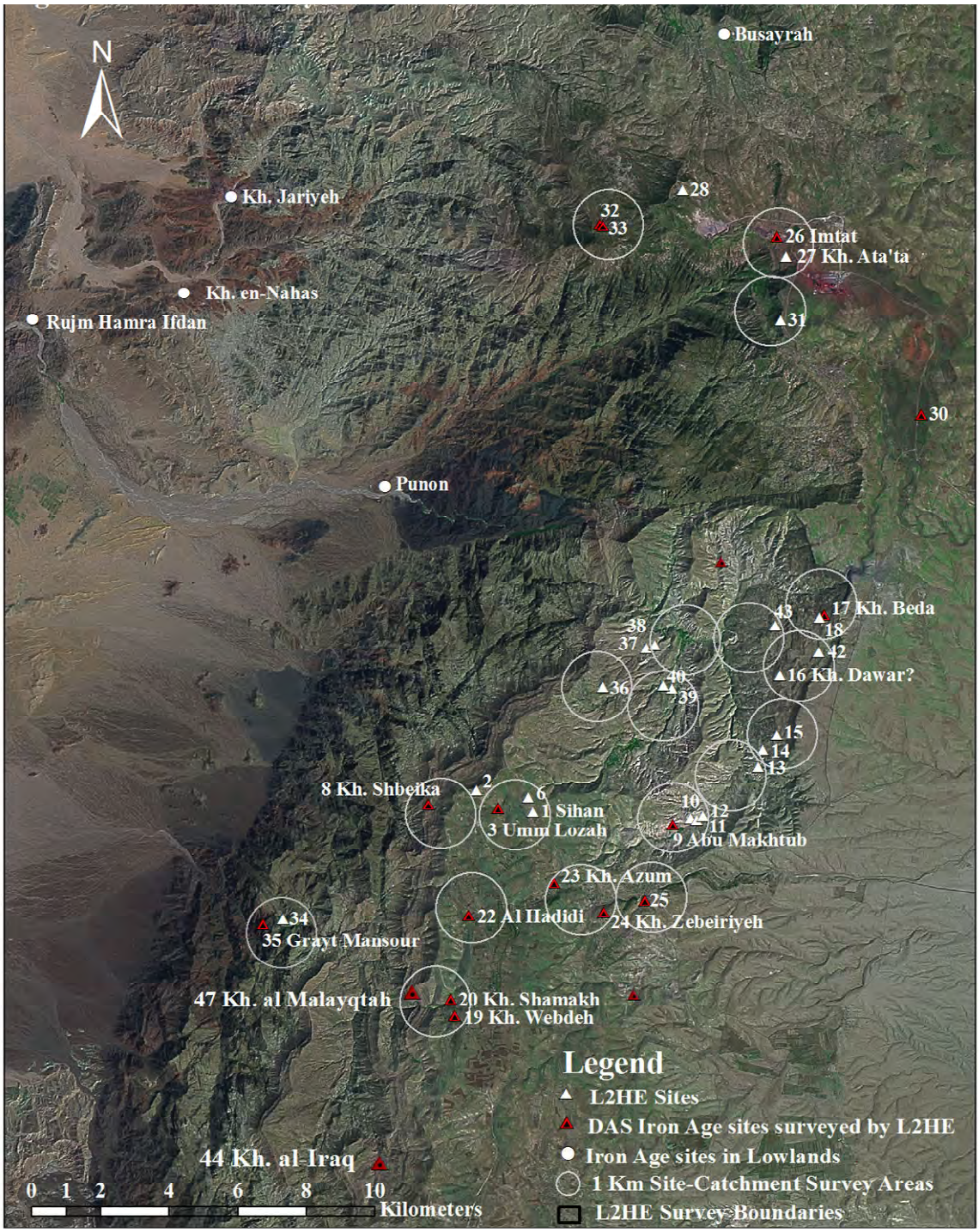


Figure 5.7: L2HE Surveyed Sites with Site Catchment Zones.

4. Resources and Routes

The territory of Showbak is an agriculturally rich area with springs and open valleys suitable for farming and pasturing. However, the settlement patterns from the survey revealed that the main heartland of Showbak was only sparsely occupied during the Iron Age period (Hart 1989). The Roman and Islamic periods appear to have been the primary periods that utilized the full extent of resources available in the Showbak plains. While, the primary Iron Age sites were located along the steppe leading down to the lowlands (L2HE: 8, 19, 20, 45, 46, 47). There is evidence that some of these structures could also have served defensive roles (e.g. L2HE 45) to control the upper plateau area. It is also significant that there is modern route in this location that leads from Showbak to Wadi Musa. Due to time constraints the area between L2HE 47 and further north along the steppe were not surveyed, although from satellite imagery there appears evidence that more sites are present.

The other primary location of the Iron Age sites was found along the bend of the King's highway leading through the modern Showbak town. This area was and is still used highly for agriculture and is one of the few areas in southern Jordan that is semi-forested. It is also significant that the four Iron Age sites (L2HE: 22-25) are located on what is traditionally known as the King's highway and clearly demarcated during the Roman period (Findlater 2000). Possibly, L2HE 17 (Upper Beda) also located just off the King's highway further north would have served as a key node for connecting the North-South and East-West traffic coming from Wadi Bustan and Wadi Ghwayr. Unfortunately, the heavy occupation during the Islamic period at the site masks the actual extent of the original Iron Age occupation. It tends to be the case at Showbak that strategic locations

for trade or agriculture during the Iron Age were also ideal spots during the Roman and Islamic periods making it difficult to gauge the original size of the Iron Age sites. Also, the recent practice in Showbak of bulldozing the fields and dumping all debris in rock piles has made reconstruction of ancient agricultural activities very difficult. An attempt was made early in the survey around L2HE 3 (Um Lozah) to gauge the presence of pottery in the bulldozed rock piles but it resulted in only a few stray sherds dating to the Roman period. L2HE 9 (Abu Maktuub) also located in the plains of Showbak had a similar problem in that much of the area was covered by Islamic pottery and construction. L2HE 36 (Tel ʻAxdar) originally surveyed by Nelson Glueck (1934) and identified as Iron Age yielded no Iron Age pottery but it also was heavily bulldozed and converted into and olive tree orchard.

In Dana, L2HE 32 and 33, located on Rumana mountain, would have been suitable locations for agricultural activities as the mountain top is level ground. Evidence of Roman Age terracing is evident; however, the primary occupation period was Iron Age. The location of these two sites may also have been on a strategic route leading up from Wadi Dana. L2HE 31 a possible fort located on the Southern route leading up from Dana Village may have also served as a strategic control point along routes coming from the North-South and East-West. Its location on the level plateau would have also been ideal for agricultural activities.

5. Defensive and Economic Factors in the Highland Site Location during the Iron Age

L2HE 45 and L2HE 31 were both large rectangular structures constructed of very large cut stones. The general impression from the surface is that these sites served a defensive nature when in comparison to the majority of sites surveyed constructed of single course walls using small stones. Both of these sites appear to be located along main trade routes and probably served as control posts for incoming and outgoing traffic. Without soundings these general observations cannot be verified. Overall, though, defensive construction in Showbak and Dana did not appear to have been necessary during the Late Iron II. Wall lines visible on the surface of many of the sites were generally only one course wide and not built to withstand any form of significant attack. This may reflect peaceful interaction within the area and perhaps lack of external threat. It may support Knauf (1992) and others conclusions that this was a period of heavy sedentarization that resulted in a decrease of nomads and exterior stress from contemporary Levantine polities such as Israel or Moab. The DAS survey conducted by Findlater (2000; Findlater and Baird 1995) found Iron Age materials further east of the L2HE survey grid that Glueck originally postulated as a network of Iron Age II towers set up as a defense against invading armies or nomads from the east. In future survey these sites will be investigated and see whether similar construction as seen at site 45 and 31 was built at these sites or whether it more appropriately reflects a later time period such as Nabatean as suggested by Hart and Falconer (1985).

6. Conclusion

The settlement pattern data for Showbak and Dana reflects small pockets of Iron Age villages and hamlets primarily located along traversable routes and near natural springs. The evidence of small fortified settlements along these routes may highlight the importance of these trails for the secure transport of commodities. The absence of any village of significant size with satellite sites suggests that the inhabitants continued to live in fairly autonomous settings. Archaic state level control reflecting four tiers of political organization, as would be expected using site size hierarchies or central place theory (see Ch.2, Hyp 1-6), is not present.

The most promising areas for future excavations to better understand how these settlements may have been interconnected in the Showbak region are sites such as L2HE 45 and L2HE 44 along the western steppe route and L2HE 24 along the Eastern King's highway. In the north L2HE 31 may also represent like L2HE 45 some evidence of state level of resource control or defense of the area. L2HE 32 and L2HE 33 may represent both control of a trade route and exploitation of the local agriculture richness of the area.

Overall, the survey met its goals of identifying key Iron Age sites in the Dana to Showbak region to understand the relationship between Iron Age settlement in the lowlands and highlands of Edom. It became apparent during the survey that many plateau areas between the upper Wadi Dana and Wadi Ghwayr were inaccessible by vehicle and could only be reached by extensive hiking. Previous surveys were never conducted in these areas and so were not a primary focus of the ten day reconnaissance survey. Since these areas are primary routes leading up from Wadi Faynan, even a preliminary survey of Iron Age sites in this area would be very helpful for understanding of the archaeology

of Iron Age Edom. In the following section, the three sites selected from this reconnaissance survey for sampling will be discussed.

C. Lowlands to Highlands of Edom Archaeological Soundings of the Highlands and Steppe

The soundings conducted on the L2HE project were carried out using the same digital excavation techniques developed in earlier seasons by the ELRAP project (Levy and Smith 2007).[9] The primary objective of these excavations was to carryout controlled stratigraphic soundings of multiple sites for the recovery of ceramic datasets that could be subjected to radiocarbon dating and ceramic analysis. These new data from Iron Age sites on the high plateau of Edom serve as part of a comparative study of the cultural relationships between the lowlands and the highlands of Iron Age Edom presented in this thesis. The sites sampled on the plateau are located near the southern routes that lead down to the Iron Age sites in the lowlands such as Khirbat en-Nahas, Khirbat al-Jariyeh, and Rujm Hamra Ifdan. Below a preliminary report for each site sampled for this thesis is presented along with several plates that illustrate the material culture recovered.[10]

---

[9] Funding from a NSF Doctoral Dissertation Improvement Grant (Grant No. 0631220) enabled this project to acquire all the excavation materials for the project as well as hire the Bedouin excavation guards and workers. Since these soundings were conducted during an off- season, only sporadic American volunteers living in Jordan participated on the dig. The majority of the excavations were conducted by the author and his elite trained Bedouin workers.

[10] The plates presented in this chapter were constructed by K. Bobczynski Smith in Adobe Page Maker©; I am grateful for all her hard work.

1. Khirbat al-Malayqtah (KAM)

The excavations at Khirbat al-Malayqtah (KAM) (30.495586°, 35.499579°, ca. 1150 m above sea level; see Pl. 5.9.1-5.9.3) were conducted from April 4th to the 28th. Khirbat al-Malayqtah (KAM) is located on a spur overlooking the Wadi Faydh. It is 200 meters North from the Ain Shimakh spring. A modern dirt road splits through the middle of the site. This site was previously identified during the L2HE reconnaissance survey and other surveys (c.f. Findlater 2000; Hart 1989).Two probes were excavated. The first sounding (KAM-A) located on the western side of the road directly on the edge of the spur consisted of two squares in total measuring, 5x10 meters. The smaller 5 x 5m probe (KAM-B) was located on the top of a small hill to the east of the road. The second probe was opened after a week of excavation to investigate the function and purpose of the upper hill which appeared to be also Iron Age and preserved a large perimeter wall running along the uppermost contour.

Area A

Two 5 x 5 meter squares set to 117 degrees from north were opened using the Total Station. This alignment was selected to follow the natural contours of the lower area of the site and to directly target two rooms identified on the surface from preserved wall lines. After the removal of top soil, two rooms were clearly delineated. The western room was assigned the square number B4 and its adjacent eastern room was square C4.

Phasing

(1) Topsoil

(2) Hard compacted fill with wall collapse

(3) Soft Ashy sediment

(4) Ash sediment mixed with compacted flooring

(5) Bedrock with foundation stones of wall dug into.

Discussion

Western Room: Sq. B4 (Pl. 5.9.2:A)

The western room was only preserved to three courses of its surrounding walls. Bed rock was reached after ca. 80 cm of excavation. This room, as well as the eastern room, was a single occupation period primarily sealed by fill and wall collapse due to later depositional processes. Approximately 10cm prior to bedrock in the eastern room a compacted surface relating to the original occupation level of the site was discovered with a high concentration of pottery and one large storage jug found in situ at the western end of the room. Besides the high concentration of ceramics the room was primarily devoid of other forms of material culture or installations that might relate the function of the room.

Eastern Room: Sq. C4

In Square C4 structure 2, the depositional processes were slightly different in that after the first 30 cm of fill removal a hard compacted surface was discovered. This level was the same for a small installation outside of the room with a stone paving. Ceramics were found in the installation and structure 2 in small amounts. After the removal of this surface (L. 3007) a second compact surface (L.3020) consisting of soft light brown fill and patches of yellow stones was found. A bulk was created splitting the room in half

with a portion in Square B4. Following the removal of the second hard compacted surface was a hard gray ashy sediment in patches and more of the yellow compacted surface with gravel (L.3026 and L.3027). These loci had a higher concentration of pottery and ground stones. After further excavation the floor of the structure was found (L. 3031/L.3029). The floor had a high concentration of more complete *in situ* ceramic vessels, often imbedded in the hard yellow compacted surface. Besides the high concentration of pottery and grinding slabs found within Structure 2, two incised "spindle whorls' (c.f Plate 5.9.3:A-B) were found. These spindle whorls are very similar to those found at Busayra (Sedman in Bienkowski 2002:Pls. 10.166-178) and Tawilan (Bennett and Bienkowski 1995: Fig. 9.29) and serve as further evidence of KAM being contemporaneous with these other known large-scale 'Edomite' sites. A probe into the sterile deposit below the floor demonstrated that the foundation stones of the walls were placed in foundation trenches dug into the basement rock.

Area A exposed two rooms with floors containing a high concentration of pottery and ground stones. Two incised "spindle whorls" were found which could be directly paralleled with those found at Busayra and Tawilan, which serves as further evidence of KAM being contemporaneous with these other known 'Edomite' sites usually dated to late in the Iron Age (ca. 7th – 6th centuries BCE). In Area B, a small pit was found containing a cache of over 25 loom weights and broken reconstructible ceramic vessels.

Area B

Phasing

(1) Topsoil

(2) Bright red clumpy sediment fill with large stones from collapsed fill

(3) Intruding Decayed sandstone

(4) Dark ash layer

(5) More ash with burnt wood over beaten floor

(6) Sterile Soil with foundation stones of wall and pit dug into

Discussion

Area B consisted of one 5 x 5 meter square probe located on top of a hill to the east of Area A. A large surrounding wall was delineated along the uppermost elevation of the hill and Area B probed the southwestern quadrant of the structure. Area B was extremely difficult to excavate as much of the exterior and internal walls had collapsed into the rooms creating a fill full of large boulder size wall stones that could only be moved by breaking with a sledge hammer. The probe was excavated to bedrock ca. 2.5 meters below. The probe exposed the SE quadrant of the main building. Two internal walls were delineated running north to south attached to the larger southern wall of the building. This wall was preserved to 2.02 meters. Both walls end after ca. 1-2 meters, thus serving as partitions to create narrow inner chambers and a hallway. At the base of the threshold or step was preserved at the entrance to each chamber.

In the southern end of the chamber a pit was found cut into the sterile soil (Pl. 5.9.2:B). The pit contained a number of near complete ceramic vessels including a juglet and an apparent stock pile of fifteen loom weights. In the upper 10 centimeters of the pit fill, three of these items were found including one decorated example. These loom weights differed from the others found at the site in that they were very fragile, perhaps

not fired, and appeared to be made of a high concentration of organic material, possibly chaff mixed with dung. The function of Area B appears to have been for storage.

Radiocarbon Sample Results: KAM Area A and B

Figure 5.8:A. KAM Area A: L.3032 B.10216, Olive Seed (OxA-18322)

Figure 5.8:B. KAM Area A: L.3032 B.10216, Olive Seed (OxA-18323)

Two radiocarbon samples taken from a collection of seeds found on the floor of Area A (L.3032) and submitted for AMS dating (see Figure 5.8:A,B; Table 5.4). L.3032 was a compacted yellow-brown hard surface which contained numerous broken or semi-complete (25%) sherds *in situ*. Virgin soil was reached below this floor. This locus appeared to be the best context from which to date Area A at KAM. Both results were found highly consistent. They reveal that this floor can be dated to the Late Iron Age II sequence. As seen in Figure 5.8A and Table 5.4, at 95.4% probability, sample OxA-18322 dates from 810 – 578 BC and OxA-18323 (Figure 5.8B, Table 5.4) at 95.4% probability to 820 – 612 BC. Due to the fluctuations in the calibration curve a more definitive dating cannot be achieved. While these high precision dates fall slightly into the very end of the 9th c. BC and end of the 7th c. BC, they are centered in the 8th – 6th c. BC.

Figure 5.8:C. KAM B: L.3035 B.10226, Olive Seed (OxA-18344)

A third radiocarbon sample collected from a cache of olive pits from L.3035 at Area B was submitted for AMS dating (see Figure 5.8:C). L.3035 represents a sample from the floor of the East chamber of the probe in Area B. This floor contained a scatter

of pottery sherds resting on very dark gray ashy sediment. Large burnt wood pieces (possibly originating from beams that collapsed from the roof) and collapsed wall stones sealed this layer. The radiocarbon sample comes from a collection of olive seeds adjacent to the western wall. At 95.4% probability, OxA-18344 dates from 776 to 511 BC and is situated in the 8th through 6th c. BC (Figure 5.8C; Table 5.4). Taken together, there is little doubt that the steppe site of KAM was occupied during the 8th – 6th c. BCE. Due to the fluctuations in the calibration curve a more definitive dating cannot be achieved. Based on the ceramic study in Chapter 7, KAM should be viewed as a small village settlement contemporary with Busayra – the largest late IA II site on the highland plateau.

Table 5.4: Radiocarbon dates and calibrations for L2HE sites.

OxA	Sample	Material	d13C	BP Date
OxA-18322	L2HE_KAM_A_B.10216_L.3032, seeds, olive	Charred Seeds	d13C=-21.92	2572 ± 30
OxA-18323	L2HE_KAM_A_B.10216_L.3032, seeds, olive	Charred Seeds	d13C=-22.30	2589 ± 30
OxA-18344	L2HE_KAM_B_B.10226_L.3035, seeds, olive	Charred Seeds	d13C=-21.09	2491 ± 27
OxA-18345	L2HE_KIJ_C_B.11085_L.4006, seeds, Lentils?	Charred Seeds	d13C=-22.43	2539 ± 30
OxA-18346	L2HE_TW_J_B.13176_L.6026, seeds	Charred Seeds	d13C=-22.87	2642 ± 28
P20943	L2HE_KIS_D_B.12084_L.5013, seeds, lentils?	Charred Seeds	FAILED due to no yield	N/A
P20945	L2HE_TW_K_B.13206_L.6027, seeds	Charred Seeds	FAILED due to very low yield	N/A

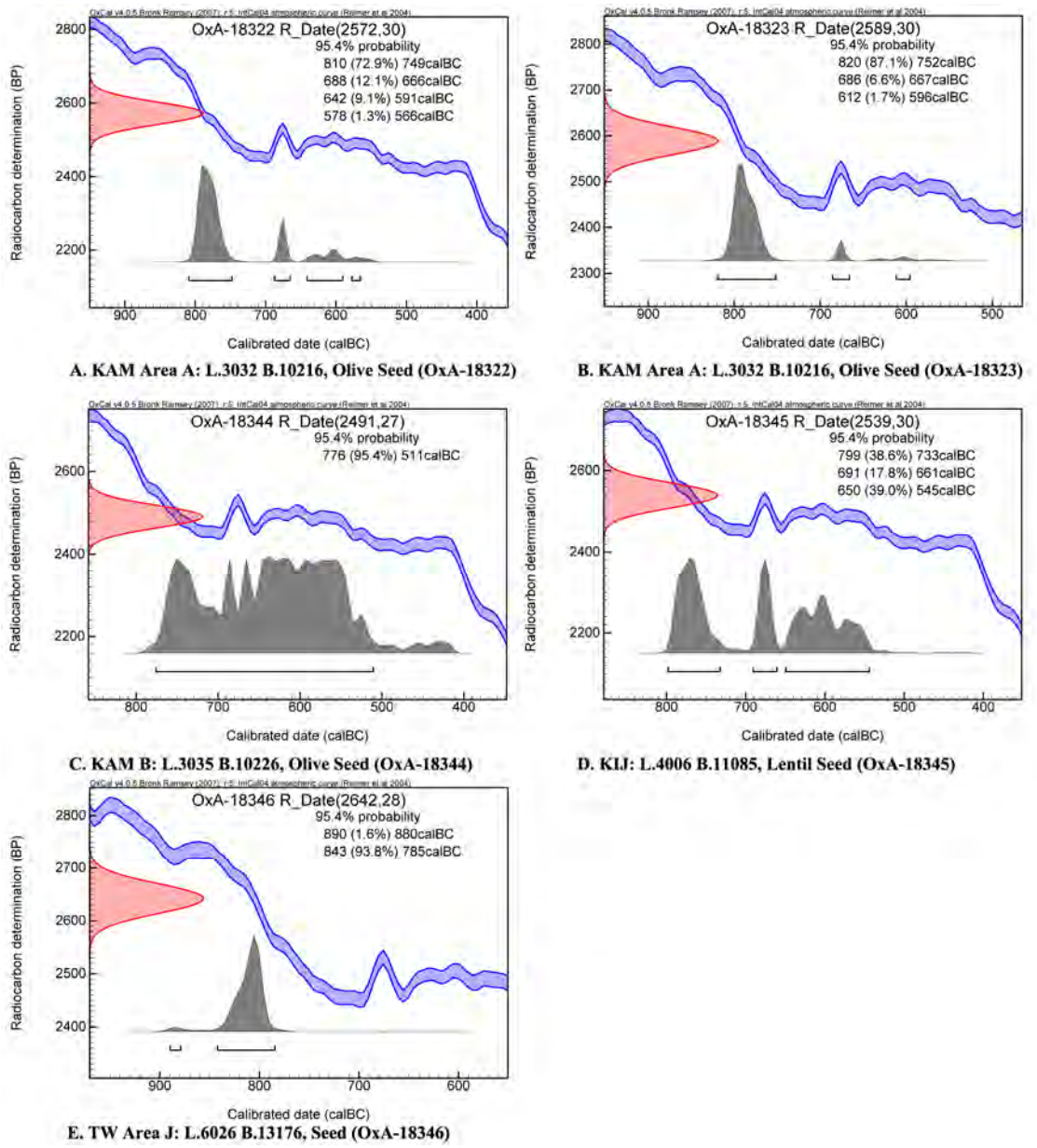


Figure 5.8: L2HE AMS Radiocarbon Results conducted at Univ. of Oxford Radiocarbon Accelerator Unit.

2. Khirbat al-Kur (KIJ) (formerly known as Khirbat al-Iraq Junubiya)

Khirbat al-Kur (30.456615°, 35.498551°, ca. 1400 m above sea level; see Pl. 5.11.1-5.11.3) is located on small hill situated on a spur of the steppe plain. KIJ is located

in one of the few areas in Showbak that was not completely stripped of its tree cover during the Ottoman period (see above). Wild oak, pine and more local trees are densest just pass KIJ. It is located near a water source that in the Roman period was converted into a well. This site was identified during the L2HE reconnaissance survey based on earlier surveys in the region (c.f. Findlater 2000; Hart 1989). The name was changed after discussion with the local villagers over which was more common.[11]

At the top of the hill, a 5 x 5 m probe was opened where clear wall lines were detected from the surface. The probe was situated directly between two large stone piles on the north and south associated with more buildings. Excavations revealed that the walls from the excavation continued underneath the southern stone pile. To the west a depression in the hill is directly noticed and may have represented a past cistern.

Excavations revealed a single phase occupation with three adjacent rooms. The main room had a pillar perhaps for roof support located in the center.

Depositional Phasing

(1) Topsoil

(2) Deep Moist Brown Fill

(3) Ceramic scatter fill just over surface

(4) Compacted surface and plaster flooring

(5) Wall Structure built over bedrock

(6) Limestone bedrock with pits and installations dug into

---

[11] Since all of the excavation data was recorded with the abbreviation KIJ, this abbreviation was retained for this study.

Discussion

Room 1: Main Room (Pl. 5.11.2:A)

The south west quadrant of the probe exposed a large room that continued south into the baulk. The depositional phasing was similar to the other rooms excavated. A high proportion of hammer stones, and ground stones were found in the fill (L.4001, 4008). In the southern part of this room a complete small juglet was found (L.4008; Pl.5.11.3:A). Ceramics were found in the fill also but at very small numbers. This room also had many large stones that had fallen in from the walls and perhaps contributed to the destruction of any ceramics left during abandonment.

A large two course pillar stood in the middle of the southern section of the room. The probe was extended further south to fully expose all sides of the pillar. The pillar consisted of two very large cut stones with tiny stones used as wedges to level and supports the pillar on the bedrock. The upper stone was cut to have five sides creating an octagonal shape (see Pl. 5.11.2:A).

This room was excavated to a thin plaster surface that overlaid the bedrock. A large pit ca 1 m. in diameter was located in the NW corner of the room. It was excavated to 2 meters below the room's bedrock surface. The pit opened up in a bell shape. After it became clear that this pit may continue for another 2meter, it was decided to fill in the pit for a future excavation when the appropriate safety equipment could be acquired. Inside the pit was a fill mixed with small ceramic sherds and several hammer stones. To east of

this room, a cylindrical mortar hole (.30m) carved into the bedrock was found at the corner of two walls connecting to the pillar. The mortar hole was filled with very dark ash sediment which was collected for later floatation and study.

Room 2: Storage Room (Pl. 5.11.2:A)

This room most clearly represents the single period of occupation postulated for Khirbat al-Kur– a least for this portion of the site. This small room bounded on all four sides by walls had a dense scatter of restorable pottery (L.4006) found filling the room. The ceramic scatter consisted primarily of broken storage jars but other vessel families (bowls, jugs) were also found. Many hammer stones, pestles and mortars were found as well. One flint arrowhead and several short-life RC samples were collected. The ceramic scatter was imbedded in a soft, light brown matrix just above the plaster and limestone bedrock floor. The depositional nature of the ceramic scatter suggests it represents a remnant of vessels left during abandonment of the site and later natural processes of windblown sediment filled in the room in two stages. In contrast to the other rooms there were much fewer wall stones collapsed in this room and this may explain the better preservation of vessels found here. A cylindrical mortar hole located in the middle of the room abutting the eastern wall was dug into the limestone. A second possible mortar hole was found in the NW corner of the room that was shallower and more poorly constructed. The room appears to be enclosed on all four sides although the southern wall was only preserved to one course and further delineation was not possible because the possible room to the south was concealed by the southern baulk. The narrow size of this room, as well as the fact that it was closed from all sides, suggests it was used for storage.

However, the presence of mortar holes indicates that at a certain point in time, perhaps earlier in its use-life, the room may have been used for minor domestic activities.

Room 3: Pithos storage room (Pl. 5.11.2:B)

After removal of topsoil and overlying fills, the level of bedrock found in the other two rooms was reached in L.4010 that represented the northern rectangular quadrant of the probe bounded by wall on the south and the baulks of the probe. In the eastern section of L.4010 a small wall (L.4019) preserved to one course was discovered lying directly on bedrock running parallel with the larger wall (L.4018). The wall continues east into the northern and eastern baulk. The relation of this wall to the primary building is not clear. The gap between the walls yielded nothing of significance besides the typical fill found throughout the probe. There is a possibility this wall may be associated with an earlier settlement, but both walls were built directly on top of original bedrock. Further expansion north and east of the probe appears the only solution to more clearly understand the relationship of this wall to the main structure.

A large stone roller was found in situ, re-used as part of a small one course wall in the middle of the L.4010 (see Pl.5.11.2B). It lies directly on the bedrock on the edge of the storage jar installation pit. Although it is clear that this probe represents a single period of occupations, the discovery of the re-used roller is another minor piece of evidence suggesting that there may be an earlier phase of occupation in other areas of the site. (below a similar roller was found at Tawilan Area K; also compare with one found at Tawilan, Bennett and Bienkowski 1995:Pl. 10.152).

L.4012 was opened to sample the western half of L.4010 that continued to be excavated below the bedrock level (in antiquity, a large area had been dug into the bedrock creating a large pit). A higher quantity of broken pottery mixed in the typical site fill was found just above the two *in situ* Pithoi (Pl. 5.11.2:B). These are remarkably large vessels. In the field they measured ca.1.5m in circumference and were a ca. 1 meter tall. The pithoi were placed in the pit after it had been plastered along an east-west axis. They were placed next to each other but not touching. The vessels were complete except for their broken rims. A portion of the second pithos's rim was found broken and laying behind the neck of the vessel. It is a triple ridged upright rim (see Ch. 7:PT 20). Pieces of later vessels and fill were found in both pithoi (PT). In PT 1 a smaller storage jar fragment too large to fit through the rim was found inside along with other vessels. The evidence suggests that first pithos's rim was broken possibly by other falling vessels and later depositional processes filled in the vessels with pottery and sediment floating through the site. No large stones were found around the vessels that could be attributed with breaking the vessels. Four handles were attached to the shoulder of the second pithos that had an inscribed cross decoration on each one. The focus on the plastering of the installation and large size of these storage jars indicates they were used for the permanent storage of liquids. The storage of the vessels below bedrock allowed the liquids to remain cool even during the temperatures as was discovered during excavations when temperatures outside of the installation were over 40˚C but it was still cool and refreshing below inside the room.

Radiocarbon Sample Results: KIJ

Figure 5.8:D. KIJ: L.4006 B.11085, Lentil Seed (OxA-18345)

A lentil seed found on the floor of L.4006 was submitted for AMS dating (see Figure 5.8:D; Table 5.4). L.4006 consisted of a dense scatter of broken vessels resting on the floor of the eastern room, that has been interpreted here as a storage room. The seed was found as we began to remove the scatter of sherds that were resting on the floor. At 95.4 % probability, OxA-18345 dates to 799 – 545 BC. Thus, the calibrated AMS date suggests that KIJ belongs to the Late Iron Age II sequence (ca. 8th – 6th c. BC). Due to the fluctuations in the calibration curve a more definitive dating cannot be achieved.

3. Khirbat al-Iraq Shmaliya (KIS)

Khirbat al-Iraq Shmaliya (KIS) (30.467283°, 35.499118°, ca. 1410 m above sea level; see Pl. 5.12.1-5.12.5) is clearly interconnected with the nearby (n=0.5 km) site of KIJ. KIS is located within a kilometer of the modern village of Hawwali. The site is north of a limestone outcropping and occupies the highest area of a large agricultural field. A small building belonging to the local villagers from Hawwali was built to the south of the area sounded. The foundation stones for this building come from the IA occupation of the site. This site was previously identified during the L2HE reconnaissance survey and other surveys (c.f. Findlater 2000; Hart 1989; above). The sounding at KIS consisted of a 3x7 m probe specifically targeted to excavate three rooms identifiable by wall lines on the site surface. This site proved to be the best preserved site with each room containing plaster

floors with many complete vessels including large reconstructable kraters, cooking pots, and storage jars.

Phasing

(1) Topsoil

(2) Hard Fill Layer

(3) Pottery Scatter above floor

(4) In situ pottery on floor

(5) Bedrock with pits

Eastern Room (Pl. 5.12.2:C)

The eastern room has large limestone (ca. .75-1m) walls preserved to four courses. The walls differ in size from higher to lower, even though it is clear stratigraphically that there is only a single phase represented. From the topsoil (L.5001) and underlying fill (L.5006) large semi-reconstructable storage jars and other vessels were found throughout the room with a high concentration in the NE and SE corners. Everything was imbedded in the hard compacted sediment fill. After another approximately 30cm of excavation the hard compacted sediment, which can best be described as decayed mudbrick, became more patchy as an ashy fill began to predominate. A large number of large broken but reconstructable vessels were found in the northern section of the room along with a few complete vessels. 30cm from floor the top of a very large grinding slab was found (see Pl.5.12.2:C). L.5014 was opened to represent this final stage of fill that continued to the original floor. This locus was kept for the floor as well since many reconstructible vessels found on the floor had other

portions higher in the matrix of L.5014. Many pieces were found sloping down to the floor level.

Exposure of the floor revealed good evidence for the original organization and use of the room. The large grinding slab was installed in the NW corner of the room as part of a small grinding complex (Pl.5.12.2:C). A large elongated flat basalt grinding stone was found *in situ* on top of the grinding slab. Dark black ash covered the entire grinding slab and was collected for later study. This ash perhaps represented burnt plant remains used in grinding. To the south of the grinding slab a plaster made depression was preserved associated with the grinding process. Plaster was also found on the western wall primarily near the grinding slab. To the east of the grinding slab a ditch was created by construction of a small one course wall running N-S approximately 20cm from the grinding slab. A pestle and hammerstone were found in situ within this ditch, which may have served as a storage area for grinding tools. Running E-W perpendicular to the N-S wall is another one course wall that connects with a smaller grinding slab that has slightly rotated due to deposition processes but is still approximately in the same location. This smaller grinding slab was elevated above the wall. Three hammer stones were found *in situ* abutting the E-W wall which also appears to have been placed there purposely for later use. At the southern end of the room in the SE corner a small stone grinding mortar was found in situ with a pottery scatter surrounding it. To the west a cylindrical mortar hole was found dug into the bedrock.

Overall, the preservation of the room presents a rare picture of Iron Age II domestic activities. Full exposure of the room may provide a clearer picture of the various processing stages that occurred within this room

Middle Room (Pl. 5.12.2:B)

The middle room had a very hard light yellow compacted layer of sediment as found in the other rooms. Small ceramic sherds were found imbedded in the layer. Below this layer an ashy fill was found (L.5010) this fill continued to have patches of this hard material but began to expose a hard gray ashy sediment in the northern half and a softer reddish brown sediment in the southern half. Directly in the middle of the locus a complete cooking pot was found turned upside down lying on top of a second carinated bowl also upside down. They are imbedded in a patch of the compacted surface. As the fill was slowly removed a large storage jar broken in a radial fashion began to emerge in the northern half of the room with many other smaller vessels either half complete or broken (Pl.5.12.2:B). To the south of the scatter a cache of over 50 lentil seeds were found (B.12084). A stamp seal on the handle of one of the storage jars was also found (c.f. Pl.12.4:J). L.5017 is a technical division from L.5013 in being the last level of ceramic scatter directly sitting on the floor of the room. At this level more many of the vessels were found in situ resting directly on the floor. In a couple examples evidence of purposeful stacking of the vessels was found (Pl.5.12.3:C,D). A dozen hammerstones and pestles were also found throughout the room on the floor. In the NW corner two small rectangular stones were placed at right angles. In the corner of the stones a cosmetic dish was found directly sitting on the floor (Pl.5.12.5:G; compare with those found at Busayra (Bienkowski 2002:. The stacked vessels and another small carinated bowl were all found around these arranged stones. In the center of the room a mortar hole was found.

The preservation of the vessels in this room especially the many on the floor is another rare look past domestic life in Late Iron Age II Edom.

Western Room

Only a small portion of the western room was exposed due to the limits of the excavation probe. The general depositional phasing found in the other two rooms was the same for this room. In L.5011 associated with the ashy fill and CS a small complete in situ torpedo jar was found in the middle of the room. In the southern area abutting the baulk a large burnt beam was found. L.5012 follows the pattern of the other rooms as being a fill associated with the original floor. The composition of archaeological artifacts was very different. Although, some restorable vessels were found in the occupational phases they were minute. What was found in higher quantity was the evidence of metallurgical objects. 4-5 copper and iron spear or arrowheads were found: a copper bracelet, flint blade, and shell (see Pl. 5.12.5).

Due to the small exposure of the room the exact function is unknown. What is known is that this room housed many more metallurgical artifacts that can be associated both with adornment and military functions.[12]

Radiocarbon Sample Results: KIS

A seed from a cache of lintel seeds found on the floor in L. 6026 at KIS was submitted for AMS dating. Unfortunately due to the small size of the lentil and possible contamination, the 14C yield was too low and the AMS dating failed. However, as will

[12] Upon revisiting the site several weeks after the completion of the excavation, this site was found to be looted, and damage was done to the bulks.

be argued in Ch.7, KIS's ceramic assemblage is near identical to the other sites in the steppe and highland that yielded successful radiocarbon dates. There is no evidence to suggest KIS should be dated differently than the other sites. Therefore, KIS should be considered as belonging to the Late Iron Age II sequence.

D. Highland Excavations

1. Tawilan

In 2007, as part of the L2HE project N. Smith, T. Levy and M. Najjar , started work at Tawilan (30.330964°, 35.484981°, ca. 1415 m above sea level; see Pl. 5.13.1-5.13.3) to conduct two soundings in order to re-examine the stratigraphy at the site that was originally excavated by Bennett (Bennett and Bienkowski 1995). Specific goals included procuring well documented radiocarbon samples and ceramic assemblages from the site for comparative analysis with Iron Age sites on the plateau and lowlands. In contrast to Busayra (Bienkowski 2002) or Ghrareh (Hart 1989), Tawilan is a medium size open village ca. 0.9ha in size. Tawilan's location near 'Ain Musa in the vicinity of the highland of Petra and its sloping face made it an ideal location for terraced farming. While the material culture is typical of the the Late Iron Age II sites located on the plateau of Edom, it is not situated in the inaccessible settings of other sites from this IA II phase such as the Edomite stronghold sites of Ba'ja III, Umm al-Biyara, Jabal al-Qseir, and others (See above). Tawilan is in a more open setting and has much to offer concerning the daily domestic life of the settled inhabitants of Edom.

Significance of Tawilan in archaeological literature

Tawilan was first discovered during Glueck's (1934:13-14; 1935:82-83) first survey in the region of Edom. In Glueck's survey of the site, he identified two enclosure walls - an outer one encompassing ca. 2 ha of area and inner wall enclosing ca. 0.9ha of site area.. Glueck dates Tawilan from the 13th to 6th century BC, primarily by the evidence of Negebite Ware found on the sites surface. Based on the site name, date and presumed large fortification wall, Glueck argued that Tawilan was biblical Teman. R. de Vaux (1969) rejected this identification after arguing that Teman was not a particular site but rather a region of Edom. When Bennett first excavated the site in 1968 she probed two sections of Glueck's outer wall (Areas IV and VI). However, this wall lacked evidence of an Iron Age date. Based on the ceramics and other artifacts found associated with the wall it was dated to the 1st c. C.E. during the Roman period (Bennett and Bienkowski 1995:51).

Besides the test probes, Bennett opened three large areas (Area I, II, III) in the southern portion of the site. These excavations revealed domestic architecture primarily consisting of rectangular buildings made with dry-stone masonry. The size of the stones used and quality of construction was found to differ between the main areas excavated (Bennett and Bienkowski 1995:101). In a number of the rooms pits were found dug into the bedrock. All three areas underwent an initial building phase and a second phase of restructuring where the original buildings apparently continued in use until they were

destroyed or abandoned at sometime during the end of the Iron IIC. Based on this phasing, Tawilan can be considered primarily as a single Iron Age phase site dating between late 8th c. BCE to 4th c. BCE with only minor modifications to the architecture over the duration of its use.[13] While the final monograph publication appeared in 1995 (Bennett and Bienkowski 1995), much of the site has been unexcavated and the problematic reports concerning Bennett's excavation have obscured the full understanding of the site (Bennett and Bienkowski 1995:16-17). This site was probed by the L2HE project in order to resolve several of these issues, retrieve a quantitative sample of ceramics, and short life radiocarbon samples for dating. Currently the site is in danger of destruction by modern village construction and encroachment by village shepherds.

The New Excavations

As noted above, the goal of conducting two new 5 x 5 m soundings was to acquire quantitative data concerning the ceramic assemblage of Tawilan and tie them with radiocarbon dates to the respective phasing proposed by Bennett and Bienkowski (1995). The soundings would then serve as a control for comparing quantitative data of the ceramic assemblages at other newly excavated IAII sites on the plateau described above. It was hoped that with radiocarbon dates and the full collection of diagnostic sherds from each sub-phase of the site, a more detailed examination of the site chronology would be possible.

---

[13] This conclusion is supported by the recent L2HE soundings on the site. The ceramic assemblage, studied by Hart was considered homogenous during all phases, which should be expected. Due to the lack of any sites with Late IAII stratigraphy associated with pottery it is not possible to determine the duration the site was occupied or at what point within a Late 8th to 4th c. BCE date the site was first constructed.

Area J (Pl. 5.13.2:A)

The first sounding (Probe J) was made directly north of Bennett's Area III (Figure 5.8). Walls from Bennett's excavations in Area III extended into the new sounding making it possible to connect our new work with the past excavation stratigraphy. The sounding exposed a series of walls including three evenly spaced pillars that were connected by smaller supporting walls. The use of pillars was common at Tawilan and was found in different sections of Area III as well as Area II (Bennett and Bienkowski: ibid.).

Phasing

(1) Topsoil (L.6002)

(2) Stony Ashy light brown sediment (L.6005)

(3) Powdery, light gray ash sediment (L.6008)

(4) Crudely Plastered surface (L.6017,6021,6022)

(5) Medium hardness clay sediment and fill with second plaster surface in Southern end (L.6026)

(6) Bedrock.

Summary

The function of the Area J room is undetermined. The phasing suggests an original occupation with minor modification shortly afterward the initial settlement of this part of the site. The large quantity of pottery, bone, and ground stone artifacts in the fills appears to be a result of intense occupation in Area J and not related to natural formation processes such as runoff from the eastern dumping areas. The excavations

confirmed the original findings by Bennett and Bienkowski (1995) that there is indeed narrow sub-phasing at the site. Thus, Area J represents a relatively short occupation span with three short sub-phases that would probably not be recognized in a ceramic seriation. In any event, the relatively small sample size of ceramics from the new Tawilan soundings precluded doing a seriation study for this thesis.

Area K

The second probe was opened north of Bennett's excavations to better understand the chronological relationship of different areas of the site. This probe revealed well built walls and multiple stratigraphic phases. While the floor above bedrock in this area was reached, the northwest corner of the probe contained a large pit, 1.5m in diameter. This pit proved the richest as it contained five complete storage jars and a finely painted jug. Numerous large storage pits were found during Bennett's excavations at Tawilan in Areas III, this is confirmed in the new soundings described here and were also common at KAM and KIJ. The phasing observed in the Area K probe is summarized below.

Phasing

(1) Topsoil (L.6010)

(2) Hard sediment accumulation with stone wall collapse(L.6012, 6014)

(3) Brown clumpy moist sediment with some stone wall debris

(4) Hard compacted sediment and patches of gray ash(L.6018, 6019)

(5) Hard clay surface with patches of plaster and sporadic stone paving (L.6024, 6025)

(6) Softer white ashy surface patches and gray clay surface (L.6027)

(6b) Pit dug into bedrock

(7) Bedrock

Western Room (Pl. 5.12.2:B)

It is not fully clear whether two occupational phases occurred in Area K. The hard compacted surfaces can be misleading as at other sites excavated they represented later depositional processes rather than periods of occupation. Perhaps the best evidence is the small wall on the East which appears built either as the original wall or later division. The presence of a roller stone in the wall shows that it came from a previous period of use on the site. The relation of this wall to the outer wall is not clear although it appears the later wall starts at a higher elevation as seen for the southern wall but this can only be more clearly defined through a larger exposure of the site.

Eastern Room (Pl. 5.13.2:B)

This room is much narrower and appears to have a bounding eastern wall but. The only significant feature of the room is the large stone slab which was placed over bedrock and leveled using smaller stones wedged underneath. The bedrock drops another 20cm from the stone platform. It is interesting the pottery scatter is found at the base of the stone slab and ends before the fill which goes below the stone slab unto bedrock. The fill of small stones may have been intentional to lift the area up to the level of the base of the stone slab but it is not clear. In this scenario it is possible the stone slab represents a later phase of reorganization of the room.

Radiocarbon Sample Results: Tawilan

Figure 5.8:E. TW Area J: L.6026 B.13176, Seed (OxA-18346)

Two radiocarbon samples were submitted for AMS dating from Tawilan. The sample collected from Area K failed to yield significant results (see ^{14}C discussion for KIS for explanation). The other sample (OxA-18346 see Figure 5.8E; Table 5.4) was collected from Area J in L.6026. This locus represents the final fill (ca. 10 cm) and material found on the second plastered surface below the previous crudely plastered floor (L.6017, L.6021, L.6022). At 95.4% probability, the new sounding at Tawilan shows that the basal occupation floor dates to 890 – 785 BC and spans the 9th to 8th c. BCE. Therefore, this portion of the Tawilan site borders between the end of the Early Iron II phase and the Late Iron Age II phase.. This is the only example where the possibility of a late 9th c. BCE occupation can be entertained. Taking into consideration that this is only one sample, this early date must be further investigated through more radiocarbon dates to determine whether it is representative of other radiocarbon dates or not.

V. Conclusion

When the new archaeological data presented here is combined with the models developed in the previous chapters a picture of early and late Iron Age II Edom's social complexity can be more clearly delineated. The field data retrieved from the survey and soundings described here for the steppe and highland zones provide new insights concerning the relationship and history of settlement of Transjordanian Edom – from the lowlands to highlands. The remaining sections describe how these new field data refine our understanding of Iron Age Edom in relation to the earlier research in the area.

A. Radiometric Results and Dating of the Highlands

Overall, when the AMS radiocarbon results presented in this study are taken as a whole, it becomes apparent that all of these site's dates cluster around the beginning of the 8th c. BCE. Lack of funding and some unfortunate luck with individual sample size precluded having a larger sample of 14C dates for this thesis. The fluctuations in the radiocarbon calibration curve during the 8th – 7th c. BC is a well known problem (Bronk Ramsey 2005) making any definitive conclusions concerning absolute dating impossible at present. However, according to the results presented here, a significant early 8th c. BC occupation came to fruition in the steppe and high plateau region of Edom during the late Iron Age II. More importantly, the primary occupation phases at Tawilan should not be dated to the 6th c. BCE as Hart (1989:44-47) argued (see also Bennett and Bienkowski 1995:102). It is hoped that as more Iron Age excavations in the highlands are conducted that AMS radiocarbon dating will be employed so that a clearer picture of the absolute dating of Edom's plateau can be achieved.

B. A Picture of Early Iron Age II Edom (ca. 10th – 9th c. BCE)

First, it must be noted from the excavations and surveys described above highlight that Khirbat en Nahas was not an isolated entity during the IA IIA. Rather it belonged to a large regional network of sites involved in industrial-scale copper production from as early as the 10th c. BCE – an observation made by Glueck (1940) and now confirmed by the new excavations and ceramic analysis for KEN and the other sites described here and presented in Chapter 7 (see also Smith and Levy 2008). The surveys and soundings

conducted by the ELRAP project between 1997-2007 in Wadi al-Guwayb, Wadi al-Jariyeh and Wadi Fidan have discovered a number of contemporaneous sites that served different functions (e.g. preliminary processing, mining, smelting, and defense) but were all connected to centralized metallurgical production at KEN (Figure 5.3, 5.9). When these data are coupled with the German Mining Museum surveys (Hauptmann 2007) and the CBRL work in the main Faynan valley (Barker et al 1998; 1999; Barker et al 2007), it can be argued that a complex society had emerged as early as the 10th c. B.C.E in the lowland region. However, unlike Glueck (1940), it is not yet possible to identify the ethnic group (i.e., Israelite, Egyptian, Edomite, etc.) that controlled industrial production at this time (see Chapter 7 here).

Figure 5.9: UCSD JHF-ELRAP 2002 Survey of KEN and its hinterland. (Source: Levy et al. 2003).

Second, the surveys conducted around KEN and its hinterland show that there are no large village settlements in the area (c.f. Figure 5.9). Evidence for IA IIA domestic settlement outside of the three major copper industrial sites (KEN, KAJ, Kh. Faynan WF424) is scarce. In total, 5 IA II cemeteries with a minimum number of 5 tumuli visible on the surface and one tomb near KEN were identified by the 2002 survey (ibid.). The continuation of the WAJ survey in 2007 had similar settlement type patterns and yielded 5 more cemeteries (Levy et al., in prep).[14] Along the Wadi Fidan a similar pattern of settlement function emerges for the IA II (figure 5.9). The majority of sites were either cemeteries, tumuli groups, cairns, or pottery scatters with occasional associated circular structures - with an absence of domestic occupation sites. Four small copper smelting sites were found (WFD 52, WFD 56, WFD 120, KAJ 615), but their relation to KEN and KAJ has not been established (cf. Levy et al 2001, 2003). The SIGNAS survey (McDonald et al. 1992), that conducted purposive and pedestrian transect surveys over all the major wadis from Wadi Fidan to Ghor Safi in the southern Dead Sea basin area also failed to yield any sites with any significantly large IA II settlement (figure 10). The only other significant site north of KEN discovered by the SIGNAS survey was site No. 75, Khirbat Feifa, which is described by Macdonald (1992:73) as having a large enclosure or fort that was associated with Iron I-II period pottery. Other than Khirbat Feifa, the sites north of Wadi al-Guwayb indicate a nomadic or semi-nomadic settlement pattern with circular structures, cairns, campsites, sherd scatters with no associated architecture, and many cemeteries. As noted earlier, the only

---

[14] The database has two sites (588, 640) described as archaeological complexes with 2 and 3 ha in size, but there is no detailed information on these two sites.

Iron Age cemetery excavations carried out to date in Transjordanian Edom have been at Wadi Fidan 40 where the researchers suggest that it was a burial site for Iron IIA nomads, possibly the Shasu nomads known from ancient Egyptian texts (Kitchen 1992; Levy 2009; Levy et al 2004).

In sum, the survey data from the ELRAP 2002 and 2007 projects, which both were full-coverage surveys, indicate that the populations that lived within this area and entombed their dead did not build villages. Either these inhabitants lived somewhere in the vicinity of the three large IA IIA metallurgical sites, were semi-nomadic, or were a combination of both. The evidence of camp sites, cairns, tumuli, and large cemeteries strongly suggest that at least a contingent of the population residing in Faynan were semi-nomadic moving between the lowlands and highlands on an annual basis.

Searching for a 1st tier controlling body.

Khirbat en-Nahas and the mining district it belongs to represent a high degree of organized metallurgical production. The settlement patterns on the Wadi al-Guwayb and Wadi Fidan represent a three tiered site hierarchy. Khirbat en-Nahas at ca. 10 ha would have served as the central settlement that administered the area. Its location would have been strategic, the end point for the processing and distribution of copper. Khirbat al-Jariya and Khirbat al-Guwayb are much smaller than KEN but still 3ha in size would be considered large villages. They are located much farther up Wadi al-Guwayb's tributaries near the IAII mines. They were in ideal locations not far from the mines for initial ore processing,and transport to KEN. The bottom tier represents the many small temporary settlements, all under 1ha in size, located in between the major settlements. These areas

may have all been occupied by a significant semi-nomadic population of laborers and their families. The large cemeteries also reflect a significant population that lived and worked between or on these major settlements (Levy, Adams and Shafiq 1999).

Recently, Finkelstein and Singer-Avitz (2008:18) have argued that KEN should be "linked with the settlement activity, including copper production and trade, in the Beer-sheba Valley, along the roads leading to the coastal plain." In an earlier publication Finkelstein and Piasetzkey (2008:89) more specifically suggests that Tel Masos is the major site that administered the copper production at KEN – part of what they call the 'Tel Masos chiefdom'. However, there are several significant problems with this argument. First, Tel Masos is small in comparison to KEN. Tel Masos is ca. 5-6 ha in size while KEN averages 10 ha. It is more logical to argue that KEN not only administered copper production but also oversaw its trade among the smaller Negev sites. The presence of significant IA IIA Negev sites does not mean they necessarily would have any role in controlling KEN. Secondly, there is little evidence of metallurgical activities at Tel Masos (Kempinski 1983) and what there is seems to reflect simple re-melting that was not part of a larger metallurgical chain of production and trade. Third, as will be argued in Chapters 6 and 7, the ceramics at KEN are indigenous to the Transjordanian Edom lowland area and more closely connected to the highland plateau – not the Negev desert to the west. There is no evidence for of any type of administrative control coming from the Negev (Levy et al 2005, 2008). Fourth, Finkelstein and Singer-Avitz (ibid.) argue that the Tel Masos chiefdom collapsed or disappeared at the end of the early IA IIA. Finkelstein and Piasetzky (2008) manipulate the radiocarbon dates from KEN using unacceptable averaging methods (cf. Levy and Higham 2005) to make it look

like KEN's major copper production occurs only in the early portion of the IA II A. But even Finkelstein is not able to fully adjust the manipulation of the dates and admits that KEN continues until the end of the IAIIA. Not only is Finkelstein's re-dating highly unscientific, there is no doubt that there was intensive copper production the entire duration of KEN's occupation as witnessed at Area M where the latest 9th c. BCE phase still produced 3 meters of metallurgical waste. The reason for Finkelstein's manipulation of the dates is clear. If KEN was still a strong metal producer when the Tel Masos chiefdom had vanished, then KEN was never dependant on it in the first place. Finally, Tel Masos did not have the social complexity or the means to supply any of the needs required by KEN for industrial scale metal production. The need for labor, financial resources, and foodstuffs were not abundant enough in the semi-arid environment around Tel Masos to provide the constant supplies needed to keep the mining and smelting industry running at KEN.

The importance of KEN in relation to understanding the evolution of social complexity in Edom has been underestimated recently in scholarly discourse in on-line publications. For example, Bienkowski and van der Steen argue that a single "fortress" does not prove that there was a complex society:

> "Unfortunately, one 'fortress' does not make a kingdom. Or, to put it differently, most kingdoms may have fortresses, but not every fortress belongs to a kingdom (and, of course, the interpretation of the structure as a fortress is no more than a hypothesis). Neither does industrial production require a state structure. Recent research suggests that local corporate groups are very capable of conducting and maintaining large-scale industrial activities, and building up the infrastructure, such as fortified buildings and housing, that comes with it. So far nothing else has been found in southern Transjordan to justify the incorporation of the Khirbet en-Nahas 'fortress' in a larger polity. The presence of a 10th-century 'fortress' at Khirbet en-Nahas is no indication, let alone proof, of the early

> rise of the Edomite kingdom. In fact, if, as the authors claim, the copper industry-cum-fortress of Khirbet en-Nahas would be evidence of an Edomite kingdom, we may wonder why it ceased to exist exactly at the time when the other features of that kingdom make their appearance, the 8th and 7th centuries." (Bienkowski and van der Steen 2006)

L. Herr has proposed a similar question concerning the significance of KEN:

> "We also need to establish why mining copper at a fortified site implies a "state" in the region, especially when there is not yet any clear evidence for the settlement of other parts of the region." (Herr 2006)

However, what these researchers fail to understand is that the significance of the KEN for understanding the evolution of Iron Age society in Edom is not simply the presence of a fortress at the site, but rather the combined evidence of fortress, large scale buildings at the site, the Iron Age II settlement hinterland described above and most of all – how these factors relate to the new evidence of industrial scale metal production during 10th and 9th BCE —the organization of which could only take place under the control of a complex social organization. At ca. 10 ha in size, KEN is the third largest site in Edom (after Kh. Faynan and Busayra) and the largest 10th – 9th c. BCE fortress in the southern Levant desert zone of Sinai, the Negev and southern Jordan (see Levy et al 2005) In this light, two main sets of evidence support the view that KEN played a central role in a settlement network typical of a complex society beyond egalitarian social organizations that are typified by autonomous village settlements (cf. Feinman and Marcus 1998) :

(1) KEN was the center of an industrial scale metallurgical center during the 10th and 9th c. BCE. On-site the necessity for efficient production would have required

complex organization and administration that may be linked to public residences (Area T, R) excavated in 2006.

(2) The 2002 and 2007 surveys show that KEN belonged to a network of related sites during the IAIIA (Levy et al. 2003; Levy et al. in prep). In other words, not only a central administrative center existed in Faynan but also multiple satellite sites and mines that would have been interlinked with KEN's metallurgical activities.

These data suggests that some organizing body with associated leadership was required to coordinate the production of copper at these sites, organize the construction of the monumental four chambered fortress for defense, and mediate between the various settled and semi-sedentary populations that resided and possibly labored at KEN.

C. A picture of Late Iron Age II Edom (ca. 8th – 6th c. BCE)

There seems little doubt that at the end of the Iron Age trajectory in Edom, during the 8th through 6th c. BCE, the site of Busayra in the northern highlands of Edom was the central polity. However, the new settlement pattern data and soundings at three steppe and 1 highland site add a new dimension for understanding the nature of social complexity at this time. Busayra is located south of the modern town of Tafila and is one of the most important Late Iron II sites to have been excavated in Edom. Therefore, the new settlement pattern and excavation data described above must be integrated with this IA settlement center. The site has been linguistically identified as ancient Bozrah from the Hebrew Bible (Avishur 2007, Bartlett 1989, 1992). However, when Busayra's size and its hinterland are taken into consideration new observations emerge that must be addressed when considering how it articulated with other late IA sites in the region. It is

clear that a different settlement processes evolved in the highlands after the abandonment of the major $10^{th} – 9^{th}$ c. BCE metal production sites in the lowlands at KEN and KAJ..

A number of scholars have interpreted the importance of Busayra differently. Here we discuss the specific data recovered from the Busayra excavations and compare it to what is seen in the hinterlands in order to test several of the hypotheses developed in Chapters 2-4. Central to this examination will be an examination of the settlement patterns derived from past surveys and those conducted by the L2HE and ELRAP projects.

First, a large perimeter wall can be seen surrounding the main northern territory of Busayra. Using the perimeter of the fortified wall as the boundary of the main settlement, the site size of Busayra is 8.16ha (Bienkowski 2002:39; measured 8.14ha in ArcGIS). However, the presence of the acropolis walls and other architecture suggests domestic dwellings, now masked by the modern village probably continue below the acropolis in the south of the site. (cf. Bienkowski 2002:39). This area would almost double the site size of Busayra.

Taking into consideration the central portion of the site (8.16ha), Busayra is the largest site in Edom on the plateau by a significant margin. In terms of size, it rivals many of Israel's provincial towns such as Megiddo, Gezer, and Lachish (although Busayra is not a deeply stratified 'tel' site; Kempinski and Reich 1992). Based on Busayra's site size there is no question that it was a capital town that exerted control over its immediate periphery.

Busayra has diversified monumental architecture which includes at least one palace and another temple/palace adjacent to it (c.f. Bienkowski 2002). The palace and

associated monumental buildings are all built on a walled acropolis. Although, the excavations at Busayra were limited, the evidence of an acropolis with monumental architecture separated from a lower town and possibly a southern village suggests that elite residences were clearly demarcated from a commoner class. The evidence of not only a temple but also a palace on the acropolis suggests that a ruler resided at Busayra and that the palace was perhaps the hub of some level of administrative control. The Assyrian texts that refer to the 'kings' of Edom corroborate this evidence suggesting that some type of 'ruler' and political organization was centered at Busayra (c.f. Bartlett 1989; Millard 1992).

However, it must be noted that the settlement patterns in the immediate periphery of Busayra and the plateau in general are missing lower tier small towns (ca. 5ha). Instead, the extensive surveys conducted on the plateau have found only medium size villages that are a maximum of (3ha) in size (c.f. Macdonald et al. 1988; Macdonald 2004).[15] Thus, it cannot be inferred from the current data that Busayra had a four tiered settlement hierarchy even though it was a large site reflecting a practices of statecraft. While B. Porter (2004), B. Crowell (2004), and others (Knauf 1992; Knauf-Belleri 1995) suggest that Late Iron Age II Edom was a state-level organization, the new data indicate that it does not fully conform to the kind of archaic states discussed by Feinman and Marcus (1998) and in Chapter 2 here. Rather according to the models presented in Ch.2 the Late Iron Age II polity should be considered as a 'kingdom.' It is more hierarchical than a complex chiefdom, as witnessed by its development of a capital with diversified

[15] If small towns existed one would expect to find them in the surveys since all of these surveys were able to locate many of the smaller less visible sites. Therefore, the lack of small towns in this region is not a result of missing or poor data.

monumental constructions, a stratified society with elite and a dynastic ruler, and a loose administrative system reflected by the various forts found dispersed throughout the region and some evidence of administrative tools (seals, etc.). However, in comparison to neighboring southern Levantine polities (e.g. Judah, Israel, Philistia, and Phoenicia) only a three tiered settlement hierarchy and two levels of decision making existed. There was no urban center, but rather Busayra, a town that probably administered a network of second tier villages. In general, the region of Edom remained undeveloped where pastoral nomadism played a role in the formation of complex societies (cf. Levy 2009, LaBianca and Younker 1995). Although the thrust of this dissertation focuses on the rise of Early Iron Age II social complexity in Edom and the ceramic analyses is centered there, there are some additional implications gleaned from the ceramic study concerning the end of the IA II in Edom that are touched on in the concluding chapter (7).

Pl. 5.7.1: Excavations in Sounding A (10th c. BCE deposits) at Rujm Hamra Ifdan below Glueck's Iron Age watchtower. As shown here, the site is situated along the Wadi Fidan near a secondary drainage leading to the contemporary copper production site of Khirbat en-Nahas

Plate 5.7.1: RHI 04 Site Photo

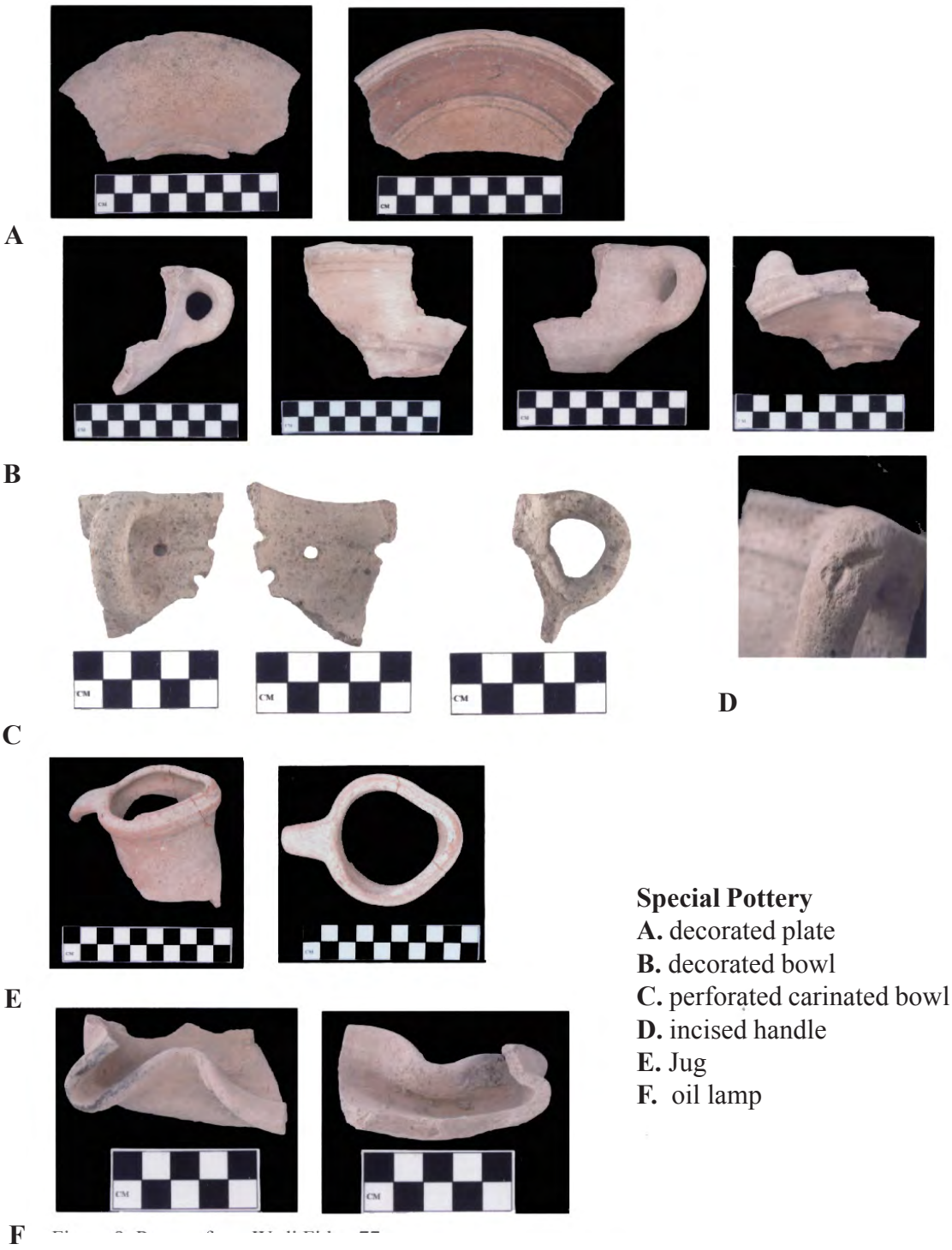
A. RHI 04 Upper and lower probes including slope

Plate 5.7.2: RHI 04 Site Photo

A. RHI 04 Sounding A. upper probe

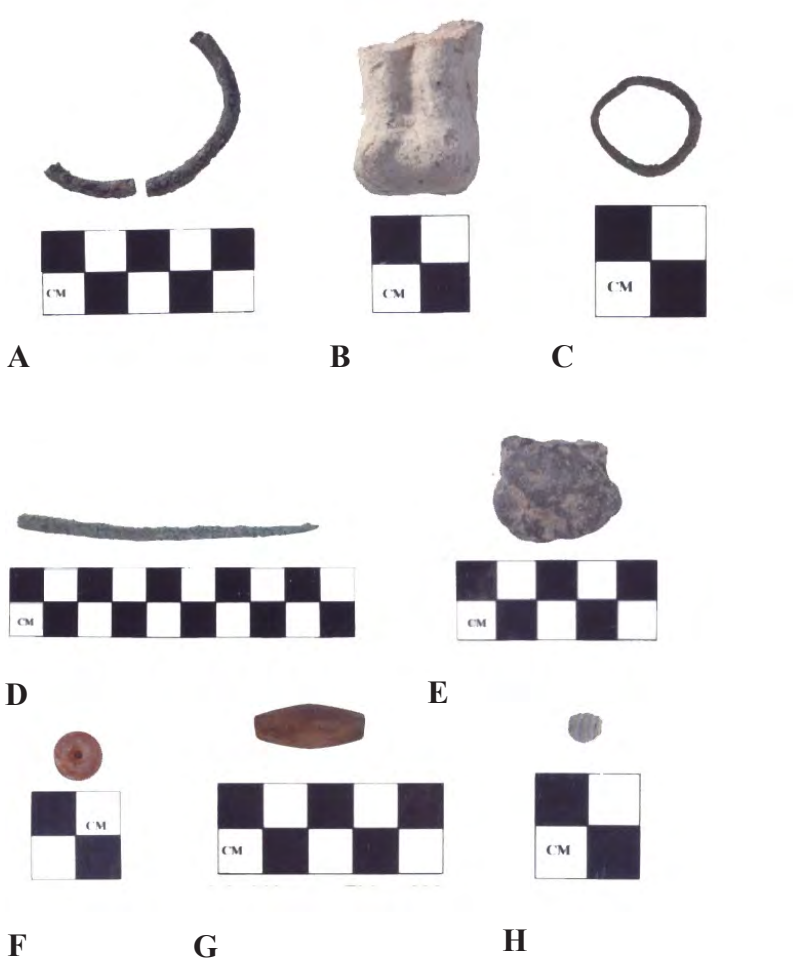
B. RHI 04 Sounding B. lower probe

Plate 5.7.3: RHI 04 Site Photos



Special Pottery
A. decorated plate
B. decorated bowl
C. perforated carinated bowl
D. incised handle
E. Jug
F. oil lamp

Plate 5.7.4: RHI 04 Special Pottery



A. copper bracelet (EDM.89040 L.503)
B. figurine (EDM. 10307)
C. copper ring **(**EDM. 89046 L.507)
D. copper pin (EDM. 10161 L.520
E. slag (EDM. 10057 L.5501)
F. bead **(**B.10089 L.3022)
G. bead (B.10269 L.3038)
H. bead (B.10230 L.3033)

Plate 5.7.5: RHI 04 Special Finds

A. Khirbat al-Malayqtah located on spur

A. Khirbat al-Malayqtah facing out towards the lowlands

Plate 5.9.1: L2HE 07 Site Photos KAM

A. Khirbat al-Malayqtah facing east

B. Khirbat al-Malayqtah small storage pit with loomweights and restorable vessles

Plate 5.9.2: L2HE 07 Site Photos KAM

A

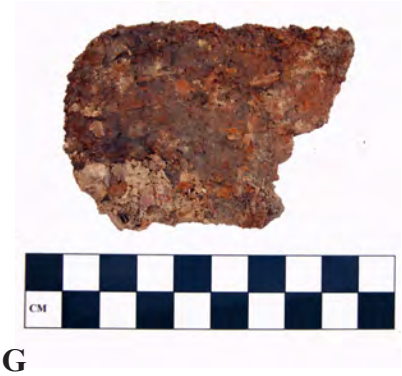
B

C

D

E

F



G

H

A. spindle whorl with incised design (B.10109 L.3016)
B. spindle whorl with incised design (B.10217 L.3032)
C. worked bone spatula (B.10284 L.3032)
D. copper earing **(**B.10233 L.3034)
E. copper earing **(**B.10089 L.3022)
F. flint blade (B.10269 L.3038)
G. iron object (B.10230 L.3033)
H. juglet (B.10306 L.3041)

Plate 5.9.3: L2HE 07 Special Finds KAM

A. The sounding at Khirbat al-Kur with author and son, Jabal al-Safaha in the background.

Plate 5.11.1: L2HE 07 Site Photos KIJ

A. Khirbat al-Kur facing east

B. Khirbat al-Kur storage pit with two restorable pithoi

Plate 5.11.2: L2HE 07 Site Photos KIJ

A

B

A. juglet (B.11049 L.4008)
B. flint blade (B.11040 L.4003)

Plates 5.11.3: L2HE 07 Special Finds KIJ

A. A View of Khirbat al-Iraq Shmaliyah from neighboring Khirbat al-Kur. The steppe setting of this site can be seen here.

Plate 5.12.1: L2HE 07 Site Photos KIS

A. Khirbat al-Iraq Shmaliyah facing NE

B. Pottery scatter of middle room (L.5013)

C. Installation and large grinding slab with in situ groundstones in eastern room (L. 5014)

Plate 5.12.2: L2HE 07 Site Photos KIS

A. Close up of pottery scatter (L.5013)

B. two in situ jugs and stone bowl found on surface (L.5014)

C. Exposed surface in L. 5013 with several vessels found in situ resting on the surface

D. in situ stacked bowls and small cooking pot found on the surface of L.5013

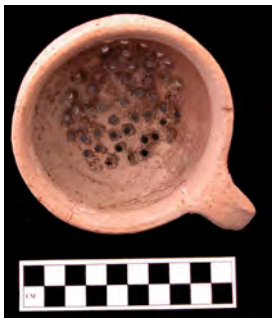
Plate 5.12.3: L2HE 07 Site Photos KIS

A

B

C

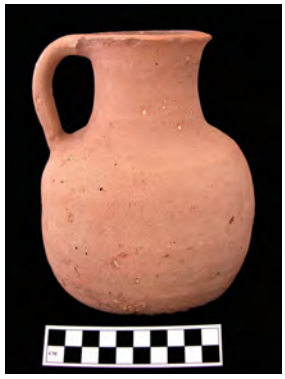
D


E

F

G

H


I

A. bowl (B. 12124 L.5017)
B. bowl (B.12123 L.5017
C. bowl (B. 12140 L.5017)
D. tripod strainer bowl (B.12103 L.5013)
E. strainer bowl (B.12045 L.5009)
F. cooking pot (B.12123 L.5017)
G. platter (B.12130 L.5017)
H. bowl (B.12073 L.5013)
I. Jug (B.12133 L.5012)
J. handle with potter's mark and close up (B.12081 L.5013)
K. handle with potter's mark and close up (B.12102 L.5013)

J

K

Plates 5.12.4: L2HE 07 Special Finds KIS

A

B

C

D

E

F

G

H

A. oil lamp (B.12144 L.5017)
B. stone objec**t** (B.12006 L. 5003)
C. copper bracelet (B.12069 L.5013)
D. iron arrowhead (B.12100 L. 5012)
E. hematite weight (B.12092 L.5013)
F. iron arrowhead (B.12071 L.5012)
G. cosmetic dish (B.12127 L.5017)
H. ram's head figurine on ceramic rim (B12121 L.5017)

Plates 5.12.5: L2HE 07 Special Finds KIS

A. New Excavations at Tawilan (Area J) with Modern Village in Background. Note the open setting of this highland site.

Plate 5.13.1 Site Photos L2HE 07 TW

A. Tawilan Area J facing west

B. Tawilan Area K facing north

C. Pit with storage jars found in Area K

Plate 5.13.2 Site Photos L2HE 07 TW-J and TW-K

A. spindle whorl with incised design (B.13214 L.6027)
B. scarab seals (B.13069 L.6012)
C. scarab seals (B.13012 L.6003)
D. bone spatula with pointed end (B.13150 L.6018)
E. arrowhead (B. 13014 L.6003)
F. iron artifact (B.13200 L.6027)
G. tridachna shell (B. 12028 L.6006)
H. cosmetic dish with incised design and close up (B.15001)
I. zoomorphic figurine head (B.13051 L.6006)
J. Jug (B.13221 L.6030)
K. handle with potter's mark adn close up (B.13011 L.6004)
L. figurine head (B.13122 L.6013)
M. bowl (B.13131 L.6013)

Plate 5.13.3: Special Finds L2HE 07 TW

Chapter 6:

From Lowland to Highland – Petrographic Perspectives on Iron Age Edom

I. Introduction

Ceramic petrography enables the archaeologist to go beyond the use of morphological analysis of ceramic assemblage to a deeper level of analysis. Ceramic petrography is an examination of the mineralogical composition of ceramics that allows the archaeologist to not only discover the provenience of pottery, but also investigate how it was produced and what specific technological choices were made by the ancient potter from the selection of clays, sorting, tempering and firing of the vessel. Petrography has been used by a number of archaeologists as an analytical lens for understanding how these technical choices may reflect a culture's models of production, preferences toward specific materials, and preconditioned ways of doing things (Goren 1996; Goren et al. 2004; Whitbread 1995; Ballard et al. 2002; London 1995; Gunneweg et al. 1991; Mommsen et al. 1984; Singer-Avitz 1999; Na'aman and Thaerani-Sussely 2006; Levy 1987).

Specifically, a petrographic study and ware analysis of the ceramics from the UCSD ELRAP and L2HE projects enable this dissertation to corroborate and refine various inferences made concerning ceramic 'technological style[1]', production, exchange, craft specialization and social boundaries. First, the petrographic analysis conducted here allows us to independently verify the provenience of all the significant vessel types. Locally produced ceramic forms can be distinguished from imports coming from other

[1] See Ch. 3

areas in the immediate region of Edom or from further distances throughout the Southern Levant and Eastern Mediterranean. Second, a study of petrography enables the designation of a vessel's provenience, composition and morphology to be correlated in a multivariate typological analysis. Multivariate analysis is important because it allows us to conduct a more comprehensive study. In this manner, the petrography will serve as a refinement of the more subjective, observed, grouping of ceramic sherds into specific wares and morphological types at the various sites studied. Third, technical choices related to clay selection, tempering, and firing can be identified for the various ceramic assemblages. Understanding the decision making of these various technical choices gives us a better look at the ancient potter and his/her surroundings and methodology As argued in previous chapters, these technical choices are rarely purely functional but often reflect the arbitrary technical styles and learned mimetic models of pottery producing communities. Specifically, evaluating ceramic ware (i.e. correlations of ceramic chemical composition, color, and firing) combined with ceramic types and locale provides essential insight into the mimetic models learned by producers of the community. After a series of inter-site and intra-site analyses conducted in Ch.7, quantitative inferences can be made in light of the data to make valid observations of possible social boundaries and interaction spheres that existed within the Iron Age Southern Levant. Finally, since the petrographic study examines ceramic assemblages from the early Iron Age II sequence (KEN, KAJ, and RHI: Sounding A) and the later period sites (L2HE soundings and RHI: Sounding B), the petrography can be used as a tool to identify possible patterned diachronic changes that occurred. This will aid in the chronological inferences already

made based on morphological form, site stratigraphy, and radiocarbon dating conducted at all these sites.

In this chapter, a statistically determined sample of ceramics recovered from the several excavations in the lowlands and highlands will be subjected to a petrographic analysis and a subsequent ware analysis of the entire assemblage. The methodology carried out will be detailed below. Following the methodology, each petrographic group and its associated wares will be discussed with reference to its respective matrix, inclusions and geological provenience. Finally, the statistical and spatial results of these determined groups will be correlated with the sites excavated and analyzed. In the following chapter, the ware and petrographic groups determined here will be used for aiding in description of the various types and their illustrations as well as the cross regional comparative analyses.

II. Past Petrographic and INAA Ceramic Studies of Iron Age Edom

A number of ceramic petrographic and INAA studies have been conducted that relate to the region of Edom. These studies are informative in corroborating the data discussed in this chapter. As was alluded to in Ch.4, the presence of 'Edomite' ceramic styles in the Negev sites have sparked a number of petrographic and INAA(Instrumental Neutron Activation Analysis) studies in order to determine the provenience of these vessels. For example, J. Gunneweg and collaborators (Gunneweg and Balla 2002; Gunneweg amd Mommsen 1990, 1995; Gunneweg et al. 1991) have sought to use INAA to determine the provenience of these 'foreign' sherds. In a comparative INAA study of 'Edomite', 'Negbite', and 'Midianite' pottery Gunneweg et al. (1991) found that Late

Iron Age II 'Edomite' painted bowls and other vessel forms were produced locally in the NE Negev. 'Edomite' sherds were sampled from the Negev at sites Horvat Qitmit, Horvat Rogem, Qadesh Barnea, Givat Parsa. Three cooking pots from Tell el-Ghrareh and a jug from Buseirah were used for control. Out of a sample of 40 'Edomite' sherds only one example from Givat Parsa was found to be local to the Petra region. An earlier study by this research team corroborates these data (Gunneweg and Mommsen 1990:10). It showed that the pottery found in Petra was local and a comparison of pottery from Um al-Biyara and Tawilan and wasters from Nabatean Petra were found to be highly similar at <1 Chi-square correlation.

Although the sample was small, these data suggest that the 'Edomite' style pottery found at the Late Iron Age II Negev sites may either have been produced locally by Edomite potters or imitated by local inhabitants. Gunneweg and Mommsen (1990; 1995) argue the former. As was discussed in Chapter 4, these vessels should be associated with motor habits which are not accurately imitated by others. Moreover, later petrographic provenience studies (Singer-Avitz 1999) found that cooking vessels were imported, further corroborating the assertion that 'Edomites' were indeed living within the range of these settlements. At some sites they may have been part of a trade-diaspora at another (e.g. *Horvat Qitmit*) they may have been the dominant population at the site.

It is important to note that Singer-Avitz (1999) found that at Tel Beersheva, which had a small amount of 'Edomite' sherds not only had locally produced forms but also many from the Shephelah region to the north of the Negev (see discussion of BL21 below where it is argued the northern forms should be considered imitation or local innovations). Tel Beersheva's function as a possible gateway town suggests this small

quantity of atypical sherds reflect imports, possibly even from neighboring Negev sites that had a larger contingent of 'Edomites' living at some capacity within them (see Ch. 4's discussion of Whiting's work).

In this same study an important observation was made concerning the relationship of Edomite and Midianite (Qurayyah) ware. Several examples of Negebite pottery (n=10) and Midianite pottery sampled from Timna (n=10) was found to have a provenience in Edom rather than in Qurayya. Only two of the fourteen Midianite samples were found to actually originate from Qurayyah. These data are in stark contrast to the petrographic study conducted by Rothenberg and Glass (1983:86, 102) that considered 'Midianite' pottery from Timna to all originate from Qurayyah due to a high degree of homogeneity in petrography but also hardness, fracture, surface characteristics and decoration. A further discussion of these conflicting studies will be discussed at the end of this chapter and in chapter 7.

In a later study focusing specifically on Edom, Gunneweg and M. Balla (2002) conducted an INAA provenience study on 18 samples of pottery from Busayra and 12 samples from Umm al-Biyara. Although, the samples taken from Umm al-Biyara have not been published, the authors mention in this report that they were a different composition from Busayra. Similarly, three cooking pots from Ghrareh originated from the district of Tawilan (Gunneweg and Mommsen 1995). Out of the sample, the painted Edomite bowls were found to be local to Busayra on the high plateau of Edom. Several other samples (n=5) were found to originate in the Petra region. What is important about this study for the analyses presented here is that it shows that the ceramics from the Petra region can be distinguished from the Busayra region using INAA.

All of these studies have relied on small samples and focused on only the plateau sites of the Late Iron Age II. In this chapter a petrographic study of the lowlands and highlands and both the Late Iron Age and Early Iron Age II will be conducted. These new data presents a new perspective on the provenience of 'Edomite' pottery and its implications for understanding the interaction spheres of the Iron Age II Southern Levant.

III. Methodology

A. Sampling Methods

One of the goals of this study was to distinguish petrographically the different possible proveniences of Iron Age sherds represented within the ceramic types and whether this may be related to local social interaction, local production or regional exchange. Out of 5296 registered indicative sherds representing all six lowland and highland sites in the study, 306 thin sections were made (Table 6.1). The approach to sampling the ceramic assemblages taken here was to focus on the most dominant vessel types and any other sherds that appeared to be of foreign import. This would allow us to determine the variability within the most common vessel forms to determine if they showed a high degree of variability in ceramic ware or more standardization. In order to sample the most dominant vessel types a quantitative study was conducted and each vessel type was ranked according to abundance for each site. Each dominant type was allotted a minimum of two thin sections. If a type was found at several sites at least one thin section was taken from each site so that the fabric of the type could be compared across all the representative sites. The abundant types (e.g. BL21, BL30 or BL3 – see Chapter 7) were sampled extensively. Once general numbers were determined for all the

dominant types, a preliminary grouping within each type of fabric was conducted to aid in selecting a variety of examples from each type. If there were no major distinguishing fabric differences within a type, one to two samples were selected and vice versa if it appeared that there was a higher variety of fabrics within a type more than two samples were taken. In this way an informed sampling of the significant types and fabrics from each site could be carried (See Table 6.2a-c for a distribution of types thin sectioned).

B. Thin Sectioning

The procedure for thin sectioning occurred in two stages. First each sherd had a ca. 10 x 20mm portion removed using a dremel mounted with a diamond plated dental disc saw. Smaller more delicate sherds that were painted had a smaller portion removed. The sample and a labeled thin section slide were placed in individual bags for transport. Once the cutting of samples was complete they were shipped to the R. A. Petrographic lab at UCLA, where they were glued to the slides and ground to 3 microns thickness. All thin sections were stored within a slide box with associated labels. A database also recorded the samples taken and thin sectioned.

C. Petrographic Analysis

The Petrographic Analysis was conducted at Tel Aviv University Petrographic Laboratory by N. G. Smith and Professor Yuval Goren using standard petrographic techniques and a polarizing microscope. These samples were divided into petrographic groups according to typical petrographic attributes and correlated with specific geological environments as carried out in previous studies (c.f. Goren 1991, 1995; Goren et al. 2004;

Porat 1989). Geological mapping (c.f. Goren et al. 2004:21) was used to locate the closest geological environment representative of each thin section's composition (e.g. Figure 6.4). The thin sections were then compared to the large database of thin sections stored at TAU that had many representative samples taken from sherds in CisJordan and Transjordan. Publications related to similar geological environments were consulted for comparison (e.g. Goren et al. 2004; Porat 1989; Rothenberg and Glass et al 1983; Bettles 2003; Ballard et al. 2002; Whitbread 1995).

After the geological environment was determined for each thin-section they were correlated with information on vessel typology, site and period. These data enable a refinement of the ceramic typology (presented in Ch. 7), determination of what types may have been imports, and help identify ware groups identified within and across vessel types.

D. Ware Analysis

After the petrographic analysis was completed, a more comprehensive ware analysis was performed on the ceramic assemblages stored back at UCSD. The insights from the petrographic study enabled a more refined delineation of the wares identified at the site. This knowledge of petrographic provenience especially helped in understanding the extent of variability in fabric color that was possible within fabrics. The sherds not thin sectioned from each vessel type were compared to those thin sectioned of that type according to their visible properties of color, inclusions, hardness, and firing. In a number of circumstances the petrographic analysis enabled a clearer classification of several specific vessel types that had originally been differentiated only by morphology and

surface treatment. For KEN especially, the comparison of fabric, thin section data, and vessel type enabled clearer distinctions to be made in certain types that could be postulated to have originated outside of the site or represented as a separate subgroup of pottery manufacture.

One of the goals of the ware analysis was to provide a more representative description of the fabric of the illustrated sherds that can be used for future research. This study agrees with the observations made by Mazar and Panitz-Cohen (2001:15) that individual Munsell color definitions for each illustrated sherd can be very misleading since color is highly affected by firing and other aspects of pottery production and use. Similarly, descriptions of fabric inclusions often are either not detailed enough or are too superficial and sporadic to necessarily help in making valid comparisons of fabric across sites. As will be discussed below, a number of these ware groups derive from an identical geological context (at the level of precision of petrographic analysis) but according to other factors such as methods of firing and sorting has produced objectively observable clusters of wares with specific types or regions. Thus, by presenting sherds according to their observed ware groups, a more quantitative comparison of the vessel types can be achieved and future petrographic and INAA studies can further refine these distinctions and draw correlations with studies conducted at other sites or in other regions.

The naming of the ware groups has been divided between those coming from KEN and RHI Sounding A (Ware Groups A) and the sites from L2HE and RHI Sounding B (Ware Groups B). As will be elaborated below, the ware found at these earlier sites, thought they come from a similar provenience, had distinctively different firing, resultant colors, and secondary inclusions. These characteristics suggest that to lump these wares

together would be misleading and mask several significant distinctions between the wares. Where characteristics in specific wares are found to be similar, this is noted in the text. A ware group is also assigned to each imported fabric, since a number of imported sherds not thin sectioned are identical to this representative sample.

Within several ware groups, sub-types have also been defined according to their degree of quality (i.e. fine ware—course ware). Two attributes are used in coordination to differentiate quality: 1) Roughness: how smooth or course a vessel is—this includes aspects of surface treatment (e.g. burnishing and slip); 2) Sorting: visibility of inclusions, porosity, fibrosity, evidence of organic material. Two other attributes that may play a role in determining quality but can occur across these are: 3) Fire control: hardness of vessel, consistency of fabric color; 4) Precision of production: uniformity, thinness/delicacy of vessel walls, method of construction (i.e. fast wheel, coil made). From these four variables determinations of quality can generally be differentiated. Emphasis is placed on describing these attributes for each individual ware, but quality is described according to four descriptors:

1) Fine-ware: smooth or soapy feel, no visibility of inclusions by naked eye, very well sorted, generally hard, thin and delicate

2) Medium-Fine ware: smooth, medium size sand particles, well sorted, hard, can be thin or thick

3) Medium-Course ware: course feel—inclusions and cavities can be felt, sand particles (quartz, shales, calcite, basalt, slag) clearly visible on surface, other attributes may be similar to other qualities

4) Course-ware: rough, jagged feel, large inclusions (>2mm) protruding out of vessel, very poorly sorted, may also be poorly fired or over fired, is generally thick walled, and fashioned by hand.

As analyzed in the following chapter (7), ware can cross several types and can encompass different levels of quality often according to the specific type of vessel being created (e.g. small carinated bowl or large pithos).

IV. Petrographic Groups

A. Petrographic Group 1: Lower Cretaceous Shales (Pls. 6.1-6.5)

Matrix:

This matrix is silty (ca. 10%), Dark red to dark reddish gray color in XPL[2], Yellowis-tan in PPL[3], and optically active. The silt predominately consists of sub-angular to sub-rounded quartz grains. Ferruginous opaque bodies and rhombs of iron oxide are commonly identified.

Inclusions:

A course mixture of sub-rounded to sub-angular mono- and poly-crystalline quartz sand and shale rich minerals are the predominate inclusions. The shales vary significantly in color and roundedness. Ferruginous limestone is also regularly present. Appearing as rare accessories are plagioclase and orthoclase feldspars, Arkose, Chert, sandstone, calcite and gypsum. Quartz rich grog is rare but does occurs in some

[2] XPL = Cross Polarized Light
[3] PPL = Plane Polarized Light

examples. Besides these primary inclusions, slag and basalt were found in a number of thin sections and have been distinguished into their own ware types. Slag inclusions were either purposely added or belonged to a contaminated on-site clay source was found only at KEN, KAJ, RHI Sounding A and among only a specific type of pithos at RHI sounding B.

Geological Interpretation:

Lower cretaceous shales occur in the Southern Levant in the Upper Galilee, and southern part of Transjordan from Wadi Zarqa and southward. There are also smaller outcrops in eastern Samaria, Wadi Malih and Wadi Farah (Glass et al. 1993:276). Specifically in Southern Jordan these outcrops are circumscribed on the eastern side of the Wadi Araba Rift Fault line; the western Araba and Negev is predominately covered with loess soils (see Petrographic Group 5 where loess soils are described in detail). These data suggest the origin of these lower cretaceous shale rich ceramics are local to the lowland and highlands of Edom. Since lower cretaceous shale outcroppings originating from the Kurnub Sandstone (KS) formation is found in both the lowlands (Figure 6.4) and highlands (Figure 6.5) of Edom, a more refined distinction between these areas is not possible with standard petrographic analysis. As was argued above, INAA studies have been able to distinguish between sherd fabrics collected in the Petra region and the area of Busayra. Future INAA studies may find a similar scenario in distinguishing the lowland LCS from the highlands.

Ware: A group

Ware A1: This group has light red or gray shales. Fabric color ranges from light red to brownish red. Some examples have gypsum in matrix and visible throughout fabric. The quality ranges from medium-fine to medium-course depending on vessel type.

Ware A1b: This group has a highly fired exterior and interior with light gray core. It is medium-fine ware.

Ware A1c: This group has a very well sorted fabric, with no visible inclusions other than shales. It has a smooth or soapy feel. It is a very thin walled delicate pottery. It is fine-ware.

Ware A2: This group is medium-fine to medium-course ware with slag inclusions- a majority of the time slag inclusions are distributed on the surface and in the core of the sherd. Four important observations were made concerning this ware. First, out of the thin sections made, slag inclusions represented (50%) of samples made from KEN. This high proportion was further supported by the ware analysis that found a number of non-thin sectioned sherds possessing these visible slag inclusions. Second, some of the thin sectioned examples that had slag had no visible trace of these inclusions under non-microscopic examination of the surfaces or core. If it was not for the thin section we would not be able to distinguish these sherds from Ware A1. Third, several sherds with no slag visible in thin section, had visible slag in the core seen using a 10X magnification using a hand lens. This is understandable due to the fact that the slag inclusions were

found on a number of the sherds, and the thin sections were made from a single location on the sherd. Fourth, with the exception of the visible slag inclusions, the fabric in respect to color, firing, porosity and other attributes appears identical to Ware A1. Thus, taking these four observations into account, sherds collected from KEN where no thin section were made were labeled as Ware A1/2 since it could not be ruled out that slag was still present if observed at the microscopic level. Sherds with visible slag inclusions were labeled WareA2, including those that were thin sectioned but possessed no visible slag in the thin section but had obvious numerous examples of slag in the core or surfaces.

Ware A2b: These are course fabric sherds with granule size (>5mm) slag inclusions. The roughness is primarily a result of the dense large inclusions of jagged slag throughout the surface of the vessel. This courser fabric was only found associated with pithoi and large bowls.

Ware A3: This group has course to medium-course fabric with large basalt inclusions found regularly in thin section and visible on surface. No thin section examples with basalt had also slag inclusions. This discovery enabled us to compare these thin sectioned vessels to identify distinctive characteristics between the black basalt and slag inclusions. Slag inclusions have sharp pointed edges and a reflective sheen when placed under direct light. In contrast basalt inclusions are rounded and smooth and have a matte black to dark gray appearance.

Ware A4: This group is a medium-fine ware with only visible calcite inclusions on the surface and in core. Color is a consistent very pale brown and highly fired with a non-porous/ smooth feel. The thin sections conducted on these sherds showed a high concentration (>50%) of calcite and limestone in comparison to quartz inclusions. Sample R.956 (KAJ, Locus 106) has visible red shales in the matrix but the other two thin sections do not. Three thin sections with this fabric were found to come from KAJ.

Ware A5: This single example found at RHI has a predominant amount of fossileferous limestone inclusions. Rounded yellowish brown shales are also regularly occurring. Within the matrix iron oxide rhombs are visible as well. A very similar petrographic thin section was identified by Ian Whitbread for an Early Bronze sherd found in Wadi Faynan (Barker et al. 2007: appendix 5 p. 773).

Ware A6: This group represents the cooking pots that have a distinctively different brittle and flaky fabric with a number of voids and are often highly fired. The petrographic analysis revealed that all the cooking pots were made of the local lower cretaceous shale material. Ware A6b is designated for the cooking pots that have slag inclusions identified in thin section or in the core.

Ware: B group

Ware B1: This ware group has a well sorted fabric but with calcite and quartz visible on interior surfaces and non-slipped exterior surfaces. Angular pale red and gray shales are frequent and visible in fresh cut cores. Some examples have a predominant amount of

calcite and limestone visible in thin section. Quality ranges from medium-fine to medium-course depending on vessel type. The sherd surfaces are smooth and evenly colored possibly due to the potting technique--wheel marks are often visible on the interior and exterior of the sherds.[4] This ware is very strong and hard in comparison to that found at KEN. This was readily apparent during thin section preparation where all samples from KEN cut very quickly and easily using the diamond rotary blade while Ware B was difficult and required slow grinding to avoid dulling the blade or creating sparks if not placed under running water. The larger kraters and pithoi were even harder leading to the decision to break sections off from these sherds rather than spend the time to make clean cuts or use the larger diamond cutting saw in the petrographic labs.

Fabric color ranges from light red to reddish gray. However, on the plateau at KAM, KIS, KIJ and TW the predominant fabric color is a light red. At TW and KAM especially but also found infrequently at KIS and KIJ a reddish gray color fabric is also found across numerous vessel families and types often in association with the light red color fabrics mentioned above. Among pithoi and jugs only on the plateau sites a gray 2.5Y5/1 fabric with white large calcite inclusions was found. An analysis of the thin sections yielded no significant difference in the matrix between these various colored fabrics. It must be noted that this ware in although possessing similar geological composition is different from what is seen at KEN and Sounding A at RHI as discussed above.

[4] The wheel marks may be a direct result of a fast wheel or later purposeful smoothing (see Ben-Shlomo et al. 2009:8).

Ware B1b: This ware group has medium-course, very poorly sorted fabric with visible large size quartz (1-2 cm in size), calcite and shales on the interior and exterior surfaces and core. The surface is periodically rough due to the large inclusions but the clay fabric remains smooth as seen among Ware B1. These are very hard sherds as alluded to above. Fabric represents all typical colors discussed above.

Ware B2: This group has a course, rough, poorly sorted fabric with large granule size slag inclusions. Only one thin section sample was made from RHI, but numerous examples were discovered during the ware analysis specifically among PT17/18 at RHI, no examples from L2HE sites was identified. Fabric color ranges from pale red to light pale brown (see B4). Ware B2 is not as strong or hard as the B1 or B4 wares. This fabric highly resembles Ware A2b with the exception of color. The morphological types found in this ware differs greatly form those with similar fabrics (i.e. A2 vs. B2)

Ware B3: This group has course, poorly sorted fabric with large granule size basalt inclusions. Three thin sections - one from RHI (R.183) and two from L2HE (KAM: R.281; KIS: R.1151) - are all large pithoi. After the determination of basalt inclusions, other examples from the L2HE sites and RHI could be distinguished into this group (see discussion of basalt inclusion for A3). All examples from L2HE resemble the medium-course B1b group due to presence of large quartz and calcite in matrix but a still smooth fabric otherwise. In contrast the examples from RHI resemble B2 in all aspects except the slag inclusions.

Ware B4: This group has medium course to fine quality fabric with a consistent very pale brown color with large pale red or light gray shales. This fabric is only found at RHI Sounding B and is the predominant ware among all vessel types; B1 also is present at RHI Sounding B but represents the minority. The method of thin section analysis conducted in this study did not reveal any significant petrographic difference from the B1 ware; this identification was based solely on its consistently distinctive color and fabric that became readily apparent when directly compared to the various vessel types found at the L2HE sites. Among the medium fine to medium course examples poorly sorted large angular shales (often pale red) and quartz are visible on the vessel surface. Generally where the shales or quartz are visible they reflect a flaking off of clay originally covering these large inclusions. Therefore on the exterior but especially interior there are a number of indentations where the clay has flaked off exposing these inclusions or perhaps air pockets or vegetal matter originally trapped prior to firing. This creates a much rougher surface than what is seen among the B1 ware fabric found at RHI Sounding B and L2HE sites on the plateau. Among the finer vessels (e.g. BL20, BL21, BL30 – see Chapter 7) this similar colored fabric is also found but it is well sorted; thus, the surface is smoother and only periodically reveals a shale or quartz inclusion. This fabric is absent from the L2HE plateau sites.KEN and RHI Sounding A. It is possible, without prior knowledge of site origin, to sort this fabric from the L2HE sites by appearance alone. Thus this appears to be a local fabric specific to RHI. In future ware studies it is hoped that other late Iron Age sites from the lowlands will be examined to determine whether this fabric occurs throughout Late Iron II Faynan district or specifically only around the vicinity of RHI.

Ware B5: This ware group has a very fine, high fired, well sorted fabric. The matrix is light gray in XPL, reddish brown PPL, consists of very fine micrometer size quartz particles. Inclusions still contain large rounded, gray shales and periodic sub-rounded large quartz inclusions. The core is black or gray with no visible inclusions. Since the exterior and interior are slipped and painted it was not possible to determine always the external color. This ware is found only among a few vessel examples from BL12c and BL20 at RHI and L2HE sites. This ware is primarily distinguished from the B1 ware by their black cores. They are all intricately decorated, slipped and burnished. They are the thinnest examples of the BL12c and BL20 bowls.

Ware B6: This group represents the cooking pots which have a distinctively different brittle and flaky fabric with a number of voids and are often highly fired. The petrographic analysis revealed that all the cooking pots were made of the local lower cretaceous shale material.

B. Petrographic Group 2: Lower Cretaceous Arkose Group (Pls. 6.5- 6.6)

Matrix:

This matrix is silty (10%), dark red in XPL, Yellowish-tan in PPL, optically active, with elongated sub-angular and angular quartz rich silt. Mica is predominant within the matrix as well.

Inclusions:

Angular mono- and poly-crystalline quartz. There are no visible shales inclusions found in the thin sections. On the other hand, Arkose and Granitic rock is the predominant inclusion next to quartz. Limestone is also regularly present with some occurrence of calcite. Appearing as rare accessories angular plagioclase and orthoclase feldspars, chert and sandstone are also present.

Geological Interpretation:

The matrix and inclusions hint at a geomorphological provenience where Arkose sediment has been mixed with alluvial wadi sands. The presence of Salib Arkosic Sandstone and other granitic rock formations around the vicinity of KEN (see Figure 6.4) and predominately further south in Aqaba and Sinai (c.f. Porat 1989:174) suggests that this material was local to the Southern Portion of this region. Since only a small sample of this PG (n=8) was identified throughout the whole assemblage, the petrographic group does not appear to be a regular clay source used for production at KEN. Arkose rich silty fabric has been identified in the Faynan area in EBI ceramics (see E. Johnson in Barker et al. 2007:771). Since the Arkose sediments could have been acquired locally, this PG should be considered, as of now, local to the vicinity of KEN.

Ware:

A7: This medium-fine ware is distinguishable by the naked eye from the predominant KEN assemblages. The lack of visible shales and very finely sorted red/gray core is readily different. The two examples found among the Pithoi are even more striking since

the regular pithoi found at KEN are riddled with visible slag inclusions (A2b). This fabric is smooth and is a light red to yellowish-red color.

A8: One thin section, R.971, contains a similar angular quartz and mica rich matrix with abundant Arkose inclusions and lack of visible shales; however it also has slag inclusions in the core. This is a medium-course fabric with a pale-yellow brown color and flaky fabric resembling the identified cooking pot fabrics.

C. Petrographic Group 3: Lower Cretaceous Disi Formation Sandstone (Pl. 6.6)

Matrix:

This siliceous fabric is gray in XPL, White in PPL, isotropic, highly fired almost vitrified clay. The matrix consists of quartz, feldspars and small amounts of mica.

Inclusions:

Angular mono- and poly-crystalline quartz. Appearing as rare accessories chert, gypsum and limestone. Small voids (<.2mm) with a halo of calcite or limestone found due to high firing.

Geological Interpretation:

This is highly siliceous white sandy clay in which the matrix and grains are made up entirely of quartz. Other inclusions are minor or leached out due to high firing. White silica sand deposits are found exposed on the surface of Early Ordovician and Lower Cretaceous sandstone in the south of Jordan (Rabb'a 1994). The Disi sandstone formation found in Ras en-Naqab, the vicinity of Petra (see Figure 6.5) and sporadically in the

Faynan district has been identified as a white sand stone material known for its high Si02 (>99%) content. This PG should be considered local within the southern region of Jordan and possibly was extracted from the large outcropping of Disi sandstone within the vicinity of Petra.

Ware:

Ware A9: This ware has pure white fabric is immediately distinguishable from the typical A1/2 fabrics found at KEN. It is smooth, devoid of any visible inclusions, and well fired. It only occurs among several vessel types where it is the dominant form. These are Kraters (KR8), Jugs (JG3a), and fine-ware bowls (BL14)—see Chapter 7 and below for a further discussion of these types and a correlation with morphological features and spatial distribution.

Ware B7: From RHI Sounding B, a thin section was made of a similar fabric JG3a. Although under microscopic examination this thin section shares similar characteristics with the A8, there are several notable differences. First, micah was not visible in the matrix and larger (>.2mm) sub-rounded to rounded quartz inclusions were visible. There were also a number of large voids visible under microscope and in the core. These voids created through the high firing temperature leached out the calcite or limestone leaving a small remnant around their edges. The high firing of the ferruginous limestone left a visible red color to the edges of these voids which were visible to the naked eye during

ware analysis. The fabric is a whitish green color which also deviates from A8.[5] The primary visible similarity it shares with A8 is the fine smooth whitish fabric and similar morphological type.

D. Petrographic Group 4: Paleozoic Micaceous Clay (Pl. 6.6)

Matrix:

This is a clayey micaceous matrix dark red in XPL, reddish-brown in PPL, containing sub-angular to sub-rounded well sorted quartz.

Inclusions:

Larger inclusions of sub-rounded to rounded quartz. Large Grog inclusions are also found in several samples.

Geological Interpretation:

This PG represents a Paleozoic geological formation possibly from further south in Jordan, the Negev or Sinai.

Ware:

Ware A10: The fabric of this ware is discernable from the local A1/2 fabrics at KEN especially when the core is examined. The core is pink and very well sorted with no visible inclusions. All the fabrics associated with this ware are fine in quality.

[5] It is important to note that Oakeshott (1978) and later Bienkowski (2002) distinguished a similar white colored ware coming from Busayra that they described as siliceous. Whether this is the same ware found at RHI Sounding B needs to be further investigated.

E. Petrographic Group 5: Loess Soil (Pls. 6.6-6.7)

Matrix:

A mixture of clay and silt (10%). It is carbonatic, pale ped in XPL, yellowish-tan in PPL, optically active. The quartz silt is well sorted and angular. There are also accessory heavy minerals such as hornblende, augite, zircon, and plagioclase.

Inclusions:

The inclusions are a course mixture of large sub-rounded quartz, vegetal material (straw), and micritic limestone.

Geological Interpretation:

This fabric is strongly associated with Loess soil discussed within the petrographic literature (c.f. Goren et al. 2004:112-113). Loess is a term that refers to Aeolian sediment formed through the accumulation of wind blown silt and clay. It is located in the Southern Levant primarily in the northern Negev and southern Shephelah. The predominance of quartz as the main constituent suggests a western northern Negev provenience (as far as the southern central Beersheva valley) where littoral sands from the coast were swept inland (see Goren et al. 2004:112-113).

Ware:

I1: This Loess fabric is a clear import from the Negev. The fabric is distinguishable from the standard A1/2 local fabrics. The core of PG5 is strong brown in color with no visible

inclusions. All examples are a fine ware red slipped and burnished. Similar fabrics and surface treatment are found at Beersheva (Herzog 1984; Singer-Avitz 1999), Tel Arad (Singer-Avitz 2002) and other other Early Iron Age II sites located in the western Negev (see for further discussion Ch.7: BL24).

F. Petrographic Group 6: Lower Cretaceous Shale with Micaceous clay- Qurayya Ware (Pl. 6.7)

Matrix:

This micaceous clay with (10%) silt is greenish-gray in XPL, Yellowis-tan in PPL. The silty quartz inclusions are very well sorted. The matrix is also highly fired with evidence of decomposed carbonates and secondary carbonates.

Inclusions:

Large opaque primarily argilicous shales (>4mm) are common within the thin section. Several of the identifid shales in thin section had horizontal fractures. At a further extent these shales have become quartzo-feldspathic silts. A few sub-angular quartz occur also.

Geological Interpretation:

This highly micaceous clay originating from lower cretaceous shale has been examined petrographically by Rothenberg and Glass (1983:97) for LBA Timna. They argue that this painted ware originates from Qurayyah in N.W. Arabia (Hejaz). The

painted designs slip, and fabric has traditionally been associated with the 'Midianite' culture known from the Hebrew Bible.

However, Gunneweg et al. (1991)'s INAA analysis, discussed above, found that only two examples of 'Midianite' sherds were strongly associated with Qurayyah, while the remainder studied appeared local. Since their study does not mention fabric, visible inclusions, or decorative styles it is not clear whether these other sherds possessed a similar appearing core fabric to the two examples that did originate from Qurayyah. Based on Rothenberg and Glass's (1983) detailed petrographic discussion the PG discovered here should be associated strongly with this group.

Further investigation is required to compare the INAA sherds analyzed by Gunneweg et al. (1991) and the thin section analysis conducted by Rothenberg and Glass (1983).

Ware:

I2: This PG is distinguishable from all other fabrics found at KEN. A fresh broken core is a pinkish white color with large red shales visible by the naked eye. Although the fabric is actually rough when exposed, this fabric is consistently coated with a thick cream slip and painted with black and dark reddish brown pigments. A number of dilapidated examples were identified where the painted slip had detached from the sherd exposing the underlying fabric. These were also selected for thin sectioning and confirmed to be similar fabric. Thus, by fabric alone this ware can be distinguished from the other fabrics found at KEN and RHI sounding A.

G. Petrographic Group 7: Moza Dolomitic Clay (Pl. 6.8)

Matrix:

This matrix is reddish-brown in XPL, Yellowis-tan in PPL, consisting of dense carbonatic clay material and dolomite rich sand.

Inclusions:

The inclusions are predominately poorly sorted densely distributed single rhombs (.025-.25mm) of clear idiomorphic dolomite.

Geological Interpretation:

This PG is widely documented as Moza-'Amminadav clay material located within the vicinity of Jerusalem (c.f. Porat 1989; Goren et al. 2004:262-264). This PG is a natural occurring mixture of clay from the Moza formation and dolomitic sand from the 'Amminadav Formation in Israel.

Ware:

I3: The specific ware associated with this PG at KEN is found among the black burnished juglets. These examples are Iron Age II imports from the vicinity of Jerusalem—see Ch.7 for discussion of parallels. These are very rare in the assemblage at KEN (n=2). See Plate 7.2.2:9.

H. Petrographic Group 8: Cypriot Aegean (Pl. 6.8)

Matrix:

This micaceous clay is Reddish-brown in XPL and Yellowish- tan in PPL, highly fired consisting of silty angular quartz. The mica occurs frequently and a number of examples are (>.2mm) in length.

Inclusions:

Rare inclusions of angular to rounded quartz are found. Otherwise, there is no other informative evidence that can be deduced from a study of the inclusions.

Geological Interpretation:

This micaceous clay is typical of the Cypriot Aegean geological formations (c.f. Whitbread 1995). Since all examples come from the Cypriot Black-on-Red juglets it can be surmised that they originated from Cyprus.

Ware:

I4: These Cypriot Black-on-Red juglets are a very fine highly fired, burnished soapy feeling fabric. See Plates 7.1.2:20-21; 7.1.3:11; 7.2.1:11; 7.2.2:10; 7.5.6:5.

I. Petrographic Group 9: Syro-Lebanese Coast: Neogene clay with *Amphiroa* fossils (Pl. 6.8)

Matrix:

This is a clay rich, carbonatic fabric with a brownish yellow color in XPL and PPL, consisting of silty quartz (2%), opaque minerals, and dense carbonate crystals.

Inclusions:

The main inclusions are fossiliferous marine limestone, micritic limestone, chert, angular to sub-angular quartz, corallinean algae *Amphiroa*, and *mollusca*.

Geological Interpretation:

Numerous studies (c.f. Ballard et al. 2002; Bettles 2003a, 2003b; Goren et al. 2004:108) have associated this PG with Neogene clay derived from the Syro-Lebanese coastal areas. The occurrence of corallinean algae *Amphiroa* throughout the thin section enables a more refined interpretation of geological provenience. Bettles (2003) argues that the *Amphiroa* rich Neogene clay is found around Tyre, Sidon, and Sarepta areas. This fabric is an import from this region.

Ware:

I5: This medium-fine ware has a shiny light red slip. Only one example was found in the complete assemblage.

J. Petrographic Group 10: Greek Transport Amphoria. (Pl. 6.8)

Matrix:

This micaceous clayey matrix is light reddish-brown in XPL, greenish-brown PPL, fired to isotrophic, with a red ferrogonius clay.

Inclusions:

The predominant inclusions include angular quartz, plagioclase and limestone. A few examples of Mica-schist also occur.

Geological Interpretation:

This ceramic is readily identified by its petrographic affinities to Aegean Greek transport Amphoria. See Ian Whitbread (1995) for a detailed discussion of the various types of clay that occur in this region.

Ware:

I6: This single example is a painted body sherd with white slip and black horizontal bands. It has been burnished creating a soapy texture. See Whitbread (1995) for parallels.

V. Analysis and Conclusion

A number of informative observations can be made from this petrographic and ware analysis based on 306 thin sections prepared for this study. The several rudimentary statistical tables (tbl. 6.1-6.2) and figures (figs. 6.1-6.4) presented here in conjunction

with specific information extracted from each PG allow a number of inferences to be drawn. These will be detailed below and connected with several of the test hypotheses discussed in earlier chapters.

The dominant proportion of the fabrics found at these sites were acquired within a short distance and most likely produced on site. Figures 6.2-6.3 and Table 6.1 show that the dominant petrographic group for both the highlands and lowlands (fig. 6.2: PG1-A 52% and fig. 6.3 PG1-B 99.9%) are the Lower Cretaceous Shales originating from the Kurnub Sandstone formation outcroppings. Within PG1 a number of secondary inclusions can be identified being predominately Slag and Basalt.

At KEN, slag rich Lower Cretaceous shale represents 30% (A2/A2b/A6b) of the sampled thin sections. This is significant, since KEN was an industrial metallurgical complex. The evidence of such a high percentage of slag rich PG1 suggests that the pottery was produced on site by potters linked to industrial metal production activities taking place at the site during the 10th and 9th centuries BCE. The evidence of small traces of slag in the medium-fine ware bowls indicates that most of the clay sources were contaminated with slag. On the other hand the visible large slag inclusions found in the A2b ware suggests either a purposeful tempering of slag or technical decision to not sort out these granule size particles during selection and preparation of the clay. There may have also been a perceived pyro-technical advantage to have slag as part of the temper of the fabric. In any case, the slag inclusions are a strong indicator that the majority of the ceramic assemblage found at KEN was local to the lowland region and most likely produced on site. Since other metallurgical sites contemporary to KEN existed in the

region there is still the possibility that some of these A2 sherds may have come from these sites as well.

A small sample (n=7) of ceramic sherds from KAJ were thin sectioned. Although the fabric in appearance was similar to KEN, a number of distinctive petrographic attributes were distinguished: 1) It must be pointed out that none of the thin sections contained slag inclusions. This may be due to sampling error, since during the ware analysis for the KAJ ceramic assemblage several vessels appeared to have slag inclusions; 2) The only examples of typical PG1-A was two samples (R.491, CP20; R.915, CP20) both cooking jugs, but they were made of a highly fired light gray cooking pot fabric. Other CP20 found at KAJ were not made of this gray fabric but appeared similar to the fabric. All of the CP20 fabrics including the gray fabric was found at KEN among similar CP20's; 3) The two BL18's and JG14 were highly calicitic (~50%) when compared to the thin sections found at KEN where it was rare or replaced with limestone. This led to a designation of this group as A4. 4) The example with fossileferous limestone (JR6) was the only of its kind but otherwise appears to be local to the local geology. When all of this evidence is taken together, it suggests that the ceramic assemblage at KAJ contains ceramics produced from different clay sources than those exploited by the potters at KEN. The location of KAJ further north up the Wadi al-Jariyeh may explain this disparity. On the other hand, KAJ, was not limited to only these sources but also exploited similar clay sources as KEN and has a nearly identical fabric and morphological style as found among the cooking pots (CP20) at KEN. In chapter 7,

the spatial distribution and association of CP20's and other parallel forms with specific stratigraphic levels at KEN will be discussed in further detail.

Rujm Hamrat Ifdan has been distinguished both by radiocarbon dating and morphology to have two significant periods of occupation. The ceramic assemblage recovered from Sounding A located at the top of the conglomerate hill is similar to the Early Iron II material from KEN. The small sample of sherds that were thin sectioned (n=5) from RHI Sounding A reveal that two of these sherds had slag inclusions (R.236, PT2 and R.519, KR3). The ware analysis in general showed that the wheel-made pottery is identical to ware A1/2 found at KEN. Out of the small sample thin-sectioned a BL3a, which shares a number of morphological features and surface treatment found among parallel BL3a's at KEN had basalt inclusions. In addition, one example of painted Qurayyah ware was recovered from the area. It was not thin sectioned, due to its size, but has identical fabric as described above for PG6. These observations support the radiocarbon data which suggests Sounding A was contemporary with KEN.

In contrast, RHI Sounding B has a strong correlation with the L2HE sites designated as Ware Group B. A larger sample of this area was sampled (n=38). With the exception of one thin section,[6] all the samples belonged to PG1. The ware analysis distinguished a sub-group B4 but the remainder could not be distinguished from B1. The identification of B2-slag rich fabrics is significant. Although only one example, was identified in thin-section (R.604, PT18) the ware analysis found that other PT18 also contained course granule size slag inclusions. The fabric resembles the PT from KEN,

[6] R.303, JG3—discussed above probably originated from the PG3 Disi formation. It can still be distinguished from the other PG3 by its greenish-white fabric and red colored voids. The continued use of the PG3 fabric into the late Iron II is significant.

but importantly the morphological form is not witnessed at KEN. On the other hand, it is common among the L2HE sites. It was already mentioned above, that the granule size slag inclusions found in Pithoi from KEN were purposefully unsorted or was used as temper. The evidence of slag in PT18 found at RHI is significant since there is no evidence found during excavations or on the surface of metallurgical activities. This would suggest that either the PT18 came from another late Iron Age II site in the region that was conducting metallurgical activity or the slag rich clay was purposefully collected from one of these sites. As of yet, we have not found any evidence suggesting a late occupation at KEN, but there is still the possibility that an unexcavated area outside the center of the KEN complex was occupied during this later period. If such areas are discovered there is a possibility that PT18 might be found there as well.

It was not possible to distinguish by petrographic or ware analysis between the ceramic assemblages recovered from the L2HE sites. All of these sites exploited the same Lower Cretaceous Kurnub Sandstone formation found adjacent to these sites and below them in their respective wadi drainages (figure 6.5). The ceramics assemblages underwent similar clay preparation, smoothing, surface treatment, and firing conditions. Therefore, the entire ceramic assemblage from each site should be considered primarily local to the Showbak-Petra Region and part of a single *chaînes opératoires*. Since these sites were all found in close proximity it is understandable that exchange of commodities and 'cultural' models of pottery fashioning was common. Relating this evidence to earlier discussions the near identical technological styles of the ceramics at these sites suggests that mimetic models were not circumscribed between these communities but were transferred and internalized as individuals moved back and forth and lived within these

communities. The potting communities that produced the ceramic assemblages found at these four sites belonged to the same social boundary.

This inference is corroborated when the ceramic assemblages from these sites are compared to the contemporary radiocarbon dated lowland site of RHI sounding B (Levy et al 2008). Across the vessel types and families, RHI has a unique fabric designated here as B4. Its consistent use suggests that a large variety of morphological forms were created by the same community of potters. The different color fabric however should not be confused with its clay source, the petrographic analysis found it to be acquired from the same PG1 as found at KEN and the L2HE sites. The clearly distinguishable looking fabric is a product of the *chaîne opératoire* of the producers that made this pottery rather than clay provenience. Thus, we find a different set of mimetic models that predominate in the production of ceramics at RHI in comparison to the highland L2HE sites. The short (10 hour) walking distance between RHI and the L2HE sites does not suggest that these two communities were out of the range of possible social interaction. The movement back and forth of individuals between these two areas is observed today amongst modern Bedouin who reside in the respective Faynan and Showbak areas. There are a number of possible, easily traversable routes, that are regularly taken by these regions' inhabitants. This relatively short distance suggests that these two areas could have had intense interaction. However, despite this observation it is clear from this study that mimetic models of pottery production were circumscribed within these different sub-regions of Edom. The possible intense interaction that could have occurred between these areas did not result in the transfer of specific technological styles between these groups. Even though on a purely functional level the ceramic ware found at the L2HE sites can be

considered superior to RHI's B4 ware, the potters at RHI did not adopt the technical procedures that resulted in this ware. Therefore, it can be inferred that a social boundary existed between these groups, since the specific mimetic models involved in the creation of these different fabrics were circumscribed.

Furthermore, this petrographic study reveals that specifically all the ceramics so far studied for these Late Iron Age II sites lacked imports and were local to the region of Edom. There are no examples recovered from the L2HE sites that have the RHI ware A4 fabric. At RHI, the picture is slightly different as fabrics representing a small minority (specifically bowls) are similar to those found at L2HE (B1), but it is not clear whether these could possibly be exchange commodities from other areas or a subset style of local production. Nevertheless, taken as a whole the predominant fabrics are local and sub-regional in Edom at all of these sites. All of these sites are small to medium size villages. They were not towns or important centers that would have generated the resources to acquire foreign goods nor had elites who could control the exchange of those goods. If these villages did acquire foreign goods it would most likely be through down-the-line exchange or the purchase of these goods at a nearby town (which currently has not been identified), but as of now there is no evidence that either of these activities occurred.

Khirbat en-Nahas, Rujm Hamrat Fidan Sounding A, and KAJ all show evidence of interaction and exchange of ceramics outside their immediate vicinity. At KEN and KAJ, western Negev red slipped bowls were found. From RHI Sounding A and KEN, Qurayyah ware is found. Finally, KEN acquired high valuable fine-wares such as Cypriot Black on Red Juglets, Black Burnished Juglets, and Phoenecian and Greek Amphora. Each of these however represent a small minority (<1%) of the ceramics sampled (c.f

Table 6.1; Figs. 6.1-6.2). These imports should be considered even more rare when compared to the entire assemblage as a whole since they are either just one occurrence (e.g. PG9, 10) or occur in small numbers often as painted body sherds (see Ch. 7, imports). Therefore, in all cases, even among the wheel made red slipped bowls from the W.Negev and the painted Qurayyah wares, they should be considered as rare infrequent imports rather than a contingent of foreigners living at the site. On the other hand, their presence in the material record suggests that KEN was not purely just a subsidiary metallurgical complex populated by full-time craft specialists. Fine-ware goods were being imported into the site by individuals perhaps in charge of the entire metallurgical operation. These initial inferences will be further elaborated on in Chapter 7.

A number of important observations can also be made concerning the Qurayyah ware in relation to previous studies of its provenience. First, the Qurayya ware fabric identified in this study petrographically is identical to what Rothenberg and Glass (1983) identified from Timna. Second, Despite this fabric being made of lower cretaceous shale, its highly micaceous matrix precludes it from being produced from the local geological context of KEN. These are thus imports from outside KEN rather than local imitations. Third, another southern import, the PG4 Paleozoic Micaceous painted sherds, may have originated from further the Sinai and possibly from contemporary metal producing sites during this period (e.g. Timna). The 'Qurayyah' ware found at KEN was not made from local clay sources, and thus originated from somewhere else further south in the vicinity where similar clay sources have been found.

Finally, at KEN several other possible clay sources were either exploited by the local potters or reflect exchange within the southern region. The most intriguing of these

is the PG3 fine white ware ceramics. This ware is specific to only a few types (KR8, JG3a, BL14). They represent a specific *chaîne opératoire* made of various specific technical choices necessary to achieve the uniformity of this ware. Specific technical choices can be seen in the selection of Disi Formation clay, its preparation, shaping, finishing techniques, and firing. Additionally, this ware is not an infrequent type. Within the this study alone it represents ca. 8% of the total sample thin sectioned from KEN (c.f. figure 6.2). The predominance of this sub-form becomes readily apparent when quantitatively compared to the ceramic assemblage of KEN as a whole since it represents the entire KR8 group, JG3a group, and the majority of BL14 (see Ch. 7 for tables). Therefore, this ware represents one of two possibilities: there was possibly a high degree of importation of these products into KEN, or potters produced it on site but travelled to acquire the highly siliceous clay. As more sites are surveyed and excavated in the lowland region of Edom we may be able to reach a more definitive answer concerning the nature of these ceramics. What can be concluded now is that they represent a specific class of highly specialized ceramic production with their own series of technical choices reflecting a specific mimetic model of a potting community.

In summary, a combination of petrographic and ware analysis has enabled a fine-grained analysis of the various ceramic assemblages recovered from the UCSD ELRAP and L2HE stratified excavations. Based on the petrography and ware analysis of these ceramics alone, it has been possible to delineate the different regions and sites from which these ceramics originated and make a diachronic distinction between the earlier ceramic assemblages and later. In the case of the later period where five sites could be compared it is argued here that it is possible to distinguish different technological styles

reflecting mimetic models for the two sub-regions – the highlands and lowlands of Edom. The circumscription of these technological styles suggests that a social boundary existed even though intense interaction may have occurred between these communities. In the case of the earlier period sites, the evidence of imports suggests that these sites to a greater extent participated in the interaction sphere of their western and northern neighbors. Khirbat en-Nahas's important role in the exportation of copper was not a purely one-sided affair, but valuable 'prestige goods' were being imported. In the following chapter the petrographic data will be combined with a morphological study to further clarify the inferences made here.

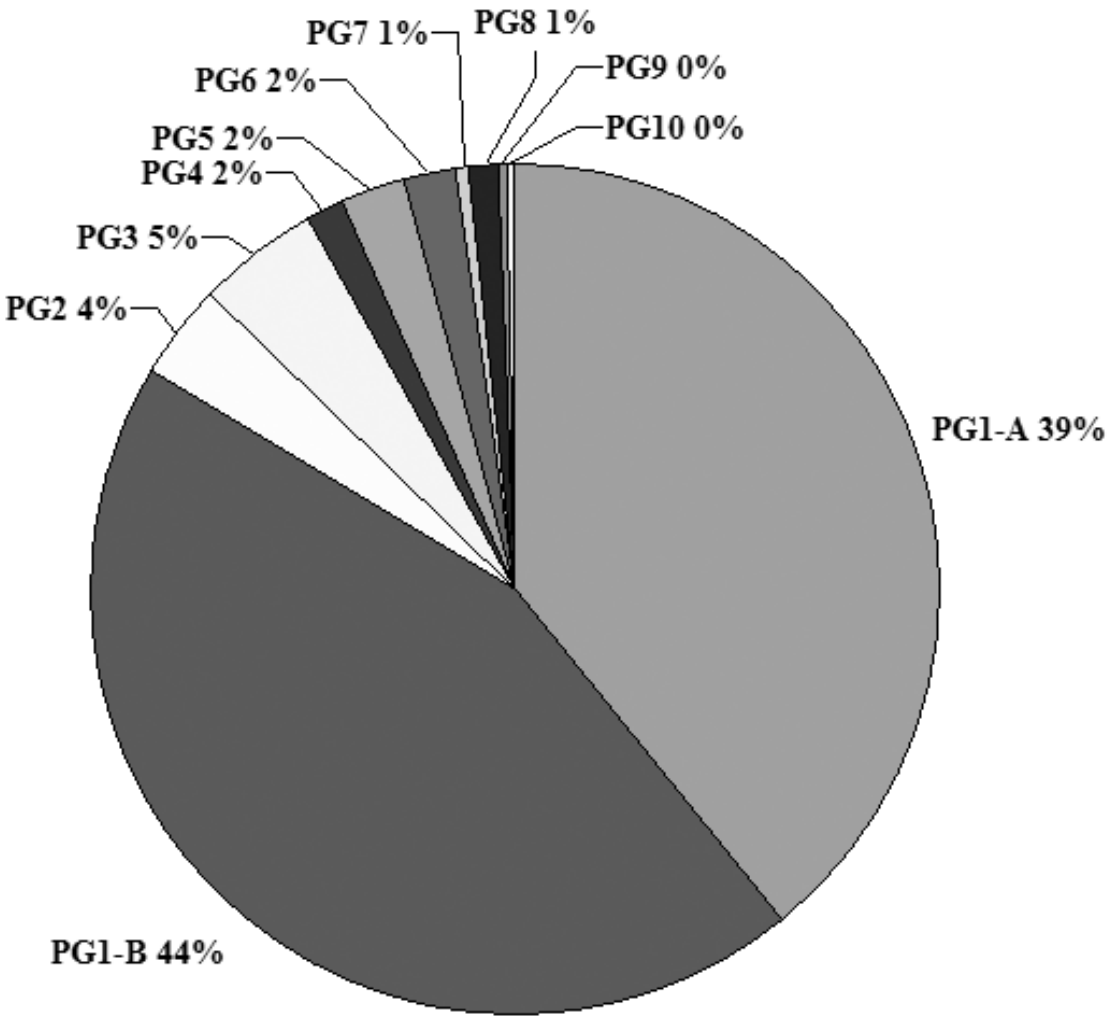


Figure 6.1: Percentage of Petrographic Groups Represented.

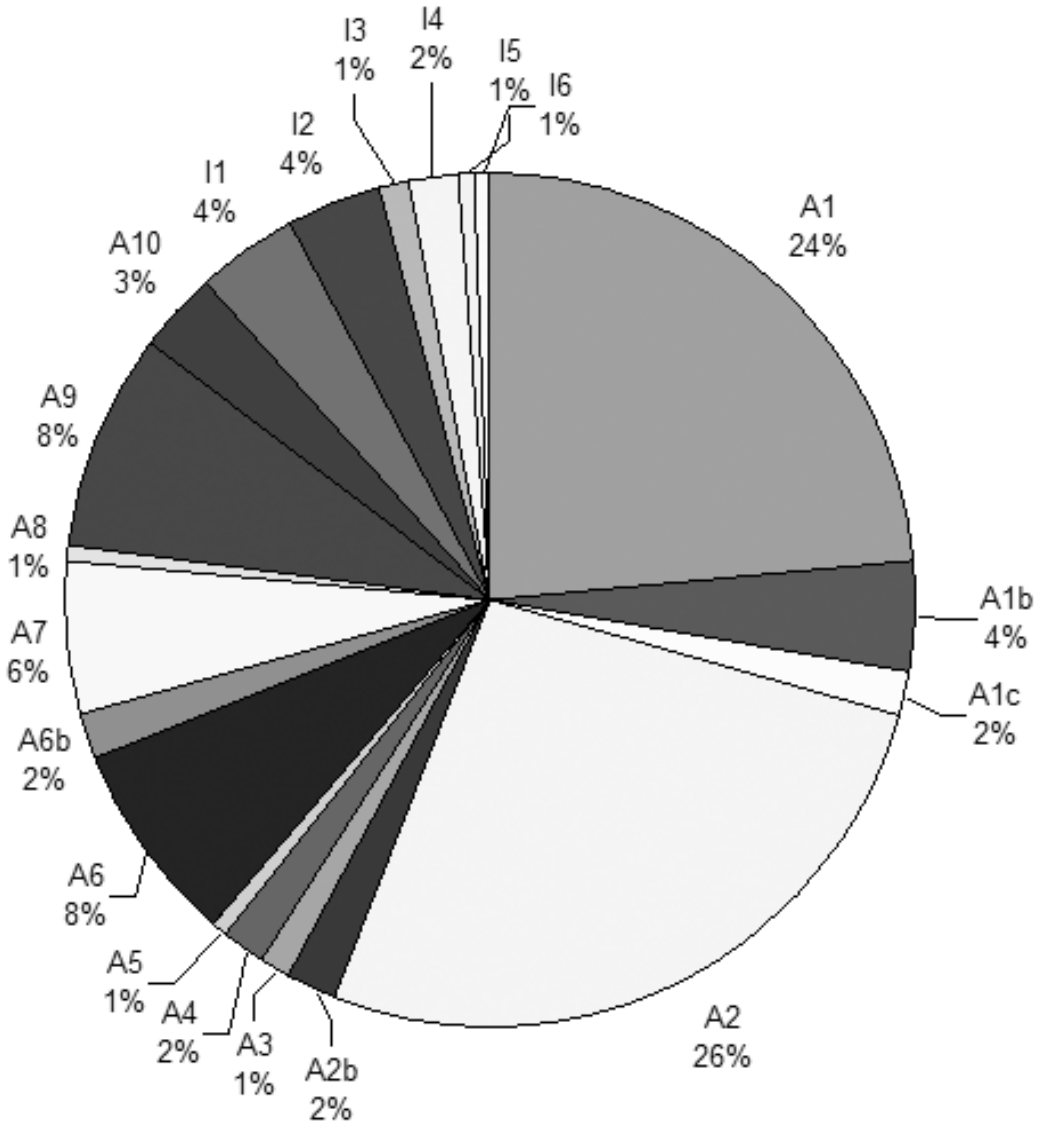


Figure 6.2: Percentage of Ware Group A and Imports.

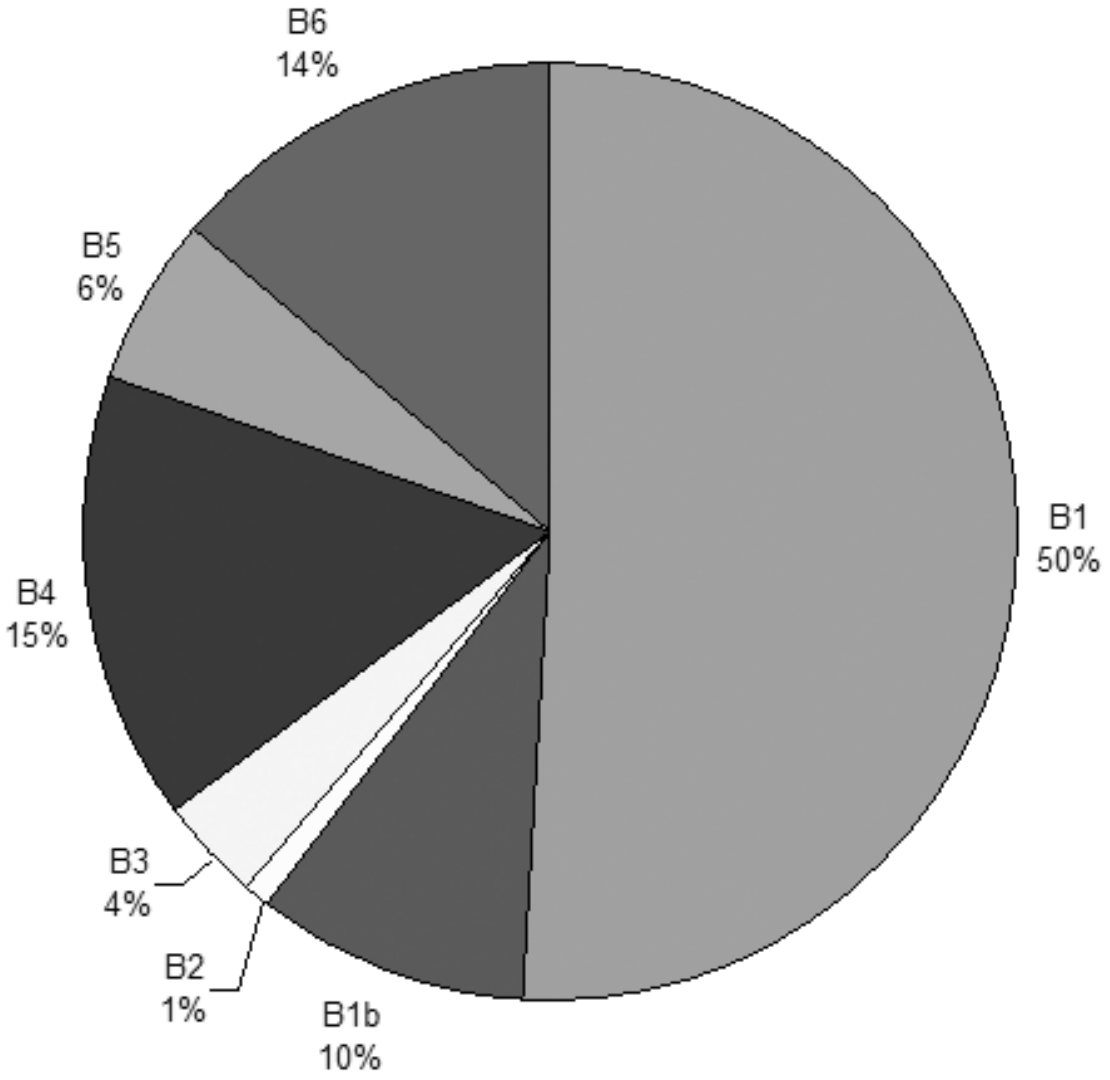


Figure 6.3: Percentages of Ware Group B.

Table 6.1: Petrographic Groups and Wares Distinguished in the Study.

P-Group	Sites	Name	Count	Ratio	Ware	Description	Count	Ratio
PG1-A	KEN, RHI Sounding A	Lower Cretaceous Shale	120	39.2%	A1	Predominant Type	40	13.1%
					A1b	Highly fired gray fabric	7	2.3%
					A1c	Fine-ware	3	1.0%
					A2	Slag Inclusions	45	14.7%
					A2b	Course Slag Inclusions	3	1.0%
					A3	Basalt Inclusions	2	0.7%
					A4	Calcite rich	3	1.0%
					A5	Fossileferous Limetstone	1	0.3%
					A6	Cooking Pot Fabric	13	4.2%
					A6b	Slag inclusions	3	1.0%
PG2	KEN	Lower Cretaceous Arkose	11	3.6%	A7	Medium-Fine ware	10	3.3%
					A8		1	0.3%
PG3	KEN, RHI Sounding B	Lower Cretaceous Disi Formation Sandstone	14	4.6%	A9		14	4.6%
PG1-B	KAM, KIJ, KIS, TW, RHI Sounding B	Lower Cretaceous Shale	136	44.4%	B1	Predominant Type	69	22.5%
					B1b	Course ware	13	4.2%
					B2	Slag Inclusions	1	0.3%
					B3	Basalt Inclusions	5	1.6%
					B4	Very Pale Brown Fabric	21	6.9%
					B5	High fired fine ware	8	2.6%
					B6	Cooking Pot Fabric	19	6.2%
PG4	KEN	Paleozoic Micaceous Clay	5	1.6%	A10		5	1.6%
PG5	KEN	Loess Soil	7	2.3%	I1		7	2.3%
PG6	KEN	Micaceous LCS-Qurayya	6	2.0%	I2		6	2.0%
PG7	KEN	Moza Dolomitic Clay	2	0.7%	I3		2	0.7%
PG8	KEN	Cypriot Aegean	3	1.0%	I4		3	1.0%
PG9	KEN	Syro-Lebanese Coast: Neogene clay with *Amphiroa*	1	0.3%	I5		1	0.3%
PG10	KEN	Greek transport Amphoria	1	0.3%	I6		1	0.3%
Total Thin sections:			306	100.0%			306	100.0%

Table 6.2a: Identified Petrographic and Ware Groups for Thin-Sectioned Vessel Types

	PG1-A										PG2		PG3	PG4	PG1-B							PG5	PG6	PG7	PG8	PG9	PG10	
Type	**A1**	**A1b**	**A1c**	**A2**	**A2b**	**A3**	**A4**	**A5**	**A6**	**A6b**	**A7**	**A8**	**A9**	**A10**	**B1**	**B1b**	**B2**	**B3**	**B4**	**B5**	**B6**	**I1**	**I2**	**I3**	**I4**	**I5**	**I6**	**T#**
BL1	1														1													**2**
BL1f											1																	**1**
BL3a	7			2											2				1			1						**13**
BL3b	1														1													**2**
BL3c															3				2									**5**
BL3d																			1									**1**
BL8															1													**1**
BL8b															1													**1**
BL9	1			1																								**2**
BL12			2	1							1																	**4**
BL12c															2					6								**8**
BL13	2			2							1																	**5**
BL15				1										1								1						**3**
BL16			1											1								2						**4**
BL17		3		1																								**4**
BL18							2																					**2**
BL21	2			2									1															**5**
BL21a3															4				1									**5**
BL21b															3				1									**4**
BL21c																			1									**1**
BL21e															3													**3**
BL22	4														3					1								**8**
BL23				2											2					1								**5**
BL23b															2				1									**3**
BL24																						1						**1**
BL25														1								1						**2**
BL30	2														2				7									**11**
BL30b															1													**1**
BL30c															4													**4**
BL31												1																**1**
BL32	1																											**1**
BL34				1		1																						**2**
BL37				2																								**2**
BL41															3			1										**4**
BL56															3													**3**
BL57															1													**1**

Table 6.2b: Identified Petrographic and Ware Groups for Thin-Sectioned Vessel Types

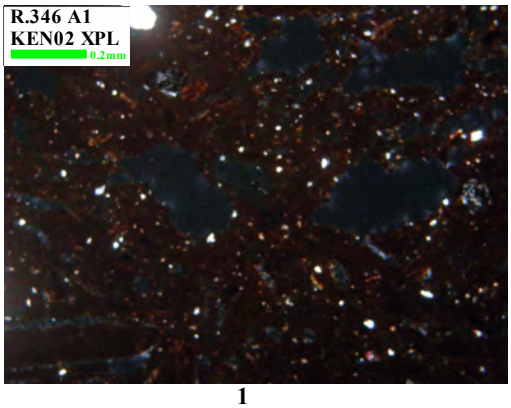
	PG1-A										PG2		PG3	PG4	PG1-B						PG5	PG6	PG7	PG8	PG9	PG10	
Type	**A1**	**A1b**	**A1c**	**A2**	**A2b**	**A3**	**A4**	**A5**	**A6**	**A6b**	**A7**	**A8**	**A9**	**A10**	**B1**	**B1b**	**B2**	**B3**	**B4**	**B5**	**B6**	**I1**	**I2**	**I3**	**I4**	**I5**	**I6**	**T#**
CP1									1	1																	**2**
CP2										1																	**1**
CP3									2																		**2**
CP4									1																		**1**
CP5									1	1																	**2**
CP8									1																		**1**
CP9									1																		**1**
CP15									1																		**1**
CP20									4		1																**5**
CP30																					5						**5**
CP30b																					1						**1**
CP33																					5						**5**
CP36																					4						**4**
CP38																					1						**1**
CP46																					2						**2**
CP50																					1						**1**
FL2																						1					**1**
JG3		1											4														**5**
JG3d															5												**5**
JG3d2															1												**1**
JG3f															1												**1**
JG4		1													2												**3**
JG4d				1							1																**2**
JG6d	2			1																							**3**
JG12													1														**1**
JG14		1					1				1																**3**
JG26									1																		**1**
JR6				2				1																			**3**
JR7													1														**1**
JR8	1																										**1**
JR9	1																										**1**
JR10				1																							**1**
JR11	1																										**1**
JR13	1																										**1**
JR14				1																							**1**
JR15				1																							**1**
JR16																										1	**1**
JR17	1			1									1														**3**
JR30															1												**1**
JT1	1	1																									**2**
JT3													1	1													**2**
JT21															1									2			**3**
JT22																									3		**3**
JT30															2												**2**

Table 6.2c: Identified Petrographic and Ware Groups for Thin-Sectioned Vessel Types

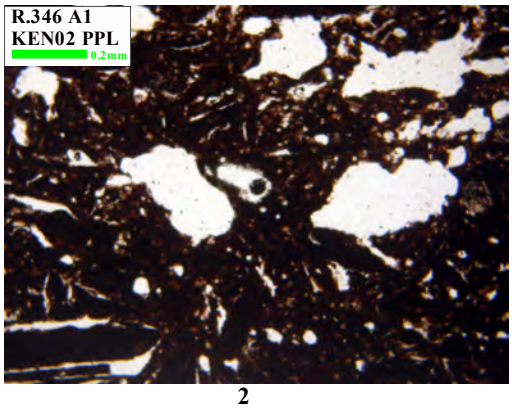
	PG1-A										PG2		PG3	PG4	PG1-B							PG5	PG6	PG7	PG8	PG9	PG10	
Type	**A1**	**A1b**	**A1c**	**A2**	**A2b**	**A3**	**A4**	**A5**	**A6**	**A6b**	**A7**	**A8**	**A9**	**A10**	**B1**	**B1b**	**B2**	**B3**	**B4**	**B5**	**B6**	**I1**	**I2**	**I3**	**I4**	**I5**	**I6**	**T#**
KR1																			1									1
KR3	3			5																								8
KR4											1																	1
KR8													4															4
KR11	2																											2
KR12	2																											2
KR13	1			1																								2
KR15															8				2									10
KR16																			1									1
KR17															1				1									2
SJ2				1							2																	3
SJ3													1		1				1									3
SJ4				1																								1
SJ5				5	1																							6
SJ8				1	1																							2
SJ10				2																								2
SJ11				1																								1
SJ12				1																								1
SJ13						1																						1
SJ14											1																	1
SJ15																1		2										3
SJ18																5	1	1										7
SJ19				1											1			1										3
SJ20																3												3
SJ21																1												1
SJ22																1												1
SJ23																2												2
Pyxis	1																											1
Qurayya																							5					5
Painted	2			2										1													1	6
HM-Jar					1																							1
BS				1											3								1					5
Total	40	7	3	45	3	2	3	1	13	3	10	1	14	5	69	13	1	5	21	8	19	7	6	2	3	1	1	306

Table 6.3: Sites and Areas Thin Sectioned

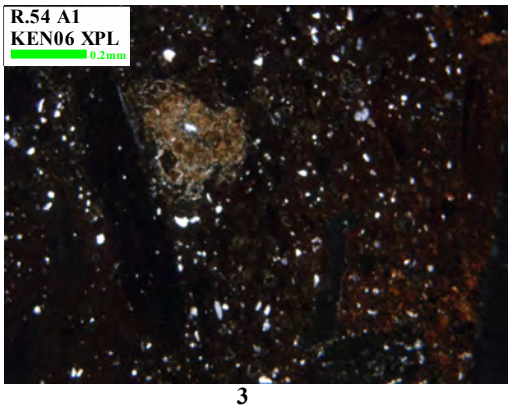
Site/Pub	Area	Count	Ratio
KEN	A	45	14.7%
	M	25	8.2%
	R	29	9.5%
	S	35	11.4%
	T	24	7.8%
KAJ	KAJ06	7	2.3%
RHI04	Sounding A	5	1.6%
	Sounding B	38	12.4%
L2HE	KAM-A	24	7.8%
	KAM-B	7	2.3%
	KIJ	21	6.9%
	KIS	17	5.6%
	TW-J	23	7.5%
	TW-K	6	2.0%
Total		306	100.0%



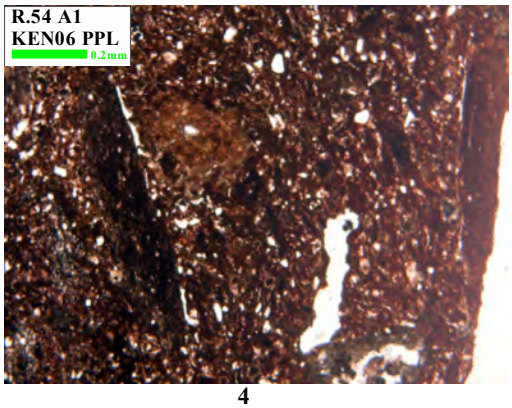
1



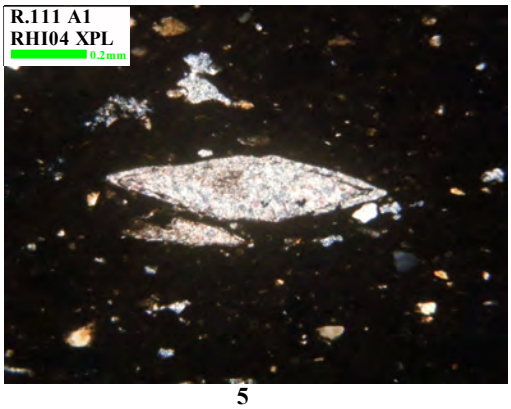
2



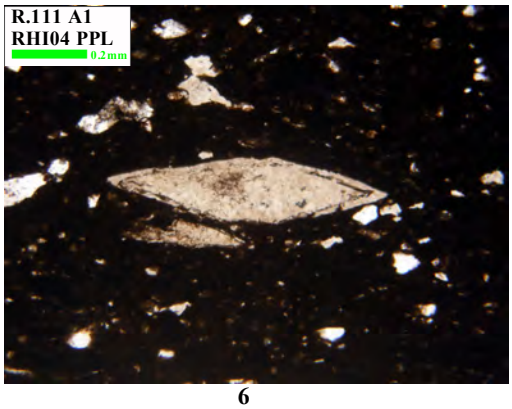
3



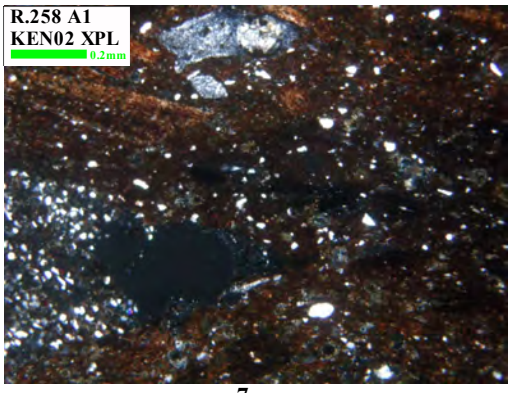
4



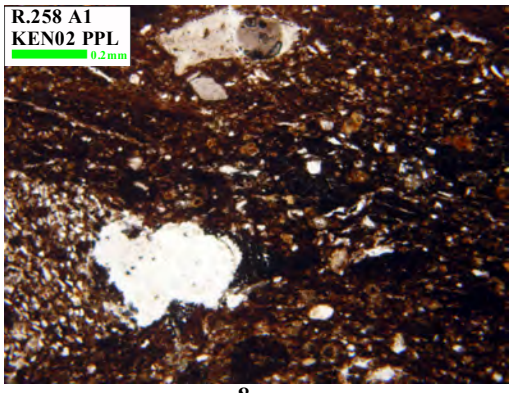
5



6



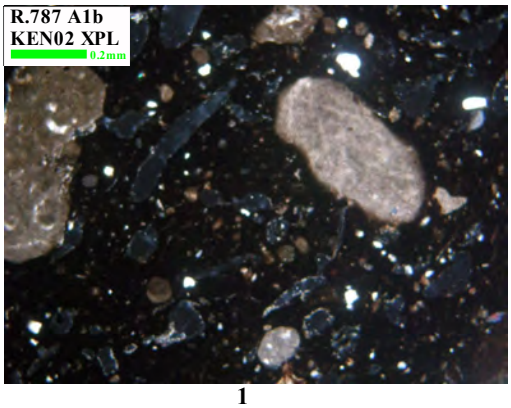
7



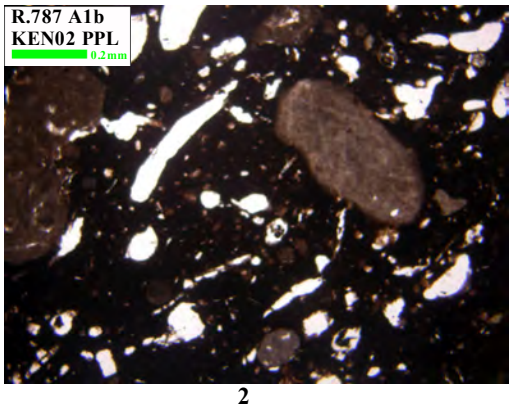
8

Plate 6.1: Petrographic Groups XPL/PPL (Ware A1).

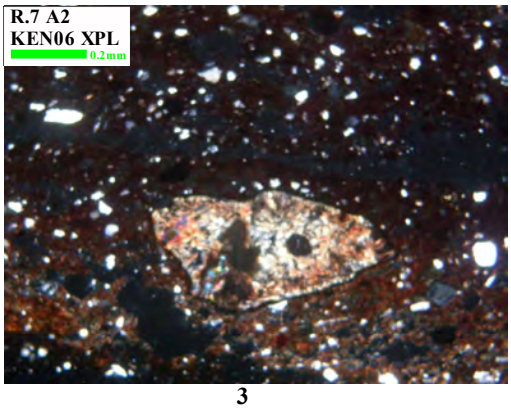
Plate 6.1: Petrographic Groups XPL/PPL (Ware A1).										
#	Reg#	Locus	Basket	Str.	Vessel	Type	PG	Ware	PL	Description
1	346	40	1234	A3	Jar	JR11	PG1	A1	XPL	Lower Cretaceous Shales
2	346	40	1234	A3	Jar	JR11	PG1	A1	PPL	Lower Cretaceous Shales
3	54	630	9266	M2a	Jug	JG6d	PG1	A1	XPL	Lower Cretaceous Shales
4	54	630	9266	M2a	Jug	JG6d	PG1	A1	PPL	Lower Cretaceous Shales
5	111	518	139		Bowl	BL3a1	PG1	A1	XPL	Lower Cretaceous Shales with Gypsum
6	111	518	139		Bowl	BL3a1	PG1	A1	PPL	Lower Cretaceous Shales with Gypsum
7	258	25	1315	A2a	Bowl	BL30	PG1	A1	XPL	Lower Cretaceous Shales with Lots of calcite
8	258	25	1315	A2a	Bowl	BL30	PG1	A1	PPL	Lower Cretaceous Shales with Lots of calcite



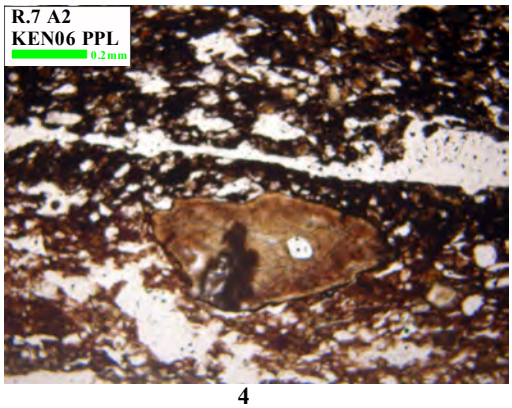
1



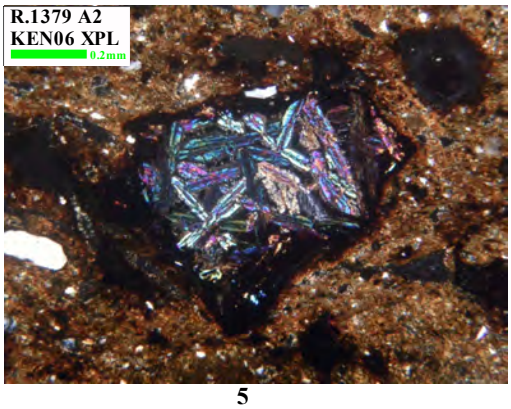
2



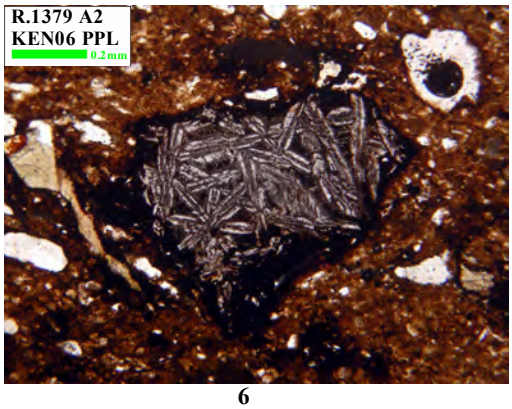
3



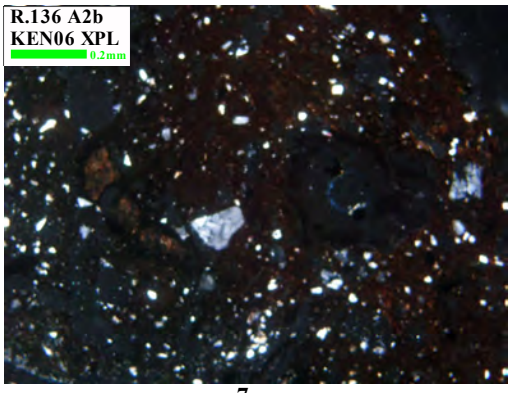
4



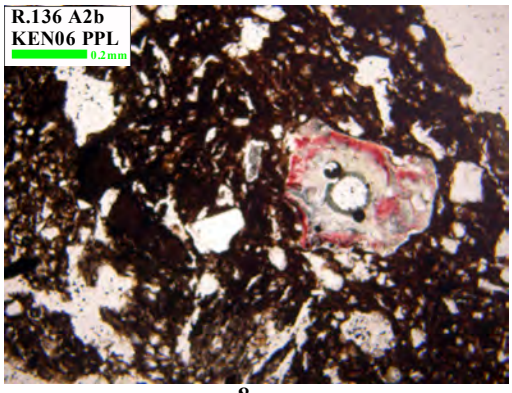
5



6



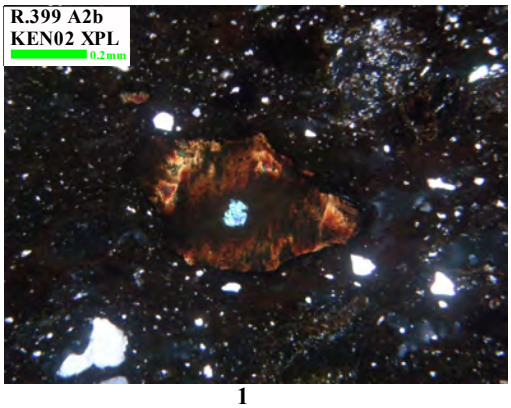
7



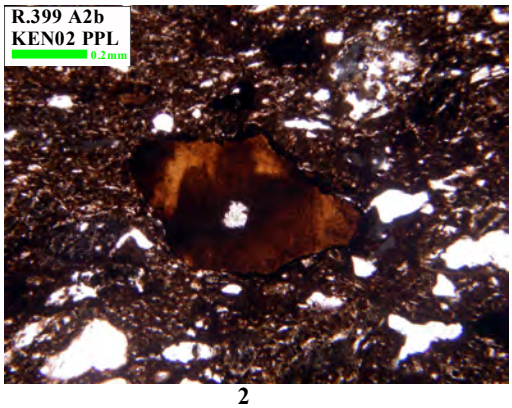
8

Plate 6.2: Petrographic Groups XPL/PPL (Ware A1b, A2, A2b).

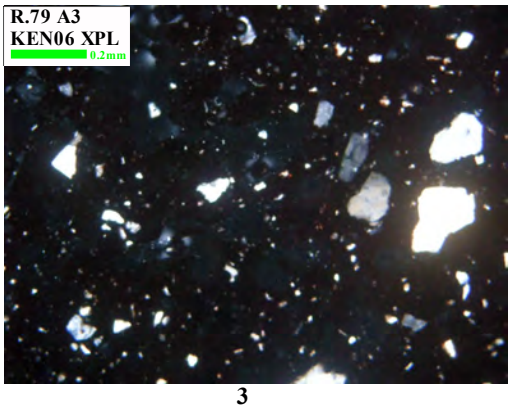
Plate 6.2: Petrographic Groups XPL/PPL (Ware A1b, A2, A2b).										
#	Reg#	Locus	Basket	Str.	Vessel	Type	PG	Ware	PL	Description
1	787	339	7377	S2b	Jug	JG14	PG1	A1b	XPL	Lower Cretaceous Shales with high fired black core
2	787	339	7377	S2b	Jug	JG14	PG1	A1b	PPL	Lower Cretaceous Shales with high fired black core
3	7	155	4014	A1b	Bowl	BL3a4	PG1	A2	XPL	Lower Cretaceous Shales with slag
4	7	155	4014	A1b	Bowl	BL3a4	PG1	A2	PPL	Lower Cretaceous Shales with slag
5	1379	1849	16415	R3a	Bowl	BL13b2	PG1	A2	XPL	Lower Cretaceous Shales with slag
6	1379	1849	16415	R3a	Bowl	BL13b2	PG1	A2	PPL	Lower Cretaceous Shales with slag
7	136	166	4128	A4	Pithos	PT8	PG1	A2b	XPL	Lower Cretaceous Shales with slag
8	136	166	4128	A4	Pithos	PT8	PG1	A2b	PPL	Lower Cretaceous Shales with slag



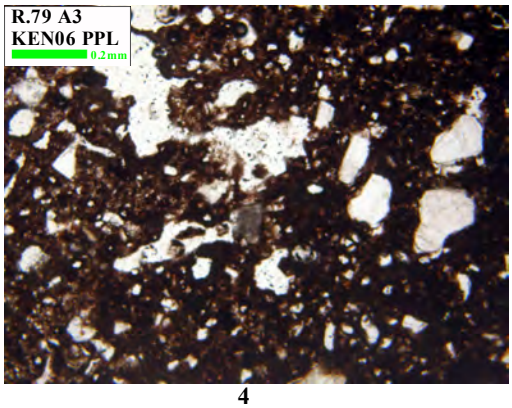
1



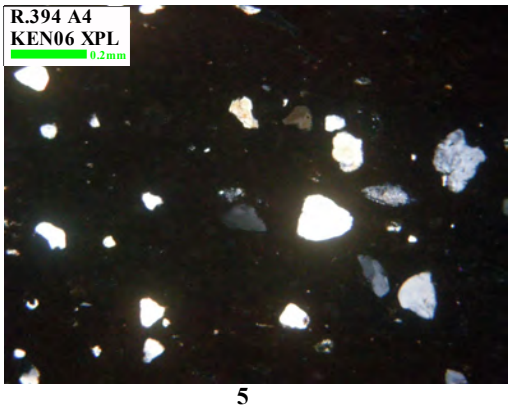
2



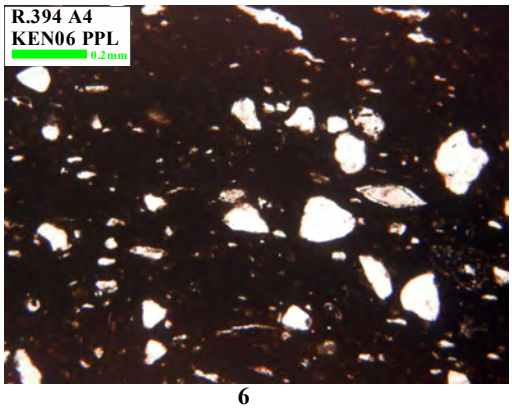
3



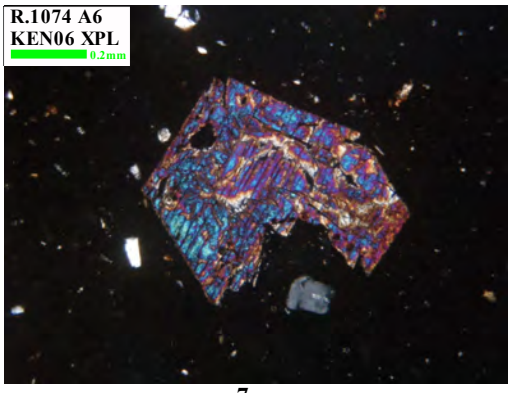
4



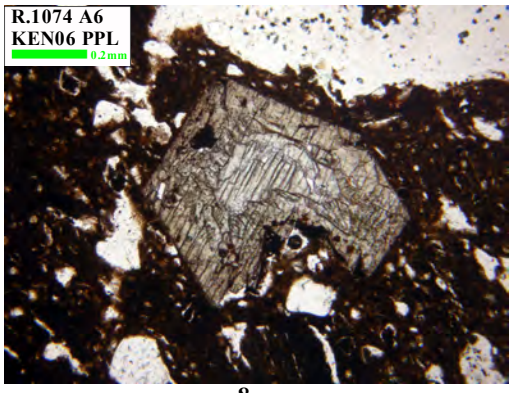
5



6



7

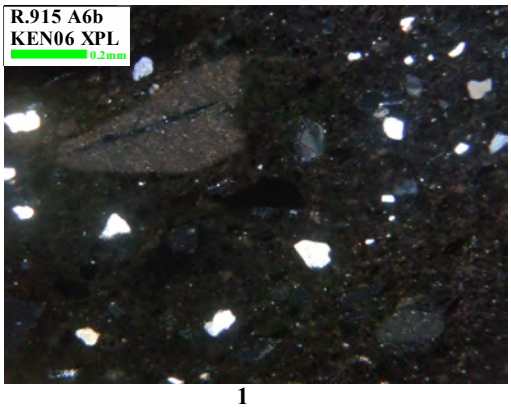


8

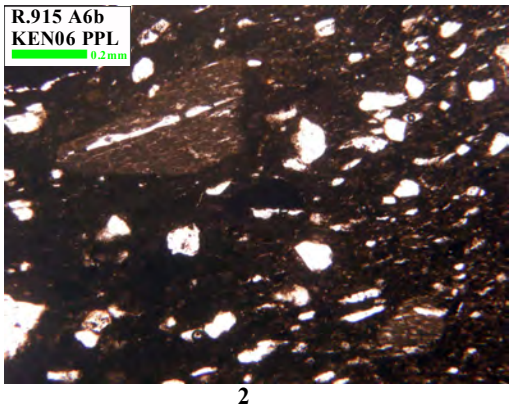
Plate 6.3: Petrographic Groups XPL/PPL (Ware A2b, A3, A4, A6).

Plate 6.3: Petrographic Groups XPL/PPL (Ware A2b, A3, A4, A6).

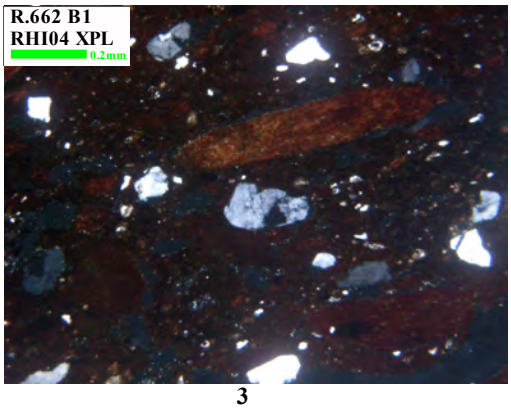
#	Reg#	Locus	Basket	Str.	Vessel	Type	PG	Ware	PL	Description
1	399	284	5645	S2b	Pithos	PT5	PG1	A2b	XPL	Lower Cretaceous Shales with slag (See also 62/63)
2	399	284	5645	S2b	Pithos	PT5	PG1	A2b	PPL	Lower Cretaceous Shales with slag (See also 62/63)
3	79	631	9195	M2b	Bowl	BL34	PG1	A3	XPL	Lower Cretaceous Shales with basalt
4	79	631	9195	M2b	Bowl	BL34	PG1	A3	PPL	Lower Cretaceous Shales with basalt
5	394	106	3105	A3	Bowl	BL18	PG1	A4	XPL	Lower Cretaceous Shales with calcite
6	394	106	3105	A3	Bowl	BL18	PG1	A4	PPL	Lower Cretaceous Shales with calcite
7	1074	717	10430	M2b	Cooking Pot	CP9	PG1	A6	XPL	Lower Cretaceous Shales with Pyroxene - cooking pot fabric
8	1074	717	10430	M2b	Cooking Pot	CP9	PG1	A6	PPL	Lower Cretaceous Shales with Pyroxene - cooking pot fabric



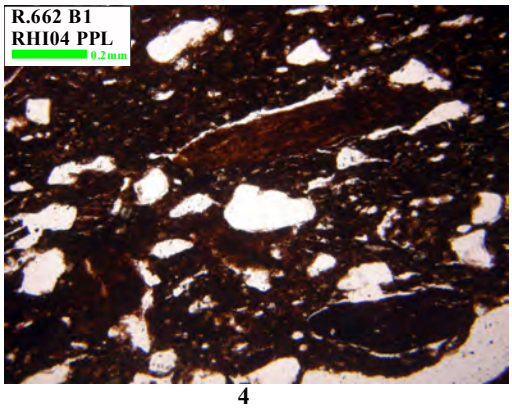
1



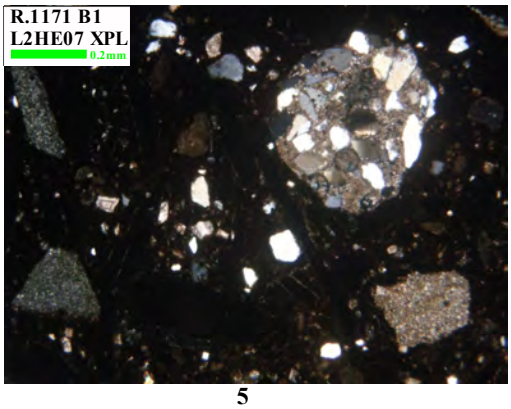
2



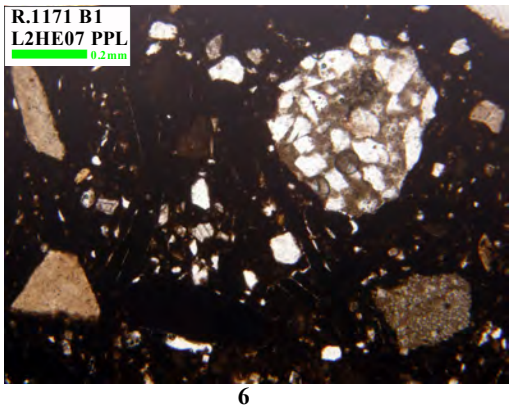
3



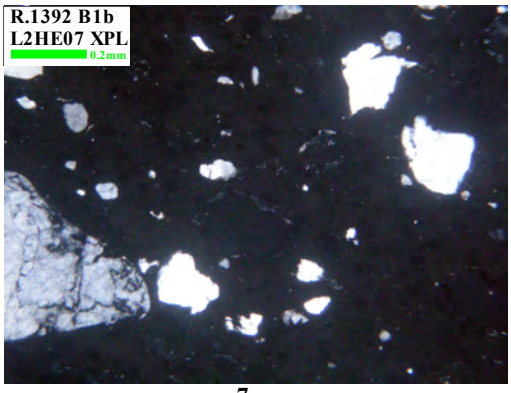
4



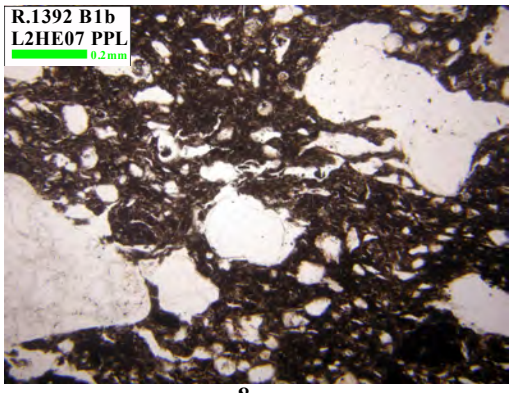
5



6



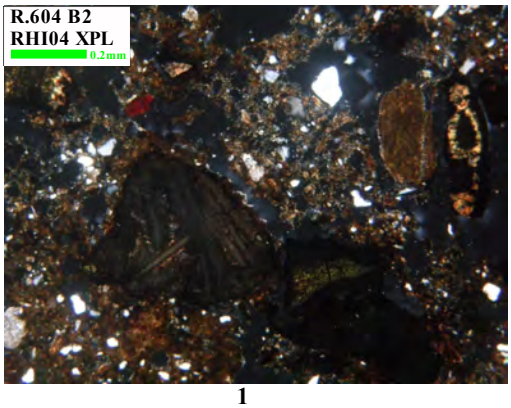
7



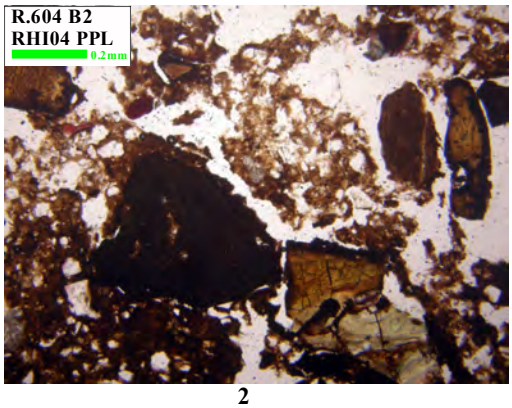
8

Plate 6.4: Petrographic Groups XPL/PPL (Ware A6b, B1, B1b).

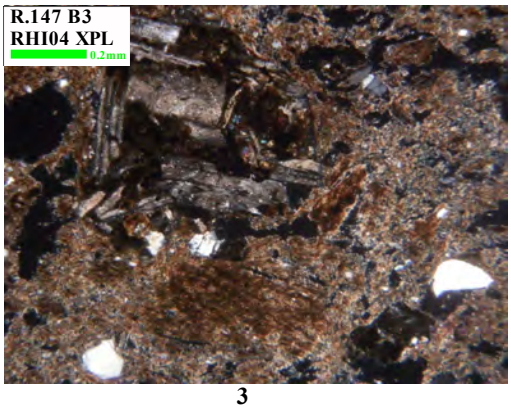
Plate 6.4: Petrographic Groups XPL/PPL (Ware A6b, B1, B1b).										
#	Reg#	Locus	Basket	Str.	Vessel	Type	PG	Ware	PL	Description
1	915	105	3027	A3	Cooking Pot	CP20	PG1	A6b	XPL	Lower Cretaceous Shales with fired gray - cooking pot fabric
2	915	105	3027	A3	Cooking Pot	CP20	PG1	A6b	PPL	Lower Cretaceous Shales with fired gray - cooking pot fabric
3	662	533	209		Pithos	PT3c	PG1	B1	XPL	Lower Cretaceous Shales
4	662	533	209		Pithos	PT3c	PG1	B1	PPL	Lower Cretaceous Shales
5	1171	5012	12037		Juglet	JT21	PG1	B1	XPL	Lower Cretaceous Shales with large silty grog inclusion
6	1171	5012	12037		Juglet	JT21	PG1	B1	PPL	Lower Cretaceous Shales with large silty grog inclusion
7	1392	5014	12110		Pithos	PT22	PG1	B1b	XPL	Lower Cretaceous Shales highly fired
8	1392	5014	12110		Pithos	PT22	PG1	B1b	PPL	Lower Cretaceous Shales highly fired



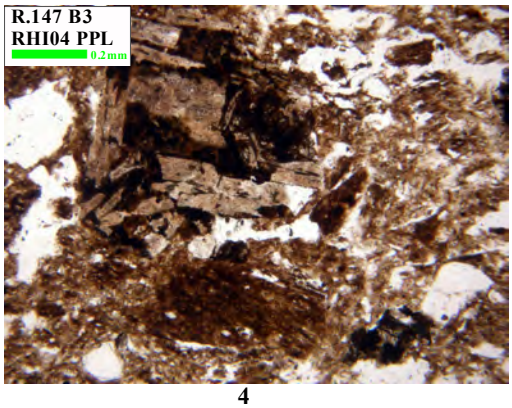
1



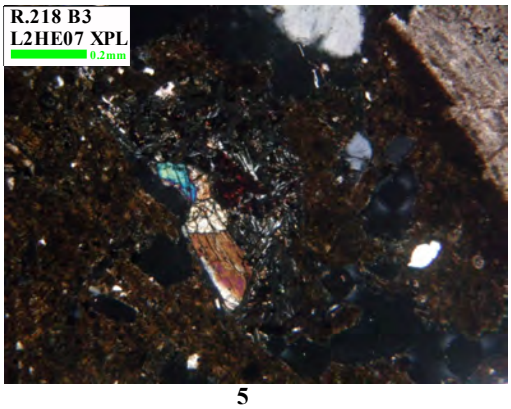
2



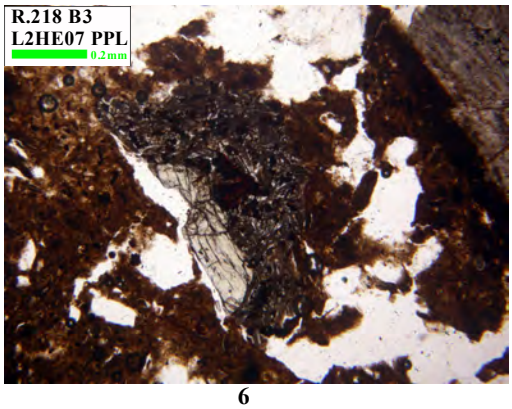
3



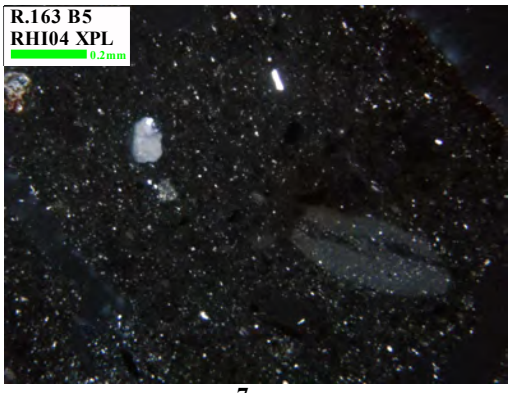
4



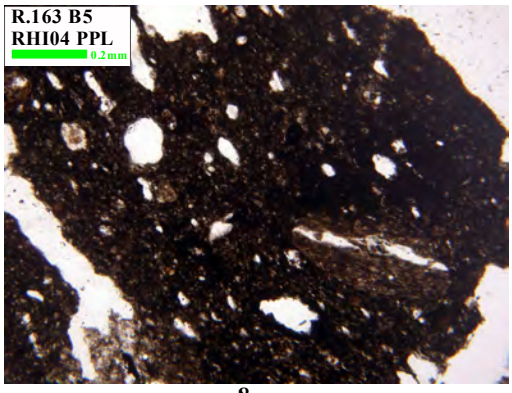
5



6



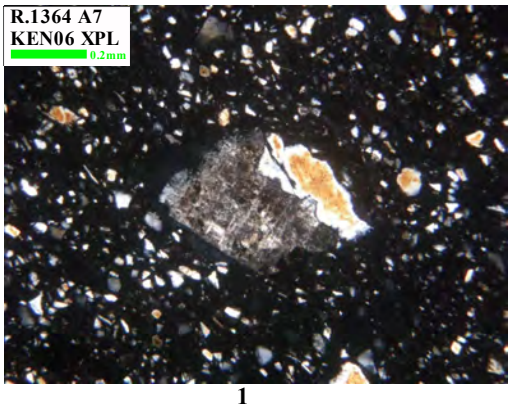
7



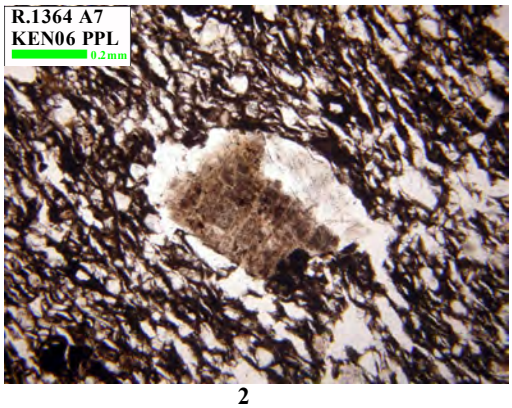
8

Plate 6.5: Petrographic Groups XPL/PPL (Ware B2, B3).

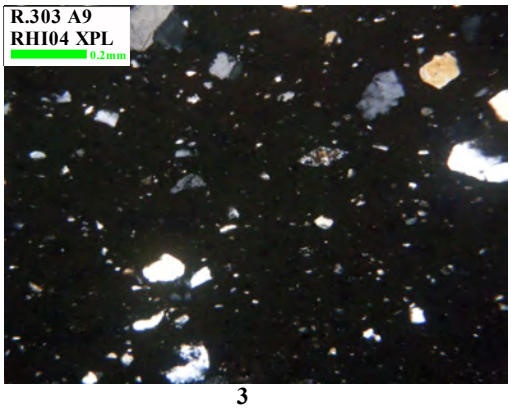
Plate 6.5: Petrographic Groups XPL/PPL (Ware B2, B3).										
#	Reg#	Locus	Basket	Str.	Vessel	Type	PG	Ware	PL	Description
1	604	532	217		Pithos	PT18	PG1	B2	XPL	Lower Cretaceous Shales (See also 56)
2	604	532	217		Pithos	PT18	PG1	B2	PPL	Lower Cretaceous Shales (See also 56)
3	147	534	222		Pithos	PT15	PG1	B3	XPL	Lower Cretaceous Shales with basalt
4	147	534	222		Pithos	PT15	PG1	B3	PPL	Lower Cretaceous Shales with basalt
5	218	3009	10033		Pithos	PT19c	PG1	B3	XPL	Lower Cretaceous Shales with basalt
6	218	3009	10033		Pithos	PT19c	PG1	B3	PPL	Lower Cretaceous Shales with basalt
7	163	535	261		Bowl	BL12c	PG1	B5	XPL	Lower Cretaceous Arkose with pale brown fabric
8	163	535	261		Bowl	BL12c	PG1	B5	PPL	Lower Cretaceous Arkose with pale brown fabric



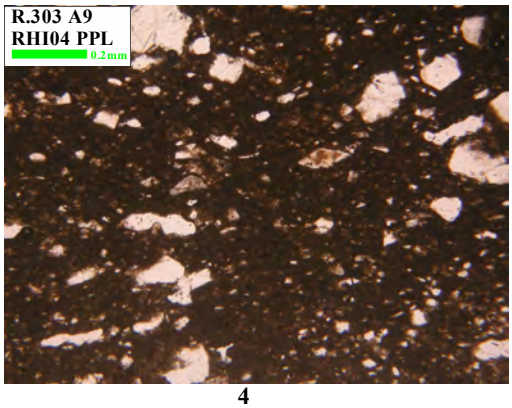
1



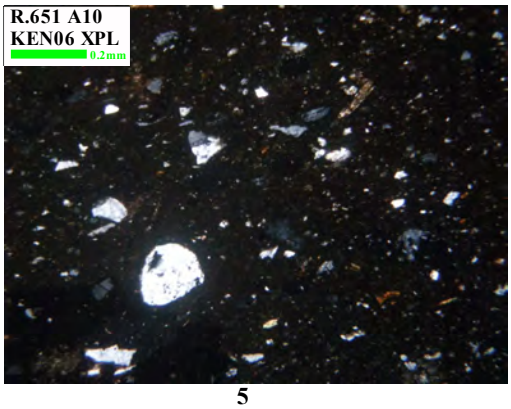
2



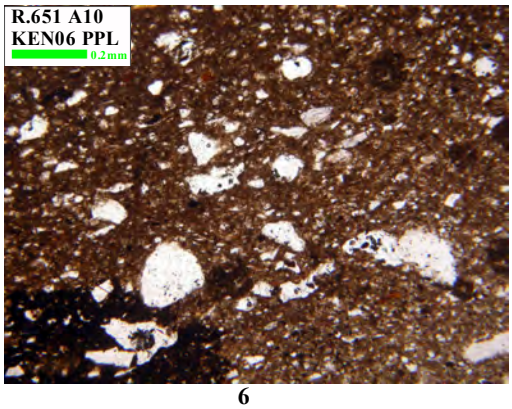
3



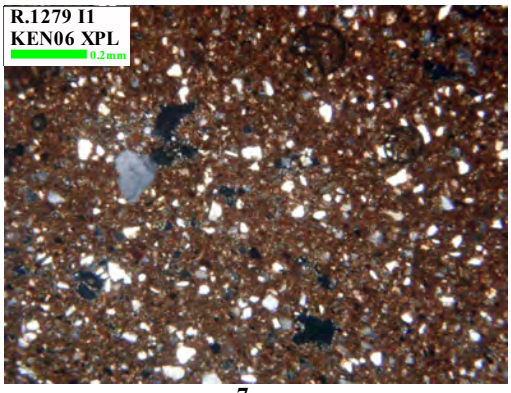
4



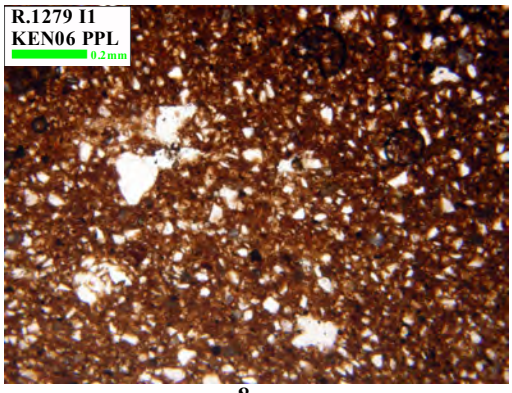
5



6



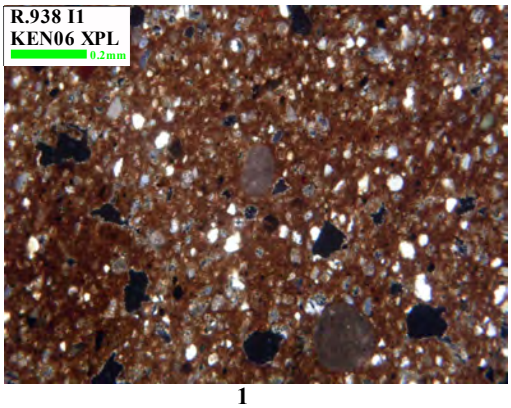
7



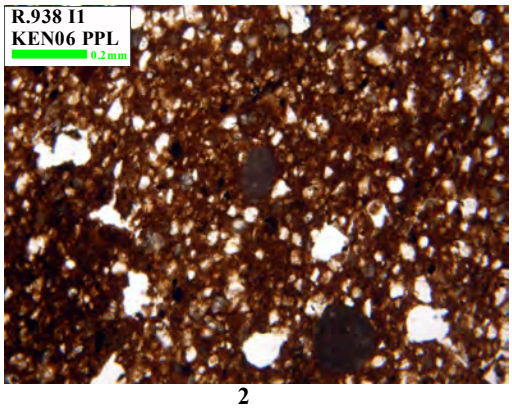
8

Plate 6.6: Petrographic Groups XPL/PPL (Ware A7, A9, A10, I1).

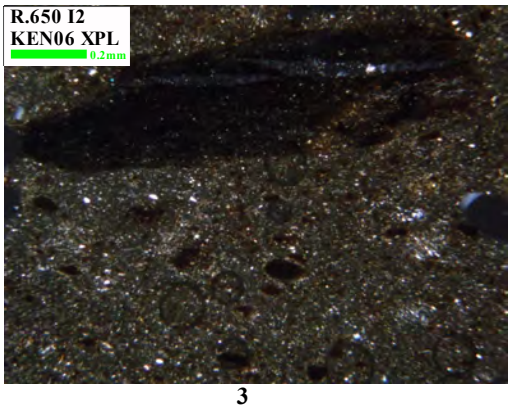
Plate 6.6: Petrographic Groups XPL/PPL (Ware A7, A9, A10, I1).										
#	Reg#	Locus	Basket	Str.	Vessel	Type	PG	Ware	PL	Description
1	1364	1849	16520	R3a	Pithos	PT2b	PG2	A7	XPL	Lower Cretaceous Arkose
2	1364	1849	16520	R3a	Pithos	PT2b	PG2	A7	PPL	Lower Cretaceous Arkose
3	303	531	189		Jug	JG3b	PG3	A9	XPL	Lower Cretaceous Disi Formation Sandstone
4	303	531	189		Jug	JG3b	PG3	A9	PPL	Lower Cretaceous Disi Formation Sandstone
5	651	1524	13365	T2a	Bowl	BL15	PG4	A10	XPL	Paleozoic Micaceous Clay
6	651	1524	13365	T2a	Bowl	BL15	PG4	A10	PPL	Paleozoic Micaceous Clay
7	1279	1578	13698	T2b	Bowl	BL25	PG5	I1	XPL	Loess Soil
8	1279	1578	13698	T2b	Bowl	BL25	PG5	I1	PPL	Loess Soil



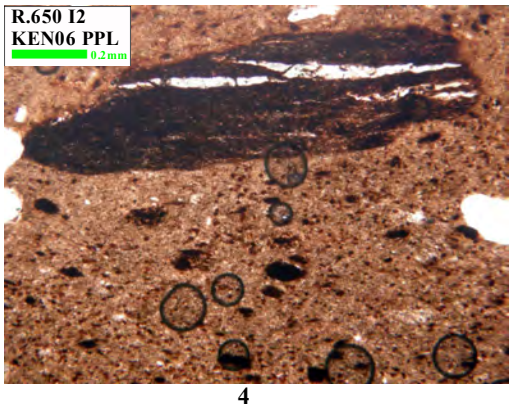
1



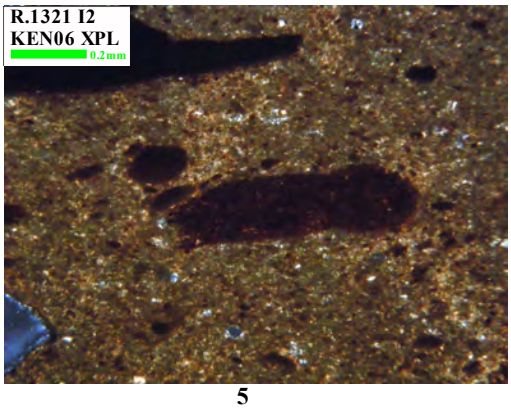
2



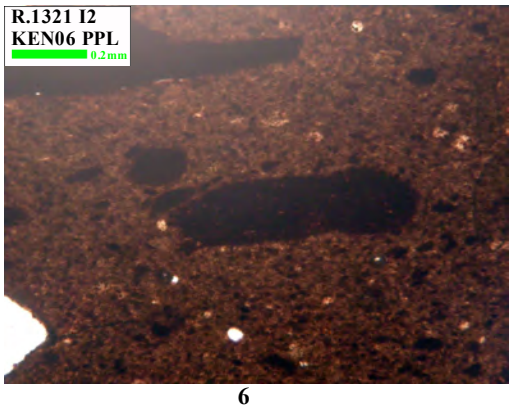
3



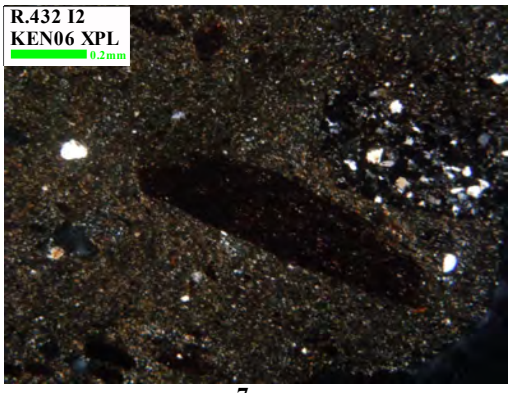
4



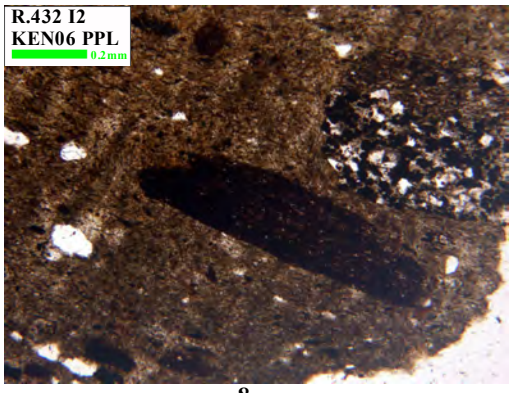
5



6



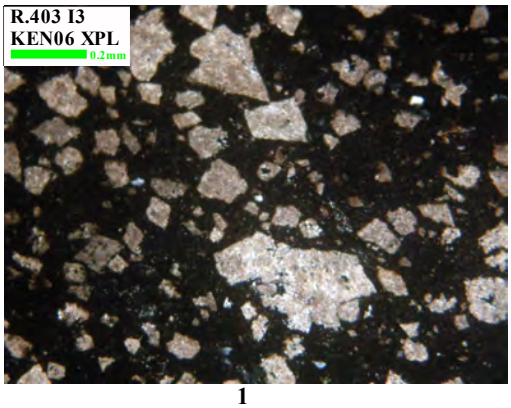
7



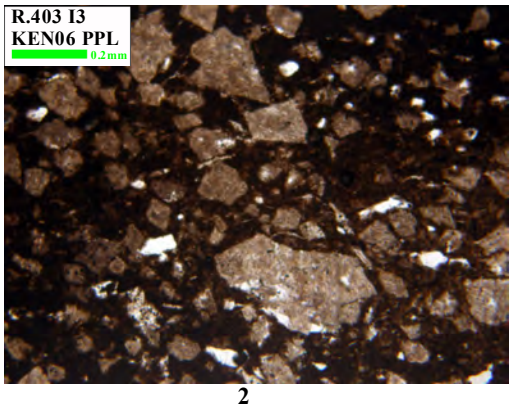
8

Plate 6.7: Petrographic Groups XPL/PPL (Ware I1, I2).

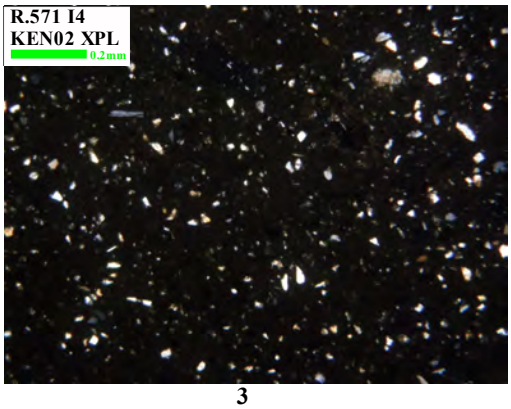
Plate 6.7: Petrographic Groups XPL/PPL (Ware I1, I2).										
#	Reg#	Locus	Basket	Str.	Vessel	Type	PG	Ware	PL	Description
1	938	105	3196	A3	Bowl	BL16	PG5	I1	XPL	Loess Soil
2	938	105	3196	A3	Bowl	BL16	PG5	I1	PPL	Loess Soil
3	650	1827	16265	R2b		Midianite	PG6	I2	XPL	Lower Cretaceous Shale with Micaceous clay-Qurayya Ware
4	650	1827	16265	R2b		Midianite	PG6	I2	PPL	Lower Cretaceous Shale with Micaceous clay-Qurayya Ware
5	1321	1827	16378	R2b		Midianite	PG6	I2	XPL	Lower Cretaceous Shale with Micaceous clay-Qurayya Ware
6	1321	1827	16378	R2b		Midianite	PG6	I2	PPL	Lower Cretaceous Shale with Micaceous clay-Qurayya Ware
7	432	660	9754	M3		Midianite	PG6	I2	XPL	Lower Cretaceous Shale with Micaceous clay-Qurayya Ware
8	432	660	9754	M3		Midianite	PG6	I2	PPL	Lower Cretaceous Shale with Micaceous clay-Qurayya Ware



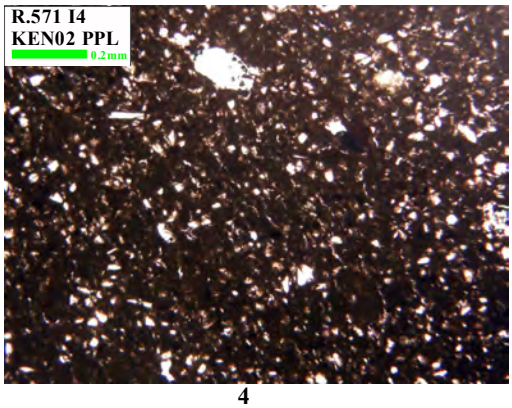
1



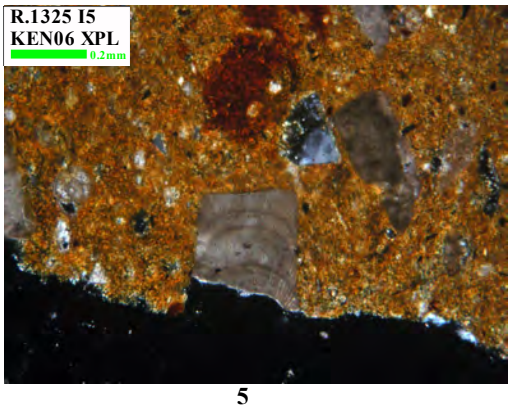
2



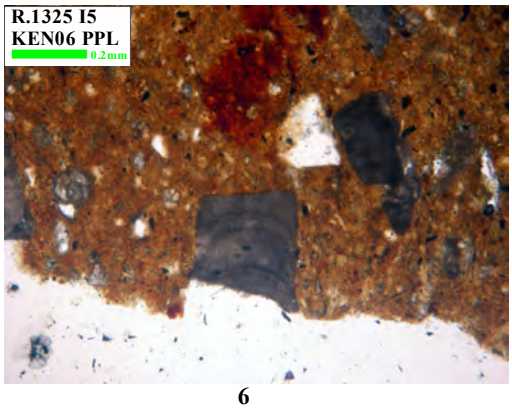
3



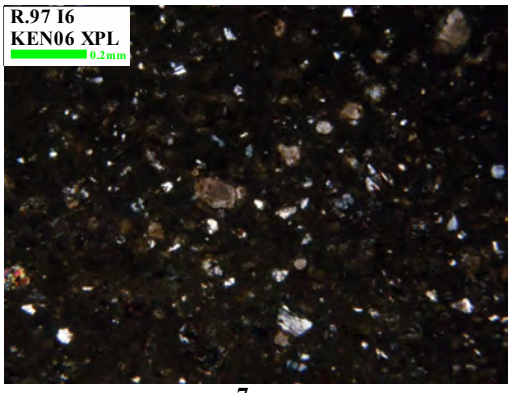
4



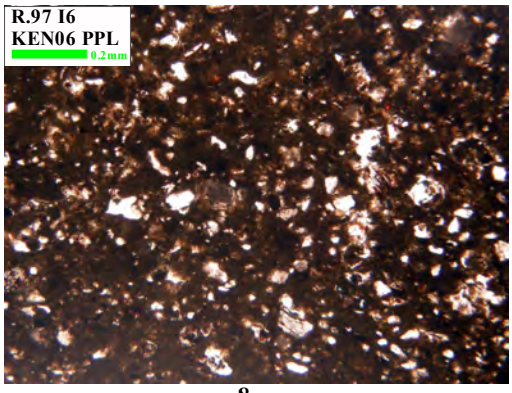
5



6



7



8

Plate 6.8: Petrographic Groups XPL/PPL (Ware I3, I4, I5, I6).

Plate 6.8: Petrographic Groups XPL/PPL (Ware I3, I4, I5, I6).										
#	**Reg#**	**Locus**	**Basket**	**Str.**	**Vessel**	**Type**	**PG**	**Ware**	**PL**	**Description**
1	403	1531	13235	T2a	Juglet	JT21	PG7	I3	XPL	Moza Dolomitic Clay
2	403	1531	13235	T2a	Juglet	JT21	PG7	I3	PPL	Moza Dolomitic Clay
3	571	264	5615	S1	Juglet	JT22	PG8	I4	XPL	Cypriot Aegean
4	571	264	5615	S1	Juglet	JT22	PG8	I4	PPL	Cypriot Aegean
5	1325	1832	16373	R2b	Jar	JR16	PG9	I5	XPL	Syro-Lebanese Coast: Neogene clay with Amphiroa fossils
6	1325	1832	16373	R2b	Jar	JR16	PG9	I5	PPL	Syro-Lebanese Coast: Neogene clay with Amphiroa fossils
7	97	631	9384	M2b		Greek	PG10	I6	XPL	Greek transport amphoria
8	97	631	9384	M2b		Greek	PG10	I6	PPL	Greek transport amphoria

Chapter 7:

Conclusion: The Ceramics of Edom

I. Introduction

The region of ancient Edom and its Iron Age (IA; ca. 1200 – 500 BCE) archaeology presents a rich field of study in which to investigate the anthropological models of social change and ethnic identity formulated in the previous chapters. In terms of historical archaeology, Edom was one of ancient Israel's most important contemporaries and thus, it is a rich source of comparative data for understanding the dynamics of social interaction during the Iron Age between the various polities within the southern Levant. The excavations conducted for this dissertation on the highlands (L2HE project) and the ongoing excavations on the lowlands (ELRAP project) provide new data concerning the social, cultural, and chronological nature of Edom that has been a relatively unexplored region in the southern Levant.

In this chapter a ceramic typology will be presented along with a series of quantitative analyses that seek to probe the data for indications of social change and the presence of social boundaries. The ceramic typology is based on ceramic data recently collected from excavations conducted by the UCSD ELRAP and L2HE projects in the lowlands (Khirbat en-Nahas and Rujm Hamra Ifdan) and highlands (Khirbat al-Malayqtah, Khirbat al-Kur, Khirbat al-Iraq Shmaliyeh, and Tawilan) of Edom in southern Jordan. The first two sections detail the methodology underlying the ceramic analysis. The organization of the ceramic analysis and variances is explained. Then, the methodology and theory underpinning the ceramic analysis is described. It will be argued

that the combination of a morphological approach coupled with ware analysis is the best method to elucidate ceramic types in the region of the Iron Age southern Levant.

In the last part of this section, the "Pottery Informatics Query Database", a new contribution to the field of digital ceramic analysis and critical component to this chapter is presented. The third section presents the ceramic typology including descriptions of all vessel types and their attributes, ceramic imports, patterns of surface treatment, and the handmade wares. The last two sections present a series of intra-site and inter-site spatial analyses of the ceramic typology. It is the goal of these last sections to relate the quantitative data of the ceramic assemblages to the hypotheses presented in earlier chapters on complex societies and social boundaries for the Iron Age of southern Jordan.

II. The Organization of the Ceramic Analysis

A. Field Collection and Dirty (Field) Lab Processing

It is important to briefly describe the digitally based collection method used at Khirbat en-Nahas and the several soundings (RHI, and L2HE sites) discussed below as this insured the collection of secure stratified ceramic samples. The system is part of the 'On-Site GIS-based Digital Archaeology Recording system described in detail by Levy and Smith (2007). By avoiding the use of dumpy-levels and non-digital recording techniques, we insured that pottery sherds and other artifacts were collected with the tightest stratigraphic control. While technology won't tighten stratigraphy and good (experienced) excavation can only isolate archaeological sediment layers, the ultimate goal of archaeological recording in the field is to be able to 'reconstruct' the site back in the laboratory. By using digital archaeological methods it is possible to do this with a

higher degree of precision. The provenance of each day's basket of collected pottery was recorded in three-dimensions using this method. Ceramics were collected from the field in plastic buckets and labeled with appropriate locus, basket, square and 'EDM number' (short for Electronic Distance Measure recorded with a Leica Total Station). Special pottery or near complete vessels found *in situ* had exact coordinates recorded using the Total Station and were given their own specific EDM and Basket numbers for integration with the project's general ArcGIS database. In GIS terms, these are referred to as point data. Similarly, on a daily basis, all sherds found in a given locus were collected together and recorded by mapping the outline of the basket area excavated in that locus as well as the depth, as is the norm for locus-basket based excavations in the southern Levant [see (Dever and Lance 1978)]. However, rather than use inaccurate dumpy levels at KEN these data were recorded with digital surveying instruments and TDS Recon data collectors loaded with software suitable for our GIS system. For GIS, these are referred to as polygon data. This pottery was later washed and special pottery digitally photographed separately before being incorporated into the general sorting and registration. Reconstructible vessels collected from the field were marked and all sherds with possibly similar fabrics were separated from other diagnostic vessels and body sherds that under went general processing. These vessels were immediately sent to the conservationist to be reconstructed. The other ceramics in buckets were brought to the Dirty (Field) Digital Processing Lab, where they were checked against the master database to insure the tags were the same. Then, the buckets were set out for the next day of washing. The pottery was then washed by students and set out to dry. The preliminary sorting consisted of separating diagnostic from non-diagnostic vessel sherds and then

counting, weighing and entering the data in a laptop computer. Diagnostic vessels consisted of rim sherds, painted or decorated handles, distinct bases, and miscellaneous vessel sherds that appeared rare in the ceramic assemblage.

B. Sorting, Weighing and Counting

The preliminary sorting consisted of separating diagnostic from non-diagnostic vessel sherds and then counting, weighing and entering the data in a laptop computer. Diagnostic vessels consisted of rim sherds, painted or decorated handles, distinct bases, and miscellaneous vessel sherds that appeared rare in the ceramic assemblage. These were sorted while still on the table into their respective vessel families. Each vessel family was counted and weighed and entered into the database. This enabled rough counts and weights of vessel families by the end of the season to facilitate the supervisors with any rough quantitative studies for their field reports.

C. Computer Registration

Although every season of excavation on the ELRAP and L2HE projects represented an improvement in method for computer registration, from the 2002 season to present the same essential data was recorded. In 2002, a complex ceramic database was created in Microsoft Access™ to register every diagnostic vessel sherd with its specific form, color, and fabric details. The database used drop down menus to collect specific information on rim form, surface treatment, fabric color, sorting, roundedness and inclusions. This system was streamlined over the seasons to focus only on descriptions of vessel family and surface treatment during in field registration. Currently a new

registration system is being used that incorporates a server based structure, html based input, and barcode scanning, which we are calling the MasterTable (see section III.C.3.c).

D. Labeling and Storage

After a diagnostic sherd was analyzed and assigned its registration number from the database, it was labeled with its appropriate information and placed in a labeled acid free zip-lock bag. The current method of labeling uses clear fingernail polish or White-out© to prepare a marking area on the sherd—these are used since they can be removed in the future in case a special photo needs to be taken. An ultra fine black Sharpie© is used for the marking—this was found to achieve similar results to inking pens but significantly easier to use. The bag was also labeled using a Sharpie©. In the 2007 season at L2HE a stamp was designed for making the preset label information on each bag.

Storage varied according to whether the sherd was diagnostic or non-diagnostic. For body sherds, handles and bases these were placed inside bags relating to their locus and basket and stored in labeled plastic crates. Since the excavations on the ELRAP and L2HE project did not yield extremely high collections of sherds nothing was discarded. Eventually these crates were shipped to UCSD and stored properly in one of the Levantine Archaeology Laboratory storage facilities. The storage of the diagnostic sherds after their placement in bags was according to their later determined vessel type. Prior to the end of the season a rough typology was conducted on all the diagnostic sherds and each type was placed in its own large bag labeled with the type information and eventually stored with the other types in crates. Once shipped to UCSD, only the diagnostic sherds were brought to the UCSD Levantine Ceramic Laboratory. The sherds

were then placed in clear plastic shoe-sized boxed according to type. They were also entered into the MasterTable as being stored in the pottery lab. If they are moved in the future (e.g. for restoration or 3D scanning) the MasterTable is updated with the change in location so that the location of a diagnostic sherd can be tracked at all times.

E. Illustration

A sample of diagnostic vessel sherds from every excavation season for the ELRAP (KEN 2002, 2006 and RHI 2004) project was illustrated. For the seasons diagnostic vessels were still illustrated these were made by Dr. Caroline Hebron. Since drawing was conducted in the field laboratory as excavations were taking place, the selection of vessel sherds for drawing could not always follow a systematic pattern but was primarily determined by factors such as a high frequency of its appearance in the assemblage, similarities to known vessel types of other Iron Age sites in Edom, distinctive features, and good preservation of the vessel sherds. Therefore, the plates presented here do not represent statistically the breakdown of types found within the ceramic assemblage, but rather adequately presents an overall picture of the full range of vessel types represented in the ceramic assemblages[1].

F. 3D Scanning

The 3D scanning of ceramic vessels from both the ELRAP and L2HE projects was initiated in the summer of 2008 in collaboration with A. Shalom and U. Smilansky

[1] The UCSD ELRAP project is grateful to Dr. Caroline Hebron, London, U.K., for producing half of the excellent pottery drawings used here. The other half were produced with the 3D scanning program developed by the author for the PIQD project that is part of the doctoral research presented here (see Plates 7.1.1 to 17.15.1 where both hand and automated drawings are presented together).

from the Weizmann institute (see III.C) and T.E. Levy under the auspices of the California Institute of Telecommunications and Information Technology (Calit2) Center of Interdisciplinary Science for Art, Architecture and Archaeology (CISA3). The goal of the scanning was to try to reduce the expense, time, and subjectivity involved in traditional hand illustration of the sherds.[2] By scanning in 3D a highly detailed micron precision model of the ceramic sherd could be recorded, which can be used for analysis and digital illustration. A 3mp texture was taken at every angle so that the fabric color associated with the model could be readily visualized. The rotary stage for the scanner was modified to enable scanning of multiple objects at once. We found with this setup that we could scan and process approximately 10 sherds per hour on one scanner. Half way through this project, a second scanner was donated to the CISA3 Archaeology laboratory based on our collaboration with NextEngine that has enabled us to increase the number of sherds scanned to 20 per hour.

After the digital scan models were cleaned and processed they were exported into various formats for visualization, use in the PIQD©, and importation into Matlab©. The end goal for every scanned diagnostic sherd was importation into Matlab©. Once inside Matlab© the proper stance of the vessel, its rim diameter, and vessel profile were extracted. This digital profile was then used to automatically draw a digital illustration of the scanned sherd. In this manner, the 3D scanning of sherds has enabled us to triple the amount of sherds illustrated in this chapter's figure section. All the L2HE diagnostic sherds and a large portion of those from RHI and KEN are illustrated from the 3D

[2] Two inexpensive 3D scanners were tested on the ceramics before the decision was made to purchase the NextEngine scanner. We found the NextEngine scanner to fit within the budget of any archaeological project and provide the quality and streamlined processing needed to conduct large 3D scanning projects. The NextEngine HD scanner was used for scanning all the 3D derived sherds in this study.

scanning procedure. The majority of plates presented in this chapter contain these digital sherds and the plates themselves have been automatically produced using the PlateMaker program developed for this dissertation and discussed below (see section III.C.3.b).

III. Towards an Objective Analytical Ceramic Study of Iron Age Edom: Typology Construction and Parallel Studies

A. History of Ceramic Typologies in Edom: Problems and Different Approaches

There are a series of problems associated with past ceramic typologies of Iron Age Edom that necessitate the construction of a new ceramic typology for the region. The first detailed investigation of the southern Jordanian pottery assemblages in the region of Edom was undertaken by M. Oakeshott (1978), who prepared the first detailed typology of the 'Edomite' pottery. Oakeshott relied primarily upon the ceramic assemblage from Busayrah, a site excavated by C. Bennett (1974,1975,1977,1983) that represented the largest and most extensive collection of Iron Age 'Edomite' ceramics, to develop her typological series. The only other two excavated sites in the region of Edom at this time that were included in this typology were Tawilan (Bennett 1984,1995) and Umm al-Biyara (Bennett 1966). Oakeshott's typology was constructed based on the most popular forms found at the site and used an alphanumeric numbering system to delineate the different types. It was standard practice during Bennett's excavations to discard ceramic types that did not fit into the typology that was determined in the field, similar to what was done by Kathleen Kenyon in Cisjordan (c.f. Bienkowski 2002; Tappy 1992). Oakeshott's typology did not take into consideration sherds that did not fit into common types. The typology also generalized a number of significant morphological differences

within the Iron Age ceramic assemblage, that the research presented here has found to be especially problematic. Ware analysis and quantititative determination of clustered types was not extensively handled, which would have helped in construction of the typology. Equally problematic, the lack of stratigraphic contexts or strong control of the loci at the various sites studied (c.f. Bienkowski 2002) prevented Oakeshott from being able to develop a chronological sequence based on stratigraphy. Therefore, the chronological distinctions made by Oakeshott were based solely on typological comparisons with sites outside of Edom in Transjordan and Cisjordan and presumed imports from Assyria. Busayra along with the other sites used in the typology were treated as contemporaneous, roughly single period sites dating to the late Iron IIC period. Thus, the possibility of Iron Age ceramics in Edom extending earlier in time into the Iron IIB, IIA and Iron I periods was not factored into Oakeshott's work. All of these factors are reasons for why a new typology needs to be developed, if ceramics are to be used for answering questions in anthropological archaeology as well as historical Biblical archaeology.

Oakeshott's (1978) typology and classification scheme became the interpretive framework for the comparison and dating of all future excavations and surveys in Edom and thus, in many ways lead to chronological assumptions about the dating of the Iron Age in this region and stagnation in the study of 'Edomite' ceramic assemblages and an inability to develop more comprehensive typologies. For example, the subsequent ceramic publications by S. Hart and P. Bienkowski followed Oakeshott's typology without significant modification. Hart (1989) adopted Oakeshott's typological system for several surveyed sites and an excavation conducted at Ghrareh. The only modification to Oakeshott's typology was the combining of Types K (the imitation Assyrian bowls)and

M (deep bowl with straight flaring neck) together (c.f. Hart 1989). Although many diagnostic sherds published in this work did not be fit Oakeshott's typology, there was no attempt to create new type-names to describe them. In a later study, Hart (1995b) tried to connect Oakeshott's typology with the stratigraphy of Area A at Busayra, but the lack of quantitative data inhibited any conclusive chronological information to be extracted from this study (c.f. Bienkowski 2002). Despite this problem, Hart attempted to re-date Busayra, Tawilan, Ghrareh, and Umm al-Biyara and a number of his surveyed sites according to this method (c.f. Hart 1987, 1989, 1995a, 1995b), essentially pushing many into the 6th-5th c. BCE. In the final publication of Bennett's excavations at Busayra, a ceramic typology was written by P. Bienkowski (2002). Although the descriptions, formatting, and parallel study were updated, it still followed Oakeshott's typology closely, only deviating where Bienkowski viewed her typology too specific. Bienkowski rejected a number of Hart's assumptions concerning the chronology of the ceramics and with new information on 'Edomite' style vessels coming from late 8th c. BCE stratigraphic sequences in Tel Arad and Beer-sheva (e.g Singer-Avitz 1999; 2002) dated Busayra's ceramic assemblage to the late Iron II starting in the late 8th c. BCE. Thus, Oakeshott's typology with its many shortcomings has remained the primary source for our understanding of Edom's Iron Age ceramic assemblage. A number of the variances between sites and many vessel types not fully distinguished in Oakeshott's typology have thus remained under the radar of archaeologists working in the region. Thus, in this section of the ceramic analysis we will develop a more comprehensive typology of the region of Edom that accounts for a number of these variances and presents statistically significant types often overlooked.

There are two additional typologies that have been offered for the region of Edom by G. Practico (1993) and J. Zeitler (1992). . Although these typologies attempt to address other Iron Age vessel forms, they are not comprehensive enough to account for the chronological and stylistic factors that have been identified and developed in this dissertation. First, Practico's (1993) reexamination of the ceramics from Tell el-Kheleifeh near the Gulf of Aqaba presented a series of organized plates, but without any explanation of the typological system or quantitative measure of how many sherds within the ceramic assemblage paralleled each figure presented in the plates. There is thus no documentation concerning the quantities of these vessel forms and no significant attempt at noting parallels to enable other ceramicists to make informed judgments on how representative these types are for Tell el-Kheleifeh. Many of the figures parallel those found at other sites, however it cannot be determined whether there were other significant forms (not paralleled in Oakeshott's typology) that were also significant types at the site. Moreover, the figures presented represent the mixture of various stratigraphic phases within the site preventing any interpretation relating to the typology to chronological factors. Thus, although Practico's publication of the ceramics from the site typology have detailed descriptions of each individual published sherd there is no typological system that enhances our understanding of the site's relation to the region of Edom as a whole.

Second, based on the surveys and small soundings conducted in the Petra region by Lindner et al. (1996; see also), J. Zeitler (1992:172) developed a preliminary typology. Zeitler's study could not be comprehensive since it depended on surface survey and two shallow soundings with only a small quantity of pottery to define its types rather than material from deeply stratified soundings. Nevertheless, Zeitler typological distinctions

are significant especially since they highlight certain forms not identified in Oakeshott's typology. However, the primary limitation of Zeitler's study is that it is only a preliminary typology that does not discuss variations within the types, fabric wares, parallel studies outside the region, nor describe in detail the ware or quantitative numbers of these different forms. Since there is no significant stratigraphy from the limited soundings or radiocarbon dating for Linder's work, the typology is still dependent upon Bennett's more extensive excavations to draw any conclusions about chronology. It is hoped that in the future either Zietler or one his colleagues will present a more comprehensive discussion of the Iron Age ceramic types found at these sites.

Due to problems with Oakeshott's (1978) typology and the lack of any other comprehensive typologies for the ceramic assemblages of Edom, this chapter will focus on developing a new typology based both on the extensive stratified excavations at KEN (first initiated in Smith and Levy 2008), but also the several well excavated radiocarbon dated sites from the lowlands and highlands of Edom by the UCSD ELRAP and L2HE projects. Since the ceramic assemblages from these sites are stored at the UCSD Levantine Ceramic Laboratory, a detailed quantitative analysis of these various site assemblages and their relations with each other is presented here. As discussed above, the same techniques for recording and processing were conducted at each site so that the highest degree of statistical comparison can be carried out. Not only has a similar morphological analysis been carried out for all these sites, but also analyses of fabric, decoration and petrography (see also Ch. 9) were carried out for all these sites using the same methods. Illustrations were all drawn by Caroline Hebron and the 3D scans used the same mathematical functions to compute ceramic profiles. Overall, this unique

circumstance enables the study presented in this chapter to develop a cross-regional, diachronic typology with the same level of precision often only conducted for one site.

B. A New Ceramic Typology for Iron Age Edom: Theoretical Considerations and Methods

1. Ware vs. Form typologies

There are a number of approaches to constructing a ceramic typology of a region (cf. Adams and Adams 1991; Gifford 1976; Rice 1987). Most ceramic typologies tend to either emphasize ware while others morphology. In the region of the southern Levant, morphologically based typologies have predominated and parallel studies are made between different sites by their classifications (Amiran 1969; Dornemann 1983; Gitin 1990; Mazar and Panitz-Cohen 2001; Zimhoni 1997). More recently, especially with the increasing use of petrographic, INAA, and XRF studies, archaeologists in the southern Levant have taken into consideration ware in their typological constructions. In this study a form based morphological study will predominate but ware has played a major role in refining the typology and enabling more minute distinctions between sites that appear morphologically to share similar ceramic styles. Thus, an excursus on the methodology and theory behind this ceramic typology is discussed below.

A ceramic typology is the classification of ceramics into groups (*types*) based on various *attributes* that are observed to cluster together. An *attribute* is a single distinct

variable or principal component of a ceramic vessel.[3] Specifically for this study, which will involve an investigation into the mimetic models that create culturally specific variables, an attribute will be envisioned as a single variable of technological style belonging to any choice made within a chain of operations involved in the construction of the vessel (i.e. the *chaînes opératoires*).[4] Some examples, therefore, of an attribute (technological style) include: the type and density of inclusions, petrography, construction method, fabric color, hardness, body shape or size, thickness, form of carination, rim treatment or stance, surface treatment, paint design, functional use, etc. An *attribute state* represents any possible value or values that describe the nature of that technological style (e.g. "denticulated", "15cm", "sharp carination", "slag tempered"). Since this study also involves stratigraphy and cross-comparison between Iron Age sites, attributes such as stratigraphic provenience, relation to absolute dating, and spatial location inter/intra-site are also considered attributes that impinge on typological interpretation.

Also introduced here is the concept of a *sub-attributes*, which represents a series of measurable components that define the nature of certain complex attributes (e.g. an attribute such as a rim fold has a specifically associated tangent, length, thickness, precision of completion, and uniformity). Sub-attributes are quantitative or qualitative measurements of variance that at the highest degree of precision (e.g. on the micron level) can function as a fingerprint to enable a distinction from one vessel to the next (e.g. the tangent of two nearly identical vessel rims may vary within a couple 0.001 degrees).

---

[3] For further definition and justification of this term see Adams and Adams (1991:169); Clarke (1968:139); Gifford (1976:9); Rice (1987:275).

[4] See the discussion in Ch. 6 on these concepts. This definition has been similarly defined by Chilton's (1999:47-8).

It is argued here, that the clustering of sub-attribute states around a single attribute (e.g. rim fold, vessel body shape, and surface treatment) represents a specific technological style. Every vessel possesses sub-attributes, but for a potter to repeat the same organized collection of various sub-attribute states on a specific attribute over and over requires practice and thus it is the repeated occurrence of these in several vessels that allows us to distinguish a learned motor habit (i.e. it is habitual). The measurement of sub-attributes also enables a more fine-grained approach of investigating craft specialization, since highly standardized sub-attributes will be very consistent in their measurement and thus most likely indicators of the vessel being produced in the same place and at a mass scale.

A *type* is, thus, a recognizably distinct combination or clustering of *attributes*/ technological styles (Gifford 1976:9). Types should not be considered hard-and-fast rules but rather strong associations of attributes and sub-attributes that posses a limited range of variety and as a whole readily apparent difference between other types. With every season of excavation or survey, the varieties within a type may be expanded to account for ceramics that share the majority of distinctive attribute states but may have distinguishable sub-attributes or slight deviations in a few of the already established attribute states. Thus, a type should be seen as always in flux and constantly undergoing refinement as its definition becomes more comprehensive (c.f. Gifford 1976:9; Spaulding 1960:76).

The ceramic typology constructed here makes no attempt to reconstruct folk classifications (III.B.2), but rather represents a critical, analytically devised classification of ceramic types. The typological method presented here takes an *etic* approach to classification rather than *emic*. Types are distinguished based on the attributes and sub-

attributes mentioned above, analytically observed patterns seen among these attributes, and discontinuities between one type and another. It will be argued in III.B.4. that certain attributes take greater precedence or rank over others in the overall classification and distinctions made between the various ceramic types and sub-types. However, a conscious effort is made to inductively discover what attributes are most relevant through an analysis of the ceramic data as a whole. In this manner, the artificial inductive classification made in this chapter may or may not overlap with the original community's folk classifications (c.f. Rice 1987:284). Although this study has begun to apply mathematical approximations of vessel morphology and objectively based cluster analyses (see III.B.3), at the current stage of writing this chapter they have not been systematically applied across the whole collection of ceramic assemblages. Thus, the ceramic typology presented here follows many other southern Levantine Iron Age typologies in making informed, but subjective analytical inferences of which attributes have greater weight than others and how or when to split or lump types and sub-types. Other ceramic specialists working within the southern Levant may disagree with either the generalization ('lumping') or specificity ('splitting') of the classifications made below. The positivist approach developed here for the delineation of types should not be mistakenly viewed as the canonical typology of Edomite ceramics as was done in the past with Oakeshott's work and others working in other parts of the world (c.f. Adams and Adams 1991:4-5; Chilton 1999:44; Spaulding 1953). The ceramic typology presented in this chapter modifies an earlier publication (e.g. Smith and Levy 2008) in light of new evidence. It is expected with more extensive excavations at stratified sites in the lowlands and highlands of Edom and insights from future mathematical based analyses that this

typology will be amended accordingly. Therefore, a detailed explanation is presented below for every type and sub-type in order to defend the reasoning and hypotheses behind every classification and provide grounds for further scholarly discussion.

The most commonly used pottery classification system in North and South America by archaeologists is the type-variety system (c.f. Wheat, Gifford and Wasley 1958; Gifford 1960; 1976; Rice 1987). The type-variety system emphasizes attributes having to do with composition, technology, and surface treatment in contrast to the primarily morphological typologies developed in the southern Levant. The types are derived from a number of attributes, such as paste composition, texture, color, surface treatment, firing technology, period, geographical location, and morphology (Rice 1987:287). Once a type is distinguished it is often labeled similar to biological sciences with a combination of the name of the first settlement it was discovered at and by the primary attributes that make it distinctive from others (e.g. "Sierra Red" in Gifford 1976). Each type can encompass a very large collections of sherds found at many sites. For example, the Sierra Red type found at 38 mounds in Barton Ramie, Belize represented 3593 sherds, with each variety representing ca. 200-300 sherds (Gifford 1976:85). The main attributes that define this type are red-slip with lustrous finish and waxy feel but also some morphological features such as the presence of shallow dishes or bowls with everted or thickened rims in the assemblage. The varieties within this type (Sierra Red) are primarily distinguished by color of paste, or slightly different techniques in firing or application of the red-slip. It is clear that vessel morphology is not extremely consequential for the definition of these varieties. In fact over this large group the morphology remains fairly consistent with only slightly different attribute states in

specific rim treatments or height to diameter ratios. This tends to be the case for the majority of types defined in the Americas and Mesoamerica in that types may encompass only two vessel families (jars and bowls) and the deviations in rim treatments or overall proportions are not considered significant enough to split types or varieties. The advantage of this system is primarily found in its ability to connect a wide variety of ceramic vessels together into a single shared type. Whole ceramic assemblages from a site can then be defined together by their type and larger groupings called 'ware'. Wares can also be used to demarcate the ceramic production of full-time specialists and their wares distribution through a region (e.g. as demonstrated by the "Plumbate" ware of Mesoamerica) (Gifford 1976:14). Its emphasis on technological properties also predisposes it to more quantifiable, scientific, and statistically measured analyses such as petrographic and INAA studies (c.f. Chilton 1999; Rice 1987). This brief discussion of Mesoamerican ceramics is important to the southern Levant Iron Age specifically because it points out a number of typological attributes rarely explored. When these attributes are combined with morphological analysis typology a more comprehensive and comparative studies between whole site ceramic assemblages can be achieved.

Perhaps the reason the southern Levant typologies do not emphasize fabric (e.g. Amiran 1969; Bienkowski 2002; Gitin 1990; Zimhoni 1997) as seen in the type-variety approach is because is that it is not always possible to easily classify attributes of composition and surface treatment between or within sites. In the Iron Age southern Levant, surface treatments (paint, slip, burnish) or lack thereof and technology (firing technology, wheel-made pottery) is fairly uniform or unelaborated (simple black painted strokes, or plain red slip) within and between sites. Surface treatment does not appear to

have been as diversified in contrast to Mesoamerica and other New World locations. Similarly the composition of Iron Age sherds (inclusions, texture, hardness, color) is highly variable within each and every site and thus does not function always as the best tool for distinguishing types across the region. For example, as seen for Khirbat en-Nahas from the petrographic study (Ch.6), the majority of ceramics at the site were created from a single clay source and most likely produced on site but there is still a plethora of variation in paste color, sorting, texture, and inclusion size (see also for example Mazar and Panitz-Cohen 2001). Thus, this diversity in composition is more a product of potting techniques than different ware types exchanged across a region.[5] Taking these factors into consideration a type-variety system is not always applicable for the Iron Age southern Levant.

A morphological type system primarily classifies ceramic assemblages according to attributes of form. A number of techniques have been developed to classify sherds by morphology, such as proportion ratios, vessel contour, geometry or volume (c.f. Rice 1987:215-222). In the southern Levant, morphological type systems classify according to a ranked system of attributes. They start by classifying sherds according to general vessel families (e.g. bowl, jar, jug) generally using proportional ratios of height to diameter and orifice to midsection diameter (c.f. Shepherd 1976). Vessels that do not fit into these general proportional ratios and have distinctively different sizes, thickness or morphological features are assigned their own predetermined families (e.g. kraters, pithoi, vats, flasks, pyxis, cups, cooking pots). The determination of these categories can

[5] The exception of course are the few cases where there is highly controlled firing and selection of pastes to create a uniform color, but these are often also associated with specific morphological types (see below: JT21; KR8, etc).

differ between ceramicists who may use slightly different proportions and criteria than others to make the distinction between for example a bowl and cup, krater and large bowl, jar and pithos, or jar and cooking pot. Even the delineation between jars and jugs fluctuates, especially in situations where a handle is not present on a fairly closed vessel. Complete vessels are thus generally desired since they can be more easily classified into these families rather than rim sherds.

Once these vessel family classifications are made, types are distinguished by varying attributes of a vessel's anatomy. The body of the vessel (the area between the orifice and base) generally takes first rank in the next stage of classification over rim treatment or other attributes. A number of attribute states and combination of linked attributes are used to classify vessel bodies. These may be geometric attributes (e.g. rounded, flaring, cylindrical, and ovoid) and/or structural attributes (various forms of carination, distance between inflection points, presence/absence of a shoulder or neck). Although in general circumstances rim treatment follows the classification of the body, in certain circumstances it may also be a defining attribute in which various body attributes are linked (e.g. repeated patterns of unique rims treatments on varying body forms). The term rim treatment, as used in this chapter, refers to all the attributes of the upper portion of a vessel that follows the end of its body or neck. Attributes of rim treatment can be combined to include rim stance, thickening, subsequent folds, grooves, ridges, diameter, attachments, specific treatment of the lip, etc (see type B.2.). Sub-types are generally delineated by specific attributes of rim treatment, certain vessel body variations or lower ranked attributes (e.g. types of base shapes, handle forms, applied decoration, and surface treatment). The importance at which different attributes take in creating type and sub-

types extremely varies between on ceramicist to another. In this chapter, the typology primarily follows this morphological method of determining types but also seeks to delineate key indicators of technological style, as will be discussed next.

2. Methods of determining types from Morphological Form and other technological styles for Iron Age Edom

The approach taken in this typology is to primarily classify according to morphological attributes but also seek to integrate ware analysis and petrographic thin-sections wherever these attributes reflect a pattern of occurrence. These second order attributes are analyzed for every vessel but tend to refine the typology into sub-types rather than generate new distinguishable types. The emphasis on morphology placed in this typology is related to one of the inherent research problems of this thesis. Namely the identification of technological styles that reflect circumscribed social boundaries. A survey of various ethnoarchaeological studies conducted in Ch. 3, demonstrated that morphological attributes, which often are directly linked with motor habits (mimetic models), do not regularly cross social boundaries. In this section, the method for isolating these specific types of technological styles and differentiating them from other styles will be delineated.

Complex Technical Operations

It was argued in Ch. 3 that technical and morphological stylistic traits (i.e. learned mimetic models) are often shared and uniform for each community, which enables researchers to directly isolate them from other communities (see Arnold 1989; DeBeor

1990; Deal 2007; Dietler and Herbich 1998; Gosselain 1998; Levy et al 2008; Pryor and Carr 1995; Stark et al. 1998; Stark 1999). As defined in Ch. 3, a motor habit is a habitually practiced unexamined schema that is learned only through repeated training, practice and development of the necessary muscles and physical dexterity (Arnold 1985:147). They represent only a subset of all possible technological styles within the *chaîne opératoire* of a product. These attributes require highly difficult technical operations that can only be performed properly through direct teaching. A highly skilled potter may be able to imitate other forms but their lack of regular training in that style will require a significant amount of conscious effort and reorientation of their learned motor habits to accomplish it; even if the imitation is attempted it will often betray the local imprint of the potter (see Ch.3). This is in direct contrast to a potter that has directly been taught these motor habits from another potter or community. Their repeated training has made these actions rapid and routine requiring little conscious effort and thought. Since they are often rudimentary activities (shaping, bending, folding, paddling of clay) they do not regularly participate in conscious assertive ethnic or individual expressions. They remain highly stable and are passed down from one generation of a community to the next rather than functioning as passing fancies of a producer community, consumer demand, or individual expression. Therefore, the specific types of technological style important for this ceramic typological study of social boundaries must be restricted to those that are produced from learned complex motor habits.

Four main sets of attributes are highlighted here relating to complex motor habits (mimetic models): 1) Shaping; 2) Folding and Bending; 3) Paste and Color Control; and

4) Complex decoration. Within each of these four main attributes there are a number of sub-attributes that when combined together reproduce a reoccurring technological style.

Shaping

Learning as an apprentice how to draw and shape a vessel is the first critical motor habit learned through mimetic modeling. The apprentice is taught by their master a series of technical choices: the proper postures in which they are to stand or sit, gestures (ways of pushing, patting, drawing, pinching, cutting, coiling) in which to shape the clay, critical decisions of shaping (e.g. where to thicken or thin a wall, add or subtract clay, expand or contract diameter, create an inflection point/carination, straighten or round) and, especially for wheel-made pottery, timing/speed at which to transition from one stage of construction to the next. All of these technical choices, which require considerable practice and development of specific motor skills, lead to a series of interconnected sub-attribute states that can be used by the analyst to describe the total shape of the vessel. Since it can be assumed that every potter learns the general techniques needed to fashion different vessel families (bowl, jar, jug), the key attributes that would distinguish culturally specific motor habits would be those that are highly arbitrary but require practice in order to implement on a consistent basis such as 1) Inflection points--their presence/absence, position, sharpness; 2)Tangent and length of individual segments of the vessel, e.g. walls, collars, necks, bases, rims; 3) Geometric shape—spherical, ellipsoid, ovaloid, etc; 4) Thickness—areas along the whole vessel that are thickened or thinned with no necessarily observable 'structural'[6] purpose.

[6] By structural purpose, I refer to the need to thicken certain areas of a vessel so that it will structurally hold up under stress depending on the vessel family (e.g. for a pithos certain areas must be thicker to support the large size of the vessel).

Folding and Bending

Folding and bending primarily has to do with the preliminary shaping of the rim. This refers specifically to rims that undergo this elaboration, in a number of areas and periods rims are simply rounded or flattened off and thus do not involve any significant training or skill to complete. The simplicity of a rim can be considered an attribute state of a vessel but is more a reflection of the absence of rather than variation of culturally learnt motor habits. Second there is still a level of debate on whether the folding and bending of rims is part of an individual schema (Roux 2003) or reflects a cultural schema (Nicholson and Patternson 1992).[7] Here a distinction is made between the preliminary folds and bends of the rim that occur as a potter completes the shaping of the pot and finishing techniques (i.e. grooves, depressions, decoration, denticulation) that may be producer specific and do not occur until later nor involve skilled folding and bending. It is argued here that the amount of repeated patterns of sophisticated rim designs in Iron Age southern Levant would suggest that the specific folds and bends of the rim were, as much as body shape, integral to a vessel's construction rather than an added on attribute.[8]

Paste and Color Control

Although a potter may be limited by the available clay sources of their respective area, how these sources are sieved, sorted, combined with temper, and fired can determine the outcome of the vessel's fabric and color. All of these are technical choices,

---

[7] See for example Nicholson and Patterson (1992:33, fig. 2.6) where the rim treatment could be used to identify individual workshops but at a higher extraction the nucleated industry as a whole. The distinction made earlier between the Old world and New World vessels concerning morphological shape also suggests that indigenous distinctions of morphology in the Old world played a larger role than fabric.

[8] Finishing techniques on the rim (i.e. grooves, decoration, and denticulation) would be considered secondary and not as related to motor habits—see below.

but only highly controlled preparation and firing of clays would represent those produced by culturally specific mimetic models. If fabric and color is found to be highly variable within the same petrographic group it would suggest that potter was not taught complex technical operations to ensure a repeated outcome in fabric or color. Surely the potter had a cultural schema for their production of clay but it would not be highly complex making it differentiable from another group that also had very lax schemas. In contrast, if a highly consistent fabric and color is produced from specific techniques (recipes) of sorting, tempering and firing, these specific attribute states can be used as an indicator of a culturally learnt mimetic model of a potter. Similar to motor habits these complex technical choices may be unexamined dispositions and completed rapidly since they had become habitual from the potter's younger years of apprenticeship. Thus, in order to identify these mimetic models within ceramics, the petrographic nature of the vessels must be known as well as the total possible fabric and color variation possible. Where a highly consistent, controlled color and fabric is found to cluster within a sea of possible choices, then a technological style influenced by mimetic modeling can be identified.

Complex Decoration

Complex Decoration refers to specific styles of decoration that cannot easily be imitated even with full access to the observance of this decoration. A number of studies on decoration have found that potter's ability to repeat complex decoration styles learned them through master-apprentice training often from a young age. Imitations of these decorations have been noted by these studies to lack the same level of precision or intricacy when compared to potters that were directly taught these techniques. In addition, they found that the motivation for the apprentice to learn the style or the

duration at which the apprentice lived with the master potter affected their ability to replicate the decorative pattern. Thus, these insights strongly support the theory that when they are learned they are learnt through mimetic models that involve strong emotional arousal and evaluation leading to motivational force. Finally, it must be noted that the distinction between individual mimetic models learnt from ones nuclear family and those learned from the community as a whole may be hard to distinguish.

Attention to Detail

Below technological styles influenced by cultural mimetic models variation can still be distinguished by any potter's attention to detail. This variation is most clearly seen among imitated forms, differing levels of craft specialization, and individual caprice. Since a number of these styles can be a product of various factors they are not as applicable to the study of social boundaries as the styles discussed above. However, their greatest asset is their ability to help the archaeologist distinguish whether a vessel's spatial distribution is as a result of popular imitation or mass production, since each will have drastically different levels of attention detail.

Measurement

Measurement refers to the technical measurement of rim diameters, proportions of vessel height to diameter, volume, and thickness. Two vessels may be shaped in exactly the same way but deviate in several of these measurements. Rim diameters may have a specific 'acceptable' range and the same for the other attributes of a vessel. The way the potter makes these measurements can vary and may be culturally specific (i.e. by perceived appearance, a combination of fingers or body parts, specific objects or tools, or

specifically crafted measuring devices). However, these measurements may be more directly influenced by the objects that need to be stored or transported in, standards of middlemen, or demands by the consumer (especially if the vessels may be used for trade of commodities). A number of ethnoarchaeological studies have found that these measurements (the level of acceptability) strongly correlates with craft specialization (see Ch. 5). Vessels produced in large workshops will be more standardized than those produced by part-time or full time domestic environments. Therefore, although vessel attributes of measurement may be reflective of cultural schemas, they also can be highly influenced by a number of other factors that cannot be easily differentiated. For this study, the most important factor in determining the level of craft specialization for specific vessels is attributes of measurement. It will allow us to distinguish between vessels mass produced and those representing local production and/or imitation.

Finishing techniques

Finishing techniques are surface treatment (slip, burnish), decoration (incisions, grooves, simple painted designs, applied decoration) and attachments (handles, bases, spouts, figurines). Finishing techniques refers to practices that may not be associated with motor skills because they are not complex or habitually carried out, however they may still require attention to detail. For example, a finishing technique on a vessel such as a groove around the rim will vary considerably according to the tool used, its size, and the pressure applied. The attention of these various aspects by a potter will determine how consistent they occur. The imitation of observed vessel styles will vary to the degree that potters see these differences and are motivated to replicate them. Potters may even mark their own individual style, experiment or innovate on these attributes since they do

not require significant alteration of motor habits or learning (c.f. Ch.3). Therefore, finishing techniques although a reflection of technological styles, cannot be determined *apriori* as mimetic models. It cannot be determined whether the variation seen reflects different culturally learnt technological styles or a lack of attention to detail by potter's seeking to imitate a form. Their variation may also be a factor of standardization, since these attributes can also be highly influenced by the level of craft specialization.

In this chapter these attributes will contribute to the classification of vessel types but will not be used as indicators of mimetic models. In later sections these attributes will be analyzed together to shed light on whether vessel forms that are found across a region are a product of imitation (i.e. structural homologies) or increased craft specialization (i.e. mass production of vessel forms by commissioned specialists).

3. Taxonomy-Method for labeling and discussing types

The typology presented here uses the alpha-numeric system widely used in the southern Levant for ceramic studies (c.f. Mazar and Panitz-Cohen 2001:11; Zimhoni 1997). This system in contrast to the type-variety naming system is more geared towards typologies based off of morphology rather than ware. Thus, rather than use of locale and descriptive names of each type, it uses an abbreviation of the vessel family (i.e. morphology) and a successive numbering to differentiate types (e.g BL5b = Bowl type 5, sub-type 'a'). The advantage to this system in the southern Levant is that the typology does not become embroiled in external arguments over the connotation of the use of a morphological term (e.g. collared rim pithos) or the semantics of what morphological

forms belong to this name or do not. This naming system is often site specific; therefore, one site's BL5 will not be the same type as another's BL5. However, comparison between sites can simply be drawn by referring to another sites naming system (e.g. BL5 at KEN parallels B13 at Tel Batash). Since the typology presented in this chapter is developed using multiple sites, diachronic differences in similar morphological forms are distinguished by sub-type classifications (e.g. BL3a and BL3b, below).

For each designated type a description has been written that describes the distinctive attributes of its morphology, ware (fabric, surface treatment), and frequency across the sites. Also, each description is followed by a parallel study where possible. Parallels are presented for the vessel types from excavated assemblages in Transjordan Edom, such as Tawilan, Busayra, Ghrareh, Umm al-Biyara, Tell el-Kheleifeh and where possible, sites from the Negev, northern Transjordan and southern Israel.[9] Comparison of the ceramic assemblages, which is primarily made up of broken rim sherds, to other sites is difficult because one cannot be certain when comparing to complete forms; however, attempts were made here where possible. At a higher level of classification types are contained under vessel group descriptions which generalize common morphological attributes among several types (e.g. Shallow Rounded Bowls). Detailed descriptions for Handmade Ware and Imports are presented in their own sections.

The plates are separated by site and area. For KEN each plate is arranged according to the stratigraphic sequence and vessel type from earliest strata to later (see the stratigraphy discussion above respective strata). This approach was chosen in order to compare and contrast temporal distinctions between the specific vessel types, which, until

[9] For certain unique vessel types, northern Israel and Phoenicia are included in the discussion of parallels.

now, could not be done because of the lack of clearly defined stratigraphic phases at other Iron Age 'Edomite' sites in Jordan. Imports and Handmade wares have been assigned their own plates by area and respective stratigraphic sequence. For the L2HE plateau soundings (KAM, KIS, KIJ, TW) and single lowland sounding (RHI) the plates will be organized only by vessel type, since they were all shallow single period sites (with the exception of Area J at Tawilan which did show phase changes). In certain plates the organization by vessel type had to deviate slightly to accommodate the larger diameter vessels.

C. Pottery Informatics Query Database (PIQD): Current Status and Future Development

Although there has been an increasing movement among archaeological projects to digitize various aspects of their archaeological datasets, there has not arisen a solution for integrating these different projects data for cross-regional comparison and analysis. Most researchers still must rely upon printed publication reports to conduct any form of regionally study. In general, this medium is very limited in its ability to inform the reader of the nuances of the material culture collected at the site, such as architecture, stratigraphy, ceramic assemblages, and other artifact assemblages. For instance, since printed publications are usually limited in terms of size, only a few representative samples of material culture are illustrated or displayed in photographs and their associated meta-data must be concise rather than exhaustive. Equally problematic, comparative studies are incredibly time consuming since many hours are spent searching numerous publications to find parallel datasets. Since this data is all analogue it must be

entered by the researcher into their database with a number of gaps where information is lacking from each respective publication.[10] In sum, the current state of the discipline of archaeological ceramic analysis is not geared towards enabling researchers to digitally query the combined data of a region and test new interpretive models. The cross-regional study of ceramic variability is hampered by the publication of only printed illustrations, site-specific typologies with differing interpretations of what makes a type, varying formats and scales, a lack of quantitative information on the ceramic assemblages represented, and the inaccessibility of certain publications (e.g. out of print or published in a hard to get dissertation or article). Many of the pertinent questions concerning the cross comparison of ceramic typological classifications cannot be addressed due to these drawbacks. The result is both a myopic and partial understanding of regional ceramic variability in the Iron Age southern Levant.

In order to circumvent a number of these drawbacks, a comprehensive online digital database called the Pottery Informatics Query Database (PIQD) was started for the Iron Age ceramic assemblages of the southern Levant (http://daahl.ucsd.edu) . In collaboration between the University of California, San Diego's California Institute of Telecommunication and Information Technology (Calit2) and the Weizmann Institute of Science in Israel. One of the goals of this project is to digitize all previously published Iron Age ceramic plates for the southern Levant and make this entire database available to the public on-line (Smith et al., forthcoming). [11] In addition, the PIQD query database

[10] Despite several publications' provision of a CD with digitized data from their excavations alongside printed material, this addition functions more as a digital copy of the published material rather than an exhaustive resource with information that can be used for quantitative or analytical investigations.
[11] N. Smith and T. Narayanan are responsible for the web-based programming of the PIQD. The curvature function and Matlab programs designed to work with the PIQD were developed by A. Karasik. T. Levy

is designed to facilitate regional analytical studies of the South Levantine Iron Age ceramics. Part of this goal is to produce a more in-depth accessible on-line version of the ceramic typology presented in this chapter along with all the ceramic assemblages and their meta-data. The database includes 2D and 3D scans of all the ceramics from field excavations by the ELRAP and L2HE projects in Jordan from 2002-2008. It is hoped that other researchers working in Jordan and Israel will join in this approach. By providing researchers with a rich analytical database that includes comprehensive data on this project as well as digital conversions of published ceramic illustrations and their meta-data from the majority of the most significant Iron Age southern Levant excavations, it is hoped that a new revolution in how regional ceramic analyses are conducted can be kick-started. For this doctoral thesis, the ceramic 'Platemaker' application was used from PIQD to produce the more than 50 plates used in the ceramic analysis described here.

1. The Curvature Function: A Mathematical method for storage and analysis of digitized ceramics

As was discussed above, the construction of a ceramic typology by morphological attributes can vary from one archaeologist to the next. This is primarily a reflection of what attributes the archaeologist considers to take greatest precedence in classification and whether they have a preference towards lumping or splitting groups according to the examination of these attributes. Although a conscious effort is made in this chapter to

---

and U. Smilansky served as directors and advisors of the project and provided the facilities and organized the funding for the project. This project was funded primarily by a UCSD Chancellor Collaboratory Grant made to Levy and in part by the UCDS Judaic Studies Program, the Calit2 Summer Intern program.

inductively discover what attributes are most relevant for morphological classification, these attributes and their clustering into types cannot always be validated according to this method. It is at this juncture that highly accurate mathematical representations of vessel morphology and objectively based cluster analyses hold the greatest potential in isolating what principal components (attributes) are statistically valid for classification and determining objective clustering of ceramic types. These data can then be compared to the archaeologist's typology to either confirm their classifications or highlight discrepancies with their analysis. In order to facilitate the regional analysis of ceramic assemblages in an objective manner, all the published 2D ceramic illustrations of Iron Age southern Levantine sites and 3D scans from the ELRAP and L2HE projects were mathematically encoded and stored as complex mathematical algorithm called the "curvature function" developed by A. Karasik and U. Smilansky (2008). For this study this digital approach enabled the publication of a much higher quantity of plates than is regularly possible. It has also enabled several cluster analyses to be run on several of the most dominant bowl types (BL20,21) in the assemblage (see Figure 7.1).

The curvature function measures with a high degree of precision minute differences in vessel form, stance, and diameter.[12] Once ceramic sherd profiles are mathematically stored in the curvature function they can be subjected to any form of statistical or mathematical analysis. This technique combined with principal component analysis (PCA) and cluster analysis (CA) has been used to classify objective mathematically based typologies and ceramic prototypes (Adan-Bayewitz et al., In Press;

[12] For a detailed description of the mathematically derived method behind the curvature function please see Karasik et al. (2004).

Gilboa et al., 2004; Karasik, 2008; Karasik et al., 2004; Karasik et al., 2005; Mara et al., 2004; Smith et al., forthcoming).

Another advantage to the use of the curvature function for a regional study of Iron Age southern Levant is that it is not limited to 2D profiles. It can fully account for 3D derived profiles which are more accurate and can be analyzed using several cross-section profiles, rather than just an abstract one selected by the illustrator. At the same time, since both 3D and 2D data can be stored using the same curvature function they can be analyzed together; thus, as more studies move towards 3D scanning of pottery more accurate studies can be performed on the 3D scans alone or they can be compared to previous 2D illustrations, even dating back to the beginning of the 19th century.

Finally, a side product of digitizing ceramics in this manner is that they can be re-exported in a number of formats. For example, once a 2D illustration is digitized, it can be exported as a computer drawn vessel profile for publication quality reports. Ceramic publications with varying methods of illustration can be standardized so that there is no discrepancy in how they are depicted in a publication nor need to request copyright permission for the use of an figure from the publication. Digitized 2D illustrations can also be revolved around their axis of symmetry to extract a 3D model of the sherd for visualization purposes. These 3D models (derived either from 2D revolves or 3D scanning) can provide a new method for visualization analysis, tactile feedback using haptic systems, and student instruction or museum display using printed 3D plastic models. Since the formats of the 2D raster images or 3D polygonal meshes are independent of the mathematical algorithm, the exportation of new formats for publication and visualization that arise in the future can easily be carried out. This can be

seen on the CISA3 virtual museum designed by the author and S. Savage (http://daahl.ucsd.edu/DAAHL/museum.php). Similarly, the algorithm itself is stored as a mathematical array that can be exported into any current database structure or other statistical program (e.g. Excel, Access, ArcGIS Shapefile, MySQL). Therefore, the movement towards the complete digitization of Iron Age southern Levant ceramics publications, as presented here, will not lead to an unusable or obsolete data format as computer technology undergoes future innovations or paradigm shifts. Moreover, future analytical tests and research questions can be conducted on the digitized data.

2. Introducing the Pottery Informatics Query Database

Accordingly, the PIQD seeks to use the "curvature function's ability to objectively classify ceramic types as a tool for rapidly querying a whole database of digitally stored vessels for cross-comparison studies of the Iron Age southern Levant. In this sense, these queries are similar to BLAST algorithms (Altschul et al. 1990) in being able to rapidly associate large quantities of digital vessel profiles to each other based on user specified morphological traits. This technique, being currently developed at CISA3 and the Weizmann Institute, will enable on-line researchers to query the database to conduct cross-regional studies of vessel types without having to have prior knowledge of each site's internal typology or naming system.

PIQD is an online tool designed to enable researchers to test their own interpretations and models against the ever-expanding digital medium of ceramic datasets in ways that conventional print data can not provide (figure 1; http://daahl.ucsd.edu). The

PIQD has been designed using MySQL, PHP, Ajax, and Javascript with an imbedded Google Maps API to provide a fully query-able spatial environment for the user. PIQD, now in Beta testing, will make available an online spatial database of 2D and 3D ceramic profiles from new archaeological excavations and previously published archaeological publications of Iron Age southern Levant ceramics. It is designed to enable users to contribute their own data with a high level of quality control to enable an ever expanding computation of digitized ceramic assemblages. As pottery is one of the most important datasets for solving chronological, social and economic problems since the Pottery Neolithic period (ca. 6,000 BC) to Ottoman time in this region, ceramics was chosen as the starting point for the PIQD but it can easily be expanded into other forms of material culture or combine these with ceramics for regional studies. This project presents a new avenue for how archaeologists can simultaneously publish their research in scholarly journals and on-line in a more in-depth format where it can be examined and compared with other assemblages.

a.) Structure of the database

The PIQD allows the user to access all the digitally stored 2D and 3D ceramic data in real-time using an online MySQL database. The MySQL database functions as the underlying structure to the system by interlinking the all data associated with each sherd together, such as its stored raster images, meta-data, curvature function, typology system, 3D model, and spatial location. The MySQL database and its related digital data are stored on a dedicated web server located at Calit2, San Diego. Since the database is accessible from online, data can be queried or modified from anywhere with an internet

connection, and multiple users can access it at once to enable real-time collaboration. The database is designed to be comprehensive in its storage of archaeological data but where even more specific tables of information are needed; these can be dynamically joined to it enabling more detailed specific studies. The database facilitated this study by allowing the author to query the database and look up the ceramic figures and plates for a number of the published sites used for comparative analysis in this study.

b.) Making the algorithm automated

The curvature function algorithm for every digitized sherd added to the database and the resulting cluster analyses are automatically computed within the PIQD. Previous cluster analyses using the curvature function (see Avshalom et al. 2008; Smith et al., forthcoming) required individual tuning by the researchers to ensure accurate results of the specific data added. The PIQD is designed so that correct results are achieved despite an increasing amount of data being added to the system. This is accomplished through the use of a standalone program written in Matlab that both performs the needed quality control and adjusts parameters on the fly according to the data inputted (see Smith et al., forthcoming). Once the program computes the statistical relations between all the digital ceramic profiles it outputs a database array representing the pre-run mathematically computed ceramic typology. All the other information of each digital ceramic profile is then linked to this database array. This database array, which we call the internal typology system, drives all the possible morphologically related queries in the PIQD. It runs autonomously, can be dynamically updated, and is fast; it does not require intensive server-side computation every time a user makes a query.

c.) User capabilities

The individual user accesses the database and associated data through an Html interface. Working behind the html is the combined use of PHP, Javascript, Ajax and CSS to create dynamic pages that change according to user requests without the need to reload the page. When the user makes a query through the drop down menu system or by clicking on a user button, the MySQL database is queried and the appropriate data is retrieved for the user. Currently the user has a number of options in querying the data, such as searching by a publication's plates, limiting searches by variables (e.g. spatial location, period, vessel family, site specific typologies), querying the database using the curvature function by a known type, or narrowing the search by clicking on prototypical images of the system's internal regional typology. Once the specific vessels queried are found by the user, they can store these into personal save sessions for later study, analysis, or export the saved session to excel, Google Earth, or the PlateMaker.

d.) The Visualization Component

Immediately after the user makes their first query the retrieved data is displayed both in a table format and visually. The visual component displays spatially the icon markers of each sherd from the query results on an aerial satellite map. The real-time spatial display can be easily manipulated (pan, zoom, select icons) by the user since it uses an embedded Google Maps API. Every sherd icon has imbedded within its popup window meta-data on the specific sherd and its illustration. As the user makes new queries, the Google Map is updated with the new information. Below the query buttons a dynamic table is displayed showing both the query results and the currently stored sherds

in the user's saved session. The table imbeds thumbnail images of the illustrations that can be clicked on to further narrow the results using the internal typology system. Vessel's that have been 3D scanned can also be clicked on to open a new window that enables the user to rotate the vessel and zoom in and out.[13] All of these functions provide the user with a spatial and visual context in which to study the ceramics they are querying. In essence, the PIQD is an open source GIS. Google Maps function as a real-time spatial display for all the ceramics coordinate information while MySQL functions as the server side database to organize all the stored ceramics's information and send the appropriate data to the geographic display and connected table.[14]

e.) User Accounts and Adding data

Adding data to the PIQD so it can become more comprehensive for the Iron Age southern Levant is an essential component. The PIQD is designed to eliminate the need for a web-administer to make changes every time a user desires to add new data. Every user that registers receives a login account page that allows them to see all their saved sessions, create new sessions, or navigate to different tools on the PIQD. This page allows the user to upload their vectorized ceramic profiles and associated meta-data to the server. Once uploaded, the program imports the files in Matlab where they are checked to make sure they meet the appropriate requirements. If there is an error in the data (e.g.

---

[13] The popup window described here was developed by N. Smith and S. Savage for the manipulation of ceramic sherds in a Google Earth environment, it is called the Virtual Museum. When the window is opened a Google Earth API session is started and it zooms to the spatial location of the sherd. If the 3D sherd has texture information this is also displayed. The user can rotate the object or zoom around the site to see its relation to the architecture.

[14] This project is also integrated into the Digital Archaeology Atlas of the Holy Land, being developed by Thomas E. Levy and Stephen Savage, so that larger spatial research tools can be utilized (see http://daahl.ucsd.edu).

incorrectly digitized ceramics, improper naming system, missing information in metadata), the user is sent back a report detailing the errors. This procedure enables the program to maintain a level of quality control on the data uploaded. Once the uploaded data passes the quality control it is appended to the master MySQL database and all the associated raster images are stored in an appropriate file structure. The vectorized information is run against the current database of curvature algorithms and a new cluster analysis is created that accounts for the new data. In this manner, new information added by users can expand the current PIQD and keep its data current with new excavations and surveys in the region of the southern Levant.

3. Pottery Informatics as an Analysis and Publication Tool

The PIQD is designed towards being an online user-friendly analysis and publication tool. Several elements have been added to facilitate analysis and publication from within the PIQD and applied in this chapter. The ability to query data and export the results for further analysis has already been discussed above, but a number of other procedures have been added for archaeologists to securely work on their personal data, analyze across the entire PIQD and directly publish their results when ready from the PIQD.

a.) User Levels and Copyright Protection

All users are required during first use of the PIQD to register their information. Depending on the user, he or she will be given different access levels to the PIQD. For the general student they will be allowed to query the publicly released data from the

PIQD. They can export tables, Google Earth files, watermarked pictures[15], and pottery plates designed in the PlateMaker. On the other hand, archaeologists with senior positions on archaeological projects will be granted upon request a higher level of access. First they will be required to sign an online waiver disclaiming that they will contact the appropriate individuals to receive permission if others illustrations are used for publication. The senior archaeologist will also be able to grant graduate or upper-division students access to this level, so that they can participate in the uploading of data and analysis on the PIQD. These archaeologists will then be allowed to view illustrations without watermarks and publish plates without the PIQD copyright at the bottom. They will also be given access to any future more sophisticated computer intensive statistical or analytical programs designed by the administrators or community.

Most important, they will be allowed to upload their data. First a series of downloadable programs written for the PIQD for vectorization of illustrations or conversion of 3D ceramic scans will be made available. An instruction manual and PowerPoint is also provided to help the archaeologist in the conversion of their data, ensuring that their data is standardized, and methods for cross-checking it for common errors. When the archaeologist has their data ready, they can upload it to the server, as discussed above. The archaeologist has the option to mark the data as publicly accessible, useable by other senior archaeologists, or only for use by those granted access to the archaeologist's respective project. By this method, archaeological projects that have

[15] Since raster images of original illustrations from copyrighted publications will be made available to the general public, a cyan color transparent watermark has been added to all illustrations. The watermark text references the publication from which the illustration was extracted. These illustrations will not be made available at all to the public if the request to a specific publication's copyright company denies use.

sensitive, unpublished data can still use it on the PIQD with the security that other researchers will not be able to access it. When the data is finally published or the archaeologist is ready to release it online all they will have to do is change the security status of the project. In sum, by the creation of user levels and secure login parameters the PIQD can be used not only by the general public for study, but by archaeological projects to conduct more complex studies not possible without the PIQD and bring their new data to publication in scholarly journals and online in a more comprehensive manner. For this thesis all of the illustrated and scanned ceramics are stored on the PIQD. This has enabled the author to rapidly access the data when checking specific vessels to see their illustrated profiles or check their associated metadata.

b.) The PlateMaker – Applied Here for the First Time

One of the central add-on programs that have been recently designed for the PIQD is the PlateMaker. This online tool automates the production of ceramic plates and tables for visualization and analysis. Once a user has selected a series of ceramic profiles on the main PIQD page they can choose to export them to the PlateMaker. Once exported, each ceramic profile is read in as an image and is placed in sequential order on a page. Each illustration is spaced evenly from each other and given a figure number as seen on standard publications of plates. The margin size in which the figures must remain within is pre-set to ensure compliance with the regulation of the specific publication or requirements of the user. If more ceramic profiles are selected than what fits on a single page a series of following pages will be created. Since within the PIQD information is stored on the original scale of every ceramic profile, images from different publications

are set to the same scale determined by the user (e.g. 1:5). The scale is displayed at the bottom of the page, but can be moved by the user. The user also has the ability to move each ceramic profile individually to make refined adjustments to the automated layout of the plate. Every change made to the plate is immediately saved; no saving is required by the user.[16] The session is made available to the user on their account page so that they can work on it over several sessions if needed. To the right of the plate is a dynamic table linked to the figures on the plate. The linking of the table to the plate ensures that the user never misidentifies a ceramic profile with incorrect information. For example, if the order of the figures is changed on the table, the plates are immediately rearranged and renumbered accordingly. Information within the table can be changed as well, such as adding more detailed descriptions for each figure. A second publication quality table is found below the plate. This table mirrors the dynamic table and its changes but allows the user to see how the original table will look when published. A series of buttons and fields are made available to the user for conducting operations such as adding black divider lines, using a horizontal/vertical leveling ruler, adding a white mask for unwanted portions of an image, adding/subtracting images, adding moveable text, and moving the alignment of figure numbers. Finally, when the user is ready they can either print or export as an image their plate. Overall, the PlateMaker is designed to facilitate the archaeologist or student in publishing professional looking ceramic plates without any significant time or labor involved. All the ceramic and petrographic plates presented in

[16] Currently an" undo" feature has not been implemented, although easily possible. If the user conducts a series of mistakes they can always have the PlateMaker reorganize the plate for them.

this thesis were created using the PlateMaker program. Currently these plates can be accessed online and dynamically updated.

c.) The MasterTable

The MasterTable is a dynamic table designed to enable the high level users access to all their uploaded data and be able to quickly sort it and make corrections and additions. It directly accesses all the public accessible databases stored in the MySQL database and joins them together, including personal databases uploaded by a project that may include a detailed ceramic analysis and registration or any other type of table related to the project (e.g. lithics, metallurgy, etc). Since the data is centralized in one place, changes can be made by multiple users from different locations. The primary function of the MasterTable is to control data, so that the user does not create several conflicting tables that must be uploaded or lead to losing track of which one is the most up to date. It is called a 'Master Table' because it's the master template of that project, which should contain the most up to date correct information enabling the proper associations of other tables to it.

The MasterTable functions similar to a Microsoft Excel spreadsheet or Access database form but has a number of advanced features to facilitate its use. First, the user is requested to select what fields they want visible. Once they make their selection the table is created and rows are populated with the first 50 entries of their data. The user can then conduct multiple ranked sorts or query by text to find the specific data they are interested

in.[17] Every cell of a row represents either a text field that can be modified or a drop down list of available options. Any change made immediately alters the database and is saved, but the user has the option to undo changes if they make a mistake. Information that is essential to the database (e.g. Registration number, Site Name, Locus, Basket) is by default 'read only' but a checkbox is made available to uncheck this precaution. The user can also conduct mass replacements of information such as when a naming scheme needs to be changed (e.g. 50 entries of a vessel type, BL5, now needing to be called BL51). All of these features facilitate the rapid access of the user's data and the ability to manipulate it and correct it and at the same time to maintain a high level of quality control and security.

4. Summary

The Pottery Informatics Query Database project described here will help enable archaeologists to conduct the kind of BLAST searches that have become common in the biological sciences. In the future, researchers will be able to compare ceramics across many sites with a click of the button. In addition the various integrated tools will enable a sophisticated control of one's data and ensure quality control throughout. Since the PIQD is online (http://daahl.ucsd.edu) and built around web based programming languages, it has a lot of room to grow in both allowing new data to be integrated and new tools to be developed. The PIQD is designed to be a critical resource in the digital age of

[17] Currently, we are working on integrating bar code scanners into the program so that instead of manually searching for a specific item or updating its information, an artifact's bar code can be read and the appropriate changes are made; thus, reducing the time of the user for data changes or searching and human error in the entry of mistyped information into the database.

archaeology. This tool has already been essential to this chapter's publication as the plates, tables and a number of analyses were all conducted using it. The PIQD will enable this 'traditional' dissertation to breach the barrier between traditional publication and online distribution.

IV. Ceramic Typology by Period and Stratigraphic Level

A. Introduction

The ceramic typology and analyses discussed below are based on all diagnostic vessel sherds retrieved with an assignable vessel family from the 2002 and 2006 excavations at Khirbet en-Nahas (KEN), the lowland soundings at Rujm Hamra Ifdan (RHI), and the highland soundings at Khirbat al-Malayqtah (KAM), Khirbat al-Kur (KIJ), Khirbat al-Iraq Shmaliyeh (KIS), and Tawilan (TW). Thus, the ceramic data assembled for this thesis represents the first comprehensive typology and quantitative analysis for both the lowland and highland zones of the Iron II period in Edom. The total number of identifiable rim sherds (n = 4344; see Table 7.1) does not include decorated body sherds (with the exception of imports) or miscellaneous ceramic objects (e.g. tokens, lids, spouts, handles etc). Unlike many of the 'classic' Iron Age sites in Cisjordan, sites in Transjordan Edom have generally been poor in the preservation of complete vessels and the new ELRAP and L2HE excavations are no exception to this (cf. Oakeshott 1978; Hart 1989).[18] Therefore, the morphological determinations of vessel types presented in

[18] The one exception is KIS which had a high level of preservation with nearly completely reconstructible vessels. Unfortunately, most of these vessels could not be restored before the completion of this dissertation. In the future it is planned to return to this site for a full-scale excavation with one of the goals to recover a large collection of restorable vessel forms with pertinent information on their spatial in situ locations at the site.

this study relies heavily upon pottery rim form and assumed curvature of vessel bodies. Accordingly, vessel types distinguished in other studies (Oakeshott 1978, Hart 1989a) by vessel base sherds were not attempted in this study. The typology study was conducted from 2006 to 2009 in the field and at the UCSD Levantine Archaeology Laboratory where all the ceramic assemblages are stored. The ability to study all of the ceramic assemblages from these different sites in one laboratory greatly facilitated the integration of the different ceramic assemblages into the comprehensive diachronic Iron Age II typology presented here.

Section IVB below presents systematic description of every predominant vessel type identified at each of the sites. The morphologically unique vessel types with low occurrence are not included in this description but are still displayed in the plates where drawn. The new typology includes the ceramics from all the UCSD ELRAP-L2H2 excavated sites, but since KEN was the first site to be excavated by the project and studied (Smith and Levy 2008) the typology naming structure begins with forms found at KEN and is followed by forms found at RHI and L2HE. There are some gaps in the typology due to certain types not having significant representation and therefore not included. Each vessel type description is organized into a brief description of its key attributes followed by discussion of sub-types, fabric, decoration, and parallels found at other sites. References to published archaeological sites used in the comparative analysis are italicized and refer to a selected bibliography at the end of the dissertation.

The ceramic typology presented in here aims to compare each dominant vessel type at the sub-regional level between the seven excavated sites studied here to elucidate chronological, spatial, and cultural differences between the sites. Where early and later

Iron Age types appear to share morphological similarities they are grouped together and assigned to sub-types. These sub-types have then been examined more thoroughly to determine whether significant clustering of sub-attributes enable a chronological distinction between them. In a number of cases this has proven to be possible, especially when ware and surface treatment is taken into consideration. The observations discussed within these ceramic descriptions are then addressed by the quantitative studies and concluding discussion in an attempt to relate the inferences made to the models of social boundaries and social change discussed in the earlier theoretical chapters. Finally, the study of ceramic parallels from other IA sites. It seeks to corroborate these observations by comparing the types described here in a regional context with published studies from Edom, northern Transjordan, the Negev, Shephelah, and in specific cases Northern Israel.

For Khirbat en-Nahas the plates are arranged according to excavation area (Areas A, F, S, T, R and M), stratigraphic sequence and vessel type from earliest strata to later (see the discussion of the stratigraphy for each site in Chapter 5). The sherds on each plate are organized by vessel family and type (in certain plates this general pattern had to deviate slightly to accommodate the larger diameter vessels). This approach was chosen in order to compare and contrast temporal distinctions between the specific vessel types, which until now, could not be done for Edom because of the lack of clearly defined stratigraphic phases at other Iron Age 'Edomite' sites in Jordan. For the soundings, which yielded single occupation areas (RHI and L2HE sites) with no clearly distinguishable stratigraphy the plates are organized by site area and vessel type rather than by strata. (For example, Plate 7.1.1 is KEN06 Area R STR. V, IV. However, for a site with only one occupation level it would be presented as Plate 7.14.1, which is L2HE 07 TW-K).

B. Ceramic Descriptions

Bowls

BL1: *Platters with flaring sides and simple rounded flat or beveled rims (Pls. 7.3.1:3; 7.4.1:3; 7.8.1:1)*

Description: These platters have various rim treatments, see sub-type discussion.

Sub-types (n = 6): Variation in minute forms has been broken down into 6 subtypes: BL1a have a straight near vertical profile to rounded rim, BL1b have rims bent to horizontal 2cm from the lip and have a flat or beveled rim, BL1c are very large thick (8-10mm) platters with bent to horizontal rims , BL1e are fine ware platters with inverted vertical stance tapered rims, and BL1f are deeper with an everted to horizontal rim.

Fabric: Ware A1 & B1

Decoration: Black and red concentric lines along the bent section of the rim is common. R. 161 has two thin black concentric lines separated by white or red paint from the rim to center of the vessel. White slip is found on a couple vessels.

Parallels: In Edom BL1a parallels *Busayra* (fig 9.1:10 and possibly fig. 9.4:1-5), *Tawilan* (fig. 6.1:1) and *Tel el-Kheleifeh* (pl. 36:8-10) while many parallels of BL1b are found at *Busayra* (fig. 9.1:1-9) and one example from *Tawilan* (fig.6.1:9). Parallels in Cisjordan to straight sided simple rim platters (BL1a) are found at *Tel-Batash* Stratum III (Type BL15; pl. 14:2), Tel Gezer Stratum VIB, VB/VA (pls. 14:15; 24:8). The stratigraphy suggests they began in the mid-9th century and become more abundant in the 8th-7th century BCE (c.f. Mazar and Panitz-Cohen 2001:49).

BL2: *Platters with flaring sides and overhanging rim (Pl. 7.8.1:2)*

Description: These platters all have overhanging flat rims. Some are bent similar to BL1b to create a horizontal section before the rim (e.g. R.108, 120, 117) The flat portion of the overhanging rim is grooved or concave. There is only example that preserves a pedestal base.

Sub-types: BL2a is the standard bowl with an overhanging rim. BL2b is distinguished by having the presence of denticulation along the exterior overhang.

Fabric: Ware B1

Decoration: Many are white slipped with black concentric lines on the bent horizontal portion of the rim. Several are more elaborately painted with black, red and reddish-brown painted bands. The BL2b bowls have black concentric lines circulating the vessel every 1 cm.

Parallels: This is a commonly published form at Busayra. BL2a is found at *Busayra* (fig. 9.2:1-10), denticulation (BL2b) also occurs at *Busayra* (fig. 9.2:11-16). *Tawilan* has a couple examples of BL2a (fig. 6.1:7,11?,13?,14) and a couple with denticulation (fig. 6.2:1-4). *Tel el*-Keheleifeh (pl. 36:3) may be a BL2a. In Cisjordan platters with overhanging rims are found at multiple sites (c.f. Mazar and Panitz-Cohen 2001:49), but very few have the characteristic groove of BL2a or BL2b's denticulation. A possible parallel of BL2a is found at *Tel Batash* Stratum III (pl. 91:16).

BL3: *Triangular-section rim bowls (Pls. 7.1.1:1, 18-19; 7.11.1:1-2; 7.12.1:1; 7.13.1:1; 7.14.1:1-2; 7.2.1:12-16; 7.4.1:4, 7; 7.4.2:13-22; 7.4.3:1-3; 7.4.7:15-21; 7.4.8:1; 7.5.1:9-11; 7.5.2:18-21; 7.5.4:23; 7.6.1:1-4; 7.7.1:1; 7.8.1:3-13; 7.9.1:1)*

Description: These are small to large sized open bowls with a characteristic rim treatment involving folding and flattening of the rim, often creating a triangular section. The formation of the rim varies from one vessel to the next, with most having a triangular section while others tend toward a simpler, flattened profile. The rim stance is generally upright or sloping out. Several of these bowls have rounded sides but some have soft carnations above mid-body. Bowls with intact base sherds show a disk or ring base and are commonly painted with black concentric circles. White slip on the interior and exterior is common, while burnishing only occurs on a few examples.

Sub-types: BL3 represents the largest vessel type. However, there are many varieties among the groups. Divisions of sub-types are broken down according to the size of vessel and then specific rim treatment. BL3a is distinguished from BL3b,c,d by thickness of vessel and width of the rim. BL3a thickness ranges from 3-6mm and rim width is less than or equal to 1cm. All BL3b have thickness starting at 5mm up to 8mm; however, even though wall thickness may be the same as BL3a all rim widths are over 1cm. Rim diameter did not prove to be a distinguishing feature as the diameter fluctuated among all classes, although a general trend towards larger diameters is found in BL3b-d as would be expected.

BL3a1 are the most typical bowl of this sub-type. They have the standard triangular section rim that is evenly thickened on the interior and exterior. Rim stance

range from upright to sloping out. BL3a2 are sloping out and are more thickened on the interior than exterior. BL3a3 are upright and more thickened on the exterior. BL3a4 have rims primarily the same as BL3a1 but have attached strap handles with ridge below the rim. BL3a5 have a thinly cut section (5-7mm) on the exterior just below the rim accentuating the exterior thickened portion of the rim and creating a 1mm protruding ledge at the bottom of the thinned section. The body of the vessel is also much deeper than all other BL3a's which tend to be shallow.

BL3b follows similar classification. The BL3b1 ware group has a standard triangular rim section. BL3b2 are more thickened on the interior. BL3b3 have an exterior ledge or more thickened on the exterior. BL3c1 are deep bowls with upright rims but more beveled rim treatments giving a similar appearance although stance being upright. BL3c2 have a more T-shaped rim that is either angled outward or inward. BL3d has a ridge below the rim not associated with a bar handle thinner than BL3a4 and with two examples of handles (R.118 loop; R.898 strap attached from rim to body.

Fabric: BL3B from KEN: The majority have the same fabric, but some have Ware A1/A2. BL3A/B/C from RHI is consistently Ware B1 with few exceptions (n=2). This clay may have been extracted from the same source that the PT from the later period. BL3b/c from all L2HE sites fluctuates between colors discussed for BL21.

Decoration: Painting is a key defining characteristic of these bowls and consists primarily of black or red horizontal concentric painted bands along the interior of the vessel as well as vertical painted strokes along the rim. Several examples have horizontal bands along the rim with painted vertical strokes. Applied decoration on the exterior in

the form of a bar handle is also common. Black strokes on the rim occur often and sometimes crosscut concentric lines on the rim. Several have interchanging black and red strokes on the rim. One example R.1060 (Pl. 7.4.7:16) has irregular red slip on the exterior and uniform red slip on the interior—the thin section analysis found this to be an import from the W. Negev (Imp 1-Loess). BL3a5 has one example with a red band associated with black concentric lines on the interior of the vessel. This is another indicator of it being late. Examples from BL3b1 have black and red strokes on the rim but also red paint between the black concentric line on the interior and also evidence of oblique black lines near the base. BL3c types have white slip and some are painted similar to BL3a5.

Parallels: This is a common form found throughout the KEN assemblage and other "Edomite" sites such as *Busayra* (figs. 9.17:4,5; 9.19:14-16; 9.20:9) and *Tawilan* (figs. 6.5:8,9;6.7:6) , However, the illustrations in the *Busayra* and *Tawilan* publications show that the larger rim treatments (>10mm) are typical. This pattern should not be considered random as it was found that BL3a dominates the earlier site of KEN but BL3b becomes the dominant form at all the other later period sites. The smaller BL3a form is only witnessed in a couple examples, such as *Busayra* (figs. 9.17:4,5; 9.19:14-16; 9.20:9), *Tawilan* (figs. 6.5:8,9;6.7:6). The various forms of the larger BL3b are predominately illustrated in: *Busayra* (fig. 9.17), *Tawilan* (pls. 6.4-6.7), *Tell el-Kheleifeh* (pls. 33:6-15; 34; 35:1-6), *Ghrareh* (pls. 3:7-13; 4; 5), and *Umm al-Biyara* (pl. 56:14-17). BL3a1 is found at *Tel Batash* Stratum IV (pl.80:7). BL3b1 at *Tel Batash* Stratum III (pl. 22:15).

Parallels of BL3 in general are found in the Negev and Judah at *Tell Beit Mirsim III* Stratum A (pls. 22, 23), *Tel Arad* Strata X-VII (pls. 10:B 24; 24:3, 10, 12; see p. 132 for listing), *Beer-Sheba II* Strata VI-II (fig. 26:12-16), *Beer-Sheba I* (pls. 53:2, 5; 54:1, 2; 56:9; 55:5-7; 59:58-71), *Horvat Qitmit* (figs. 4.1:50, 56; 4.2:4-7), *Lachish* Strata V, IV (Zimhoni 1997: figs. 3.11; 3.13:4, 11, 13,14; 3.16:1-4; 3.17:4; Tufnell 1953: pls. 80:70-75, 86; 101), *Gezer III* Stratum VA (pl. 25:7; Type 50c, p.168), possibly *Kadesh Barnea* Stratum 3c (pl. 11.27:16), and are similar in rim form to *Tel Batash* Strata IV-II (BL13, pp. 39). This vessel type is found at many sites in multiple strata spanning the entire Iron Age II in both Transjordan and Cisjordan from the ninth to sixth century B.C.E. However, the white slip with black concentric lines on the interior of the vessel and stripes along the rim is a decorative style that distinguishes this vessel's appearance from Cisjordan and is characteristic of the region of Edom.

BL4: *Large Bowl with everted rim (Pls. 7.13.1:2; 7.8.1:14-16)*

Description: These large rounded bowls have an upright everted rim.

Fabric: At RHI Ware 4 is predominant but other colors occur apparently with the same fabric. Again KAM has 2.5YR6/8 light red colors, besides other standard fabrics.

Decoration: R.577 has black concentric lines on a white slipped rim.

Parallels: Only found at sites studied

BL5: *Bowl with upright rounded thickened interior and exterior rim (Pl. 7.8.1:17-18)*

Description: These medium size bowls with 1cm thick walls all have a thickened interior

and exterior rim (2cm wide) that is softly rounded on both the interior and exterior.

Fabric: Ware B1.

Decoration: White slip on the rim and black concentric lines and red ring burnish on the interior is common. At Tawilan several examples have a gray purplish slip on the exterior and rim and red ring burnish on the interior.

Parallels: These bowls are mixed into the typology by Oakeshott of Type D bowls. Possible examples based on illustrations include *Tawilan* (figs. 6.5:6; 6.20:4?-5?); *Busayra* (fig. 9.15:14)

BL7: *Upright slightly thickened rounded rim bowls (Pl. 7.3.2:9)*

Description: These bowls are similar to BL3 but have simple rounded rims that are slightly thicker than the walls of the vessel

Fabric: Ware A2 (predominant) and Ware A1

Decoration: White slip and black concentric lines on rim and interior. One example (Pl. 7.3.2:9) has knob decoration running horizontally around the vessel below the rim.

Parallels: Only found at KEN

BL8: *Rounded bowls with simple upright flattened rims (Pl. 7.8.1:19)*

Description: These rounded bowls have a simple flattened rim that is upright. The rim is no thicker than the walls of the vessel. Decoration is common.

Fabric: Ware A1/A2 for all sherds recovered from KEN. RHI has predominant Ware B4

with few (n=2) exceptions. L2HE fabric typical B1.

Decoration: The RHI04 version of these bowls are highly decorated with black, white, red, and reddish brown pigments painted in concentric lines and bands primarily on the interior but also exterior and rims of these vessels. The L2HE examples are primarily undecorated.

Parallels: This form would be expected to be found at Tawilan but no clear published examples. Perhaps its undecorated generic form on the plateau makes finding published parallels difficult.

BL9: *Flat exterior beveled rim bowls (Pls. 7.3.2:10-11; 7.4.3:5; 7.4.8:2; 7.5.1:12)*

Description: These bowls are beveled from the lip on the exterior. The rim is no thicker than the wall, is not folded and related to BL3 except lacking fold

Fabric: Mixture of Ware A2 and 4. R.257 was thin sectioned and had a high content of gypsum.

Decoration: R.1460 has a black concentric line with vertical strokes on the rim similar to BL3 vessels.

Parallels: See *Busayra* (fig. 9.36:23).

BL10: *Bowl with mid-level stepped carination and tapered or rounded rim (Pls. 7.12.1:2; 7.4.1:8; 7.4.3:6)*

Description: This bowl has a mid-level stepped carination with a tapered or rounded rim.

Fabric: R.341 (Pl. 7.4.1:8) has a high content of gypsum. R.210 (Pl. 7.4.3:6) has a matching fabric to A3 with clear evidence of basalt inclusions

Decoration: Black concentric lines on interior and exterior

Parallels: These parallel *Busayra (fig. 9.14:1-7)* and are not found outside Edom.

BL11: *Straight sided Bowl with beveled interior (Pl. 7.4.7:11)*

Description: This straight sided bowl has a rim beveled from the lip on the interior.

Sub-types: Less pronounced beveled interior bowls are found at RHI, however these also are not as straight sided.

Fabric: Ware A1 and A4

Decoration: R.940 from KAJ is slipped (ext.)

Parallels: See *Busayra* (fig. 9.36:27).

BL12: *Thin, round-walled fine-ware bowls with tapered rim (Pls. 7.1.1:20; 7.13.1:3; 7.4.3:7; 7.9.1:2)*

Description: These razor-thin, small rounded bowls are fine-ware vessels with a tapered rim.

Sub-types: BL12b are similar fine-ware bowls but have a more straight body wall. BL12c has a sharply tapered rim that is slightly turned out at the tip and are all found at the Late IA II sites.

Fabric: BL12a and BL12b range from A1 or A2 to a well sorted very fine A1c. One example (Pl. 7.4.3:7) has a similar morphological form but Arkose rich (PG2, A7) medium-fine ware fabric. The late BL12c are all B1 fabric.

Decoration: These bowls sometimes have bichrome painting, red slip with continuous burnishing on the interior and exterior, or white slip on both the interior and exterior. BL12c have black and red concentric lines and bands—the decoration is the same as BL20.

Parallels: The characteristic rim treatment of BL12c is found at all the late plateau sites with clear parallels to Oakeshott's Type J2 vessels. (see *Busayra* fig. 9.25:4, 6, 7, 9, 10, 12). BL12a has a similar morphological design to *Busayra* (fig. 9.25:1, 11, 13) but should be considered as predecessor to these later fine ware bowls. Other parallels to BL12a/b are found at *Horvat Qitmit* (fig. 4.1:26; 4.9:9), *Tel 'Ira* Stratum VII (fig. 6.89:3), *Tell Beit Mirsim III* Strata A (pl. 24:6-8), *Samaria I* Period III (fig. 4:9), 'Umayri Phase IP3 (*MPP I:* fig. 19.9:1), *Hesban* Strata 16 (fig. 3.11:22), and Dibon (Tushingham 1972: fig. 2:14?). This bowl has parallels in multiple subsequent strata spanning the entire Iron Age II from the ninth to sixth century B.C.E.

BL13: *Carinated bowls with rounded rim sloping up to a tapered lip (Pls. 7.2.1:17-18; 7.3.2:1, 12; 7.4.3:8; 7.5.3:1-2; 7.5.4:13-15, 22; 7.6.1:9)*

Description: The two primary characteristics of these bowls are the straight-rim to mid-body carination and a tapered or rounded rim created from a thinning of the thicker interior body of the vessel. Some bowls with thickened interior are very pronounced,

while others have a more typical straight rim.

Sub-types: The vessel sub-types are determined by length before carination and overall rim diameter and thickness of vessel wall. BL13a have approximately 3 - 4cm from rim until carination and are the largest examples (>5mm) in thickness. BL13a2 are identical in form but the rims are more simply rounded rather than having the slope to taper. BL13b are smaller in diameter and thickness and have ca. 2cm before carination. BL13c share similar thickness and diameter as BL13b but have a shorter (1.5cm) area before carination.

Fabric: Ware A1 and predominately A2.

Decoration: Slip and burnish appear on some examples. Ash and soot are also found on many. The majority (>50%) are undecorated.

Parallels: In comparison with Busayra, these vessels' form fits within the same class as the Type C vessels designated by Oakeshott (1978); however, the tapered rim and thicker interior are more common at KEN. Moreover, the fabric and lack of decoration makes these very different from Type C. The closest example of the thickened interior to taper appears at *Busayra* (figs. 9.13:3, 15). A few parallels are found at Dibon, but they all differ in primarily having a more flat, squared rim and a more shallow body (Tushingham 1972: figs. 2:18-24; 18:11). The Ammonite Citadel/Administrative Complex in Field A at 'Umayri has parallels represented from the ninth to eighth century B.C.E., with a few examples resembling the KEN assemblage (*MPP I*: fig. 19.9:6-9; *MPP II*: fig. 3.14:12-16; *MPP IV*: Area A Phase 8 fig. 3.23:16-17; *MPP V*: fig. 5.20:6). At *Tell Beit Mirsim III* Stratum A (pls. 24-25), a large quantity are present, as found at Busayra and KEN. Examples seen in *Tell Beit Mirsim III* (pls. 24:10, 20, 22-23) are the most common type

found at KEN. *Beer-Sheba I* Stratum II (pl. 59:55-57) has a few close parallels with a small disk base. However, at *Tel Arad* Strata XI-IX (figs. 8:3; 28:4; 34:2), the vessel typically has a small-diameter disk base. The ring-base style appears to be unique to Busayra. Unfortunately, the lack of examples with intact bases from the KEN 2002 assemblage prevents any further comparison. See *Gezer III* Stratum VIA (pl. 20:5). The bar-handle design is very common at *Lachish* Strata V-IV (Type B-14 figs. 25.17:2, 3, 5-7; 25.19:14; 25.38:4; 25.50:16; 25.51:2) but also is dominant in Strata III-II (figs. 26.3:8, 9; 26.18:3-5; 26.29:5) where, as at Busayra, ring bases appear. At *Tel Batash* Strata IV-II, a similar form is red-slipped and hand-burnished and is most dominant in Stratum IV (see pls. 5:16; 7:8; 9:1; 8:12; 13:4, 7; 24:3; 29:15; 41:16-17, 23; 82:5-7; 84:2; 90:3-4; 91:5). Finally, the recent publication at *Kadesh Barnea* Stratum 3a-b also has this vessel (pl. 11.30:3). According to the many stratified parallels, this vessel type is relatively long-lasting through the entire Iron Age II period in both Cisjordan and Transjordan.

BL14: *Round-wall bowl with plain rim (Pls. 7.2.1:1; 7.4.8:3)*

Description: These are simple, rounded-wall bowls with rounded or tapered rims. The fabric of these vessels is coarse, not well sorted or rounded. In a few examples, a white slip is applied on the interior and exterior.

Fabric: Ware A1/A2.

Decoration: White slip on exterior and interior is found on a couple examples.

Parallels: Only found at KEN; generic type lacking published parallels from Edomite sites.

BL15: *Round-sided bowl with groove below rim exterior (Pls. 7.1.1:2, 21; 7.2.1:19-22; 7.5.1:13; 7.5.3:3)*

Description: This is a round-sided bowl with a simple, rounded or tapered rim generally sloping out and a single exterior groove below the rim exterior. Only diagnostic rim sherds have been found, preventing a description of the overall vessel's form and base. BL15 belongs in the group of rounded bowls at KEN (e.g., BL14 and BL16); however, the large sample of these bowls with a grooved exterior suggests that it belongs to its own type.

Sub-types: The sub-types are distinguished by groove technique. BL15a have a thin 1mm groove just below the rim. BL15bhave a deep 2-3mm groove. BL15c have two deep grooves below the rim

Fabric: Three different wares were distinguished under microscope and thin section. Ware A2 is the typical slag rich local fabric, but also Ware A9 and A10 were common representing over half the ceramic types examined.

Decoration: N/A

Parallels: No Iron Age sites in Edom, with the exception of KEN, have any clear published examples of single grooved bowls. See Fritz (1996: Abb. 3:4). Parallels of rounded bowls with a single groove below the rim are uncommon in Cisjordan, but see *Gezer III* Stratum VIA (BL45, pl. 20:1-2), *Lachish* Stratum IVB (fig. 25.28:5), and perhaps the closest parallels at *Kadesh Barnea* Stratum 3c (pl. 11.27:4, 5). The few parallels mentioned here occur in strata variously dated to the 10th-8th century B.C.E.

BL16: *Fine-ware round-walled bowls with round rim (Pls. 7.1.1:22-23; 7.15.1:4; 7.2.1:2, 23-24; 7.4.1:9; 7.5.4:16; 7.8.1:20)*

Description: These round-walled bowls are distinct from BL14 in having finer ware and horizontal burnishing.

Sub-types: BL16a are burnished and red slipped and are possibly all imports from W. Negev. BL16b are undecorated with the exception of white slip.

Fabric: One example of BL16a thin sectioned was found to contain Loess soil (PG5, I1). The other examples had identical fabric suggesting they all were imported. BL16b had various local fabrics and foreign (PG1, PG4, PG5).

Decoration: BL16a have a red uneven horizontal burnishing commonly found at sites in the Negev.

Parallels: BL16a are imports from the W. Negev, see *Beer-Sheba II* Stratum VI (fig. 26:18). In general these are generic types lacking published parallels from Edomite sites.

BL17: *Thin Flaring bowl with tapered rim, medium-fine ware (Pls. 7.3.2:13-14; 7.4.1:4-5; 7.4.3:9-10; 7.5.1:14)*

Description: This is a straight-sided flaring bowl with a sharp tapered rim. These bowls are generally medium-fine ware and have a white slip on the interior and exterior. Some examples have a carination leading to the base.

Sub-types: BL17a are the standard type with average thickness of 3.5-4mm. BL17b are

razor-thin (<3mm) and smaller in diameter compare with BL12b. BL17c are slightly larger and thicker than BL17a and almost all preserve the lower carination.

Fabric: Ware A1.

Decoration: N/A

Parallels: Due to the lack of complete profiles containing the lower body and base, associating these vessels with specific parallels is problematic. There are no clear parallels in Edom for these vessels, but similarities are seen in the straight-sided cups found at *Busayra* (fig. 9.30:1-15). In Cisjordan, parallels with a very low carination just before a ring or disk base are found at *Horvat Qitmit* (fig. 4.6:8-10), *Beer-Sheba I* Stratum II (pl. 59:42, 45), *Tel 'Ira* Strata VIII-VI (fig. 6.60:8), *Lachish* Strata III-II (fig. 26.3:2-5; 26.20:3, 4; 26.33:7), *Tel Arad* Stratum X (figs. 29:15; 32:4; 37:2), *Samaria II* Period VI (fig. 10:11), and *Tell Beit Mirsim III* Stratum A (pl. 24:20, 26). However, other examples, possibly dating to the end of the ninth century B.C.E. and later, are found with the wall continuing to a flat base, such as at *Lachish* Strata IV-III (fig. 25.50:4, 5, 9, 19), *Tel Arad* Strata X-VIII (figs. 30:5-6; 37:3-5), *Samaria I* Period III (fig. 4:8), *Tell Beit Mirsim* Stratum A (pl. 25:1-13), and Beer-Sheba Stratum II (Singer-Avitz 1999: fig. 2:2). The lack of complete profiles at KEN makes assigning this vessel to either the earlier type or later type in the Iron Age II difficult.

BL18: *Small fine-ware Carinated Bowl with flat rim and incised stanza on below rim (Pl. 7.15.1:5-7, 19)*

Description: The small fine-ware carinated bowls or cups have a flat sloping out rim that

leads to a rounded carination. Below the rim and above the carination is found an incised triangle patterned stanza. On examples preserved past the carination, evenly spaced knobs are found attached onto the rounded carination.

Fabric: Ware A6

Decoration: Besides applied decoration mentioned above a white slip is found on the exterior of R.394.

Parallels: Only found at KAJ

BL19: *Small Carinated Bowl with rounded rim (Pl. 7.2.1:25)*

Description: These small bowls (diameters 12-14cm) have a sloping out rounded rim that leads to a soft rounded carination

Fabric: Ware A1

Decoration: N/A

Parallels: Only found at KEN

BL20: *Fine-Ware high carination tiny bowl with globular body (Pls. 7.10.1:1; 7.11.1:3-4; 7.12.1:3-13; 7.13.1:4-5; 7.14.1:3-6; 7.8.1:21-26; 7.8.2:1-15; 7.9.1:3-5)*

Description: This very fine-ware thin bowl has a globular body with a high sharp carination creating a very short sloping out neck. The rim is round or tapered. These are distinguished primarily from BL21 by their delicate thin body profiles and finer surface treatment.

Sub-types: BL20b differs in only having a taller neck by nearly twice the length of BL20a. BL20c lack a sharp carination, rather it has an inverted shoulder that then bends back outward creating the sloping out neck.

Fabric: The examples from RHI predominate with the Ware B4 fabric but there are also a number of examples with a pale red fabric and gray core that is very finely sorted (Ware B5). Similarly, these finer fabric types are also found at the L2HE sites along with a predominant amount of the local Ware B1 fabrics.

Decoration: Many of these bowls but not all are finely slipped and painted with black, white, and/or red concentric bands from below the carination to the lip of the rim. White slip with black or red concentric bands is the most common. Only at KIS, is there examples (n=5) of smoothly burnished red slip creating a soapy texture. At TW two examples with the fine gray cores have a pale brown slip. At KAM one example has a bar handle attached to the carination. Finally at RHI the fine gray core fabric vessels typically have a burgundy red slip and black painted bands (see further discussion on Surface Treatment below).

Parallels: These fine-ware vessels are paralleled at many of the sites found in the region of Edom and also the Negev. They were designated by Oakeshott as Type J and combined with rounded bowls delineated here as BL12c. These are found at Busayra (fig. 9.23:10-18), and Tawilan (fig. 6.8:1-7); note that fig. 6.8:2-6 are designated here as BL20b and represented a small proportion of overall BL20 at the sites. Possibly Pl.28:7-8 from Tel el-Kheleifeh are also this type but the illustration makes them look thicker than the typical BL20. In Cisjordan they are found at several sites, but again their thickness cannot be easily determined. See for example, *Horvat Qitmit* (see figs. 4.1:33; 4.6:2;

4.9:18; 4.12:4; 4.13:10), *Tel 'Ira* (figs. 6.80:4; 6.90:1; note that they are painted and one example red slipped and burnished), Tel Arad Stratum VI (fig. 48:3).

BL21: *Wide-necked bowl with globular body and plain rim (Pls. 7.1.1:24; 7.10.1:2-7; 7.11.1:5-10; 7.13.1:6-9; 7.14.1:7-9; 7.2.1:8, 26; 7.4.1:5; 7.4.3:11-12; 7.4.8:4; 7.5.1:1; 7.5.3:4; 7.8.2:16-47; 7.8.3:1; 7.9.1:6-14)*

Description: This is a deep globular bowl with a carinated, short flaring neck and a rounded or tapered rim. Surface treatment includes white slip on the interior and exterior; painting is rare but occurs as black concentric lines around the neck and rim of vessel.

Sub-types: Variations of BL21 are found throughout the Iron Age II. BL21a1-2 represent these form found at KEN. These bowls are generally small (ca. 10cm diameters) with soft rounded carination. Some have loop handles attached. R. 634 KEN06 is an exception in being much larger (22cm diameter) and has a tall neck (3.5cm). BL21a3 represent the soft carination into later periods. BL21a4 is a single example of a spouted form. BL21b have a sharp carination that creates almost a grooved step at its inflection point. It is noticed that the outer edge of this bowl's carination has a thin flap possibly created from the tool used to create the carination. Some examples of squat small diameter cups of this form are found at RHI. BL21b is predominant at RHI but not at the L2HE sites where only a few (n=6) examples were found at TW and KAM these had a light red fabric. These morphological differences and fabric discussed below enable us to distinguish in many cases the lowland produced vessel style from the highland. BL21d are larger and thicker variants of BL21a, while BL21e have a similar carination and diameter to BL21a but have a tall neck. BL21f are cups with handles and distinguished by the perforated

holes found along the carination and base of this vessel.

Fabric: BL21a1-2 are typical ware B1. BL21a3 and BL21b, which represent the later periods, and possess the common fabrics of their provenience. The RHI BL21's are almost all Ware B4 fabric with only a few exceptions similar to the Ware B1 fabrics found at the plateau sites. KAM specifically has a predominant amount of this form in the light red 2.5YR6/8 color, but also has light reddish brown examples as well.

Decoration: Several BL21a1-2's have white slip (int./ext.) and a few also have black horizontal lines on the neck. BL21a3 is primarily contrasted with earlier forms in lacking white slip. Red slip occurs on several vessels especially at the L2HE sites. Black and red paint is found on the neck and also just above or below the carination. The BL21b is similar to BL21a1/2 in typically being treated with a white slip and a few examples having black horizontal lines on the neck.

Parallels: The various types distinguished here are found at the later "Edomite" sites such as *Busayra* (figs. 9.28:9-13; 9.29:1-9), *Tawilan* (fig. 6.10:1-8), *Tell el-Kheleifeh* (pl. 28:1-6), *Ghrareh* (pl. 10:10-16), and *Umm al-Biyara* (pl. 56:10). The sharp carination of BL21b is less frequently illustrated. At *Tell el-Kheleifeh* (pl.28:2) this forms shares a high degree of similarity to those found at RHI, including the typical very pale brown fabric. One example is depicted at Busayra (fig. 9.28:10). Also at *Tell el-Kheleifeh* (pl.29) a whole plate of BL21f is illustrated; however, these forms differ in having two inflection points. These bowls are found at other Transjordanian sites such as 'Umayri Phase IP3 (*MPP I*: fig. 19.8:14-21) and Hesban (Lugenbeal and Sauer 1972: no. 273). These vessels have been identified in small numbers at Judaean sites. An early example is found at *Kadesh Barnea* Substratum 4b (pls. 11.15:2; 11.20:5). Later examples at *Kadesh Barnea*

substrata 3a-b are also similar (pl. 11.31:11-12, 15-16). Pl.11.31:15 is an example of BL21f and P.11.31.15 to BL21a4. Compare also BL21e to Pl.11.52:4). A sharply carinated and painted example noted as an Edomite bowl was also found in Stratum 2 at *Kadesh Barnea* (pl. 11.79:7). Other sites with parallels include *Beer-Sheba* Strata III-II (Singer-Avitz 1999: figs. 9:5-7; 10:23), *Tel Arad* Stratum X and VIII (figs. 11:B 31; 35:3), H*orvat Qitmit* (figs. 4.1:33,36-42; 4.5:4-5; 4.9:17; 4.11:7,9; 4.12:4-5), *Tel 'Ira* Stratum VI (figs. 6.67:10; 6.70:3; 6.80:5; 6.87:8; 6.89:14; 6.106:6; for BL21b see fig. 6.89:15 located outside the city wall), and *Tel Masos* Iron Age II strata (pl. 164:8). This vessel is considered Edomite in origin, and its range is limited to Transjordan Edom and the Negev at the late Iron Age sites (Singer-Avitz 1999; 2007). The carination at KEN is much softer, perhaps reflecting an earlier form of the later, more pronounced carination type found at RHI and a few examples from KAM and TW. Painting is also not as common in the parallels and when present, is monochrome black rather than the bichrome elaborate painting found at Busayra. There appears to be a number of imitation forms at sites such as Tel Beersheva (fig. 9:1-4; note they come from the Shephelah or Judea and are fully slipped) and Tel Arad (fig. 28:5; 37:9) that have high bent carinations with very short necks and surface treatments not commonly seen at the L2HE or RHI sites.

BL22: *Shallow sharply carinated bowl with straight, flaring out, tapered, or rounded rim (Pls. 7.1.3:9; 7.10.1:8; 7.11.1:11; 7.13.1:10; 7.4.3:13-19; 7.4.7:10; 7.5.3:5; 7.5.4:17)*

Description: Sharply carinated medium-fine ware bowl with low carination and straight-

sided, flaring out tapered rim. The carination creates a step between the flaring vessel walls and sharply closing shallow base.

Sub-types: The distinction between the early BL22a and the later supposed 'Assyrian-imitation style bowls' must be clarified. Although BL22a has a low carination it should not be mistakenly confused with the carinated "Assyrian-imitation-style bowls", here distinguished as BL22b (see Pls. 7.10:1:8; 7.13.1:10). First, BL22b has a distinct sharp carination either at mid-body or near the base. The carination sharply bends outward from the upper portion of the vessel and then, at a second rounded inflection point, sharply bends back inward towards the vessel. This carination is a significant elaboration of what is seen consistently in BL22a where the carination is a straight pointed carination that does not significantly protrude out from the vessel. Second, all BL22b's rim is curving outwards from the carination. This is in contrast to BL22a that consistently has a straight flaring rim. Third fabric and surface treatment can be immediately distinguished between BL22a and BL22b as discussed below. Out of the entire ceramic assemblages at TW, KAM, KIS, KIJ, and RHI no low carinated bowls paralleled BL22a which is quite common at KEN. As is argued below a parallel study bears out a similar distinction.

Fabric: BL22a is made of local medium-fine ware classified at KEN as Ware A1. This is in contrast to BL22b, which are highly fired, well sorted, smooth to feel, fine ware vessels, Ware B1.

Decoration: BL22a: Only one example from Area S was found, and it is the only example that was red slipped with a continuous burnish it is also thinner and finer than those found at Area A. Two examples from Area A were found with horizontal

burnishing without red slip; however, the majority (12 out of 15) have either a white slip or no decoration at all. In contrast, BL22b are slipped burnished and painted with black, red, white or brown bands and strokes. The painting is typical for the later period bowls found at these sites.

Parallels: Carinated bowls sharing similarities to BL22a in carination, rim treatment, and medium-fine ware are found in Cisjordan at *Beer-Sheba II* Stratum VI (fig. 26:2-3), *Hazor III-IV* Strata X-IX (pls. 208:30; 210:5), *Ain Shems II* Stratum IIb (pl. 31:21), *Gezer III* Stratum VIA (pl. 22:8), *Lachish* Strata V-IV (figs. 25.26:1; 25.28:2),and *Tel Batash* Strata IV-III (pls. 10:9; 22:1; 28:2; 87:10). The parallels of similar low carination bowls during the 10th-9th c. BCE in the Negev strongly corroborates the conception that BL22a was an indigenous style originating in the Early Iron II and should not be lumped together with the clearly later BL22b that most likely was influenced by Assyrian styles.

BL22b is the late 'Imitation Assyrian-style' carinated bowls and paralleled in Transjordan, the Negev and further North in Cisjordan. The Assyrian forms from which it is assumed BL22b derives have been identified at several Neo-Assyrian Late Iron II sites—see Nimrud (Lines 1954: pl. 37:7-8), Fort Shalmaneser (Oates 1959: pl. 37:59), Tell Sheikh Hassan (Schneider 1999: Abb. 1: Ab: 1-3; Abb. 2: Ac: 1-4), and Nineveh (Lumsden 1999: fig. 8:58). All of these 'Assyrian' examples have a similar morphology to BL22b but have no parallels to BL22a. In Transjordan, BL22b is found at *Busayra* (fig. 9.26:12-19), *Tawilan* (fig. 6.8:18-22), *Tell el-Kheleifeh* (pls. 26:7-18; 27:1-6), *Ghrareh* (pl. 9:1-5), and 'Umayri Phase 2 (*MPP I*: fig. 19.16:7; *MPP V*: fig. 5.21:1). Parallels are found throughout Cisjordan at sites such as *Gezer III* Strata VIA-VB (pls. 22:7; 27:19-21), *Samaria II* Period VI-VII (fig. 10:8-10), *Hazor II* Strata VI-Va (II: pls.

67:5; 80:25-26), *Beer-Sheba* Strata III-II (Singer-Avitz 1999: fig. 9:10-12), *Tel Arad* Stratum VII (fig. 10:B15), *Horvat Qitmit* (figs. 4.1:38, 40-41; 4.12:3; 4.6:1; 4.9:13), *Tel 'Ira* Stratum VI (fig. 6.63:5), *Tel Batash* Strata III-II (pls. 14:6; 26:20-22; 57:16; 86:14; 96:4), Aroer (Na'aman and Thareani-Sussely 2006: fig. 3:5) and *Lachish* Strata IV-III (fig. 25.49:3). For more comprehensive, parallel studies of this vessel, see Singer-Avitz (2007) and Schneider (1999: 351-54).

Recently, Na'aman and Thareani-Sussely (2006) have argued that this vessel type originated locally in Transjordan, based on the evidence that every petrographic study conducted on these vessels has shown them to be locally produced and common to Transjordan. Singer-Avitz (2007: 185, 191) acknowledges that this type is locally produced, but its presence throughout Cisjordan and its clear development from Assyrian styles during the eighth and seventh centuries B.C.E. suggest that it may be a product of a "cross-cultural encounter" with Assyria, not simple coincidence. BL22a at KEN and its parallels from other sites are not found after the end of the eighth century B.C.E. in the southern Levant, suggesting that its popularity as a vessel form was superseded by the new BL22b forms (cf. Mazar and Panitz-Cohen 2001:43). It is perhaps the indirect influence of the Assyrian ceramic styles that led to the elaboration of the local BL22a towards a more popular "Assyrian-style" carination in their construction of this shallow serving bowl type during the eighth to sixth century B.C.E.

BL23: *Flaring bowl with mid-body carination and tapered or rounded rim, medium-fine ware (Pls. 7.4.3:20-21; 7.5.1:15-16; 7.5.3:6; 7.5.4:18)*

Description: These bowls have a flaring slightly rounded wall to a mid-body carination and typically have tapered or rounded rims. They are medium-fine ware.

Sub-types: BL23a can be distinguished by their medium ware fabric and lack of decoration. These are finer tapered versions of BL13. They lack preservation of a base but possibly had a disc base (see below). BL23b are much finer well sorted fabrics and many are painted or slipped. These also have no bases preserved but most likely had pedestaled or high ring bases. BL23c has a very low carination and may belong with BL17.

Fabric: Ware A1, B1 and B4 at RHI.

Decoration: White slip on interior and exterior is common from KEN. The late vessels from RHI and the Plateau sites have bichrome painting in black and red and some have burnishing and third painted color white.

Parallels: BL23b is clearly contemporary with Type C of Oakeshott with parallels primarily found at *Busayra* (figs. 9.11-9.13) but also at other Edomite sites where only a few examples are represented at each site. For example, *Tell el-Kheleifeh* (pl. 37:8,10), and *Ghrareh* (pl. 6:19-20). A recent publication at Kadesh Barnea (Cohen 2007) which is described as an 'Edomite' variety shares similarities in decoration and form but lack evidence of a carination; it is found in stratum 2 (pl. 11.79:4). In Cisjordan BL23a can be distinguished from BL23b by the formation of the base being either an earlier form with a disc base or a more rare later form with the ring or pedestal base. At *Tel Batash* the earlier form is well represented with many examples (BL23 see pp. 44-45) while only one example of the later form (BL23b) (pl. 41:22). Parallels to BL23a are also found at *Gezer III* Strata VI-V (figs. 20:4-5; 24:1-2). BL23b has only a couple other parallels at

Samaria...If BL23a does have more simple disc bases they should be dated to the 9th-8th C. BCE and distinguished from the later predominately "Edomite" form in the 8th-7th C. BCE.

BL24: *Bowl with carination and sloping out rim (Pls. 7.1.1:3, 25-26; 7.4.1:10; 7.4.8:5)*

Description: These medium-fine ware carinated bowls have a oblique carination similar to BL22 but are much thicker and have sloping out rims that are either tapered or rounded.

Fabric: BL24a are made of loess soil and should be considered imports from the W. Negev. BL24b are a local variation and have standard Ware A1/A2.

Decoration: R.781 and R.1369 are red slipped and burnished. R. 781 is evenly burnished while R.1369 was burnished on the wheel.

Parallels: These bowls, subjected to petrographic analysis are found coming from the W. Negev sites. For example, (n=4) of this type all parallel very closely vessels found at *Tel Arad* Stratum XII (fig. 3:1) and *Tel Beersheva* Stratum VI (fig. 26:3).

BL25: *Bowl with ledges and carination (Pls. 7.1.2:1; 7.2.1:9; 7.5.4:19)*

Description: These bowls have two ledges with the second serving as a carination

Sub-types: BL25a has deep grooves to create ledges. The grooves are red slipped and burnished. The upright rim is thickened on the exterior. BL25b has ledges by oblique cuts or grooves in the body creating a more stepped look. The second cut creates a carinated

look on the exterior. All of these have a white slip on interior and exterior and are a different fabric from BL25a.

Fabric: Ware A1/A2

Decoration: See above.

Parallels: A similar design is found at *Tel Batash* Stratum IV-III (pls. 82:11; 23:10;24:13)--this vessel also has a continuous red burnish.

BL26: *Small bowls or drinking cups (Pls. 7.1.2:2-3; 7.2.1:27; 7.5.1:2)*

Description: These drinking cups have sloping in rounded rims that lead to a smooth carination. Rim diameters range from 6-10cm.

Fabric: Ware A1/A2, but a high concentration is of calcite was identified during the ware analysis.

Decoration: Four drinking cups were found in situ and were white slipped with black vertical stripes running around the vessel. Some other examples have white slip on the exterior.

Parallels: Only found at KEN

BL28: *Large Rounded Bowl with rounded thickened interior upright rim (Pl. 7.1.1:4; 7.5.3:7)*

Description: These large round bowls have a thickened interior rim that is rounded and upright.

Fabric: Ware A1

Decoration: N/A

Parallels: *Busayra* (fig. 9.35:1) parallels these bowls but their generic form may suggest they were a popular style for several centuries that underwent only minor variation.

BL29: *Large Rounded Bowl with thickened interior and groove below rim on exterior (Pls. 7.1.2:4; 7.2.1:28; 7.5.3:8)*

Description: This large bowl has a groove below the rim, treatment on the exterior and is sloping in with a thickened interior.

Fabric: Although this bowl type was not thin-sectioned the two sub-types have distinctively different fabrics. BL29a core is a pink micaceous clay with no visible shales resembles Ware A10. BL29b's core is a Ware A9 fabric.

Decoration: White slip on exterior and interior is found on every example.

Parallels: Only found at KEN

BL30: *Small, rounded bowl or chalice with everted rim (Pls. 7.4.3:22-23; 7.8.3:2-3)*

Description: This is a shallow everted-rim bowl with rounded carination. The angle of the everted rim ranges from horizontal to a 45-degree diagonal. Although many examples of this bowl were found, none of the examples are sufficiently complete to determine the type of base. The low frequency of this form at KEN may represent the beginning of this lowland Iron Age vessel type that evolved to the Type B bowls identified by Oakeshott

(Oakeshott 1978; Bienkowski 2002) that are dominant in the later periods in the highlands.

Sub-types: BL30a1 represents the only two bowls of this type found at KEN. These can be distinguished from the other sub-types by a rounded everting of the rim in contrast to all other types that have a sharp everted rim creating a ledge at the bend (similar to BL1b and BL2. These may be incomplete chalices without the preservation of their stands, which are common in the Iron Age IIA (e.g., *Tel Batash*: fig. 2). BL30a2 are the later forms with a sharp everted rim and rounded carination. The everted rim is ca 2cm long. BL30a3 is the same as BL30a2 but all have a carination near the base (no profiles with base preserved). BL30b are shallow finer ware thin versions (<6mm) of this type with the sharp ledge and rounded carination body and rounded or disc base. BL30c have the rounded body but the rim is angled at 45 degrees rather than near horizontal. BL30d are similar to BL30b in thickness and ware but are deep and carinated but none have preserved base.

Fabric: Ware A1 and B1 for later sites.

Decoration: Decoration consists of white slip on interior and exterior, red slip and burnish on interior, black painted bands on the rim. BL30b are all plain. BL30d are generally heavy decorated.

Parallels: All sub-types of these bowls are well represented at sites in Edom. The rounded carination bowls (BL30a2 and BL30b) have parallels at *Busayra* (fig. 9.8:1-16) and *Tawilan* (fig. 6.3:1-2,4-5). BL30a3 and BL30d are found at *Busayra* (figs. 9.6:1-18; 9.7:1-8) and *Tawilan* (fig. 6.3:7-8). BL30c occur at *Busayra* (fig. 9.10:1-15), *Ghrareh* (pl. 2:3, 8-14), *Tell el-Kheleifeh* (pls. 35:7,8,11,12; 36:1-7), *Tawilan* (fig. 6.3:3,11,12), KEN

from Fritz (1996: Abb. 3:3), and Feifa (Lapp 1994: fig. 13-2:1). General parallels to BL30 in Cisjordan and Transjordan are dated late: *Tell Beit Mirsim III* Stratum B (pl. 21:8), *Lachish* Stratum III (figs. 26.3:14; 26.36:1; 26.37:10), *Samaria II* Period VII (fig. 11:9, 10), *Tel Arad* Stratum VII (fig. 43:7-8), *Kadesh Barnea* Stratum 3a-b (pl. 11.30:7), and *Dibon* (fig. 2:40, 42).

BL31: *Shallow, rounded bowl with flattened rim (Pl. 7.5.1:3, 7)*

Description: A shallow bowl with flattened rim. This type may be related to BL3. Only one example was found in the 2002 season, in Stratum A3.

Fabric: Ware A1.

Decoration: N/A

Parallels: No clear parallels outside of KEN unless compared to examples from BL3 above.

BL32: *Necked Globular bowl with soft carination (Pls. 7.4.3:24; 7.7.1:2-3)*

Description: This necked bowl is similar to BL21 but has a very soft carination. It may be a predecessor of BL21.

Fabric: Ware A1.

Decoration: White slip on exterior with black concentric lines on neck (R.396) or body (R.122)

Parallels: Found at KEN and RHI, see parallels cited for BL21 for similarities.

BL33: *Simple straight sided bowl with rounded or tapered rim (Pls. 7.3.2:15; 7.4.3:25)*

Description: These generic straight sided bowls have a rounded or tapered rim.

Fabric: Ware A1/A2

Decoration: N/A

Parallels: Only found at KEN

BL34: *Large Rounded Bowl with Thickened flattened but slightly rounded rim (Pls. 7.3.1:10; 7.4.4:1)*

Description: These large thick (1cm) bowls have upright rims that are thickened by flattening and slight rounding.

Fabric: Ware A2b and A3

Decoration: N/A

Parallels: Only found at KEN

BL35 *Thickened interior rim bowl (Pl. 7.5.3:9)*

Description: Large bowl with sloping out sides and inverted rim.

Parallels: This bowl type is found at *Tel Arad* Strata X-VIII (figs. 25:3-4; 35:1), 'Umayri *MPPV* Area H Phase 4 (fig. 5.13:7) and *MPPI* Phase IP3 (fig. 19.8:23-25, see p.305). This vessel appears in the IAIIB (*Tel Arad*) and at 'Umayri.

BL36: *Large straight sided Bowl with simple rim (Pl. 7.5.4:20)*

Description: These large straight sided bowls have a simple (flattened) rim.

Fabric: Ware A1 and B1

Decoration: N/A

Parallels: Only found at KEN

BL37: *Deep bowls with exterior beveled rim (Pls. 7.3.1:4; 7.3.2:16; 7.3.3:14)*

Description: This is a deep bowl with the exterior lip of the rim beveled.

Fabric: Medium Course A2b Ware

Decoration: R.378 has white slip on interior and exterior.

Parallels: Only found at KEN

BL38: *Shallow Bowl with thickened interior rim creating interior ledge often grooved below rim (Pls. 7.4.8:6; 7.5.1:17)*

Description: This shallow large bowl has a thickened interior that is triangular pointed creating an interior ledge. A number of these bowls either are grooved or due to specific folding of the rim have a small ledge 1cm below.

Fabric: Although this type was not thin-sectioned it has Ware A10 fabric, suggesting it was produced from somewhere further south than KEN.*

Decoration: The two examples have white slip on the interior and exterior

Frequency: Frequency Statistics, Stratum, Locus and Spatial Location

Parallels: Only found at KEN

BL39: *Large Bowl with inverted rim and slight depression on exterior portion of rim*

Description: This bowl has a sloping out inverted rim with a slight depression on the exterior portion and compares with BL51.

Fabric: Ware A1.

Decoration: N/A

Parallels: Only found at KEN

BL40: *Small Fine-ware Bowl with everted oblique rim (Pl. 7.8.3:4)*

Description: This small fineware bowl has an everted rim at an oblique angle.

Fabric: Ware B1

Decoration: R.329 has black concentric lines on exterior body.

Parallels: Only found at RHI

BL41: *Bowl with upright flattened rim and two grooves or applied bands on exterior (Pls. 7.14.1:10; 7.9.1:15)*

Description: These large bowls have an upright flattened rim and two grooves or applied bands below the rim or further down on the body.

Fabric: Ware B4.

Decoration: Some have white slip on exterior and interior. R.589 has black concentric lines on lower portion of body and R.319 has red slip with black concentric lines on interior.

Parallels: R.589 parallels nicely *Busayra* (fig.9.20:13) and has similar three black concentric lines below ridges. Other BL41 have the ridges lower down on the body.

BL42: *Large Deep Interior Beveled Bowl (Pl. 7.8.3:5)*

Description: These large bowls have deep upright walls and interior beveled rims

Fabric: Only R.316 belongs to Ware B4, the remaining examples range in color and have a finer fabric.

Decoration: Red slip, white slip red bands along with black concentric lines found on interior and exterior.

Parallels: Only found at RHI

BL43: *Bowl with multiple grooved section (Pl. 7.8.3:6-7)*

Description: These rounded or tapered bowls have many grooves (5-7) in a section of the exterior of the body

Fabric: One example has the local RHI B4 Ware others vary (Ware B1).

Decoration: R.164 has a white slip with black upside down triangle painting from rim to beginning of grooved section.

Parallels: Only found at RHI

BL44: *Bowl with carination and sloping out stance flattened thickened rim with depression (Pl. 7.8.3:8)*

Description: This bowl is carinated at mid-section with the upper portion sloping out to a thickened flattened rim that has a depression in the middle. R.894 has a handle that attaches from the rim to the carination.

Fabric: Both have light red fabric with very fine pink core with several large calcite and quartz inclusions and no visible shales, possibly not local (neither thin sectioned).

Decoration: R.894 has red horizontal on the rim and interior. R.813 has a red to dark red horizontal slip on the interior.

Parallels: See *Tell el-Kheleifeh* (pl. 33:5)

BL51: *Large Bowl with inverted rim and exterior ledge with groove (Pl. 7.10.1:9)*

Description: These large bowls have a sloping out inverted rim. The rim also has an exterior ledge with a groove just before the ledge.

Fabric: Ware B1

Decoration: R.116 has a dark slip on the exterior

Parallels: This bowl occurs at *Tawilan* (fig. 6.5:3) and *Busayra* (fig. 9.16:16).

BL52: *Everted rim Bowl with sharp carination (Pls. 7.11.1:12; 7.13.1:11)*

Description: This bowl has an upright stance everted rim with a sharp carination just below the rim

Fabric: Ware B1

Decoration: N/A

Parallels: Similar to *Tawilan* (fig.6.6:8 but without the depression on the rim.

BL53: *Bowl with inverted turned over rim (Pls. 7.13.1:12-14; 7.14.1:11)*

Description: These large bowls have an inverted rim created from turning the clay over on top of itself from the interior to the exterior. The lip of the rim slopes inward giving a beveled interior look.

Sub-types: BL53a have the interior thickened and sharp fold. BL53b are much shallower bowls, the interior fold is smoothly rounded and there is a slight ledge on the exterior of the rim created by the completion of the fold. BL53c have a more pronounced exterior ledge on the rim with groove below the rim

Fabric: Ware B1

Decoration: Some BL53b have white slip and black concentric lines on the rim. R.1028 and R.813 have vertical black strokes on the rim.

Parallels: BL53a compare with *Tawilan* (figs. 6.5:6; 6.6:10). BL53c is similar to *Tawilan* (figs. 6.5:2; 6.7:2,3)

BL54: *Large Bowl with exterior ridge below rim (Pl. 7.13.1:15)*

Description: These large bowls have an exterior ridge directly below the rim

Sub-types: No separate sub-types could be distinguished, however, each vessel is

slightly different in rim form and formation of the ridge

Fabric: Ware B1

Decoration: R.926 has black strokes on the rim and exterior white slip with black cross-hatch painting. R.106 has red slip below the interior of the rim and black concentric lines on the interior and exterior.

Parallels: Only found at Plateau Sites.

BL55: *Large Bowl with sloping out inverted turned over rim with exterior ridge*

Description: This large bowl is sloping out and has an inverted rim with exterior ridge created by folding over the clay from the interior. BL55 is similar in construction to BL53 but is sloping out more and has a more pronounced exterior ridge.

Fabric: Ware B1

Decoration: White slip, red paint bands and black concentric lines on rim and interior. T.788 has black strokes on the rim also.

Parallels: A couple parallels found in publications but not considered an important type by Oakeshott. See *Busayra* (fig. 9.36:15), *Tel el-Kheleifeh* (pls. 34:6-8; 35:2-5). They are also grouped with BL13 at *Tel Batash* Stratum II (pls. 60:7,9;64:14-15) where they are more sloped out almost vertical they also have red slip and hand burnish. See also *Tel Gezer* Stratum VIA (pl. 20:20) with a less pronounced exterior ridge which Gitin distinguishes from a more common version in Stratum VB/VA (pls. 24:5;27:24).

BL56: *Thin fine-ware Bowl with t-section rim (Pls. 7.12.1:14-16; 7.9.1:16-17)*

Description: These fine-ware bowls are very thin and have an upright t-section rim. R.1180 has a ridge below the rim.

Fabric: Ware B1

Decoration: N/A

Parallels: Only found at Plateau sites.

BL57: *Thin medium-fineware Bowl with exterior ledge (Pls. 7.13.1:16; 7.14.1:12)*

Description: These medium-fineware bowls have an upright rim with an exterior ledge.

Fabric: Ware B1

Decoration: R.901 has a white slip and black concentric line on the rim.

Parallels: Only found at Plateau sites

Kraters

KR1: *Krater with sloping in triangular-section rim (Pls. 7.2.1:29; 7.5.4:24; 7.8.3:10)*

Description: It is a closed Krater with a sloping-in triangular folded rim. The rim is folded on top of itself and shaped to create a sharp triangular ridge. These Kraters are large with a range in rim diameter of 29-34

Sub-types: Several have a straight wall from neck while others are bent. The RHI example's stance is very different.

Fabric: Ware A1/A2, Ware B4 at RHI.

Decoration: Remnants of White (R.215, R.207) and Cream slip (R.434),are found on the exterior and rim of the vessels

Parallels: Only found at KEN and RHI.

KR2: *Krater with folded over rim with a rounded ledge (Pls. 7.1.2:9; 7.1.3:10)*

Description: These Kraters' rim are constructed by folding of the rim back on top of itself creating a rounded exterior ledge at the end of the fold. The vessels are sloping in with a holemouth orifice. The rim diameter are 24 (R.860) and 34 (R.795). These Kraters resemble KR15 in design but have much shorter rim folds (e.g. 2cm)

Sub-types: Only one example is preserved past the rim—it has ca. 4cm long neck before a carinated shoulder. One other example preserves a handled attached to the lower portion of the rim primarily at the ledge.

Fabric: Ware A1/A2

Decoration: R.795 has an exterior white slip

Frequency: Total (n=2). Frequency Statistics, Stratum, Locus and Spatial Location

Parallels: Only found at KEN

KR3: *Upright, triangular-section rim (Pls. 7.1.2:10-11; 7.2.1:10, 31; 7.2.2:1; 7.3.2:2; 7.4.4:5-14; 7.4.8:7; 7.5.1:18-19; 7.5.3:10; 7.5.5:4; 7.7.1:4)*

Description: These kraters, with diameters over 25 cm, have upright, thickened, triangular-section rims with no neck between the rim and the body of the vessel.

Sub-types: These kraters can be subdivided into smaller thinner vessel types and much thicker, larger-diameter types. KR3a is typified by having a triangular rim 2cm thick and large diameters >29cm. Some of these vessels have a groove below the rim fold creating a more distinctive ledge—these have been designated KR3a2 (e.g. R.596; KR3b are smaller more delicate versions of KR3 with triangular rims ca. 1cm thick and thin 1cm thick bodies. Rim diameters for KR3b range from 17-25cm.

Fabric: Ware A1 and A2. Although calcite is a common inclusion in these vessels as well as KR3b resembling cooking pot vessel forms none of the examples found show any evidence of soot from cooking as commonly found on cooking pots. All of these kraters share the same ware, but can vary in color from pale red to light gray. Calcite and mica is also commonly found in these thin-sections.

Decoration: The fabric is often white or there is a white slip applied on the exterior. Several examples have handles attached from the rim to shoulder.

Parallels: This vessel was found at KEN and RHI Sounding A, suggesting they were common in the area during the Early IA II. The German Mining Museum team also found samples in their probe at KEN (Fritz 1996: Abb. 3:7-8).

KR4: *Upright, slightly thickened and flattened rim and exterior ledge with neck to carination (Pls. 7.4.4:15; 7.4.8:8; 7.8.3:11-12)*

Description: This type has folded over rims creating a thickened exterior with ledge. The folded portion of the rim is 1cm long from the lip in comparison to KR1 and KR2. A short neck (ca. 5cm) is attached to the shoulder. These resemble conical jars due to the average rim size of 20 cm.

Sub-types: KR4a also has a minor groove on the interior of the vessel at the base of the rim treatment. KR4b resembles KR4a in rim design and stance but lacks the carination and the interior groove.

Fabric: One example thin sectioned (R.6, Pl. 7.4.4:15) has an arkose rich fabric with many red wadi stones as inclusions. The other example thin sectioned from KEN06, R. 1080, has the typical fabric found at the site with possible slag inclusions. The RHI example (R.583, Pl. 7.8.3:12) not only resembles morphologically these early forms but the fabric and inclusions are very similar to R.6.

Decoration: Every example has an exterior white slip

Frequency: Total (n=3). Only two examples of this vessel were found at KEN although parallels to this form are common. R.583 from RHI is combined with this group but may not be a continuation of the form. The low frequency makes it difficult to understand the

seriation of this vessel type.

Parallels: These vessel forms are similar to those found at *Beer-Sheba II* Stratum VI (fig. 27:5,6), *Lachish* Strata V-IV (B-25: fig. 25.17:26-27), *Hazor* Strata VI-VII (*Hazor II*: pl. 68:7; *Hazor III-IV*: pl. 247:25), *Samaria II* Period IV (fig. 6:15), and *Gezer III* Stratum VA (pl. 28:8). These vessels generally date between the ninth and eighth century B.C.E.

KR5: *Everted rim (Pls. 7.1.2:12; 7.2.1:4; 7.4.5:1)*

Description: These kraters are various large open size bowl shaped Kraters with an upright long everted rim. Rim diameters range from 28-36cm. Each vessel's everted rim and wall thickness is slightly different from each other

Sub-types: One example, not depicted here, differs from the other vessels in having a depression along the center of the everted rim, it also has an attached handle

Fabric: Ware A1

Decoration: Only R.847 has a white slip on the interior and exterior.

Frequency: Total (n=4). Frequency Statistics, Stratum, Locus and Spatial Location

Parallels: Only found at KEN; a variety of forms make comparison outside KEN difficult.

KR6: *Thickened, rounded exterior rim with long, upright, curving neck to shoulder (Pls. 7.4.1:13-14; 7.4.5:2; 7.5.3:11)*

Description: This thickened and rounded exterior rim is attached upright to a short neck

leading to the shoulder of the krater. The lack of any examples with more than the beginning of the shoulder makes it difficult to determine the overall profile of the vessel and opens the possibility that they may be very large storage jars. All the diameters measured are over 30 cm and range up to 40cm while the thickness of the vessel body remains no more than 1cm.

Fabric: Ware A1/A2

Decoration: R.734 and R.884 have a white slip on the exterior and also for R.734 interior .

Frequency: Total (n=4).

Parallels: Only found at KEN; this krater type is found only at KEN.

KR7: *Upright, T-shaped Krater Bowl (Pl. 7.4.5:3)*

Description: This large open mouthed krater has a finely constructed upright T-shaped rim. Although the rim diameter is 36cm, it remains very thin (ca. 0.5cm). The characteristic design of the vessel warranted its inclusion in the typology in hope of finding parallels in the future.

Fabric: Ware A1/A2

Decoration: White slip on the exterior.

Frequency: Total (n=1).

Parallels: Only found at KEN

KR8: *Exterior rounded ridge on upright rim, sometimes slightly thickened on interior (Pls. 7.1.2:13; 7.15.1:8; 7.2.2:2; 7.5.1:20-21; 7.5.5:5-7)*

Description: This large open bowl like krater (ca. 28-35 cm diameter) has a rim folded outward, creating an exterior ledge. The stance is generally upright, but some examples slope in.

Fabric: All consistently Ware A9, white vitrified fabric.

Decoration: White slip or fabric color is common on the interior and exterior, which suggest the color white was preferred for this vessel resulting in either white fabric to be collected or slip to be applied to non white fabrics.

Parallels: Although this krater type is shares a similar morphological shape and everted rim treatment with other sites in Cisjordan, the characteristic white fabric is not. It is found at *Lachish* Strata V-IV which have red slip and horizontal burnish (figs. 25.20:6) or just the burnishing (fig. 25.21:22), *Gezer III* Stratum VIIA (pl. 11:5), *Samaria I* Period I (fig. 1:11), *Tell Qasile* Strata IX, VIII (figs. 53:6; 54:14), *Kadesh Barnea* Stratum 4 (pl. 11.1:16-17), and *Tel Masos* Area H (pl. 147:3). Tappy (1992: 90-91) notes that these kraters have ancestral forms in the Late Bronze and continue through Iron I, ending in Iron II. This vessel type is found in early strata dating to the 10th-9th century B.C.E.

KR9: *Krater with upright exterior thickened rim and short neck (Pls. 7.3.2:3; 7.4.5:4; 7.5.3:12; 7.5.5:8-9)*

Description: These kraters have a rounded large bowl type profile but with a short neck.

They have simple rounded rims that are slightly thicker than the walls of the vessel. The rim is upright and continues 3-4cm to the rounded shoulder. Some examples have strap handles attached to the rim and below the shoulder of the vessel.

Fabric: Ware A1

Decoration: They have thick white slip on the interior and exterior occurs on some of 6 of the vessels.

Parallels: Only found at KEN

KR10: *Very large bowls with thickened interior rim (Pls. 7.1.2:14; 7.3.2:19; 7.5.5:1-2)*

Description: These large, deep bowls have diameters above 30 cm with thickened interior rims. Also compare to smaller type BL35. This sample was classified as a krater because of its large size. These vessels are classified together according to general morphological form. Rim treatments vary from thickened interior flattened rims to plain flat rims. Many examples have bar or ledge handles attached on or below the rim

Fabric: Ware A1 and A2

Parallels: See BL35. A krater is simply a very large bowl therefore there are often parallels found between the two.

KR11: *Thickened exterior rim creating rounded exterior ledge and slightly interior ledge (Pls. 7.4.5:5-6; 7.4.9:2; 7.5.2:1; 7.5.5:3)*

Description: This type has a thickened exterior rim flattened on the top with an interior folded ledge. The rim is upright in stance and attaches to a long neck before reaching a soft carinated shoulder. Rim diameters range from 26-38cm. Strap handles attached on the rim are found on a couple examples. No two examples are exactly alike.

Sub-types: Two subtypes are distinguishable by rim treatment. KR11a have rounded rim treatments with a less pronounced interior ledge, while KR11b are flattened from the exterior ledge to interior ledge creating an almost pointed triangular appearance. KR11b2 are similar kraters to KR11b but have even longer more pronounced interior ledges, sharp bend between the rim and neck, and belong to the plateau site ceramic assemblages—these are all grouped together here based on similarities in morphology.

Fabric: KR11a has A1 or A2 fabric. KR11b has Ware A1.

Decoration: This form is also appears in white either by fabric or white slip on the interior and exterior.

Parallels: In Edom KR11b2 is paralleled at *Tawilan* (fig. 6.17:4). Kraters with different decoration and fabric but similar in rim treatment and carination are found at *Tel Batash* Stratum IV (Type KR14b; pls. 3:2, 8, 11; 4:2), *Lachish* Strata V-IV (B-21; figs. 25.3:5; 25.30:6; 25.41:9?), *Gezer III* Stratum VIA but with exterior undercut (pl. 21:6-9), *Hazor II* Stratum VI (pl. 68:4, 11), *Tel 'Ira* Strata VII-VI (figs. 6.68:14; 6.84:11) and *Beer-Sheba* Strata III-II (Herzog and Singer-Avitz 2004: fig. 1:4).

KR12: *Upright, rounded rims, fairly flat on lip handles attached to rim (Pls. 7.1.1:5-6; 7.3.1:11)*

Description: These large, open kraters have simple rounded or flattened rims. A 5-6cm sloping neck from the rim leads to a rounded shoulder. Half the examples have handles attaching from the rim to shoulder of the vessel. These vessels are created on a wheel but made poorly in comparison to other vessels and have cooking pot fabric. Evidence of burning and soot is also found on the interior and exterior of the vessels. The rim diameters are typically over 30cm. R.632 from our sounding at Tawilan shares many similarities but has an even more crude fabric and has a much smaller diameter of 20cm.

Fabric: Fabric-Looks like cooking pot fabric and color-ware is standard 2B

Decoration: N/A

Parallels: Only found at KEN; found only at KEN.

KR13: *Folded thickened interior rim (Pls. 7.4.8:9; 7.5.3:13)*

Description: This krater has a folded rim that is sloping in, creating a more thickened interior. The rim is attached directly to the shoulder of the krater with a bend. The form is possibly similar to KR3a and resembles later folded rims found on the plateau.

Fabric: 2B/1

Decoration: White slip on interior and exterior occurs on the vessel

Parallels: Only found at KEN; found only at KEN.

KR14: *Thin Krater Bowl with folded over rim and interior ledge (Pls. 7.4.5:7; 7.8.3:13)*

Description: This krater bowl with diameters over 30cm have very thin walls (1cm). The

rim is folded over with an interior ridge. Morphologically it is similar to kraters found at Tawilan that have been also grouped with R.927 but rim treatment and fabric are notably different.

Fabric: Ware A1 and B1

Decoration: N/A

Parallels: See Tawilan.

KR15: *Krater with long folded rim (Pls. 7.13.1:17-20; 7.8.3:14-17)*

Description: These large open bowl kraters have a long (3-4cm) folded over rim that is smoothed into the body on the exterior and bent in on the interior of the vessel. The rim diameters of the vessels range from 26 to 45cm but on average are between 30-35cm. Strap handles are attached from the top of the rim to a lower portion of the body. See sub-type discussion below for further details.

Sub-types: These kraters can be broken down into sub-types by rim treatment. KR15a have shorter folds than the other vessels along with less smoothing of the fold into the body and almost no interior bending. KR15a2 share the similarities of KR15a but have a shallow groove just above the ledge of where the fold ends. KR15b have long folds that are smoothed almost completely into the body and the interior is bent in, creating a thickened interior. KR15c are similar to KR15b but are even more significantly bent into where the rim is concave in the interior. KR15d similar to KR15c have concave interior bended rims but the exterior fold is formed as a pronounced ledge; also all examples of this form have a much thinner profile (<5cm).

Fabric: RHI all have B4 ware and consistent very pale brown color. In contrast all the L2HE sherds are B1 and none have a very pale brown fabric. Instead colors range from pale red to reddish grey. The fabrics are similar to the L2HE pithoi with abundance of calcite inclusions, but few large quartz grains.

Decoration: Sometimes a white slip

Parallels: KR15a is paralleled at *Tawilan* (fig. 6.15:1); *Busayra* (fig. 9.21:8-9); *Tel el-Kheleifeh* (pl. 22:1-4). KR15b has parallels at *Tawilan* (figs. 6.15:2; 6.16:3; 6.17:1); *Busayra* (fig. 9.40:2-5); *Tel el-Kheleifeh* (pls. 23:1-6; 24:1-2,4-5). KR15c has similar vessels at *Tawilan* (fig. 6.15:3); *Tel el-Kheleifeh* (pl. 24:3). At *Tel Batash* similar rim treatments are found on their kraters in Strata III-II (pls. 15:10; 21:7; 25:5-6; 58:24; 92:3), but these significantly vary in their depth and smaller rim diameters averaging 25cm leading the authors to designate them "krater-jars". The strap handles also are only half attached to the rim and the remainder to vessel wall while KR15's handles attach only to the rim.

KR16: *Short Carinated Neck Kraters with folded over rims*

Description: These kraters are more closed with a short neck (2-2.5cm) leading to a carination. Rim treatment is related to other kraters of this period in being folded over; however, the fold is much shorter (see below for sub-type description of varying rim treatment). The walls of these vessels are thin (<5cm) similar to KR15c and KR17. Strap handles are attached from rim to body below the carination.

Sub-types: Sub-types can be distinguished by rim treatment. KR16a have longer more pronounced folds that are more flat creating a T-shaped appearance similar to KR17. KR16b have short folds that are rounded down with a pronounced ledge where the fold ends. KR16c has a short fold that is smoothed into the body. The neck between rim and carination on KR16c are generally shorter (12-16mm) in comparison to KR16a/b (20-28mm).

Fabric: Ware B1; Fabric is either the same as KR15 or color only differs in being reddish yellow.

Decoration: White slip occurs on some of the vessels.

Parallels: For KR16a see *Busayra* (figs. 9.21:12). KR16b is paralleled at *Tawilan* (fig. 6.17:8-9); *Busayra* (9.22:8). Compare *Busayra* (figs. 9.21:13; 9.22:1) to KR16c.

KR17: *Krater with folded over rim, T-shaped (Pls. 7.8.3:18; 7.8.4:1; 7.9.1:18)*

Description: Large open bowl kraters similar to KR15 but with the long folded rim formed to create an interior and exterior ledge that is near horizontal (t-shaped) to 45 degree angle. The rim is created by a inner bend and then fold over the rim causing the exterior fold to be horizontal. In some examples the exterior fold has a pronounced ledge. Rim diameters average 30cm. Vessel walls are thin (<5cm). All examples preserve small in diameter strap handles in comparison to KR15 strap handles.

Fabric: Ware B1; All exactly the same fabric except R.825 is reddish yellow. The two types from KAM share similarity in form enough to be typed together but color fabric is pink.

Decoration: White Slip occurs on most vessels

Parallels: Similar to *Tawilan* (fig. 6.16:2); *Busayra* (fig. 9.22:7).

KR19: *Upright, thickened, rounded rims with short neck before shoulder (Pl. 7.13.1:21)*

Description: These kraters have an upright, thickened rim with a short, upright neck before the shoulder, creating a more closed type of krater. Rim treatment varies on each vessel but primarily is not much thicker than the wall of the vessel.

Fabric: Ware B1

Decoration: N/A

Parallels: Similar types are found in surveys conducted in the region (MacDonald 1988: fig. 11:14; MacDonald et al. 2004: p. 170:1; p. 259:1).

KR21: *Krater with thickened and beveled exterior rim (Pl. 7.1.2:15)*

Description: This krater has a thickened exterior rim that is beveled. At the base of the rim it attaches to the body of the vessel with a bend. The only preserved examples are both broken at bend limiting further description. Rim diameters are 30 (R.1213) and 34cm (R.1406).

Fabric: Ware A1 and B1

Decoration: R.1213 has a white slip on the interior and exterior.

Frequency: Total (n=2). Frequency Statistics, Stratum, Locus and Spatial Location

Parallels: Only found at sites studied here.

KR24: *Large thick open bowl Krater with upright thickened rim and short neck (Pls. 7.2.1:30; 7.4.8:10)*

Description: These large Krater bowls are thick and have an upright thickened exterior rim and a short upright neck that curves outward to body of vessel. One example (R.438) has a strap handle attached from rim to body of the vessel.

Fabric: Ware A1

Decoration: White slip on interior and exterior

Frequency: Total (n=2). Frequency Statistics, Stratum, Locus and Spatial Location

Parallels: Only found at KEN.

KR25: *Krater with upright rim with exterior ridge and sloping out neck (Pl. 7.4.5:8)*

Description: This more closed krater has a sloping out neck to shoulder and thickened exterior rim that is short.

Fabric: Ware A1

Decoration: N/A

Frequency: Total (n=1). Frequency Statistics, Stratum, Locus and Spatial Location

Parallels: Only found at KEN

Jugs

JG1: *Jug with deep groove along midsection of handle*

Description: Only two examples were found during two different time periods. Only the handle is preserved which has a characteristic deep groove down the midsection of the handle splitting it into two halves. The grooves are made slightly different but handle size and design otherwise is near identical.

Fabric: Both examples are made of a white fabric, Ware A9.

Decoration: N/A

Parallels: Compare with *Busayra* (fig. 9.56:16).

JG2: *Jug with folded over and undercut rim (Pl. 7.4.1:16)*

Description: This large jug has a folded over rim that has been undercut. The jug has a short neck (5cm).

Fabric: Ware A1

Decoration: N/A

Parallels: Only found at KEN

JG3: *Jug with ridge below rim (Pls. 7.1.1:7; 7.11.1:13; 7.2.2:3; 7.3.3:2; 7.4.8:11; 7.5.3:14-15; 7.9.1:19)*

Description: These medium-size jugs have upright, ridged rims, ca. 7-10 cm diameter. Many examples are also spouted. The sharpness and size of the ridge varies.

Fabric: JG3is generally a lighter color ranging from white to pink to very pale brown. Some examples have white slip on the exterior.

Sub-types: The ridged rim jug continues from IA IIA to later periods but the distinction in rim treatment and ridge can be distinguished. The JG3a group have rims with the same thickness as their neck's profile which average ca. 7-8mm. JG3a1 have an upright rounded or slightly exterior thickened rim with a pointed ridge below the end or the rim fold. JG3a2 have a rounded upright rim and a less pronounced rounded ridge below. JG3b is similar to JG3a in having a rim with the same thickness as the neck but has a rounded sloping out spouted rim with a pronounced rounded ridge below. JG3c has a sloping in; thickened exterior rounded rim with a low unpronounced rounded ridge. JG3d1 have an upright thickened exterior rim with a rounded ridge at the lower ledge of the fold. JG3d2 is similar to JG3d1 but has a more pronounced pointed ridge. JG3e has a thickened rim with a ridge created by a groove. JG3f has an unpronounced rounded ridge and overhanging ledge on the lip.

Fabric: The predominant ware found at KEN is the white ware A9. Only one example of a JG3a is standard A1 ware but it vitrified from high firing, the gray and red shales can be seen in the core. The erosion of limestone can be seen from high firing. JG3b is similar to the other groups but is very fine with no large quartz inclusions as found for JG3a. It has a light greenish gray core and exterior. JG3d: R. 1146 has large size quartz inclusion and limestone-typical 2b. The ware, however, has an olive brown core and exterior.

Decoration: N/A

Parallels: JG3b is paralleled at *Busayra* (fig. 9.55:3,5). JG3d1 compare *Busayra* (fig. 9.54:8-10); *Tawilan* (figs. 6.26:1-2,4; 6.27:8); *Tell el-Kheleifeh* (pls. 20:1,4-5;21:1.3-4,6). For JG3d2 compare *Tawilan* (figs. 6.26:3;6.27:6); *Tell el-Kheleifeh* (pls. 20:2;21:5). For JG3f compare *Tawilan* (fig. 6.27:4). This is a popular jug type in Edom found at *Busayra* (figs. 9.54:8-11; 9.55:1, 3, 5-6), *Tawilan* (fig. 6.26:1-4), *Tell el-Kheleifeh* (pls. 20:1-5; 21:1-8), and *Ghrareh* (pls. 18:1-2; 19:1-7). In Cisjordan, it is found at H*orvat Qitmit* (figs. 4.3:22; 4.5:29; 4.14:2, 8; 4.16:15), *Tel 'Ira* Stratum VII (figs. 6.74:20; 6.87:15; 6.88:16), *Tel Masos* Stratum II and Late IAII (pls. 135:9; 166:10); and see *Tel Arad* Strata IX-VIII (trefoil mouth: figs. 32:14; 35:9; spouted: fig. 38:3), Strata XII-XI (figs. 3:4; 4:4), *Beer-Sheba II* Stratum IX (fig. 19:6), *Beer-Sheba I* Stratum II (pl. 68:18), *Lachish* Stratum III (fig. 26.31:9), *Tell Beit Mirsim III* (pl. 14:6), For JG3a group see *Gezer III* Strata VIB-A (pls. 12:16?, 18; 15:3; 19:6; see discussion of type on pp. 146-47), and *Hazor II* Stratum VIII (pl. 58:14). This rim design is popular throughout the Iron Age, but more precision is needed to clarify significant chronological differences and change over this long period.

JG4: *Jug with triangular thickened rim (Pls. 7.3.1:12; 7.4.1:17-18; 7.4.5:9-10; 7.5.5:13)*

Description: These jugs have rims that have been folded over, creating a triangular, thickened exterior rim. Some examples are spouted.

Sub-types: The subtypes JG4a and JG4b have been distinguished by size. JG4a are small triangular rims averaging in height of (8-12mm). JG4b are large jugs with triangular rims

in the range of 14-16mm. The small and large triangular rims and grouped together for JG4d which is a spouted version of this type.

Fabric: JG4 typically has Ware A1 fabrib but one thinsectioned example of JG3d: R.467 had visible slag in the core and thinsection Ware A2. JG4A from KIS (R.1144) is standard vitrified B1 as seen for JG3d's.

Decoration: N/A

Parallels: For JG4b see *Tell el-Kheleifeh (pl. 21:9)*; *Tawilan* (fig. 6.28:3,6); *Busayra* (figs. 9.55:4; 9.60:11?). R.1058 is inverted creating external triangular section compare with *Busayra* (fig. 9.58:2). These jugs are found at *Busayra* (fig. 9.58:1, 2), *Tawilan* (fig. 6.28:6), *Tell el-Kheleifeh* (pl. 21:10), *Ghrareh* (pl. 19:16), Feifa (Lapp 1994: fig. 12-2:10, 11), *Tel 'Ira* Strata VIII-VI (figs. 6.73:3; 6.71:6; 6.84:15; 6.103:4-5), *Tel Masos* Strata II-I (pl. 137:11; 139:6; 152:6), *Tel Arad* Strata XII-XI (figs. 3:2; 3:6:9-10; 9:1), *Lachish* Stratum III (fig. 26.27:5), *Beer-Sheba II* Stratum VI (fig. 28:9), *Beer-Sheba I* Strata V-IV (pls. 53:16; 55:17), and *Kadesh Barnea* Stratum 4b (pl. 11.23:5). This vessel type is found primarily in Iron Age IIA strata, but is also found at all the sites on the plateau.

JG6: *Jug with thickened, bent-up exterior rim (Pls. 7.4.1:19-21; 7.4.2:1; 7.4.5:11-12; 7.5.2:2-3)*

Description: These bent-up, slightly thickened rounded exterior rims of medium-size jugs are possible variants of JG4. In contrast to JG4 the exterior is blended into the neck of the vessel.

Sub-types: JG6a are concave on the interior and the exterior is very unpronounced. JG6b

are concave on the interior but more pronounced exterior. JG6c have a bent-up appearance with unpronounced exterior. JG6d are JG6a but with evidence of being spouted.

Fabric: Ware A1/A2

Decoration: N/A

Parallels: This jug shares similar rim treatment to *Tel 'Ira* Strata VII-VI (fig. 6.68:16) and *Tel Arad* Stratum XII (fig. 1:6).

JG8: *Thin walled upright tapered rim jug (Pl. 7.5.5:14)*

Description: These jugs are very thin walled (3-4mm) with a straight upright rim that has been tapered. The rim diameters average is 8cm. One example, R.191, has a strap handle attached at the rim.

Fabric: Ware A1

Decoration: N/A

Parallels: Only found at KEN

JG9: *Jugs with handle attached to rim with thickened exterior (Pls. 7.1.2:16; 7.2.2:4; 7.4.2:2; 7.5.5:15-16)*

Description: These are various jugs with strap handles preserved and thickened exterior rims, but generally only the area where the handle attaches to the rim is preserved, making specific identification difficult (compare with JG4 and JG6)

Fabric: Ware A1 and B1 for examples from later sites.

Decoration: N/A

Parallels: Not complete generic vessel type, making comparison difficult.

JG10: *Spouted Jug with turned out rounded rim and short neck (Pls. 7.3.3:3; 7.5.3:16)*

Description: These spouted jugs have short necks with a turned out rim creating a larger diameter orifice than the diameter of the neck. Rim diameter averages 8cm. The rim itself is rounded but the curvature is more flat along the lip than the sides. All examples are from KEN except R.699 from Tawilan which shares similar design but has been undercut to create a more defined ledge from where the rim is turned out. All the examples from KEN are simply rounded and turned out.

Fabric: Ware A1 and B1

Decoration: N/A

Parallels: Only found at sites studied.

JG11: *Upright rounded rim jug with undercuts under the exterior of the rim*

Description: The distinguishing feature of this jug from simple upright rounded rim jugs is the decoration of creating undercuts in the clay at the bottom of the rim and upper portion of the neck. These cuts create many ledges.

Fabric: Ware A1

Decoration: N/A

Parallels: Only found at KEN

JG12: *Jug with slightly everted rounded rim and groove below lip (Pls. 7.1.1:8-9; 7.3.2:4)*

Description: These small diameter jugs (ca. 6cm) have slightly everted rims creating a significantly larger orifice than their neck diameter (2-3cm). A majority are grooved below the everted rim creating a second ridge at near horizontal to the oblique position. Each vessel is slightly different in thickness and how the exterior groove is created. R.831 has a strap handle attached but preserves only a portion of the rim.

Fabric: Ware A1 and A9.

Decoration: N/A

Parallels: Only found at KEN

JG14: *Small jug with upright, thin, flat or rounded rim (Pls. 7.1.2:17; 7.15.1:18; 7.2.2:5; 7.4.2:3; 7.4.5:13; 7.5.2:4)*

Description: These are various small jugs with upright, simple, flattened or rounded rims. These vessels have thin walls (<5mm). Rim diameter of these jugs ranges from 5-7cm. Small strap handles are attach from jug rim to body.

Fabric: Ware A1 and B1

Decoration: Some jugs have a white slip on the exterior

Parallels: Only found at KEN and KAJ.

JG15: *Long neck jug with thin upright, rounded rim (Pls. 7.1.2:18; 7.3.3:4; 7.4.5:14; 7.4.8:12; 7.5.5:10-11)*

Description: These are medium size jugs with simple, rounded rims upright or sloping out.

Sub-types: JG15b (R.623) is distinguished from JG15a by presence of groove 5mm below rim of the vessel. JG15c are finely painted jugs of this type (see Decoration below)

Fabric: Ware A1

Decoration: Horizontal Black stripes are found on the neck of this vessel. A white slip on the exterior is also found on R.423.

Parallels: Jug-size types are found at *Busayra* (fig. 9.59:3), but also much earlier at *Tel Arad* Stratum XII (fig. 3:10) and may be related to an earlier form found in the Iron I *Samaria I* Period I (fig. 1:8). This vessel type appears to be early 10th-9th century B.C.E., but the parallels are limited.

JG16: *Narrow-necked jug with everted carinated rim (Pl. 7.2.2:6)*

Description: The rim is everted and carinated at the lip, with a narrow neck, 3 cm in diameter. Only one example is present in the assemblage; the jug has a white slip on the interior and exterior.

Fabric: Ware A1

Decoration: N/A

Parallels: Only found at KEN.

JG17: *Jug with middle ridge halfway below neck (Pl. 7.4.5:15)*

Description: There are only two partially preserved examples found at KEN. These jugs have ca. 5cm below rim on the neck a pushed out ridge from where a strap handle is attached (R.1121) The examples found at RHI have triangular rims similar to JG4. At Ken, however, the two possible similar examples are both broken at ridge making determination difficult between early and late forms. Rim stance differs R.482 is upright while R.831 is sloping out.

Fabric: Ware A1

Decoration: R.482 has an external white slip.

Frequency: Total (n=2).

Parallels: See *SIGNAS* (pl.20:5) as possible parallel with KEN forms. For RHI examples compare with *Tawilan* (fig. 6.29:7,8), *Tell el-Kheleifeh* (pl 32:7?) and *Busayra* (fig. 9.56:1-10) but note rim treatment is different. In Cisjordan see *Tel Batash* Stratum II (pl. 49:4-5,6?) and compare with decanters that have a more everted and thickened rim *Tel Batash* Stratum II (JG14; pl. 59:6; 61:8), *Gezer* Stratum VIB (pl.12:21). These jugs are found only in Late Iron II contexts.

JG18: *Jug with everted rim and short neck (Pl. 7.2.1:5; 7.5.1:8)*

Description: The rim is everted on medium size jug with most complete example having a short neck

Fabric: Ware A1

Decoration: N/A

Parallels: Only found at KEN

JG21: *Small jug with turned out rim and large strap handle (Pl. 7.3.1:13)*

Description: This jug is similar to JG18 but has a much smaller diameter although has a large handle (2cm)

Fabric: Ware A1

Decoration: N/A

Parallels: Only found at KEN

JG26: *Cooking jug with inverted rim and exterior ridge (Pl. 7.15.1:11)*

Description: These jugs have a rim that is inverted creating an exterior ridge and rounded thickened interior. The sharp bend of the rim creates a small concavity below the rim of the jug on the interior. These jugs are called cooking jugs according to fabric (see below).

Fabric: The fabric of these jugs is commonly associated with cooking pots (A6). The ridge created on the rim also relates it to contemporary cooking pots.

Decoration: N/A

Parallels: Only found at KEN and KAJ.

JG27: *Spouted Jug with routed rim (Pl. 7.8.4:2)*

Description: This spouted jug has the upper portion of the thickened rim sliced away creating a routed look. The closest rim treatment is found in JG3

Fabric: Ware A1 and B1

Decoration: White slip has been applied on interior and exterior of vessel

Parallels: Only found at studied sites.

JG28: *Large Jug with folded over and rounded exterior rim*

Description: These large jugs with thin walls have a rim that is folded over and the fold is then rounded creating a similar bulbous appearance to rim found on Collared rim pithoi

Fabric: Ware B1

Decoration: N/A

Parallels: Possibly the same as *Tawilan* (fig. 6.28:2), but drawing makes thickened exterior to protrude significantly more than JG28.

JG29: *Small Jug with ridge and handle at midneck with everted rims*

Description: This small jug (rim diameter 2cm) has a ridge at midneck where a loop

handle is attached. Two examples have preserved rims that are everted and thickened

Fabric: Ware A1

Decoration: White slip applied on exterior present on R.138.

Parallels: Compare with *Busayra* (fig. 9.57:6-7); *Tawilan* (fig. 6.29:3-5).

JG31: *Large Jug with Inverted Bent rim*

Description: This large thick heavy jug has an inverted bent in rim that is slightly thickened on the interior. A large strap handle is attached at the rim.

Fabric: Ware A1

Decoration: A white slip is applied on the exterior

Frequency: Total (n=1). Frequency Statistics, Stratum, Locus and Spatial Location

Parallels: Only found at KEN

JG34: *Small Jug with bent in and thickened interior rim*

Description: This is a small jug with a rim that is bent in at an angle and then thickened at the lip. The strap handle is attached at the rim and the joint of the bend.

Fabric: Ware A1

Decoration: Heavy white slip on the exterior

Parallels: Only found at KEN

JG36: *Jug with sloping in short neck and folded over and beveled rim*

Description: This large mouthed jug (10cm) has a sloping neck. The rim is folded over and beveled on the exterior

Fabric: Ware A1

Decoration: N/A

Parallels: Only found at KEN

Juglets

JT1: *Juglet with upright rounded rim (Pls. 7.1.1:11; 7.5.6:4)*

Description: These juglets have upright rounded rims (diameter avg. 3cm). Loop handles attached to a couple examples.

Fabric: One thin-section conducted and standard A1 Ware. Core is has visible shales but well sorted and fine. Exterior color ranges from red to light reddish brown. One small juglet R.31 has a very fine pink core with no visible inclusions.

Decoration: Only one example possesses a white slip. Several are burnished.

Parallels: Only found at KEN

JT2: *Small Juglets with short necks (Pl. 7.3.1:15)*

Description: These juglets have 2cm rim diameters and short necks

Sub-types: Only two examples are found at this size and they very in design

Fabric: Ware A1

Decoration: R.1252 has red slip and burnish

Parallels: Only found at KEN

JT3: *Juglet with short neck and upright rims with strap handles (Pls. 7.4.1:6; 7.4.6:3; 7.5.3:17; 7.5.6:6)*

Description: These jugs have simple upright rounded rims (diameter ranges 4-5cm). They have short necks (ca. 2.5cm) and strap handles attaching from rim to shoulder of the vessel. R.523 has the only preserved shoulder which suggests these were globular bodied.

Sub-types: The stance and design of each juglet is slightly different.

Fabric: Ware A1

Decoration: Some examples have white slip on the exterior.

Parallels: Only found at KEN

JT13: *Spouted Juglets with upright rounded rim and short neck (Pl. 7.8.4:3)*

Description: These juglets are spouted with upright rounded rims. The neck is short (4cm) before shoulder of vessel.

Fabric: Ware A1 and B1

Decoration: White slip is found on exterior or white fabric is common.

Parallels: Only found at sites studied

JT17: *Juglet with ridge on neck*

Description: This juglet has an upright, thickened exterior rim and lower ridge on the neck at the attachment of the handle.

Fabric: Ware B1

Decoration: N/A

Parallels: This juglet was partially preserved to below the attachment of the handle, making comparison with complete vessels difficult. Juglets that parallel the upper portion are found at *Tel 'Ira* Stratum VII (fig. 6.74:17), *Tel Masos* Stratum I (pls. 139:10; 144:12; 148:4; 161:8), *Tel Arad* Strata XI (fig. 4:8), *Tel Batash* Stratum III (pl. 88:12?), *Lachish* Stratum IV (fig. 25.20:21), *Kadesh Barnea* Stratum 4b (pl. 11.15:12), and *Tell Beit Mirsim III* Stratum A (pl. 16:7). This juglet, with its characteristic rim and ridge on the neck, possibly a single handle attached, appears from the 10th to the mid-8th century B.C.E.

JT19: *Juglet with dimple base and handle attached at mid- neck (Pls. 7.4.8:13; 7.5.2:6)*

Description: This juglet has a long, straight, narrow neck and dimple base. The loop handle is attached from the mid-neck to the shoulder. This is the only near-complete example found, but it lacks the black burnish typical of this juglet type (black-burnished sherds belonging to juglets were found at KEN and may belong to the same group).

Fabric: Ware A1

Decoration: N/A

Parallels: See similar juglet form, but black burnished, at *Beer-Sheba II* Stratum VI (fig. 30:6, 7). Lachish Tomb 521 IAIIA (Tufnell 1953: pl. 88:328), *Tel Arad* Stratum XII (fig. 3:5), *Kadesh Barnea* Stratum 4 (pl. 11.2:16), and many other sites (see Amiran 1969: 256). It is generally dated to the 10th-9th century B.C.E.

JT21: *Black Burnished Juglet (Pl. 7.2.2:9)*

Description: Only small fragments of the body and loop handles of these jugs have found but they fit similar design as classic Black Burnished juglets in Judah.

Fabric: Ware I3, imported from the vicinity of Jerusalem

Decoration: Black Burnish

Parallels: See similar juglet form, but black burnished, at *Beer-Sheba II* Stratum VI (fig. 30:6, 7). Lachish Tomb 521 IAIIA (Tufnell 1953: pl. 88:328), *Tel Arad* Stratum XII (fig. 3:5), *Kadesh Barnea* Stratum 4 (pl. 11.2:16), and many other sites (see Amiran 1969: 256). It is generally dated to the 10th-9th century B.C.E.

JT22: *Cypriot Black-on-Red (Cypro-Phoenician) juglet (Pls. 7.1.2:20-21; 7.1.3:11; 7.2.1:11; 7.2.2:10; 7.5.6:5)*

Description: These fragments of black-on-red juglets have very thin, well-fired clay with burnish and black-on-red painting (see discussion below on imports).

Fabric: Ware I4.

Decoration: N/A

Parallels: These imports are found at many sites in Cisjordan and elsewhere, dating to the 10th-9th century B.C.E (c.f. Singer-Avitz's (2004) discussion of this vessel for southern Israel).

JT23: *Trefoil juglet (Pl. 7.4.2:4; 7.5.2:7)*

Description: This is a trefoil juglet with a long neck and oblong body; not globular.

Fabric: Ware A1

Decoration: N/A

Parallels: The trefoil rim has many parallels from northern sites and possibly originated from Phoenicia (Tappy 1992: 196-97). Similar examples were found at *Samaria I* Period III (fig. 5:5), *Hazor II* Strata VIII, VA (pls. 58:25; 88:2), and *Hazor III-IV* Stratum IXb (pl. 176:1, 3). For globular jugs with a short neck, see *Tell el-Kheleifeh* (pl. 31:9) and *Tel Masos* Stratum I (pl. 160:12). Parallels suggest this is a 10th- to 9th-century B.C.E. vessel type.

JT26: *Juglet with sloping-out rim*

Description: This is a juglet with a rim sloping out from the neck. White slip is common.

Fabric: Ware A1

Decoration: N/A

Parallels: Somewhat similar juglet forms are found at *Tel 'Ira* Stratum VII (fig. 6.83:16), *Tell Beit Mirsim III* Stratum A (pl. 18:12, 23-29), and *Tell Beit Mirsim II* Stratum B (pl. 51:12) and Stratum A (pl. 68:33-44).

Jars

JR1: *Slightly thickened exterior, rounded rim, with no neck and thin walls (Pls. 7.5.1:5; 7.5.2:8; 7.5.5:18)*

Description: This hole-mouth jar has a slightly thickened exterior, rounded rim, and thin walls.

Fabric: Ware A1 and B1

Decoration: Some have white slip on exterior.

Parallels: Similar to PT10 but much smaller; see parallels above.

JR2: *Jar with folded over rim and thin ridge at end of fold (Pl. 7.1.1:12)*

Description: This neckless jar has an upright thin folded over rim that is blended into the body but then has an added thin ridge at the end of the fold.

Fabric: Ware A1 and B1

Decoration: N/A

Parallels: Only found at KEN

JR3: *Neckless Jar with upright rounded rim*

Description: This jar has no neck but rather has an upright rounded rim directly attached to the body of the vessel

Fabric: Ware A1 and B1

Decoration: N/A

Parallels: Only found at KEN

JR4: *Long fold of upper rim; sometimes grooved on folded rim (Pls. 7.4.6:4; 7.5.3:18)*

Description: This thinner-walled holemouth jar has a folded-over rim flattened into the wall and then grooved. The rim treatment parallels the pithos size version (PT19).

Fabric: Ware A1 and B1

Decoration: R.788 has a white slip on the exterior and interior.

Parallels: The Edomite examples from the plateau are thicker and more upright; see Busayra (fig. 9.42:1-5), Tawilan (figs. 6.22:1; 6.24:3; 6.25:1), ‘Umayri Phase IP3 (MPP I: fig. 19.7:6), Dibon (Tushingham 1972: fig. 1:29-32), and Tel Arad Stratum XI (fig. 4:2).

JR5: *Folded over phalanged Jar (Pl. 7.4.2:5)*

Description: This jar has a unique rim treatment involving a folded over rim that is then inverted and depressed along the lip creating a phalange from the lower portion of the exterior fold. It may be a variant of JR6.

Fabric: R.682 has a very pale brown fabric similar to what is seen at RHI in Kraters. This fabric is the most consistent in this type represented in 10 examples. This example was highly fired with same color core and slag inclusions. R.263 is darker but has a similar fabric with many small slag inclusions. R. 763 was not thin-sectioned but differs from the others in having a red fabric similar to what is found in the jugs (R.54). R.908 from KAJ has a similar fabric but also has arkose and basalt

Decoration: White slip on exterior and cream slip/wash on interior.R.263 has a black band below the everted rim with vertical strokes spaced every 2cm around the lower portion of this band.

Parallels: Only found at KEN

JR6: *Long, everted rim with slight depression in the middle of lip (Pls. 7.1.1:13; 7.15.1:16; 7.2.2:11; 7.3.3:7; 7.4.6:5)*

Description: This large jar has a characteristic long, everted rim that is then slightly depressed after the fold. Strap handles are attached to the end of the everted rim. These jars vary in thickness of vessel wall, length of everted rim and depth of the depression.

Fabric: Ware A1 and B1

Decoration: R.263 has a black concentric line on the exterior below the everted rim with

horizontal strokes spaced every 2-3mm. R.763 and R.70 have white slips on the exterior.

Parallels: See *Busayra* (fig. 9.52:1), *Tawilan* (fig. 6.32:3), *Kadesh Barnea* Stratum 4b (pl. 11.8:5), and Barqa el-Hetiye (Fritz 1994: Abb. 10:7).

JR7: *Thickened exterior rim with neck before shoulder (Pl. 7.4.6:6-7)*

Description: These are jars with short, upright necks and various subtypes of rim treatment. Rim diameter ranges from 10 to 12 cm—these could possibly be jugs. Figure 13:21 has an upright thickened exterior rim, while fig. 13:20 is less pronounced.

Fabric: Only R.351 was thin sectioned, primarily due to its very fine well sorted high fired white fabric (see JG3). The later example from Tawilan (R.992) has a reddish brown fabric of typical ware (see KR15).

Decoration: N/A

Parallels: Only found at KEN; found only at KEN. Compare fig. 13:20 to *Busayra* (fig. 9.50:8-12) for generic jar types found in Edom.

JR8: *Jar with sloping up short neck and upright flattened exterior ledged rim (Pls. 7.2.1:6; 7.3.2:5; 7.3.3:8)*

Description: These small globular jars (R.1003) have short neck that slope upwards to the upright rim that is flattened with a exterior ledge.

Fabric: Ware A1 and B1

Decoration: White slip is found on the exterior of these vessels.

Parallels: Only found at KEN

JR9: *Holemouth Jar with flattened rim and sloppy overhanging ledge*

Description: This holemouth jar possibly mold made has a flattened rim with excess clay pushed over the exterior of the rim unevenly.

Fabric: This is standard 2B fabric color highly varies from pale red to pink and fabric appears brittle.

Decoration: A white slip is found on the exterior.

Parallels: Only found at KEN

JR10: *Holemouth Wheel-made Jar*

Description: These holemouth jars have simple rounded rims and are wheel-made.

Fabric: Standard ware similar to JG6d's and has slag inclusions.

Decoration: White and cream slip found on exterior

Parallels: Only found at KEN

JR11: *Thin Wheel-Made Holemouth Jar with slightly turned up rounded rim (Pl. 7.3.1:5)*

Description: These holemouth jars are thin well fired and wheel made. The rounded rims are slightly turned up

Fabric: R.346 has a reddish yellow core and fabric is similar to JG6D, R.54.

Decoration: N/A

Parallels: Only found at KEN

JR12: *Holemouth Jar with two grooves below rim*

Description: This holemouth jar has two deep grooves on the shoulder of the jar just below the rim.

Fabric: Ware A1 and B1

Decoration: N/A

Parallels: Only found at KEN

JR13: *Holemouth Jar with thickened exterior rim and cross-hatch painting (Pl. 7.2.2:12)*

Description: This wheel made holemouth jar has a thickened exterior rim which has been folding over. This vessel has a black concentric line on the rim and below the thickened exterior portion of the rim. Black cross-hatch follows below the exterior line.

Fabric: Pale red fabric standard 2B nothing interesting.

Decoration: N/A

Parallels: Only found at KEN

JR14: *Holemouth Jar with long thin folded over rim and slight depressed lip*

Description: These very thin small diameter (10cm) holemouth jars have a long thin folded over rim that is blended into the body. The lip of the jar depression causes the remaining portion of the folded rim to be thicker than the lip.

Fabric: Similar fabric to JR6, has slag inclusions. R.816 has a black color fabric but core similar.

Decoration: N/A

Parallels: Possibly similar to *SIGNAS* (pl.19:3) but this vessel is much larger and twice as thick as examples.

JR15: *Upright, thickened exterior rims with ridge halfway down on neck (Pl. 7.4.6:8-9)*

Description: These are storage jars with a ridge on the neck that inclines with an upright, thickened exterior rims.

Fabric: Standard JG6D fabric, has slag inclusions.

Decoration: White slip is applied on the exterior of all three examples.

Parallels: Site 159 (KEN in SIGNAS survey) has published this vessel (pl. 18:5). Parallels outside KEN are rare, but see *Gezer III* Stratum VIB (Type 2A pls. 12:4, 5; 14:10) See *HAZOR*. A similar profile but smaller diameter is found at *Busayra* (figs. 9.50:6-7; 9.60:16?).

JR16: *Small jar with upright rim (Pl. 7.4.8:14)*

Description: This is a very small (rim diameter 10-12cm), delicate jar, with an upright thickened exterior rim.

Fabric: R.1325 was selected for thin-sectioning due to its different looking fabric. This is a single example of I5 from Phoenicia. The other JR16 looks like it is from local fabric, especially R.448 which has visible slag inclusions throughout.

Decoration: R.1325 has a dark-red slip

Parallels: Only found at KEN, but R.1325 should be expected to have parallels in Phoenician sites.

JR17: *Upright, thickened exterior flattened or rounded rims with upright neck leading to shoulder (Pl. 7.1.3:1)*

Description: These jars have thickened and flattened rims with an upright neck curving out to the shoulder.

Fabric: S R.767 has white fabric A9 distinguishing it from the other JR17's. JR17 has standard A1 fabric, neither have slag. R.66 has a high limestone content.

Decoration: N/A

Parallels: *Tawilan* (fig. 6.30:6) but not fitting in description of pottery form.

JR18: *Jar with sloping in short neck and rolled over triangular pointed rim (Pl. 7.2.2:13)*

Description: These jars have sloping in short necks with a rolled over rim that is then shaped to create a rounded point or ledge.

Sub-types:

Fabric: Ware A1

Decoration: N/A

Parallels: Only found at KEN

JR19: *Jar with short everted rim and depression (Pl. 7.5.3:19)*

Description: This jar is similar to JR6 but has a short upright rim before the body of the vessel and a much shorter everted or thickened exterior rim that has a depression on the midsection of the lip. Handles attach from the edge of the everted rim.

Fabric: Ware A1

Decoration: N/A

Parallels: Only found at KEN

JR20: *Jar with short upright neck with groove and thickened exterior rim (Pl. 7.5.6:1)*

Description: This jar has a short upright neck with a thin (1mm) groove at the midsection of the neck. The rim is upright with a thickened exterior with a rounded ledge.

Fabric: Ware A1

Decoration: N/A

Parallels: Only found at KEN

JR21: *Holemouth Jar with exterior triangular section rim* .

Description: This holemouth jar slopes inward and has a thickened triangular sectioned rim.

Fabric: Ware A1

Decoration: N/A

Parallels: Only found at KEN

JR22: *Jar with long folded over sloping in rim*

Description: This jar has a long folded over rim (3cm) that is thick at the lip and thins out to the end of the fold. At the end of the fold the rim attaches with a bend to the body of the vessel. Some examples show horizontal scraping or grooving to thin lower portion of folds out.

Fabric: Ware A1

Decoration: White slip is found on the exterior

Parallels: Only found at KEN

JR24: *Jar with inverted rim*.

Description: This storage jar is created by a fold of the rim up and then inverting it creating a holemouth.

Fabric: Ware A1

Decoration: White slip on exterior

Parallels: Only found at KEN

JR25: *Jar with upright rolled over rim and pie crust decoration*

Description: This jar has an upright rolled over rim than is than scraped near the lip to create an uneven overhanging pie crust appearance.

Fabric: Ware A1

Decoration: N/A

Parallels: Only found at KEN

JR26: *Neckless upright triangular section rim Storage Jar (Pl. 7.1.3:12)*

Description: This neckless storage jar has an upright triangular section rim.

Fabric: Ware A1

Decoration: R.647 has Black vertical lines painted on the rim every 1cm and on the rim Black painted radial lines are painted near the shoulder of R.647

Parallels: Only found at KEN

JR27: *Small neckless Jar with triangular section rim*.

Description: Small delicate neckless jar with an exterior triangular section rim

Fabric: Ware A1

Decoration: N/A

Parallels: Only found at KEN

JR28: *Cup Spouted Jar with attached strap handles (Pl. 7.1.1:14)*

Description: This storage jar has a straight sloping in neck with thickened rim and has a cup like spout attached to the rim. A strap handle attaches to the right side of the cup and connects with the rim.

Fabric: Ware A1

Decoration: N/A

Parallels: A parallel is found in the SIGNAS survey (pl.20: 1). See examples from CisJordan at *Tel Gezer* Stratum VIA (pl. 19:15).

JR30: *Neckless Jar rim with triangular section rim*

Description: These neckless jars have upright rims with vessel wall from rim sloping out quickly to near horizontal. Each rim is different; general category

Fabric: Ware A1

Decoration: N/A

Parallels: Possibly *Busayra* (9.45:1)

JR31: *Jar with short neck before carination and long folded rim*

Description: These jars have a short neck before carination. The rims have long folds and similar in design to KR15-17 but small closed diameters. Maybe related to JR37.

Fabric: Ware A1

Decoration: N/A

Parallels: Only found at KEN

JR32: *Short neck Jar with upright simple rims*

Description: This small thin (5mm) short neck jar has an upright simple rim (serves as a neck).

Fabric: Ware A1

Decoration: Exterior of rims painted with black concentric lines.

Parallels: Compare with *Busayra* (fig. 9.51:7).

JR33: *Short neck Jar with upright flattened rim*

Description: This thick (>10mm) short neck storage jar has an upright flattened or slightly beveled rim.

Fabric: Ware A1

Decoration: N/A

Parallels: Compare with *Lachish* Old (fig. 3.50:6).

JR34: *Short neck jar with upright rounded rim slightly thickened on the exterior*

Description: This short neck jar has an upright slightly thickened exterior rim (rim serves as neck).

Fabric: Ware A1

Decoration: N/A

Parallels: Possibly similar to *Busayra* (fig. 6.30:17).

JR35: *Medium Neck Jar with upright flattened rim*

Description: This medium size necked jar has an upright rim.

Fabric: Ware A1

Decoration: N/A

Parallels: Only found at KEN

JR36: *Medium neck Jar with sloping out interior beveled rim*

Description: This medium size neckless jar has a sloping out flattened or interior beveled rim (rim serves as neck).

Fabric: Ware A1

Decoration: N/A

Parallels: Only found at KEN

JR37: *Jar with thickened exterior triangular section rim and short neck before carination*

Description: This jar has a short neck before a carination at the shoulder. The rim is triangular through thickening.

Sub-types: JR37b have two grooves on the rim.

Fabric: Ware A1

Decoration: N/A

Parallels: See *Busayra* (fig. 9.46:5).

JR38: *Neckless Jar with upright triangular rim with two grooves on flattened lip*

Description: This medium size neckless jar has an upright triangular rim with two grooves on the horizontal flattened lip portion of the rim.

Fabric: Ware A1

Decoration: R. 922 has black concentric lines on the exterior and R. 130 has remnants of red, black, and white painting.

Parallels: Only found at KEN

JR39: *Holemouth Jar with sloping in folded over rim with exterior ledge*

Description: This holemouth jar has a sloping in rim that is folded over creating an

exterior ledge.

Fabric: Ware A1

Decoration: N/A

Parallels: Compare to *Busayra* (fig. 9.46:3-4).

Pithoi

PT2: *Pithos with rolled out rim (Pls. 7.4.6:12; 7.7.1:5)*

Description: This pithos has a short sloping in neck that leads to a rim that has been turned out to a horizontal position. The tip of the turned out rim is sharply rounded

Sub-types: SJ2b shares similarities with SJ2a but the rim is under cut and much thicker

Fabric: Ware A7 for KEN, the fabric is directly distinguishable from the other Pithoi from KEN. The RHI are Ware B4.

Decoration: R.106 has a white slip on the exterior

Parallels: Only found at KEN

PT3: *Pithos with short upright neck and flattened rim with overhanging exterior ledge (Pls. 7.1.3:2; 7.5.4:2; 7.7.1:6; 7.8.4:4)*

Description: These pithoi have a characteristic short neck (2-3cm) with a flattened rim that is thickened on the exterior to create an overhanging ledge. There is some variation on PT3 but not enough to create sub types. Not one example is exactly alike in thickness

and rim treatment. The only example from KEN (R.834) has a well formed exterior ledge along with a depression in the center of the flattened rim. R.877 found at KEN is different and shares many similarities with examples from RHI (R.465/R.750) such as being smaller (small storage jar size) and lacks the depression or well defined ledge. R.254 which is pithos size has a less distinct neck but shares similarity in formation of rim with R.465 and R.750 Finally, R.663 has been classified as PT3c because it has a more triangular shaped rim than those above.

Fabric: R.877 and 834 share KR8 Ware A9 fabric. The RHI have typical B4 fabric. The Tawilan examples have the B1 fabric.

Decoration: N/A

Parallels: Only found at sites studied.

PT4: *Sloping-out, triangular, thickened exterior rim with short neck (Pl. 7.4.6:13)*

Description: This pithos has an upright, triangular, thickened rim and short neck before the shoulder. Only one example was found during the 2002 excavations. This pithos is a possible variant of PT5 (see below). Two more examples were found in 2006.

Fabric: All have similar gray core with slag inclusions, Ware A2b.

Decoration: All three examples had a white slip on the exterior and interior.

Frequency: Total (n=3)

Parallels: Compare with WF424 (Barker et al. 1998: fig. 27:6-7)

PT5: *Rounded, thickened, exterior rim, sometimes with a collar on the neck (Pls. 7.1.3:3; 7.2.2:17-18; 7.3.1:16; 7.4.2:7; 7.5.2:11; 7.5.4:3-4; 7.5.6:9)*

Description: This large pithos has a folded, bulbous rim that creates a thickened exterior, which is upright with a short neck. In several examples, a collar is found very high on the shoulder where the neck bends to attach to the shoulder. This vessel type is commonly classified as a collared-rim pithos (see Herr 2001).

Fabric: Ware A2b

Decoration: N/A

Parallels: Parallels for this pithos type are found throughout Cisjordan and Transjordan. There is an enormous amount of literature discussing this vessel for Cisjordan (see Faust 2006) and, in more recent scholarship, its appearance in Transjordan (Bienkowski 1992; Herr 2001; Finkelstein 1992a; 1992b). In Cisjordan, the collared-rim pithos was primarily limited to the Iron I and was very rare in the early Iron IIA. However, in Transjordan, it has a much greater longevity, spanning the whole Iron II. Herr (2001) has presented the most extensive study of its presence in Transjordan, where it continues into the late Iron IIC. Based on a study of the pithoi in stratigraphic sequence at ‘Umayri, developmental changes can be identified in subsequent periods. This pithos type found at KEN is most similar to the early Iron II assemblages and vessels found in unstratified contexts presented by Herr (2001: figs. 14.5:1; 14.6:1-2, 5, 7-8). Similar forms are also found at *Busayra* (fig. 9.42:8, 12), *Ghrareh* (pl. 26:18), Barqa el-Hetiye (Fritz 1994: Abb. 11:8-9), *WF424* (Barker et al. 1998: fig. 27:5), *Hesban* Stratum 16 (fig. 3.10:2), ‘Umayri Phase IP2 (*MPP I*: fig. 19.12:11), Field A Phase 5 (*MPP IV*: fig. 3.32:1, 2), *Tel Masos* Stratum

I-III(pls. 138:14; 140:12), and *Samaria I* Period III (fig. 4:20). These parallels support a dating of ninth century B.C.E. for this specific developmental stage found at KEN.

PT6: *Pithos with upright rim and no neck (Pl. 7.1.1:16)*

Description: This pithos has a thick upright rounded rim that directly attaches to the body of the vessel thus lacking a neck.

Fabric: Ware A2.

Decoration: N/A

Parallels: Only found at KEN

PT7: *Pithos with upright triangular rim and no neck*

Description: Similar to PT6 but having a thickened triangular shaped rim. Only one example was found.

Fabric: Ware A2

Decoration: Cream slip applied on exterior

Parallels: Only found at KEN

PT8: *Thickened and flattened upper rim (Pls. 7.4.1:2; 7.4.2:8; 7.5.4:5)*

Description: This is a large pithos with a folded rim that creates a thickened exterior, but the way the rim is pressed and flattened into the body makes it less pronounced than PT5.

This pithos is a variant of PT5 but is distinguished primarily by its unique rim treatment popular in Transjordan.

Fabric: Light red exterior, slag rich with red/gray core A2b

Decoration: Some have white slip on the exterior

Parallels: The pithos found at *Busayra* (fig. 9.43:4) resembles fig. 11 :8 but without the upper groove. Other possible parallels are found at *Hesban* Strata 19-18 (figs. 3.4:1; 3.7:9) and *Kadesh Barnea* Stratum 4b (pl. 11.20:16).

PT9: *Folded-over rim with groove slightly inverted (Pl. 7.3.3:11)*

Description: The folded and inverted rim with groove distinguishes this single example from the pithoi mentioned above.

Fabric: Ware A2

Decoration: N/A

Parallels: Only found at KEN.

PT10: *Upright, thickened, rounded or triangular rims attached directly to the neck (Pls. 7.4.1:1; 7.4.2:9; 7.4.6:14-16; 7.4.8:17; 7.5.6:7)*

Description: This hole-mouth pithos has a folded, thickened, exterior rim directly attached to the body of the vessel. (Diameters are ca. 20-24 cm). Similar rim profiles are present with diameters over 25 cm; the lack of complete profiles makes classification of these vessels as pithoi or kraters difficult.

Fabric: Fabric is standard PT A2 but all have well sorted fabric with only a few large inclusions. Slag is visible within the core. R.773 is the exception with large slag inclusions throughout, Ware A2b.

Decoration: Often thick exterior white slip is applied

Parallels: A similar rim profile is noted as a krater at *Tawilan* (fig. 6.17:6). Its rim diameter of 22cm suggests that it is more likely a pithos similar to those found here. This pithos is common to Cisjordan and Transjordan: Dibon (Tushingham 1972: fig. 1:43, 44), *H*orvat *Qitmit* (fig. 4.14:45), *Tel 'Ira* Stratum VII (fig. 6.75:2), *Tel Batash* Strata III-II (pl. 63:6), and *Samaria II* Period IV (fig. 7:6). This pithos may possibly be related to sharper-edged forms at Beer-Sheba Stratum II (Singer-Avitz 1999: fig. 3:19), Stratum V (Herzog and Singer-Avitz 2004: fig. 5:1), and *Tell Beit Mirsim III* Stratum A (pl. 13:9).

PT11: *Pithos with upright thickened interior and exterior rim*

Description: This pithos has an upright neck and rim that is thickened evenly on the exterior and interior.

Fabric: Ware A1

Decoration: A white slip is on the interior and exterior.

Frequency: Total (n=1). Frequency Statistics, Stratum, Locus and Spatial Location

Parallels: Only found at KEN

PT12: *Pithos with folded over and triangular rim that is slightly beveled along exterior ledge (Pl. 7.1.3:4)*

Description: This pithos has a straight neck and uniquely shaped rim that is folded over and made triangular but is beveled along the exterior ledge.

Fabric: Ware A2

Decoration: N/A

Parallels: Only found at KEN

PT13: *Pithos with triangular rim and exterior groove between lip and ledge (Pl. 7.3.3:12)*

Description: This pithos has a short neck leading to a thickened triangular rim that has been grooved to accentuate the exterior ledge from the lip of the vessel. Similar but more pronounced than PT12.

Fabric: Ware A3, with large basalt inclusions.

Decoration: N/A

Parallels: Only found at KEN

PT14: *Pithos with thickened exterior rim that has been beveled (Pl. 7.3.3:13)*

Description: This has a neckless upright pithos with a thickened exterior rim that is beveled up to flattened lip of the rim.

Fabric: Ware A7, Arkose rich with lower cretaceous shale.

Decoration: N/A

Parallels: Only found at KEN

PT15: *Pithos with folded over flanged rim (Pls. 7.11.1:14-15; 7.2.2:19; 7.8.4:5)*

Description: This pithos has a folded over rim with a pronounced overhanging flanged ledge. A majority of the examples also have a collar at the attachment of the neck to shoulder.

Sub-types: R.499 from KEN06 is smaller and more upright and may be a predecessor to this common form in the later periods.

Fabric: RHI fabrics have a high concentration of basalt and are in general a more coarse fabric B3. The L2HE sites, especially KIJ have high quantities of large quartz inclusions. The one example from KIS, R.1151, has basalt inclusions but has a much smoother and sorted fabric similar to the other L2HE sites. R.499 from KEN06 is a course fabric that appears to have slag inclusions and possibly also basalt, but a thin section was not made on this sherd.

Decoration: N/A

Parallels: Similar to *Busayra* (fig. 9.42:7,9).

PT16: *Pithos with folded over rim that is smoothed into body* .

Description: This rim is created similar to PT15 but is smoothed into the body of the vessel rather than being pronounced.

Fabric: Course B3 fabric with Basalt inclusions similar to PT15

Decoration: N/A

Parallels: Possibly *Busayra* (fig. 9.42:15).

PT17: *Pithos with folded over bulbous rim that is grooved on interior and exterior* .

Description: The pithos has a more rounded folded over rim than PT15/16 but also has a exterior groove just below the lip of the rim and also on the interior at the bottom of the rim.

Fabric: All slag rich fabric, see PT18

Decoration: N/A

Parallels: Only found at KEN

PT18: *Pithos with very large folded over rim similar to PT15 but with exterior groove below lip (Pls. 7.11.1:16; 7.12.1:18; 7.14.1:13; 7.8.4:6-7; 7.9.1:20)*

Description: This pithos is a combination of PT15 and PT17 in having the phalanged folded over rim but also a groove or depression on the exterior just below the lip. Some examples also have an interior groove also found on PT17. R.183 preserves a collar as seen on PT15.

Fabric: The examples from RHI have large slag inclusions making the sherds very course and rough to the feel B2. All L2HE examples are similar medium course, smooth to the feel, quartz rich sherds, Ware B1. Many examples also have large calcite inclusions

Decoration: N/A

Parallels: See *Busayra* (fig. 9.43:4,9-10,13).

PT19: *Pithos with thin folded over rim and holemouth orifice with two grooves on exterior (Pls. 7.14.1:14; 7.5.6:8)*

Description: This pithos has a holemouth sloping in rim that is folded over and flattened into the body than grooved three times. This may be the predecessor of PT20.

Sub-types: SJ19C is similar to above but is larger and thicker.

Fabric: Ware A1 and B1

Decoration: N/A

Parallels: Only found at sites studied.

PT20: *Pithos with upright folded over rim with two grooves on exterior (Pls. 7.14.1:15; 7.5.2:12)*

Description: These pithoi have large upright folded over rims with two grooves over the exterior of the rim. This rim treatment creates these three ridged rim Pithoi.

Sub-types: Each pithos is constructed slightly different with varying depth and size of grooves.

Fabric: Ware A1 and B1b

Decoration: N/A

Parallels: The various forms of this pithos is found at *Busayra* (fig. 9.42:1-6); *Tawilan* (figs. 6.22:1; 6.24:1-3; 6.25:1.

PT21: *Pithos with sloping in collared neck and thickened grooved rim*

Description: This pithos has a sloping in and bending upward neck that has a collar at the shoulder. The rim is slightly thickened and flattened with two grooves along the lip of the vessel

Fabric: Ware B1b

Decoration: N/A

Parallels: Compare with *Busayra* (fig. 9.42:11).

PT22: *Pithos with upright short necked thickened exterior ledge rims*

Description: These pithoi have a short upright neck (4-5cm) with a thickened exterior ledge on the rim. The rims vary from being rounded or flattened on the lip but all have exterior ledge either triangular shaped, rounded, or undercut.

Fabric: Ware A1 and B1b

Decoration: N/A

Parallels: Only found at L2HE sites studied

PT23: *Pithos with sloping in folded over rim and three light grooves*

Description: This pithos has a neck sloping into a folded over rim with a similar design to PT15 but less pronounced ledge and three light grooves starting from just below lip.

Fabric: Ware B1b

Decoration: N/A

Parallels: See *Tawilan* (figs. 6.24:4; 6.25:3?).

PT24: *Pithos with upright folded over rim rounded and blended into neck* .

Description: This pithos has a sloping in neck that leads to an upright folded over rim that is rounded and blended into the neck making the exterior only slightly thicker than the interior giving a slight collar type look to the rim.

Fabric: Ware B1b

Decoration: N/A

Parallels: See *Busayra* (fig. 9.43:5).

PT26: *Pithos with everted thickened squared rim*

Description: This pithos has a unique rim treatment where the rim is everted and shaped to create a squared exterior thickened section. Only one example was found but direct parallels found necessitated its publication.

Fabric: Ware B1

Decoration: N/A

Parallels: See *Busayra* (figs. 9.42:9; 9.43:7); *Tawilan* (fig. 6.24:6).

Cooking Pots[19]

CP25: *Small Necked Cooking Pot with pronounced ridge and simple rim (Pl. 7.8.4:8)*

Description: This small thin body necked cooking pot has a pronounced ridge on a simple rim. The ridge is created both by a fold creating a high ridge (5mm) but also internal bend.

Fabric: Ware B6

Decoration: N/A

Parallels: Only found at RHI

CP30: *Necked Cooking Pot with ridge and short bend on thickened exterior rim*.

Description: This necked cooking pot has a ridge created both by fold and minor internal bend. The lip is thickened and pointed on exterior.

Sub-types: CP30A holemouth. CP30b necked

Fabric: Ware B6

Decoration: N/A

Parallels: See for CP30a *Busayra* (fig. 9.38:3,6); *Tawilan* (fig. 6.34:1); *Tell el-Kheleifeh*

[19] A typological study of the cooking pots was only conducted for RHI Sounding B and L2HE sites, since the earlier cooking pots were rare and morphologically unique.

(pls. 17:4; 18:3-6,10). See for CP30b *Tell el-Kheleifeh* (pl. 19:4) and *Busayra* (fig. 9.39:6).

CP31: *Necked Cooking Pot with upright or sloping in sharp ridged rim* .

Description: This necked cooking pot is created from a horizontal bend below the rim and has a sharp ridge on the rim created by bending inwards. The lip of the rim is rounded and thickened on the exterior with a sharp exterior edge.

Fabric: Ware B6

Decoration: N/A

Parallels: Compare with *Busayra* (fig. 9.39:1-2).

CP32: *Necked Cooking Pot with upright ridged flattened rim*

Description: This necked cooking pot has an upright ridged rim. The distance from lip to ridge is short (5-6mm) and the ridge is either rounded or pointed. The flattened lip is the same thickness as the neck and body.

Fabric: Ware B6

Decoration: N/A

Parallels: Similar to *Busayra* (fig. 9.39:4).

CP33: *Necked Cooking Pot with wide ridge and slightly sloping in simple rim (Pl. 7.8.4:9)*

Description: This neck cooking pot has an slightly sloping in neck and rim. The ridge is wider (15mm) taking up most of the neck while the rim is rounded with no thickening.

Fabric: Ware B6

Decoration: N/A

Parallels: Only found at RHI and L2HE sites

CP34: *Necked Cooking Pot with wide pronounced ridge and slightly sloping in simple rim*.

Description: This pot is similar to CP33 but has a more pronounced ridge often created by grooving.

Fabric: Ware B6

Decoration: N/A

Parallels: See *Tell el-Kheleifeh* (pl. 19:2) which could be CP33 or more likely CP34.

CP35: *Holemouth Cooking Pot with ridge and thickened exterior ledge rim*

Description: This holemouth cooking pot has a thin pointed ridge (ca. 5mm) on the rim. The lip is thickened on the exterior to create a pointed ridge. The rim has no internal bending in contrast to CP36-38 and is more stubby (ca. 15mm long) in comparison.

Fabric: Ware B6

Decoration: N/A

Parallels: See *Tell el-Kheleifeh* (pls. 16:4;17:3-4;18:4?).

CP36: *Holemouth Cooking Pot with sharp ridged rim and thickened exterior lip* .

Description: The Holemouth Cooking pot with rim sloping in has a ridge created by a sharp bent in rim. The lip of the rim is thickened on the exterior creating a sharp exterior ledge.

Fabric: Ware B6

Decoration: N/A

Parallels: Only found at L2HE sites.

CP37: *Holemouth Cooking Pot with sharp ridged rim and thickened exterior ledge lip* .

Description: The Holemouth Cooking pot with rim sloping in has a ridge created by sharp bent in rim. The lip of the rim differs from CP36 in being thickened without a sharp exterior ledge.

Fabric: Ware B6

Decoration: N/A

Parallels: See *Busayra* (fig. 9.38:2,4). Possibly *Tawilan* (fig. 6.33:4) is the same type but drawing is unclear.

CP38: *Holemouth Cooking Pot with sharp ridged rim and thickened interior lip (Pl. 7.13.1:23)*

Description: This Holemouth Cooking pot with rim sloping in has a ridge created by sharp bent in rim. The lip of the rim is thickened on the interior.

Fabric: Ware B6

Decoration: N/A

Parallels: See *Busayra* (fig. 9.38:9-10).

CP39: *Holemouth Cooking Pot with pronounced large ridge simple rim* .

Description: The Holemouth cooking point with no bend in rim has a ridge and exterior thickened rim and has a large tall ridge (ca. 8mm wide and 5mm tall). The rim is simple and overall rim treatment resembles some examples from CP34.

Fabric: Ware B6

Decoration: N/A

Parallels: Only found at L2HE sites.

CP40: *Holemouth Cooking Pot with upright ridged flattened rim* .

Description: This Holemouth cooking pot has a sloping in ridged rim. The distance from lip to ridge is short (5-6mm) and the ridge is either rounded or pointed. The flattened lip is the same thickness as the neck and body. This type is the neckless form of CP32.

Fabric: Ware B6

Decoration: N/A

Parallels: Only found at Tawilan.

CP41: *Holemouth Cooking Pot with small ridge and simple rim* .

Description: This Holemouth cooking pot has a small unpronounced ridge at the base of the rim. The lip is simple.

Fabric: Ware B6

Decoration: N/A

Parallels: Possibly the same as *Tawilan* (fig. 6.35:4).

CP42: *Holemouth Cooking Pot with wide unpronounced ridged rim* .

Description: has a wide ridge (10mm) that does not protrude out far from body (4mm).

Fabric: Ware B6

Decoration: N/A

Parallels: Only found at Tawilan

CP43: *Holemouth Cooking Pot with short stubby ridged rim*

Description: This Holemouth Cooking pot is similar to CP35 but without thickened of exterior lip a slight undercutting on lip on exterior instead.

Fabric: Ware B6

Decoration: N/A

Parallels: Only found at Tawilan and KAM.

CP44: *Necked Large Cooking Pot with double thick folded rim with ridge* .

Description: This large necked cooking pot has a folded over rim creating a double thick neck in comparison to vessel wall. The neck attached to the body at a bend 8-10mm below end of rim. The ridge is rounded or pointed and lip is thick and rounded.

Fabric: Ware B6

Decoration: N/A

Parallels: Only found at KAM

CP45: *Small Holemouth Cooking Pot with ridged rim* .

Description: These miniature Holemouth cooking pots are very thin (5mm) and have small diameters ranging from 8-10cm. The rim has a rounded unpronounced ridge with a simple rim.

Fabric: Ware B6

Decoration: N/A

Parallels: See *Busayra* (fig. 9.39:11) that is similar in size but necked.

CP46: *Necked Cooking Pot with large ridge that takes up almost entire rim .*

Description: This necked cooking pot has one large ridge 4mm below lip and takes up the entire rim.

Fabric: Ware B6

Decoration: N/A

Parallels: Maybe similar to *Tawilan* (fig. 6.34:4).

CP48: *Medium Neck Cooking Pot with upright pronounced ridge rim with groove on lip*

Description: This unique cooking pot has a medium neck (13mm from body to bottom of rim). The ridge on the upright rim is pronounced and the ledge is turned up. On the lip a groove occurs. A strap handle attaches to a ridge on the shoulder and lower down on the mid-body.

Fabric: Ware B6

Decoration: N/A

Parallels: Only found at KIS, one example.

CP51: *Necked cooking pot with thinly ridged sloping in rounded rim .*

Description: This necked cooking pot has a thin (2mm high) ridge below a sloping in rounded lip

Fabric: Ware B6

Decoration: N/A

Parallels: Only found at KIJ

CP52: *Necked cooking pot with triangular ridge and everted lip* .

Description: This necked cooking pot has a tall ridge with a triangular section. The lip of the rim is everted creating an external ledge.

Fabric: Ware B6

Decoration: N/A

Parallels: Only found at KIJ

CP53: *Holemouth cooking pot with triangular ridge and everted lip* .

Description: This is a Holemouth cooking pot with a similar rim treatment to CP52.

Fabric: Ware B6

Decoration: N/A

Parallels: Only found at KEN

CP54: *Holemouth cooking pot with sloping in triangular ridge and rounded lip*

Description: This is a Holemouth cooking pot similar to CP53 but has a simple rim.

Fabric: Ware B6

Decoration: N/A

Parallels: Only found at RHI

C. General Quantitative Analysis

The tables (7.1-7.7) and figures (7.1-7.5) summarize the distribution of the identified vessel types across the excavated sites in this study. These represent the Minimum Number of Individual (MNI) vessels found in the assemblage based on the analysis of the diagnostic pottery sherds from each site. A total of 4,344 diagnostic sherds were used for the quantitative analyses presented below (see Table 7.1 for the distribution from each site). In this study, we use the MNI as an important index for measuring the percentage of ceramic types through time. Similar approaches are more common in late prehistoric ceramic studies (cf. Commenge et al. 2006; Levy and Menachem 1987) The MNI studies are important is due to the scarcity of complete vessels with which to establish a typology.

For the study presented here, a simple quantitative approach is taken to facilitate an understanding of the structure of ceramic assemblages from these Iron Age sites and for intra-site comparison in the Edom study area. These basic data can serve as a starting point for more sophisticated statistical analyses when future researchers analyze their assemblages as systematically as the studies presented here (cf. Shennan 1997; Lee and Wong 2001; Thomas 1986). Several immediate observations can be made when comparing the percentage of vessel families found at each site (Table 7.1). With the exception of KAJ and RHI Sounding A, the predominant vessel family found at all these sites was bowls. The MNI for RHI sounding A includes handmade wares, which were more abundant than the wheel made pottery; therefore, the higher quantity of jars is

skewed towards the predominance of handmade jars found at the site. The function of this distribution is unclear.

The distribution of vessel families is markedly different when comparing the late Iron Age II sites found in the highlands of Edom to KEN and the lowlands soundings. For example, among RHI sounding B and the four L2HE sites, a very similar distribution of vessel families occurs. Bowls at these sites are the predominant form and represent ca. 50% of the assemblage. The second, most common vessel family is cooking pots that represent approximately twice the amount of the other vessel families among L2HE sites KAM, KIJ, and KIS (16%-26% of the assemblage). The Tawilan site has a more even distribution with jugs, jars, kraters, and pithoi representing ca. 10% of the assemblage each. In contrast, at the Early Iron Age II sites, a different distribution of vessel families occurs. First, at all these sites cooking pots represent a small percentage of the assemblage. Small jars represent either a larger percentage (RHI04, KAJ06) than bowls or as seen in KEN they are the second most common family (ca. 24.6%).

These marked differences in assemblages could be due to a number of factors. For example, KEN and KAJ are both industrial sites and thus cooking pots would not be expected to be associated with rooms linked to metallurgical production rather than domestic activities. Second, as will be discussed below, these earlier sites had a large amount of handmade jars, containing a similar fabric to the cooking pot A6 ware. These handmade jars may have been used as the primary domestic cooking vessel instead of the ridged rim cooking pots that dominate later periods. This observation can be extended to RHI Sounding A which is located very close to summit of the site where Glueck (1934) identified an IA watchtower and we found evidence of a small habitation area that mostly

used handmade wares for domestic activities and only a few cooking pots were found (n=5; 5% of the assemblage). However, the functional differences between these early IA II sites and the later phase sites do not fully explain this data. As will be elaborated below, this difference may reflect the predominance in the earlier period of other vessel types over the predominant forms used during the Late Iron Age II as seen among RHI Sounding B and the L2HE sites.

D. Handmade Ware

The presence of handmade vessels in the Iron Age II assemblage at Khirbat en-Nahas, Rujm Khirbat Hamra Ifdan and Khirbat al-Jariya is important from a temporal and cultural perspective when compared to the other sites in this study. For the sites discussed in this study, the handmade vessels were differentiated into two primary categories of bowls and holemouth jars. Many of these bowls and jars also had knob and ledge handles attached. Several examples had white slip and/or grooving. The morphological difference between these hand made wares found at these sites is a study within itself and has been left for future research. Recently, a detailed typological study at Kadesh Barnea of the hand made wares has been conducted (Cohen and Bernick-Greenberg 2007). A number of the morphological distinctions made in that study apply here as well. A sample of the handmade wares from Khirbat en-Nahas were published recently by the author (Smith and Levy 2008) and some additional examples are illustrated here (Plates HMBL: 7.3.2:18; 7.4.2:12; 7.5.1:4; HMJR: 7.1.1:15; 7.3.3:9-10; 7.4.7:1-3, 9, 12; 7.7.1:11-12). A more in-depth treatment of this important Iron Age ceramic type will be carried out elsewhere (Smith and Levy in prep).

The hand made ware found at KEN, KAJ, and RHI Sounding A are not the same as that found on the plateau. Specifically, they contain large granule size inclusions or basalt, shales and slag. The appearance of slag as an inclusion in many of the vessels may be one of the best indicators of the intense metallurgical production that occurred during the Early Iron Age II around the vicinity of KEN.[20] In contrast, the hand made wares found on the plateau[21] had large quartz inclusions and many cavities from organic material.

For examples of handmade bowls (HMBL) found on the Plateau sites see: *Tawilan* (6.36:1-9), *Tell el-Kheleife*h (pl.14-15), *Ghrareh* (pls. 24:1-15; 28:7-10) , handmade jars (HMJ): *Tawilan* (6:36:10-11), *Tell el-Kheleifeh* (pl.12:1) and Barqa el-Hatiye (Fritz 1994: Abb. 13:1-9). For published parallels in the Negev see Meshel (2002), Cohen and Cohen-Amin (2004) and the detailed typology by Cohen and Bernick-Greenberg (2007), discussed above.

The relationship of KEN's handmade wares to so-called "Negebite" pottery is still under investigation. Recent petrographic and INAA studies on Negebite ware at other sites have emphasized local production of ceramics as well as origin in Edom (Slatkine 1974; Gunneweg et al. 1991; Haiman and Goren 1992; Rothenberg 1988). However, the distribution of these handmade ceramics at many sites in the Negev and Transjordan does not indicate production by a single ethnic group or its value as a marker of ethnic identity (cf. Tebes 2006:105). The function of these handmade vessels is still not clear; however, Meshel's (2002:291) suggestion that they are associated with cooking may explain the

[20] A study of the specific clay sources of the handmade wares at KEN is forthcoming.
[21] Few hand made wares were found at RHI sounding B and only on the surface

relative dearth of cooking pots found at KEN, especially in Gatehouse (Area A) and thus reflect domestic production. Furthermore, it seems more appropriate to use the term 'Handmade' vessels as opposed to "Negebite' pottery as these vessels may have no direct relationship with sites in the Negev region but may be a local manifestation of the south Levantine desert zone.

The quantitative analysis of the hand made and wheel made vessels reveals another significant distinction between the early industrial and domestic sites and the later period sites (Table 7.2). At KEN and KAJ the hand made wares represent a significant percentage of the entire ceramic assemblage (14.6% and 12.8%). At RHI Sounding A, the hand made wares are predominant, representing ca. 58.7% of the entire ceramic assemblage. The later period sites' hand made wares represent either a small percentage of the assemblage (KAM: 1.7%; KIJ: 3.7%; TW: 3.9%) or lacked any hand made wares. The most striking difference is seen between RHI Sounding A and Sounding B. It is clear that at this site there was a significant change in the use of hand made wares over time. For all intended purposes, Sounding A and Sounding B appear to be completely separate occupations during different time periods. The distribution of hand made wares thus corroborate what is seen among the morphology, petrography, and radiometric dating for these two soundings. An examination of the quantitative data suggests that the use of hand made wares among inhabitants at KEN, KAJ, and RHI Sounding A was an Early Iron Age II phenomenon. During the later period sites, studied here, hand made ware became less commonly used.

E. Imports

During the excavations of KEN, KAJ, and RHI Sounding A imported pottery was found within the ceramic assemblages from these sites. As of yet, none of the L2HE sites or RHI Sounding B show any evidence of imported pottery. All of these sites are rural villages in contrast to Bennett's (c.f. Bienkowski 2002) excavations at Busayra. All the imports found at the earlier lowland sites can be clearly dated to the Early Iron Age II.

First, the most predominant import found at KEN comes from the Western Negev. One example was found in the small sounding at KAJ. The petrographic study revealed that these fine-ware bowls (BL3a (n=1); BL15 (n=1); BL16 (n=2); BL24 (n=4); BL25 (n=1); Table 6.2a: PG5) were made of loess soil – common to the northern Negev but foreign to Edom. All of these imports are red slipped and the majorityare burnished as is commonly found at the early Iron Age II sites in the western Negev. BL3a is remarkably similar to the early irregularly half slipped bowls found in the Negev. The other examples have an even red slip and horizontal burnish. This is in contrast with KEN where red slip burnish rarely occurs (see F.). The evidence of these imports at KEN suggests that KEN interacted with its western neighbors and imported in small numbers fine-ware bowls (see this chapter's conclusions for further discussion).

Each season at KEN has yielded several examples of Cypriot Black-on-Red juglets (JT2). These are easily identifiable by their well-sorted clay, thin walls and well-burnished red exterior with black decoration in the form of concentric circles (see Ch.6 for a discussion of their petrography). Herzog and Singer-Avitz (2004:215-6) note the appearance of Cypriot imports in Judah during the late Iron Age IIA. Although predominant in the northern sites of Israel, they are also found at *Tell Beit Mirsim II* Stratum B (Albright 1932: fig.51:9), *Lachish* Stratum IV (fig. 25.5:16), Kadesh Barnea

Stratum 4b (pl. 11.11:11), Beer-Sheba Strata VII-IV (*Beer-Sheba II*: figs. 24:7; 30:8-9; Herzog and Singer-Avitz 2004:218) and other sites (see Schreiber 2003 for most up to date discussion and parallels). Herzog and Singer-Avitz (2004) identify these Cypriot juglets as significant markers of the late IAIIA and their context at KEN with the wheel-made vessels supports this dating. This evidence supports the relative and absolute dating found at KEN, which dates it to the 10th-9th c. BCE.

During the 2002 excavations at KEN, a total of 32 Qurayyah painted ware sherds were found in both Areas A and S.[22] In the following 2006 season Qurayyah ware sherds were found but in smaller quantities (Area A (n=1); Area M (n=2); Area R (n=2). A single example was also found at RHI Sounding A. The petrographic analysis of the 2006 Qurayyah ware (see. Ch.6) confirms these were not locally produced. Although mostly painted body sherds were found, a few jar and bowl sherds were identified with known Qurayyah painted ware vessel types. Based on the analysis here, the Qurayyah ware from KEN can be broken down into two main groups: fine ware with a cream slip and bi-chrome painted exterior surface that was burnished or a medium-fine ware that was much coarser having only bi-chrome painting designs on the exterior.[23] Qurayyah ware core fabrics are unlike any other wheel-made vessels in the KEN assemblage as they have a pink to light red color matrix with red, brown and black shale inclusions. When compared with similar vessels with bi-chrome paint and fabrics, these can be tentatively dated to the 13th-12th C. B.C.E.. However the precise chronology of this ware

[22] The petrography of these sherds has been analyzed by A. Hauptmann and R. Adams at the German Mining Museum in Bochum. As the work is incomplete, the Qurayyah ware could not be studied in greater detail here. Special thanks to Prof. Hauptmann for making the image files of these thin sections available to the author.

[23] The latter may not originate from Qurayyah and be local since the fabric is different, but the petrographic analysis has not been completed as of yet (see footnote 5).

and its variants is still not clearly defined and Bawden (1983:40-49) has noted that 10th-9th c. BCE painted wares were found at Qurayyah.[24] Whether there are distinctive differences between these two periods is not known.

Qurayyah ware ceramics are found in largest quantities at the site Qurayyah and Tayma in Saudi Arabia, and from surface collection throughout the northwestern corner of the Arabian peninsula or Hijaz region (Bawden 1983:38). Qurayyah ware has been found in Edom at Barqa el-Hatiye (Fritz 1994: Abb. 12:1-12), Ghrareh (Hart: pl.25:4), Tell el-Kheleifeh (Bawden 1983:39) and Tawilan (Rothenberg and Glass 1983:84). In Cisjordan they have been identified at Timna (Rothenberg 1988), Jedur (Ben-Arieh 1981) Tel Masos (Fritz and Kempinski 1983; Rothenberg and Glass 1983:81), Yotvata (Meshel 1990: 20-23), Tel el-Far'ah S (Rothenberg and Glass 1983:82), *Kadesh Barnea* (pls. 11.6-11.7) and Lachish (Rothenberg and Glass 1983:81). As is the case for both KEN and Barqa el-Hatiye, handmade wares and Qurayyah ware are found together at other early Iron II period Negev sites mentioned above (see Cohen and Bernick-Greenberg 2007; Meshel 1990 and Rothenberg and Glass 1983).

The presence of Qurayyah ware at Tell el-Kheleifeh and Tawilan, both dated to the late Iron II, has led to various interpretations. Rothenberg and Glass (1983:76), who have found a parallel form at Timna in a stratified 13th-12th c. BCE context associated with Egyptian New Kingdom cartouches, argue that these examples represent earlier occupations not reflected in the excavations. The Qurayyah ware from KEN is found in

[24] A date of 8th-7th C. BCE for Qurayyah ware has been suggested according to one fragment found at Tawilan (Rothenberg and Glass:84; Bienkowski 2001; Van der Stein & Bienkowski 2006:15). Unfortunately, this sherd was never published to determine whether it was truly Qurayyah ware and its original context at Tawilan cannot be confirmed. The high frequency of Qurayyah ware at many sites dating much earlier would suggest assigning an 8th-7th BCE based off of one sherd from an unknown context and lack of modern investigation is premature.

Early Iron II contexts (Levy et al 2004, 2005). Unlike one stray sherd as found at Tawilan and Tel al-Kheleifeh , the Qurayyah ware is found at multiple areas on the site (Areas S, A, R, T, M), many of which are from good contexts (e.g. on floors or production layers just above a floor). This would suggest that the presence of Q ware in these later contexts may indicate a continuation of the use of this non-local ceramic type into the 10th C. BCE. At RHI Sounding A, which has been identified as a single period short occupation site, a Midianite sherd was found associated with the handmade and wheel-made forms near the summit of the site. This phase was radiocarbon dated also to the 10th C. BCE (Levy et al 2008). Since the upper occupation was only occupied during this period and not in the 13th-12th c. BCE it strongly corroborates an interpretation of the Qurayyah ware at KEN as being contemporary rather than heirlooms from earlier occupations at the site.

As noted above, Qurayyah painted ware has also been found at Timna - another copper metallurgical region in the southern Levant some 106 km south of the Faynan copper ore district. Rothenberg and Glass (1983) published a sample of Qurayyah ware pottery and decoration motifs from Timna' Site 20 that have the most direct parallels with those from Khirbat en-Nahas. KEN's Qurayyah ware bowl (Pl. 7.16:8) is similar to the bowls published by Rothenberg and Glass (1983: fig.3:1-4). One KEN example (Pl. 7.16:18) appears to be a goblet similar to one published from Timna (Rothenberg and Glass 1983: fig.4:3). Another (KEN: Pl. 7.16:17) may be a jug similar to the one from Timna (1983: fig.5:3). Shared decorative motifs with Timna' are only found in a few examples, such as the relief near the rim on one sample (KEN: fig.23:18) (see Rothenberg and Glass 1983: fig.5:3, 6:6). Other KEN examples include the oblique lines bound in a frieze (KEN: Pl. 7.16:17) compare to Rothenberg and Glass (1983: fig. 9:9)

and also, the vertical lines (KEN: Pl. 7.16:13) parallel the Timna pottery (Rothenberg and Glass 1983: fig.9:4-6); Zigzag within a frieze (KEN: Pl. 7.16:15) found in Rothenberg and Glass (1983: figs. 4:4, 6; 6:8; 9:G:2); Note also following the frieze the repetition of two horizontal lines (KEN: Pl. 7.16:15, 17-18) is also common (see Rothenberg and Glass 1983: figs. 9:B:1; C:1; 10:E:1; G:2); Dot decoration around the vessel is also found on (KEN Pl. 7.16: 6,7,12-13) compare to (Rothenberg and Glass 1983: fig. 11:K:1). Cross-hatch can be found at KEN on figure (23:6) comparable to (Rothenberg and Glass 1983:fig.5:3;6:7). The wavy line found at KEN (Pl. 7.16:18) can be compared to (Rothenberg and Glass 1983: figs. 3:1; 4:4). However, the most common decoration motif found at KEN (Pl. 7.16:1,2 , 5, 7-9, 12, 14) the radiating straight, curved and bent lines always bounded on one side by a stanza horizontal line is not present. Although not a clear comparison, the bird motif's tails resemble this design (Rothenberg and Glass 1983: fig. 7:3-5). Overall, morphology and surface treatment parallel closely the Qurayyah ware found at Timna. Combined with the petrographic analysis these data suggest that the Qurayyah ware found at KEN is indeed an import from the vicinity of Qurayyah.

F. Quantitative and Qualitative Comparison of Decoration and Surface Treatment over Time

A study of vessel surface treatment reveals a number of important aspects of the chronological differences between KEN and the later Iron Age II sites. Specifically, surface treatment at the early lowland sites (primarily KEN) varies from the later period sites at RHI Sounding B and the L2HE sites. For the study presented here, surface

treatment has been grouped into four classes: painted, applied decoration, slip, and burnish (Table 7.3). Although burnish is often associated with a red slip, this distinction is not made in Table 7.3. Where multiple types of surface treatment occur on the same vessel, a count was tallied for each type, thus the totals for each stratum are larger than the actual MNI.

1. Painting

At KEN painting of local wheel-made pottery consists primarily of black painted strokes either applied as bands along the rim or interior and exterior. Black strokes on the rim either without bands or crossing bands is commonly seen. White slip was often applied first but not necessary; it is quite common to see bowls with the black concentric circles painted directly onto the un-slipped vessel. Red and White paint occur occasionally on bowls; especially the triangular section rim bowls (BL3). Painted black crosshatch patterns or other designs are seen rarely on the exterior of jugs, jars (Pl. 7.2.2:11), and kraters (Pl. 7.1.3:12). At Area R on a well preserved surface several complete and restorable small cups (c.f. Pl. 7.1.1:24) were found (n=8). These all had a white slip with vertical black painted stripes. The petrographic analysis revealed that these were not imports from outside the region but were produced within Edom. Their association with other fine-ware vessels (e.g. Qurayyah ware and Cypriot juglets) suggest that a small collection of delicate vessels were left remaining within the chamber of building at Area R. Similar shaped small cups lacking the decoration were found in Area T (n=2) and M (n=1).

The quantitative analysis for the Integrated Phases at KEN (Table 7.3; Figure 7.4) is not particularly informative but several observations can be made. First, all the areas have painted pottery. Area M, which was had a large exposure horizontally and vertically yielded significantly less painted pottery. In general, Area M's ceramic repertoire has a much higher amount of simple or crude bowls and jars. Area A possesses the largest percentage of painted sherds but it was also excavated for two seasons which is not represented in the normalization of the tables. Stratigraphically, painted sherds are predominant in the main stratigraphic phase of each area where the largest amount of that areas ceramic assemblage was collected. Therefore, the data does not show any significant disparities in painted sherds' distribution across the different stratigraphic periods of occupation.

At the L2HE sites and RHI Sounding B painting is also common (c.f. Table 7.3), but stylistically is more elaborate than what is found at KEN, which probably reflects temporal differences in the application of paint. Painted black bands on the rim and (int./ext.) faces continues to be the dominant style but a host of new paint colors and thicker bands becomes popular. Red paint specifically used as thick (3-5cm) bands below the rim on the interior or exterior is most commonly seen. There is also a greater occurrence of white painted bands on red slip or these on the red bands. Numerous examples have multiple sets of horizontal black or red paint bands (c.f. Pl. 7.8.2:22). The most highly decorated vessel types found among these sites are BL12c and BL20 where a thick red slip with a set of polychrome colors or plain black horizontal bands occurs. BL20 similar to BL21 are painted only on the exterior while BL12c are painted on both sides. Overall, a large percentage (13.3%-36.0%; see Table 7.3) of the vessels

(predominately bowls) are painted at these sites, which can be immediately contrasted with the smaller percentage found at KEN. This evidence suggests that this discrepancy between KEN and the Later Period sites should be associated with chronological differences between these sites.

2. Applied Decoration

Applied decoration, which subsumes many different ways of exterior grooving or clay attachments (e.g. knobs, bar handles, 'buttons') is frequent within all the ceramic assemblages in this study. The most common decoration technique employed at KEN was grooving on the exterior of vessels. Heavy storage jars and kraters as well as smaller vessels are typically grooves at or below their shoulders. Among bowls the only grooving occurs on the medium-fine bowls (BL15) and the large bowls (BL, possibly imports, Another common applied decoration among handmade wares was the attachment of small knobs running horizontally around the vessel. Applied decoration was uncommon

Among RHI and the L2HE sites, applied decoration is similar to KEN but with several new vessel types where grooving played a central role. First, several of the late Pithoi's rims described above (PT17-PT21, PT23) were finished with one or several grooves. These Pithoi are distinguished in this discussion by the various finishing techniques involved in grooving. Second, BL43 found only at RHI sounding B (n=6) has two-three large grooves found at mid-section. Finally, grooving occurs on numerous Pithoi and jars as described for KEN. In general, the comparison between KEN and the

later sites suggests that grooving remained a standard practice throughout the Iron Age II sequence.

3. Slip

Although slip is regularly seen on vessel types at all of the sites it is a predominant feature at KEN (e.g. 47.7% of the assemblage; c.f. Table 7.3). Bowls, kraters and jugs are the most common vessel classes with slips. The slip was applied in different examples on the interior, exterior, and rim. Sometimes the slip can only be identified on the rim. Although slip is found primarily on wheel-made pottery, there are a few examples at KEN of handmade ware sherds with slip. At KEN, slip is primarily white but also cream occurs on a regular basis. In very few examples are other slip colors found such as brown, black, and red. Red slip is rare in the assemblage. When it is found it is accompanied with different types of burnishing and limited to specific vessel types (e.g. BL3; BL12). The common application of white slip differs from similar vessel forms that had red slip with or without hand burnish as is seen by the imports found at KEN deriving from Cisjordan.

The distinctively different painting style found at KEN from its contemporary western neighbors (e.g. at *Tell Beit Mirsim III* or *Tel Batash*) is intriguing. It is clear from the petrographic study (ch.6) that KEN interacted with the sites found in the Negev and even imported their pottery. However, this interaction did not lead to the appropriation of red slipped burnished ware. Rather the technological styles of the potters found at KEN were unaltered by this interaction and suggest that strong motivational schemas inhibited this adoption as theorized in Chapter 3. It cannot be directly inferred that this occurred on

a conscious level (e.g. ethnic markers), but it is clear that the indigenous potters of KEN had specific mimetic models that persisted throughout the occupation at KEN that were foreign to their western neighbors. Moreover, it is these same styles of white slip and painting (as discussed above) that become more elaborated in later periods.

At the L2HE sites and RHI Sounding B white slip continues to persist but now red slip equally (ca. 50%) has become a common medium on which painting (all predominately among bowl types) occurred. In these later period sites slip regularly occurs with painting or otherwise un-slipped sherds is preferred. A number of archaeologists working in the southern Levant (Bienkowski 2002; Bienkowski and van der Steen 2001; Cohen and Bernick-Greenberg 2007; Levy 2009; Na'aman and Thaerani-Sussely 2006; Singer-Avitz 1999, 2002, 2004; Whiting 2007) have noted the distinctive difference found among this pottery, which has come to be called 'Busayra ware' even though the data here (e.g. the local production of the pottery coming from L2HE sites and RHI Sounding B) suggests it was produced throughout Edom rather than radiated out from the 'capital', Busayra. Thus, from the new data and analysis presented here it shows that these painted wares were produced throughout Edom and represent a shared cultural tradition.

4. Burnishing

Burnishing is rare during both periods of the Iron Age II. At KEN the majority of examples are primarily on body sherds. There are many different types of burnish including irregular hand burnish, continuous burnish, and horizontal or possibly wheel burnish. Surface color as a result of burnishing has a range of different hues of red and

dark reddish-brown. Painting rarely occurs with burnishing and if it does it is restricted to bowls. Burnishing is also uncommon at RHI Sounding B and the L2HE sites. When it does occur it is specifically found on the ultra-fine BL20 examples (c.f. Ch.6 discussion of Ware A6; and BL20 above). Therefore, burnish is uncommon during both periods in the lowlands and highlands, at least according to the ceramic assemblages recovered from these soundings (Busayra specifically appears to have had a number of its vessels burnished see Bienkowski 2002). This evidence implies that there was a distinctive cultural difference in the production of pottery in the region of Edom from the neighboring Negev sites. How this relates to social boundaries will be discussed below.

V. Summary of Ceramic Analysis Results- Implications for Understanding Social Boundaries, and Change in Iron Age II Edom

The seven excavations from southern Jordan described and used for the ceramic analysis in this study enables, for the first time, an authoritative comparison of the ceramics of Iron Age II (ca. 1000 – 500 BCE) Edom to be drawn from both the lowlands and highlands of this region over time and space. The ceramic typology developed in this chapter has sought to classify types through the discovery of morphological and petrographic attributes. The study shows that when an inter-site comparison is conducted according to the types defined here, the differences between the Early Iron Age II occupation at KEN, KAJ, and RHI Sounding A and the Late Iron Age II sites (RHI Sounding B, KAM, KIS, KIJ, TW) become readily apparent. When these ceramic assemblages are tied to published radiocarbon chronologies from the recently excavated sites, the study presented here gives us a better chronological picture for the whole region

of Edom concerning what is clearly early (ca. 11th – 9th c. BCE), and what is unmistakably late (8th – 6th c. BCE), as well as several insights concerning the technological styles that enable us to distinguish social boundaries within the region. Thus, the inter-site morphological quantitative comparison (c.f. Table 7.4)[25] presented here demonstrates significant inferences that can be drawn from these data based on the models and hypotheses presented in previous chapters (i.e., Ch.2 Hypotheses (Hyp.) 6-13; Ch. 3; Ch. 4 Hyp.1-13).

(1) (Chapter 2, Hyp 13) The comparative study conducted for all the dominant vessel types found at Khirbat en-Nahas overwhelmingly shows that this ceramic assemblage has strongest parallels with those found in surveys and excavations on the plateau of Edom at sites such as Busayra, Tawilan, Umm al-Biyara, and Ghrareh (e.g., vessel types BL3, BL21, BL30, KR19, PT5, JG3, and JG4) rather than sites in Cisjordan. While the assemblage from KEN is earlier (c. 10th - 9th c. BCE) than the highland sites, each of the KEN vessel types have their specific later derivatives on the plateau of Edom. In addition, the painting styles and decoration found at KEN are most similar to those found at the highland sites of Edom, although not as developed (see above). This demonstrates a much longer local Iron Age potting tradition than that assumed by earlier researchers in Edom (e.g., Bienkowski 1992, 2001, 2002; Bienkowski and van der Steen 2001; Oakeshott 1978; 1983; Porter 2004; Pratico 1993).

The study here has worked under the assumption (corroborated by radiocarbon dates at all sites) that KEN is significantly earlier than RHI Sounding B and all the L2HE

[25] Table 7.4 presented here represents all vessels that occur more than 10 times.

sites. This also has important implications for interpreting previous Iron Age excavations on the plateau of Edom. The ceramic analysis does not suggest that the similarity between ceramic types from KEN and the highland sites indicates that they should be re-dated to an earlier Iron Age II phase. Rather, what is argued here is that at many of the late IA II sites there are a several technical styles of vessel shape and rim form that remained popular from earlier traditions and only underwent minor deviation over the entire Iron Age II period. Just as some late 5th millennium Chalcolithic vessel style types, such as the V-shape bowl were made over a long period of time (ca.+ 500 years; cf. Burton in press), the fact that it happens in the Iron Age over a ca. 300 year tradition is not remarkable. This is not only a common scenario during the Chalcolithic period or the Iron II period in Edom but has also been shown at many Iron Age II sites in Israel and other regions that have well stratified sites and well-developed typologies (e.g. *Tel Batash*, *Lachish*, *Beer-sheva*, and other sites – for bibliography see site references in ceramic descriptions below). In fact, many of the types defined here (e.g. BL3, BL13) are paralleled at Tel Batash Stratum IV-II, and Lachish V-II, which span the entire 10-7th C. BCE. Also compare type JG3 to Beer-Sheba II Stratum IX (fig. 19:6) but also Beer-Sheba I Stratum II (pl. 68:18). Thus, this study does not claim that the entire Edomite pottery assemblage lasted intact and unchanging for 300 years. Rather, a few forms from this assemblage have "short use horizons" (ca. 50 years) while other forms have “long use horizons” (ca. 100 – 150 years) during the Iron Age II sequence (ca. 1000 – 500 BCE). The styles that continued over a longer period than 50 years only contain minor variants in morphology, typically not considered relevant by researchers but must now be considered in light of the findings here. Moreover, the detailed morphological and

petrographic sub-attributes defined here for these groups help to distinguish between the different phases of the Iron Age II (Iron IIA, IIB) and note significant changes over time (e.g. better controlled firing techniques, new decoration techniques, or deviating minute rim treatments or body shapes). These distinctions need to be taken into consideration when comparing sites based on morphological attributes of pottery alone in order to test social models.

The cognitive anthropology concept of mimetic models proposed in this study (ch. 3-4) helps us understand this common phenomenon found across time and space. Specifically, ceramic studies that depend on morphology must recognize that the styles found within potting communities represent *chaîne opératoires* that are taught by elder potters of a community to younger generations. These technical choices are internalized as durable models that are highly resistant to change and are passed down from one generation to the next. When these forms are found on the Edomite plateau it does not mean they are early, rather that the technological style continued in use with little drift (i.e. transformation) over time. What is important to consider is that specific styles that outsiders might distinguish as 'Edomite' pottery reflects widespread mimetic models specific to the sub-region. Thus, the general 10th- to 9th-century Iron Age ceramic assemblage from KEN should be considered a local regional ceramic tradition, deeply rooted in time, specific to Edom that developed in parallel to the many different technological styles found in Iron Age Cisjordan. The ceramic industry at KEN reflects a strong local Iron Age tradition that begins in the lowlands of Edom and continues into the eighth and seventh centuries B.C.E. at the highland sites noted above. Assuming that local ceramic production traditions reflect in some way the communities where they are

situated (van der Leeuw 1977), any attempt to model the relationship of the late second and first millennium B.C.E. historic ethnic group to the control of 10th- and 9th-century B.C.E. metal production at this important site must factor in the dominance of the local Iron Age potting tradition for the people who worked at Khirbat en-Nahas during these centuries.

(2) Despite a few ceramic forms showing "long use horizons" of stylistic choice, the comparative ceramic study above strongly supports the assertion argued in Ch. 5 that the stratified KEN ceramic assemblage discussed above dates to the 10th through late 9th century B.C.E. Many of the forms discussed in the typology are related to similar vessels from strata found at sites in the Negev and Shephelah to be strictly confined to this time period (e.g., KEN vessel types: BL15, BL22, BL34, BL36, KR4, KR8, PT5, JG4, JG15, JT17, JT19, JT22, JT23, and JT26). It is important to note that when compared to the Negev and Shephelah many of these types are not morphologically identical and more importantly the fabric and surface treatment is completely different.

The ability to find approximate ceramic 'parallels' between the region of Edom and its southern Levantine neighbors indicates the existence of a social "interaction sphere" (Chapter 2, Hyp 13), where structural homologies emerged between these regions as they began to share a number of common features such as architecture, ceramics, iconography, measurement systems, language, writing, religious beliefs and political institutions. As polities of equal or unequal status interact they must develop a lingua franca of not only language but cultural norms that facilitate the clear communication of the two groups.

Additionally, it was hypothesized (Chapter 2, Hyp 13b/13c) that elites who sought to interact at an equal level with neighboring peer elites helped drive the pursuit to adopt similar traits and behaviors. The evidence of various imported fine-wares especially in the large walled structures of Area R and T at KEN may be reflective of this model. Most important, the rough similarity in ceramic types that enables comparative studies with contemporary regions is ultimately a product of these interaction spheres. Thus, at present, there is no visible evidence in the ceramic record that would suggest that KEN was subordinate to a larger polity (c.f. Ch.2 Hypotheses 11,12). How this relates to other realms of material culture from the new excavations described here remains to be determined. As was argued in Chapter 5, Khirbat en-Nahas was one of the largest polities during this time period in the southern regions of Edom and the Negev. It can be suggested that metallurgical activity at KEN was organized and ran by an indigenous leadership at certain phases of the Iron II period – such as the 9th c. BCE.

(3) [Chapter 3, Hyp. 4] Despite the high degree of interaction between KEN and its neighboring polities, the ceramic assemblage also contains a number of early Iron Age II vessel types that are unique to the lowlands of Edom. These vessels are found in large numbers at KEN and do not have parallels outside the region (e.g., KEN vessel types: BL31, BL33, BL37, KR3, KR5, KR6, KR12, KR13, PT4, JR7, JR14, JG16). Similarly, the surface treatment is specific to KEN at this period (see above). This is an indicator of both KEN's local production but also its earlier date when compared to sites such as RHI Sounding B, the L2HE sites, Busayra, Umm al-Biyara, and Tel el-Kheleifeh.

(4) This chronological inference (Ch. 5) is corroborated by the complete absence of the many dominant late Iron Age II ceramic types identified at the highland sites and

RHI Sounding B. These types have a short life ceramic horizon dated to the late eighth to the sixth century B.C.E. and are found at all the late sites (Bowls: BL2; BL4; BL5; BL12c; BL20; BL21b; BL30; BL39-BL45; BL51; Kraters: KR15-KR17; and Pithoi: PT18-PT24see also *Busayra*, *Tawilan*, *Tell el-Kheleifeh*).

The complete absence of later vessel types at most lowland sites is most clearly seen at RHI where the early and late period occupations are found within close proximity. RHI serves as a litmus test for comparing these two phases of the Iron Age II. RHI Sounding A is similar to KEN and lacks all of the ceramic types discussed above that predominate in the later Iron Age phases. On the other hand, RHI Sounding B's ceramic assemblage strongly parallels the plateau sites, has been dated with high precision radiocarbon dates (Levy et al 2008), and has large quantities of late Iron Age II vessel types. These are not just fine-wares but also include kraters, jugs, and pithoi. If there were intruding later 7th-6th c. BCE periods at the areas excavated, it would be expected that the abundant quantities of Large pithoi and kraters found at KEN would at least contain one of these later forms, but they do not. Thus, the absence of these types at KEN should not be considered due to its industrial nature but rather for chronological reasons demonstrated on the basis of its well defined stratigraphy. To date, there are no radiocarbon dates that date KEN later than the 9th c. BCE and not a single typical late vessel type has been discovered at the site. This is not to preclude the possibility that in other areas at the >10ha site there was later occupation; however, six large excavation areas have been opened at the site and this should put to rest any doubt that there was a mixing of later periods within the ceramic assemblages discussed in this study.

(5) These chronological distinctions (Chapter 5) are further corroborated by the study of Iron Age handmade wares made above. The percentage of handmade wares to wheel-made wares is significantly higher in the early Iron Age lowland ceramic assemblage than in collections from the plateau of Edom (figs. 7, 9) and RHI Sounding B. When considering the distribution of handmade wares in both the highlands and lowlands of Edom, there is a significantly higher percentage of these wares (50 percent compared with less than 2 percent) produced in the earlier periods at KEN (now with the best published stratified archaeological record for Iron Age Edom; Levy et al 2008) than at other lowland Faynan sites (cf. Barqa el-Hetiye: Fritz 1994;)).

(6) Additionally, the presence of numerous Early Iron Age II imports such as Qurayyah painted ware (sometimes referred to as Midianite ware), Cypriot Juglets, Amphora, and W. Negev bowls coincides with the dating of the local Iron Age ceramic assemblage discussed above, the high-precision radiocarbon dates, as well as the 1200–1000 B.C.E. New Kingdom–Third Intermediate period Egyptian scarabs found in Area S, providing a terminus post quem for the early Iron Age occupation at the site (Levy et al. 2004). Thus, the radiocarbon dated stratified sequence at KEN, KAJ and the two soundings at RHI helps to identify the developmental trend of the ceramic seriation for the lowlands of Edom from the 11th -6th c. BCE.

(7) (Ch. 4 Hyp 10-13; Ch3, Hyp 4) The so-called Busayra painted bowls (BL20, BL21, B12c) were found in this study to be locally produced rather than imported from Busayra. This has important implications concerning Iron Age trade and social boundary models when ceramic style is used as a key variable for such determinations. This was validated by the presence of B4 ware found at RHI belonging to these bowl types.

However, it was also discovered in the petrographic analysis that a second type of more finely sorted ware (B6) occurred among BL20 and BL12c vessels. These bowls are the thinnest and most heavily decorated of all the examples. They also commonly have burnish that does not occur on any of the standard Ware B1 bowls. They are found at both RHI Sounding B (see especially Pl. 7.8.1) and the plateau sites (Pls. 7.9.1, 7.10.1, 7.11.1, 7.12.1) but represent a small minority in comparison to the Ware B1 bowls. Overall, they are very standardized reflecting a high degree of craft specialization (Ch. 4, Hyp 10). According to hypotheses 11-13 presented in Chapter 4, it was suggest that these may be a mass produced form, however, this conclusion must be held tentatively since they need to be compared to other regions of Edom.

(8) In the quantitative morphology study (Table 7.4) it was also noticed that of the plateau sites, KIS had finer ware bowls than the other sites. The high preservation of ceramic vessels at KIS may be reflected in this circumstance, but considering that other types common at other sites are rare at KIS, there may be another mechanism behind this (e.g. potters living within each community that specialized in only a few forms). Similarly KAM has a significantly larger count of BL21 bowls than witnessed at all the other sites. These have a brighter Light Red (Orange) color when compared to the other sites's.

(9) (Ch. 4 Hyp. 1) The ware analysis and morphological analysis has enabled a distinction to be made between the ceramic assemblage found at the lowland site of RHI Sounding B and the various highland sites excavated by the L2HE project. For instance, associated with the B4 ware is a number of vessel types that are specific to RHI (e.g. BL43; KR16; CP25, CP31, CP32, CP34, PT17), types that are predominant at RHI but

rare at L2HE (e.g. BL21b, BL30a3), and as mentioned in the petrographic study B4 ware across all the vessel families and the slag tempered Pithoi. On the other hand, vessel types dominant at the L2HE sites but absent at RHI include BL51; BL53; KR15b/c, PT19; PT20-PT25. One notable example is PT20 the double grooved rim creating three ridges is ubiquitous on the plateau and found among numerous published parallels around the vicinity of Petra, but it does not occur at RHI.

These observations support Bienkowski and van der Steen's (2001:26) suggestion that a number of ceramic forms are circumscribed within separate regions in Edom. The study here shows that this is not just seen morphologically but also in surface treatment and ware type found in different parts of Edom. In contrast to RHI the L2HE sites are very similar across the board in their ceramic technological styles. This similarity has enabled this study to refer to them as a group when comparing them to other areas. These settlements situated along the edge of the highland plateau of Edom were most likely a close knit community that may have intermarried and resided within the different settlements over their life time.

This evidence should also be interpreted according to the models developed in the previous theoretical chapters of this study. First, as argued in Ch. 6, RHI was not isolated from the highland sites and thus it can be assumed that intense interaction occurred between them. The circumscription of the morphological and fabric styles here should be related to specific mimetic models that differed between these two sub-regions of the highland and lowland. As hypothesized in Chapter 3, if technological styles associated with motor habits (i.e. morphology and fabric) are found circumscribed within an area it connotes that a social boundary existed. This is because complex technological style

related to motor habits can only be passed from teacher or community to an apprentice potter through repeated observation and correction throughout one's life. Mimetic models in the case of RHI or the L2HE sites are not circumscribed by geographical boundaries but rather the extent that groups intermarry and exchange marriage partners. A marked social boundary can be inferred between the lowland inhabitants around RHI and the neighboring sites in the highlands. Currently this inference must remain tentative until more archaeological data can be recovered from these two little explored sub-regions of Edom. The models presented in this study point the way forward for enriching our understanding of social boundaries throughout the Iron Age II sequence and how these may be related to community, tribal, or ethnic identities.

In summary, the ceramic analysis presented here has highlighted the importance of the lowlands of Edom in the early development of Iron Age societies in this part of the southern Levant. Earlier assumptions concerning the very short length of the Iron Age (Iron Age IIC) based on excavations at sites in the highlands of Edom and the Negev have influenced both the historical and anthropological reconstructions of social change in this area. Now that a detailed view of the ceramic data from the stratified excavations at KEN and six soundings at other sites in the lowland and highland zones have been conducted, a more comprehensive picture can be extrapolated: 1) Edom had a rich occupation that spans the late 13th-6th c. BCE. During the earlier period metallurgical production within the Faynan district was at its peak. Interaction between the lowlands and neighbors to the west and north was vibrant. KEN was not just exporting raw resources but also imported prestige fine ware goods as witnessed by the numerous imports. 2) During the later Iron Age phase more sites appear in both the lowlands and

highlands. All the late settlements excavated for this study were small villages, which in contrast to KEN, lacked any evidence of imported ceramics. These small villages interacted on a regional level but defined their social boundaries sub-regionally. These social boundaries may be related to tribal identity but this inference must be teased out through more nuanced excavations and studies of various other material cultures in the future.

Abbreviations

Ain Shems II = Grant, E.

1931-1932 Ain Shems Excavations (Palestine) 1928-1929-1930-1931, Part 2. Biblical and Kindred Studies 4. Haverford: Haverford College.

Beer-Sheba I = Aharoni,Y., ed.

1973 Beer-Sheba I: Excavations at Tel Beer-Sheba—1969-1971 Seasons. Publications of the Institute of Archaeology 2. Tel Aviv: Institute of Archaeology, Tel Aviv University.

Beer-Sheba II = Herzog, Z., ed.

1984 Beer-Sheba II: The Early Iron Age Settlements. Publications of the Institute of Archaeology 7. Tel Aviv: Institute of Archaeology, Tel Aviv University.

Busayra = Bienkowski, P.

2002 Busayra Excavations by Crystal M. Bennett 1971-1980. British Academy Monographs in Archaeology 13. Oxford: Oxford University.

Dibon = Tushingham, A. D.

1972 The Excavations at Dibon (Dhībân) in Moab: The Third Campaign 1952-53. Annual of the American Schools of Oriental Research 40. Cambridge, MA: American Schools of Oriental Research.

Gezer III = Gitin, S.

1990 Gezer III: A Ceramic Typology of the Late Iron II, Persian and Hellenistic Periods at Tell Gezer. Annual of the Nelson Glueck School of Biblical Archaeology 3. Jerusalem: Hebrew Union College.

Ghrareh = Hart. S.

1989 The Archaeology of the Land of Edom. Ph.D. dissertation, Macquarie University.

Hazor II = Yadin, Y.; Aharoni, Y.; Amiran, R.; Dothan, T.; Dothan, M.; Dunayevsky, I.; and Perrot, J.

1960 Hazor II: An Account of the Second Season of Excavations, 1956. Jerusalem: Magnes.

Hazor III-IV = Yadin, Y.; Aharoni, Y.; Amiran, R.; Dothan, T.; Dunayevsky, I.; and Perrot, J.

1961 Hazor III-IV: An Account of the Third and Fourth Seasons of Excavations, 1957-1958. Plates vol. Jerusalem: Magnes.

Hesban = Ray, P. J., Jr.

2001 Tell Hesban and Vicinity in the Iron Age. Hesban 6. Berrien Springs, MI: Andrews University.

H□orvat Qitmit = Freud, L., and Beit-Arieh, I.

1995 Pottery. Pp. 209-57 in H□orvat Qitmit: An Edomite Shrine in the Biblical Negev, ed. I. Beit-Arieh. Monograph Series 11. Tel Aviv: Institute of Archaeology, Tel Aviv University/.

Kadesh Barnea = Cohen, R., and Bernick-Greenberg, H.

2007 Excavations at Kadesh Barnea (Tell el-Qudeirat) 1976-1982. 2 vols. IAA Reports 34:1-2. Jerusalem: Israel Antiquities Authority.

Lachish = Ussishkin, D.

2004 The Renewed Archaeological Excavations at Lachish (1973-1994), Vol. 4. Tel Aviv: Yass Publications in Archaeology, Institute of Archaeology, Tel Aviv University.

MPP I = Geraty, L. G.; Herr, L. G.; LaBianca, Ø. S.; and Younker, R. W., eds.

1989 Madaba Plains Project: The 1984 Season at Tell el-Umeiri and Vicinity and Subsequent Studies. Madaba Plains Project 1. Berrien Springs, MI: Andrews University.

MPP II = Herr, L. G.; Geraty, L. G.; LaBianca, Ø . S.; Younker, R. W.; and Clark, D. R., eds.

1991 Madaba Plains Project: The 1987 Season at Tell el-Umeiri and Vicinity and Subsequent Studies. Madaba Plains Project 2. Berrien Springs, MI: Andrews University.

MPP IV = Herr, L. G.; Clark, D. R.; Geraty, L. G.; Younker, R. W.; and LaBianca, Ø. S., eds.

2000 Madaba Plains Project: The 1992 Season at Tell el-'Umeiri and Subsequent Studies. Madaba Plains Project 4. Berrien Springs, MI: Andrews University.

MPP V = Herr, L. G.; Clark, D. R.; Geraty, L. G.; Younker, R. W.; and LaBianca, Ø. S., eds.

2002 Madaba Plains Project: The 1994 Season at Tall al-'Umayri and Subsequent Studies. Madaba Plains Project 5. Berrien Springs, MI: Andrews University.

Samaria I = Tappy, R. E.

1992 The Archaeology of Israelite Samaria, Vol. 1. Harvard Semitic Studies 44. Atlanta: Scholars.

Samaria II = Tappy, R. E.

2001 The Archaeology of Israelite Samaria, Vol. 2. Harvard Semitic Studies 50. Winona Lake, IN: Eisenbrauns.

Tawilan = Bennett, C. M., and Bienkowski, P.

1995 Excavations at Tawilan in Southern Jordan. British Academy Monographs in Archaeology 8. Oxford: Oxford University.

Tel Arad = Singer-Avitz, L.

2002 Arad: The Iron Age Pottery Assemblages. Tel Aviv 29: 110-214.

Tel Batash = Mazar, A., and Panitz-Cohen, N.

2001 Timnah (Tel Batash) II: The Finds from the First Millennium BCE. 2 vols. Qedem 42. Jerusalem: Institute of Archaeology, Hebrew University of Jerusalem.

Tell Beit Mirsim II = Albright, W. F.

1938 The Excavation of Tell Beit Mirsim, Vol. 2: The Bronze Age. Annual of the American Schools of Oriental Research 17. New Haven: American Schools of Oriental Research.

Tell Beit Mirsim III = Albright, W. F.

1943 The Excavation of Tell Beit Mirsim, Vol. 3: The Iron Age. Annual of the American Schools of Oriental Research 21-22. New Haven: American Schools of Oriental Research.

Tell el-Kheleifeh = Pratico, G. D.

1993 Nelson Glueck's 1938-1940 Excavations at Tell el-Kheleifeh: A Reappraisal. American Schools of Oriental Research Archaeological Reports 3. Atlanta: Scholars.

Tel 'Ira = Beit-Arieh, I., ed.

1999 Tel 'Ira: A Stronghold in the Biblical Negev. Monograph Series 15. Tel Aviv: Yass Publications in Archaeology, Institute of Archaeology, Tel Aviv University.

Tel Masos = Fritz, V. and A. Kempinski.

1983 Ergebnisse der Ausgrabungen auf der Hirbet el-Mšāš (Tēl Māśōś) 1972-1975. Wiesbaden: Harrassowitz.

Tell Qasile = Mazar, A.

1985 Excavations at Tell Qasile, Part 2: The Philistine Sanctuary: Various Finds, the Pottery, Conclusions, Appendixes. Qedem 20. Jerusalem: Institute of Archaeology, Hebrew University of Jerusalem.

Umm al-Biyara = Hart, S.

1989 The Archaeology of the Land of Edom. Ph.D. dissertation, Macquarie University.

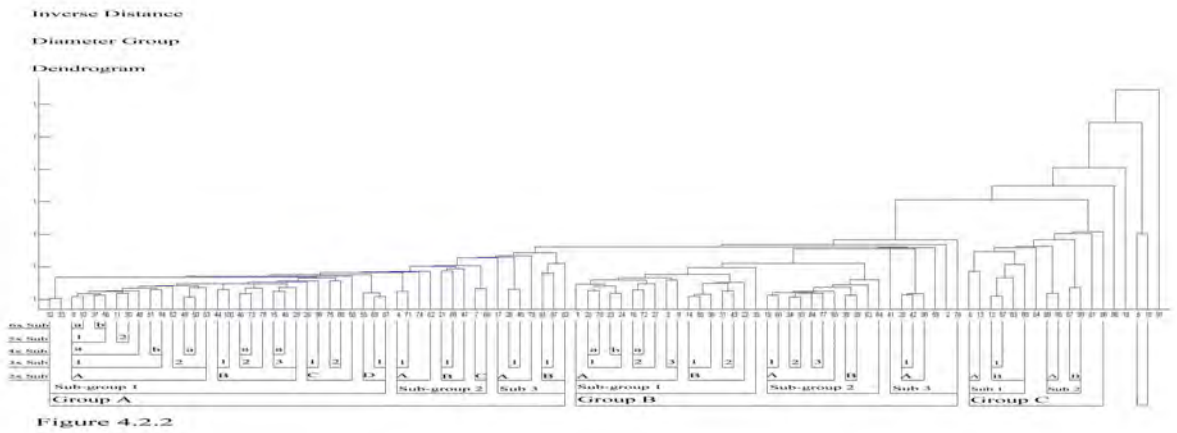


Figure 4.2.2

Figure 7.1: Dendogram from PIQD Cluster Analysis

Figure 7.2: Pottery Informatics Query Database, Main Page.

Area	IP	Count	% (n=216)
A	I	22	10.2%
	II	47	21.8%
	II-III	0	0.0%
	III-IV	2	0.9%
	IV	5	2.3%
	V	0	0.0%
Total		76	35.2%
M	II	4	1.9%
	III	1	0.5%
	II-III	5	2.3%
	IV-V	2	0.9%
	VI	0	0.0%
	VII	0	0.0%
Total		12	5.6%
R	III	5	2.3%
	IV	23	10.6%
	V	6	2.8%
Total		34	15.7%
S	I	18	8.3%
	II	24	11.1%
	III	10	4.6%
	V	0	0.0%
	VI	0	0.0%
Total		52	24.1%
T	I	0	0.0%
	III	31	14.4%
	IV	2	0.9%
	V	1	0.5%
Total		34	15.7%
F	I	1	0.5%
	III	2	0.9%
	III-IV	1	0.5%
	IV	4	1.9%
Total		8	3.7%
Grand Total		216	100.0%

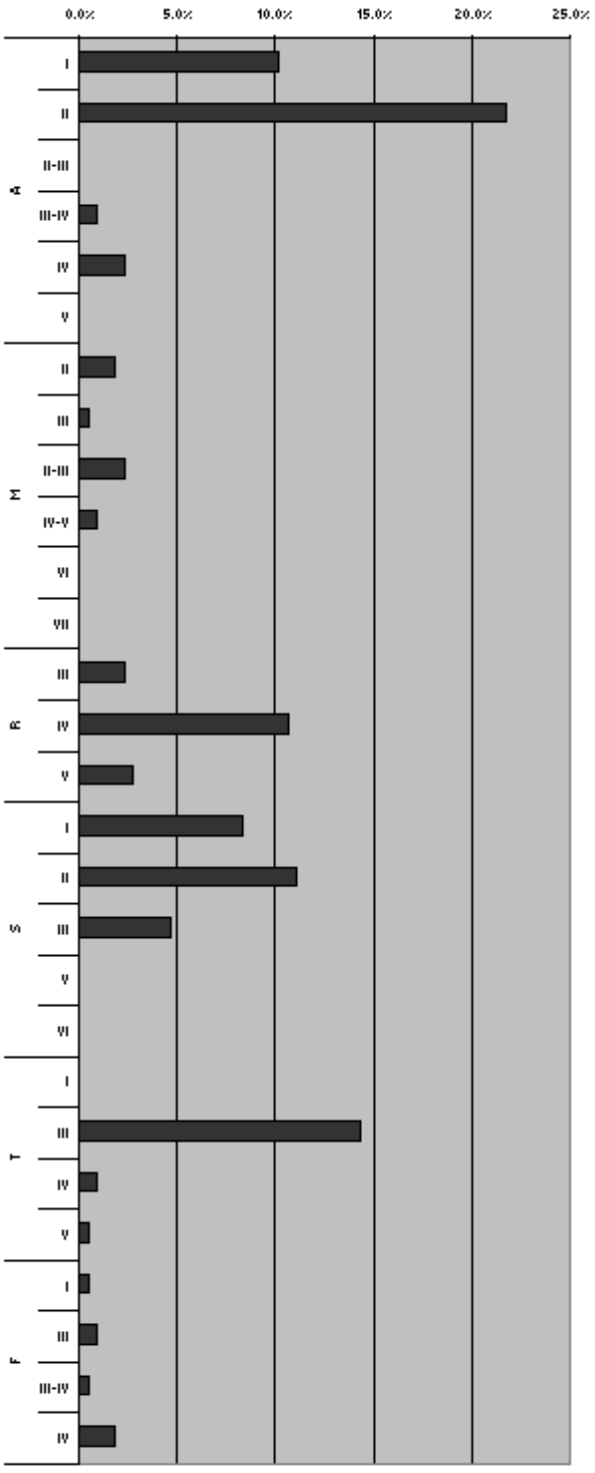


Figure 7.3: KEN Painted Pottery by Stratum.

Table 7.1: Distribution of Vessel Families by Site

Site	Bowl (BL)		Jug (JG)		Juglet (JT)		Krater (KR)		Jar (JR)		Pithos (PT)		Cooking Pot (CP)		Lamp (LP)		Import		Total
KEN	778	36.9%	345	16.4%	50	2.4%	229	10.9%	519	24.6%	108	5.1%	52	2.5%	16	0.8%	9	0.4%	2106
KAJ06	19	18.6%	21	20.6%	3	2.9%	23	22.5%	32	31.4%	0	0.0%	4	3.9%	0	0.0%		0.0%	102
RHI04 Sounding A	35	36.5%	6	6.3%	0	0.0%	2	2.1%	45	46.9%	2	2.1%	5	5.2%	0	0.0%	1	1.0%	96
RHI04 Sounding B	369	49.5%	99	13.3%	9	1.2%	70	9.4%	42	5.6%	21	2.8%	133	17.9%	2	0.3%		0.0%	745
KAM	177	50.9%	26	7.5%	0	0.0%	21	6.0%	10	2.9%	20	5.7%	91	26.1%	3	0.9%		0.0%	348
KIJ	62	50.0%	11	8.9%	1	0.8%	6	4.8%	10	8.1%	9	7.3%	23	18.5%	2	1.6%		0.0%	124
KIS	65	57.0%	10	8.8%	2	1.8%	1	0.9%	4	3.5%	10	8.8%	19	16.7%	3	2.6%		0.0%	114
TW	320	45.1%	79	11.1%	10	1.4%	66	9.3%	57	8.0%	68	9.6%	98	13.8%	11	1.6%		0.0%	709
Total	**1825**		**597**		**75**		**418**		**719**		**238**		**425**		**37**		**10**		**4344**

Table 7.2: Comparison of Hand made to Wheel Made pottery at Sites

Site	HM		WM		Total
KEN	415	14.6%	2426	85.4%	2841
KAJ06	15	12.8%	102	87.2%	117
RHI04-A	61	58.7%	43	41.3%	104
RHI04-B	0	0.0%	848	100.0%	848
KAM	6	1.7%	349	98.3%	355
KIJ	5	3.7%	130	96.3%	135
KIS	0	0.0%	118	100.0%	118
TW	30	3.9%	747	96.1%	777
Total	532		4763		5295

Table 7.3: Comparison of Surace Treatment and Decoration of Vessel Families by Site*

Site	Painted		Decorated		Slip		Burnish		Total
KEN	220	10.4%	82	3.9%	1004	47.7%	90	4.3%	2106
KAJ06	0	0.0%	6	5.9%	19	18.6%	1	1.0%	102
KAM	66	19.0%	7	2.0%	121	34.8%	34	9.8%	348
KIJ	16	12.9%	4	3.2%	13	10.5%	0	0.0%	124
KIS	41	36.0%	5	4.4%	17	14.9%	3	2.6%	114
TW	94	13.3%	5	0.7%	169	23.8%	41	5.8%	709

*The surface treatment data recorded differently for RHI A/B, so it is not incl

**Normalized by all Vessel Families including undecorated.

Table 7.4: Distribution of Predominant Vessel Types that occur more than (n=10) Bowls									
Type	KEN	KAJ06	RHI04-A	KAM	KIJ	KIS	TW	RHI04-B	Total
BL1	15	1		2			8	13	39
BL2				1		4	3	5	13
BL3a	70		2	6	1	1	6	17	103
BL3b	18		1	3	2		5	6	35
BL3c	1			6	4		6	28	45
BL3d					1			10	11
BL4				3			5	11	19
BL5				1			9	6	16
BL8	5			1	1	2	7	21	37
BL9	12								12
BL12	10								10
BL12c				8	2		6	2	18
BL13	49		1						50
BL14	10								10
BL15	21								21
BL16	17	1					1	1	20
BL17	17							2	19
BL20				5	2	18	9	30	64
BL21a1-2	23			1	1		1		26
BL21a3			2	13	5	1	5	13	39
BL21b	1			4	1		3	64	73
BL21d				7	1		11	1	20
BL22	17			2	2		5		26
BL23	18			2	1	2	9	8	40
BL26	11	2							13
BL29	8								8
BL30	6			1		1		2	10
BL30a2-3				2			3	8	13
BL30b			1	11	3	6	16	7	44
BL30c				3	5		5	4	17
BL30d							1	6	7
BL34	11								11
BL36	7								7
BL37	8								8
BL42								16	16
BL51				8			1		9
BL53				1	1		26	1	29
BL56				4	1	4	1		10

Table 7.5: Distribution of Predominant Vessel Types that occur more than (n=10) KR and JG

Type	KEN	KAJ06	RHI04-A	KAM	KIJ	KIS	TW	RHI04-B	Total
KR3	28		1					2	31
KR4	3							4	7
KR8	23	1							24
KR10	7						1	2	10
KR11	10								10
KR12	9						1		10
KR13	7								7
KR15				11	4		36	15	66
KR16								25	25
KR17				3				11	14
KR18	2						7		9
KR26	1	11							12
KR27		7							7
KR29	12								12
JG3	15				1		7		23
JG3d				5	4	2	17	11	39
JG4	19	1	3	1		3	11	23	61
JG4d	14			1			1		16
JG6	22			4	1		5	2	34
JG15	13								13
JG26	12	10							22
JG28						3	3	10	16

Table 7.6: Distribution of Predominant Vessel Types that occur more than (n=10) PT and CP									
Type	KEN	KAJ06	RHI04-A	KAM	KIJ	KIS	TW	RHI04-B	Total
PT3	2		1				1	4	8
PT5	22								22
PT10	13					1			14
PT15	1			2	2	1	1	4	11
PT18				4	1	4	4	4	17
PT20	1			1	2		6		10
PT22				4	1	2	5		12
PT23					1		7		8
PT24							7		7
CP25								12	12
CP30				14			12	5	31
CP31								8	8
CP32								18	18
CP33				1	2	3	7	30	43
CP34								13	13
CP36				7	6		7		20
CP37				7			6		13
CP38				5	1		7		13
CP39				6	1		3		10
CP40							8		8
CP46				1		4	2		7
JT3	7							2	9
JT26	5	3							8
Midianite	17		1						18
Total	1125	53	24	219	78	78	437	579	2593

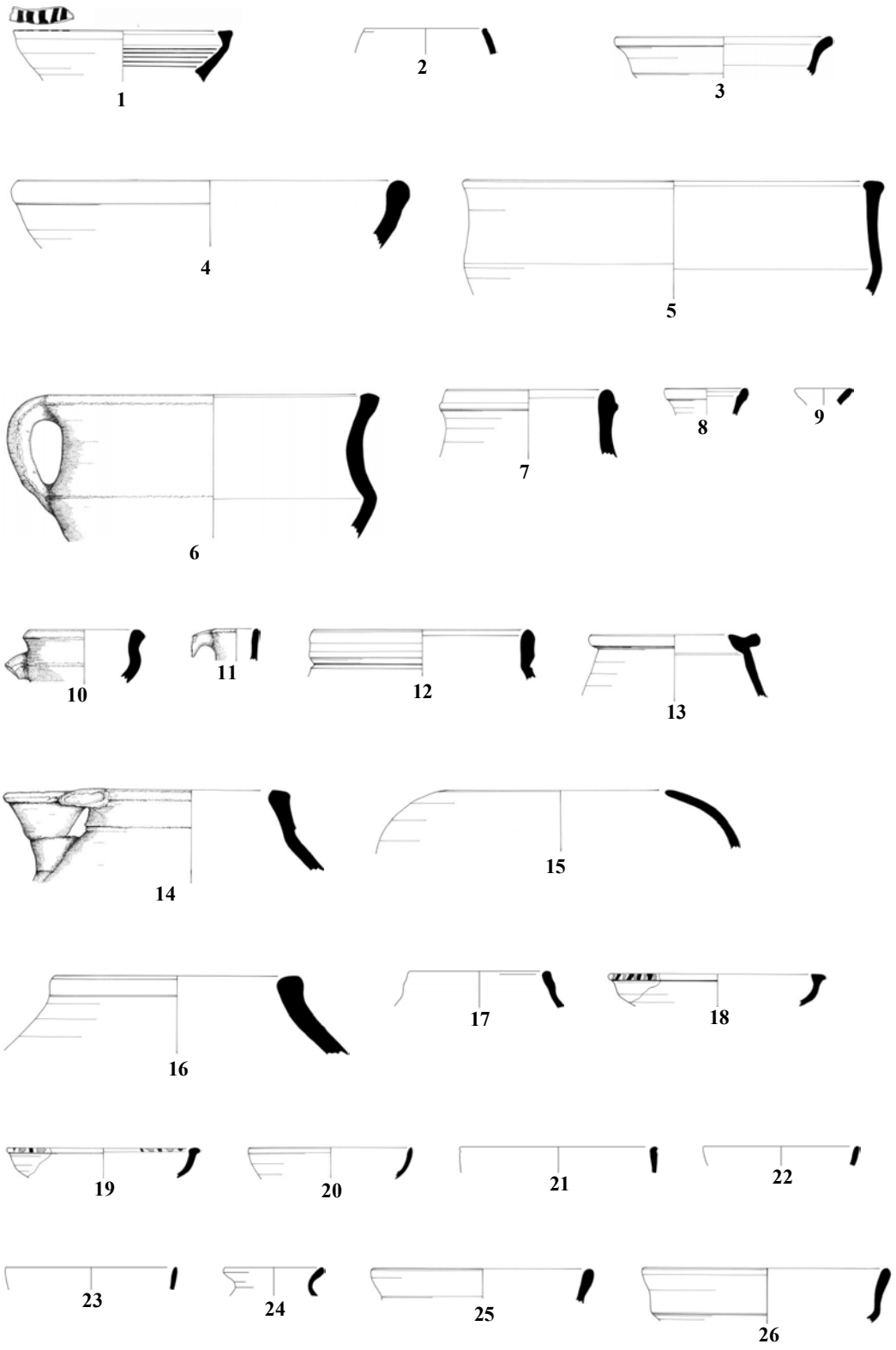


Plate 7.1.1: KEN Area R Str. V, IV

■ ■ ■ ■ ■ 10 cm

Plate 7.1.1: KEN Area R Str. V, IV									
#	Reg#	Locus	Basket	Str.	IP	Vessel	Type	Ware	Description
1	881	1810	16094	R3a	V	Bowl	BL3a2	A1	Painted Design Slip
2	1363	1849	16520	R3a	V	Bowl	BL15b	A2	White Slip
3	1369	1848	16481	R3a	V	Bowl	BL24	I1	Red Slip and Horizontal Burnish (int./ext.)
4	688	1829	16251	R3a	V	Bowl	BL28	A2	White Slip
5	668	1810	16196	R3a	V	Krater	KR12	A1	
6	708	1828	16228	R3a	V	Krater	KR12b		
7	873	1810	16118	R3a	V	Jug	JG3c		
8	831	1833	16310	R3a	V	Jug	JG12		
9	1360	1849	16520	R3a	V	Jug	JG12		
10	806	1829	16236	R3a	V	Jug	JG25		White Slip
11	1391	1846	16448	R3a	V	Juglet	JT1	A1	
12	807	1829	16236	R3a	V	Jar	JR2		White Slip
13	660	1830	16269	R3a	V	Jar	JR6		
14	1456	1846	16448	R3a	V	Jar	JR28		Slip
15	735	1828	16228	R3a	V		HMJR		
16	854	1842	16429	R3a	V	Pithos	PT6		
17	686	1829	16251	R3a	V	Cooking Pot	CP11		
18	673	1827	16253	R2b	IV	Bowl	BL3a1	A1	Painted Design
19	744	1815	16095	R2b	IV	Bowl	BL3a1		Painted Design Slip
20	740	1817	16157	R2b	IV	Bowl	BL12	A1c	Burnish Interior/Exterior
21	1346	1832	16345	R2b	IV	Bowl	BL15b	I1	Red Slip and Burnish (int./ext.)
22	1327	1832	16373	R2b	IV	Bowl	BL16	I1	Red Slip and Horizontal Burnish (int./ext.)
23	868	1814	16195	R2b	IV	Bowl	BL16c	A2	
24	676	1815	16133	R2b	IV	Bowl	BL21a2	A1	Painted Design Slip
25	781	1832	16304	R2b	IV	Bowl	BL24	I1	Red Slip and Horizontal Burnish (int./ext.)
26	876	1841	16416	R2b	IV	Bowl	BL24	I1	Red Slip and Horizontal Burnish (int./ext.)

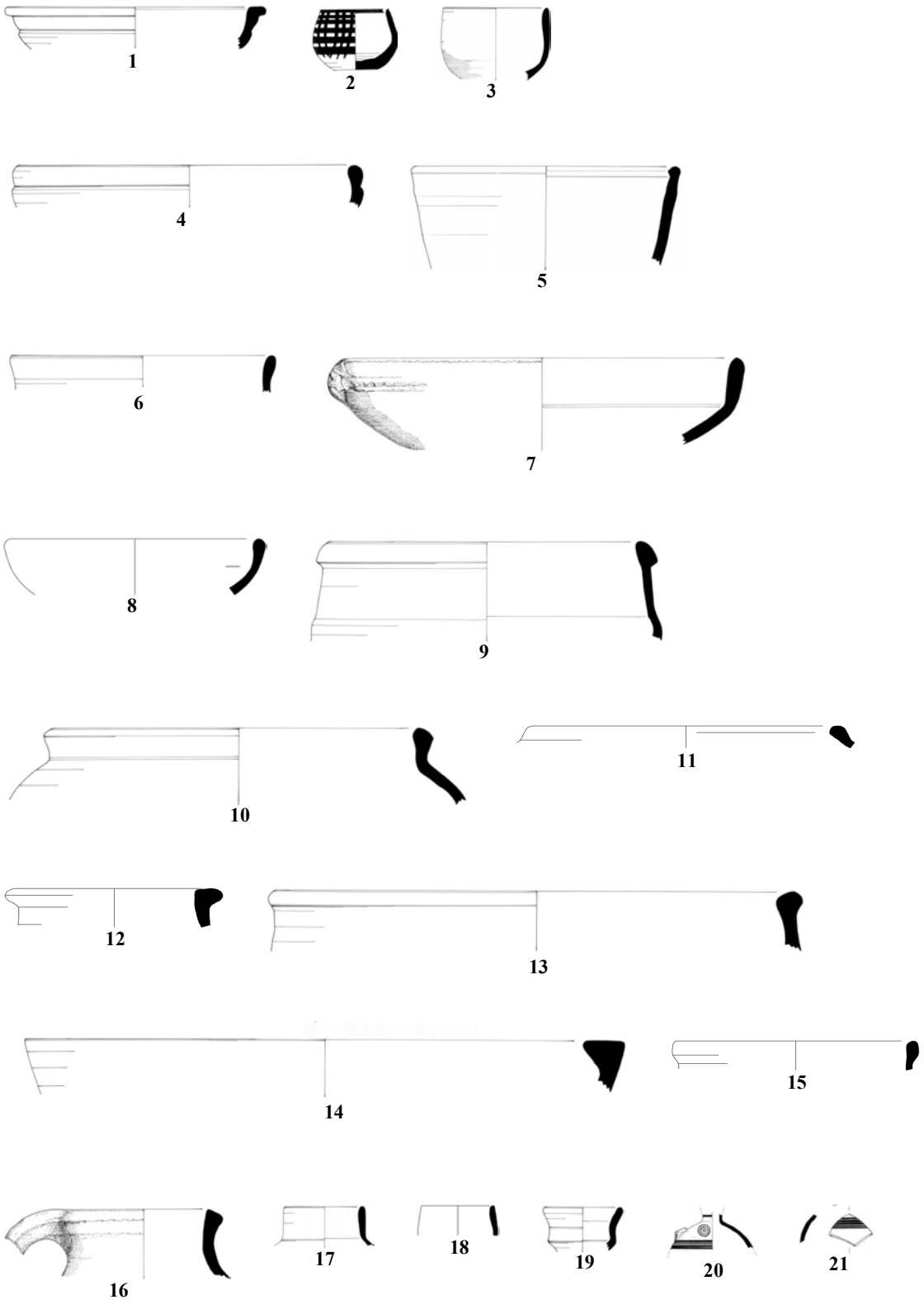


Plate 7.1.2: KEN Area R Str. IV

■ ■ ■ ■ ■ 10 cm

Plate 7.1.2: KEN Area R Str. IV									
#	Reg#	Locus	Basket	Str.	IP	Vessel	Type	Ware	Description
1	812	1814	16148	R2b	IV	Bowl	BL25b	A10	White Slip (int./ext.) with stepped grooves
2	648	1834	16350	R2b	IV	Bowl	BL26	A1	Painted Design Slip complete
3	848	1839	16428	R2b	IV	Bowl	BL26	A2	Creme slip (int./ext.)
4	792	1834	16300	R2b	IV	Bowl	BL29b	A9	
5	739	1822	16157	R2b	IV	Bowl	BL		
6	786	1832	16304	R2b	IV	Bowl	BL		Burnish
7	1450	1834	16396	R2b	IV	Bowl	BL		
8	840	1827	16343	R2b	IV	Bowl	BL		
9	860	1814	16195	R2b	IV	Krater	KR2		
10	714	1831	16285	R2b	IV	Krater	KR3a2		
11	862	1814	16195	R2b	IV	Krater	KR3b		White Slip
12	778	1827	16308	R2b	IV	Krater	KR5		
13	865	1814	16195	R2b	IV	Krater	KR8	A9	White Slip
14	821	1814	16148	R2b	IV	Krater	KR10		White Slip
15	1394	1843	16444	R2b	IV	Krater	KR21		White Slip
16	823	1834	16311	R2b	IV	Jug	JG9		White Slip
17	756	1815	16095	R2b	IV	Jug	JG14		
18	1400	1839	16411	R2b	IV	Jug	JG15		White Slip
19	879	1843	16432	R2b	IV	Jug	JG25		
20	656	1834	16407	R2b	IV	Juglet	JT22		Painted Design Burnish Cypro-Phoenician
21	657	1827	16287	R2b	IV	Juglet	JT22	I4	Painted Design Burnish Cypro-Phoenician

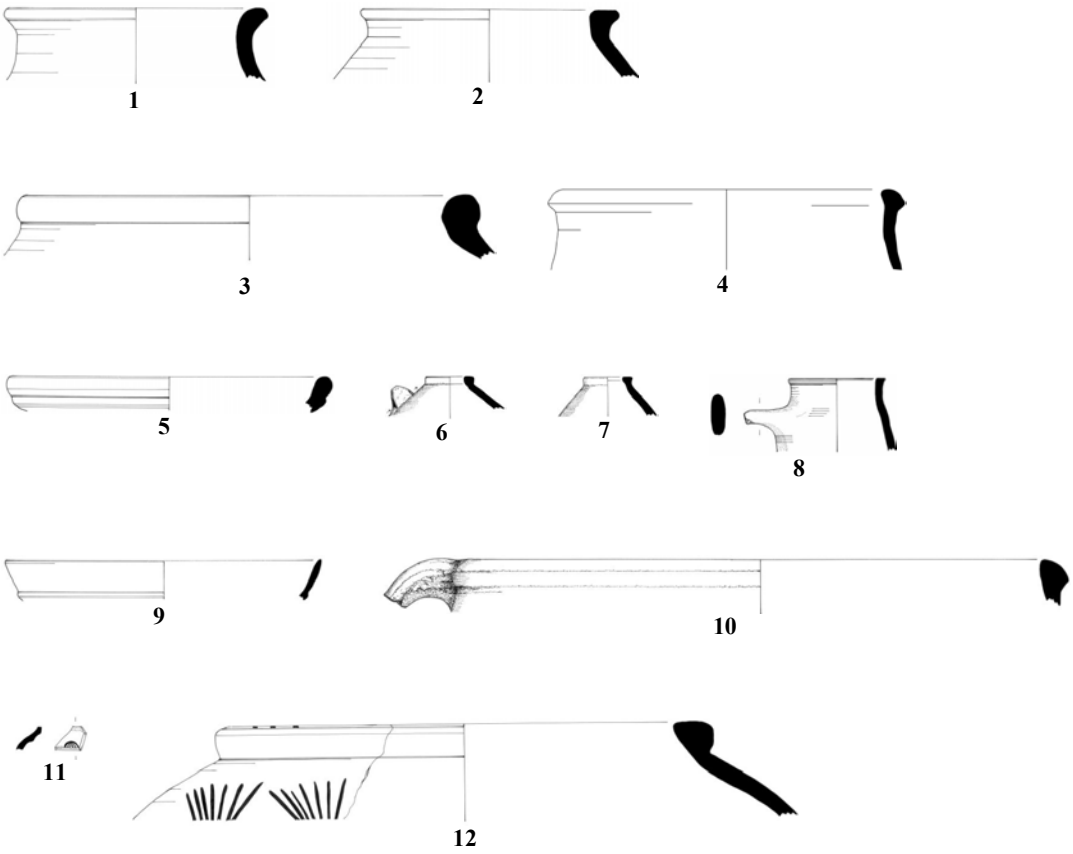


Plate 7.1.3: KEN Area R Str. IV, III

■ ■ ■ ■ ■ **10 cm**

Plate 7.1.3: KEN Area R Str. IV, III									
#	Reg#	Locus	Basket	Str.	IP	Vessel	Type	Ware	Description
1	767	1827	16308	R2b	IV	Jar	JR17b	A9	
2	877	1841	16416	R2b	IV	Pithos	PT3		
3	838	1827	16343	R2b	IV	Pithos	PT5		White Slip
4	1324	1832	16373	R2b	IV	Pithos	PT12	A2	hole
5	692	1822	16157	R2b	IV	Cooking Pot	CP4	A6	
6	706	1817	16146	R2b	IV		Pyxis	A1	with hole through knob/ black
7	822	1834	16311	R2b	IV		Pyxis		black perforated handle
8	650	1827	16265	R2b	IV		Qurayyah	I2	Painted Design Slip Burnish import? Blue/grey slip
9	700	1809	16136	R2a	III	Bowl	BL22	A1	
10	795	1803	16020	R1b	III	Krater	KR2		White Slip
11	655	1808	16077	R1b	III	Juglet	JT22		Painted Design Burnish cypro-phoenician
12	647	1816	16210	R1b	III	Jar	JR26		Painted Design

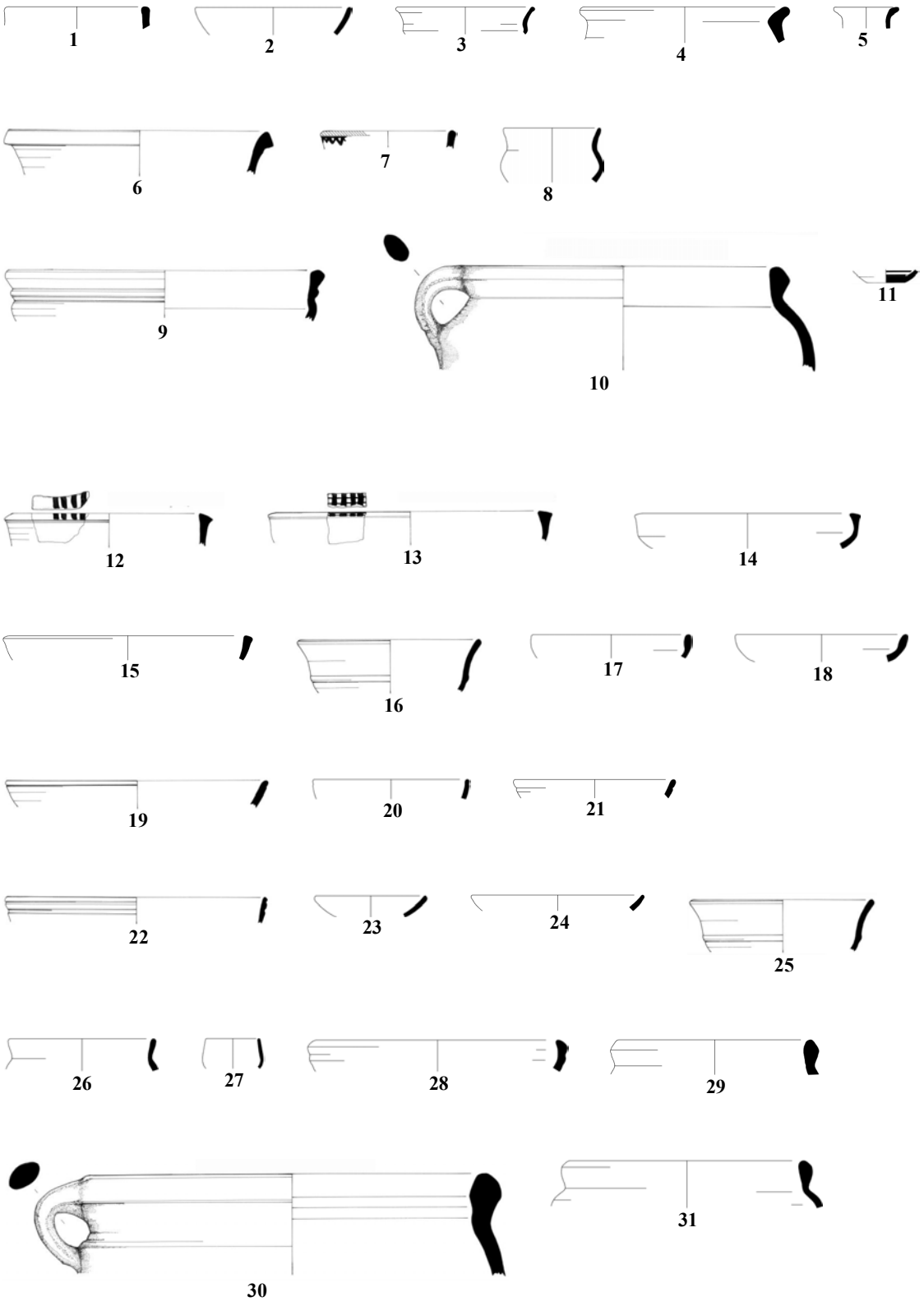


Plate 7.2.1: KEN Area T Str. V, IV, III

■ ■ ■ ■ ■ **10 cm**

Plate 7.2.1: KEN Area T Str. V, IV, III									
#	Reg#	Locus	Basket	Str.	IP	Vessel	Type	Ware	Description
1	1176	1582	13699	T3	V	Bowl	BL14		White Slip
2	1271	1566	13726	T3	V	Bowl	BL16b	A9	White Slip (int./ext.)
3	1177	1582	13699	T3	V	Bowl	BL27	A2	
4	1160	1566	13620	T3	V	Krater	KR5		
5	1152	1589	13667	T3	V	Jug	JG18		
6	652	1563	13561	T3	V	Jar	JR8		
7	1173	1563	13591	T3	V		Qurayyah	I2	Painted Design Slip Qurayyah ware
8	588	1542	13300	T2b	IV	Bowl	BL21a1	A2	
9	1279	1578	13698	T2b	IV	Bowl	BL25	I1	Red Slip and Burnish (int./ext.)
10	641	1542	13307	T2b	IV	Krater	KR3b	A1	
11	653	1542	13338	T2b	IV	Juglet	JT22		Painted Design Burnish Cypro-Phoenician
12	496	1531	13201	T2a	III	Bowl	BL3a1		Painted Design
13	612	1517	13160	T1b	III	Bowl	BL3a2		Painted Design Slip
14	445	1531	13218	T2a	III	Bowl	BL3a2		Painted Design Slip
15	1183	1526	13446	T1b	III	Bowl	BL3a3		Painted Design Slip
16	632	1553	13444	T2a	III	Bowl	BL3b2		Painted Design
17	1232	1547	13442	T2a	III	Bowl	BL13b	A2	Slip (int./ext.)
18	1130	1524	13512	T2a	III	Bowl	BL13b	A2	White Slip (int./ext.)
19	651	1524	13365	T2a	III	Bowl	BL15	A10	Grooved
20	457	1517	13114	T1b	III	Bowl	BL15	A10	
21	590	1541	13300	T2a	III	Bowl	BL15	A10	White Slip
22	635	1524	13365	T2a	III	Bowl	BL15c	A9	Grooved
23	1202	1519	13388	T1b	III	Bowl	BL16b	A9	
24	1187	1579	13660	T2a	III	Bowl	BL16c	A10	White Slip
25	636	1526	13446	T1b	III	Bowl	BL19	A1	
26	596	1541	13300	T2a	III	Bowl	BL21a1	A1	White Slip
27	609	1517	13160	T1b	III	Bowl	BL26	A1	Painted Design Slip
28	1096	1559	13533	T2a	III	Bowl	BL29	A10	White Slip (int./ext.)
29	471	1517	13196	T1b	III	Krater	KR1		White Alip
30	438	1524	13111	T2a	III	Krater	KR24		White Slip
31	1440	1552	13364	T2a	III	Krater	KR3		White Slip

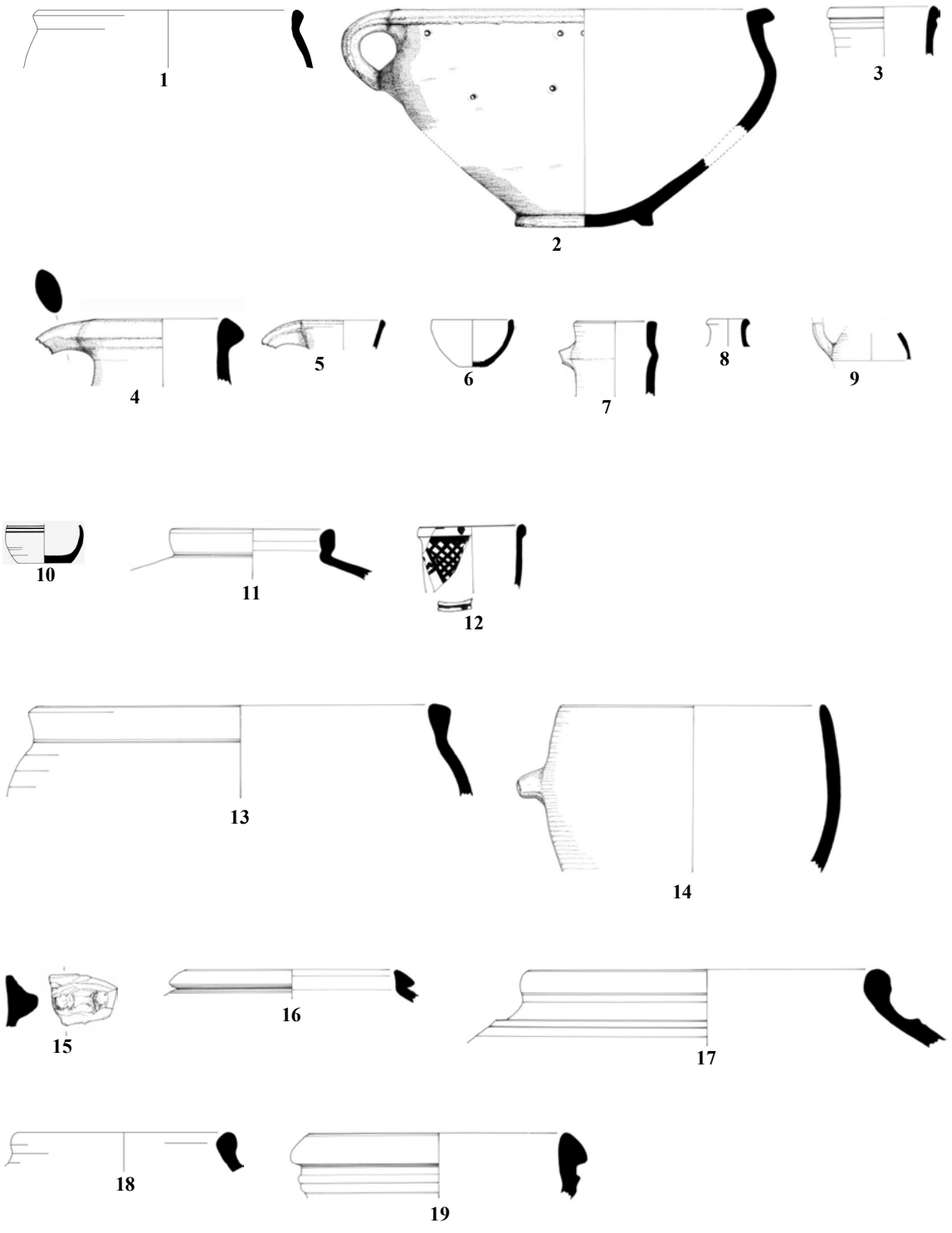
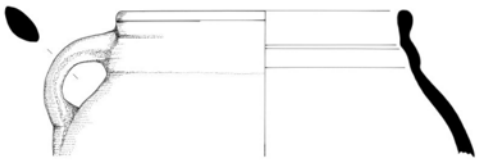


Plate 7.2.2: KEN Area T Str. III

■ ■ ■ ■ ■ 10 cm

Plate 7.2.2: KEN Area T Str. III									
#	Reg#	Locus	Basket	Str.	IP	Vessel	Type	Ware	Description
1	474	1517	13082	T1b	III	Krater	KR3b		
2	1454	1541	13300	T2a	III	Krater	KR8		
3	645	1524	13488	T2a	III	Jug	JG3c		
4	639	1552	13391	T2a	III	Jug	JG9		
5	486	1515	13115	T1b	III	Jug	JG14		
6	1191	1565	13597	T2a	III	Jug	JG16		
7	638	1524	13488	T2a	III	Jug	JG49		
8	1114	1553	13444	T2a	III	Juglet	JT10		
9	640	1552	13364	T2a	III	Juglet	JT21		Slip Black Burnish black burnish
10	654	1541	13314	T2a	III	Juglet	JT22		Painted Design Burnish cypro-phoenician
11	633	1528	13517	T1b	III	Jar	JR6		
12	643	1553	13413	T2a	III	Jar	JR13	A1	Painted Design
13	464	1524	13222	T2a	III	Jar	JR18		White Slip
14	619	1523	13264	T1b	III		HM		
15	644	1524	13443	T2a	III		HM		Applied Knobs double knob
16	1194	1524	13443	T2a	III	Pithos	PT		White Slip
17	475	1518	13082	T1b	III	Pithos	PT5		collared storage jar
18	498	1531	13201	T2a	III	Pithos	PT5	A2	storage
19	499	1531	13201	T2a	III	Pithos	PT15		storage

1



2

Plate 7.2.3: KEN Area T Str. III

■ ■ ■ ■ ■ 10 cm

Plate 7.2.3: KEN Area T Str. III									
#	Reg#	Locus	Basket	Str.	IP	Vessel	Type	Ware	Description
1	601	1517	13160	T1b	III	Cooking Pot	CP7		White Slip
2	637	1553	13444	T2a	III	Cooking Pot	CP8	A6	

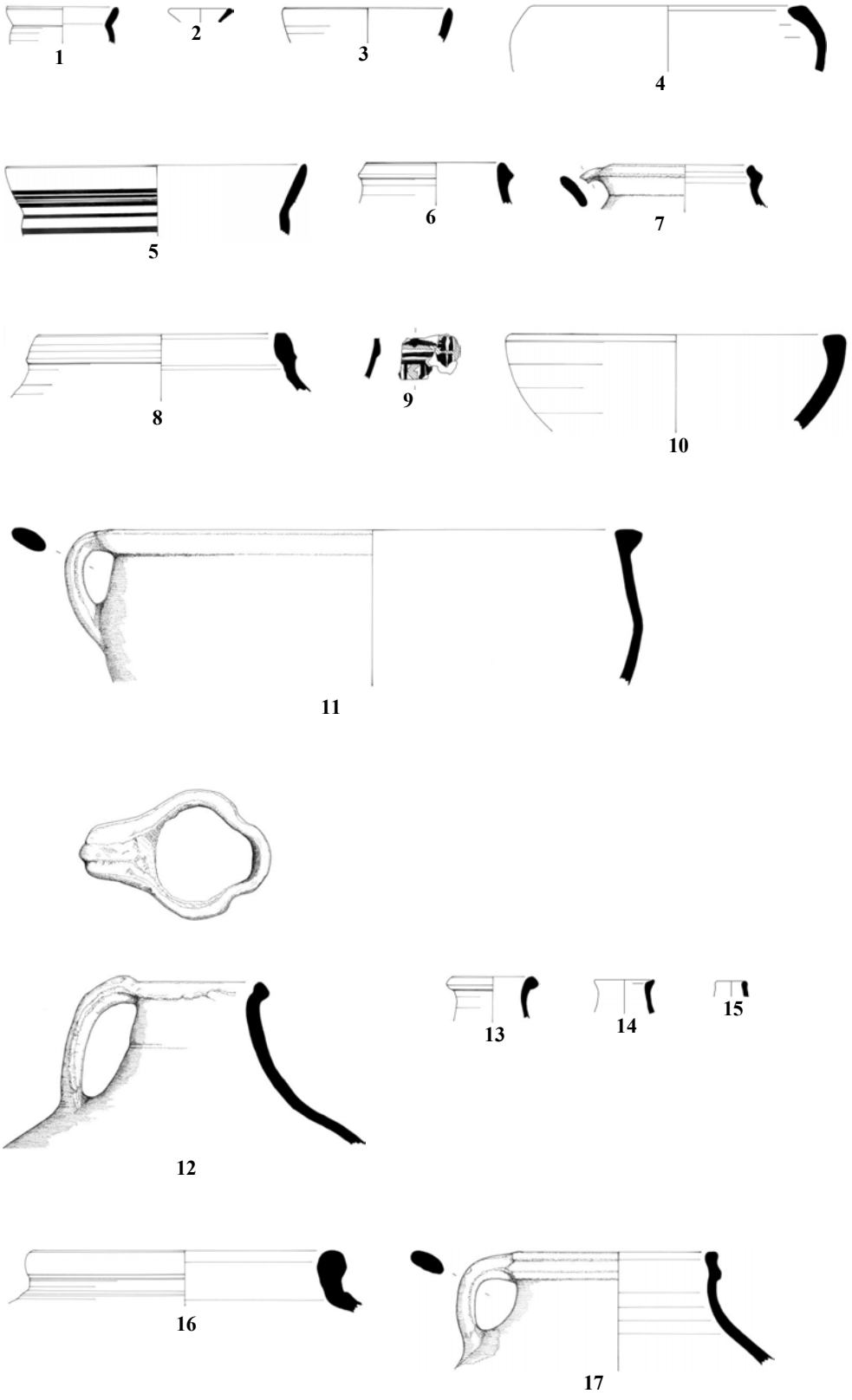


Plate 7.3.1: KEN Area M Str. VII, VI, IV-V, III

■ ■ ■ ■ ■ **10 cm**

Plate 7.3.1: KEN Area M Str. VII, VI, IV-V, III									
#	Reg#	Locus	Basket	Str.	IP	Vessel	Type	Ware	Description
1	566	673	9910	M5a	VII	Bowl	BL		White Slip
2	529	667	9823	M4	VI	Bowl	BL46		
3	576	665	9811	M3	IV-V	Bowl	BL1		White Slip
4	112	636	9283	M3	IV-V	Bowl	BL37	A2	White Slip
5	539	659	9697	M3	IV-V	Jar	JR11		
6	183	647	9555	M3	IV-V	Cooking Pot	CP20		
7	223	660	9758	M3	IV-V	Cooking Pot	CP20	A6	
8	542	659	9697	M3	IV-V	Cooking Pot	CP		
9	432	660	9754	M3	IV-V		Qurayyah	I2	Painted Design Qurayyah ware
10	79	631	9195	M2b	III	Bowl	BL34	A3	White Slip
11	1073	717	10430	M2b	III	Krater	KR12		
12	1455	717	10566	M2b	III	Jug	JG4d		
13	78	631	9263	M2b	III	Jug	JG21		
14	195	641	9471	M2b	III	Jug	JG32		
15	191	640	9395	M2b	III	Juglet	JT2		
16	1241	754	10582	M2b	III	Pithos	PT5	A2	
17	1074	717	10430	M2b	III	Cooking Pot	CP9	A6	

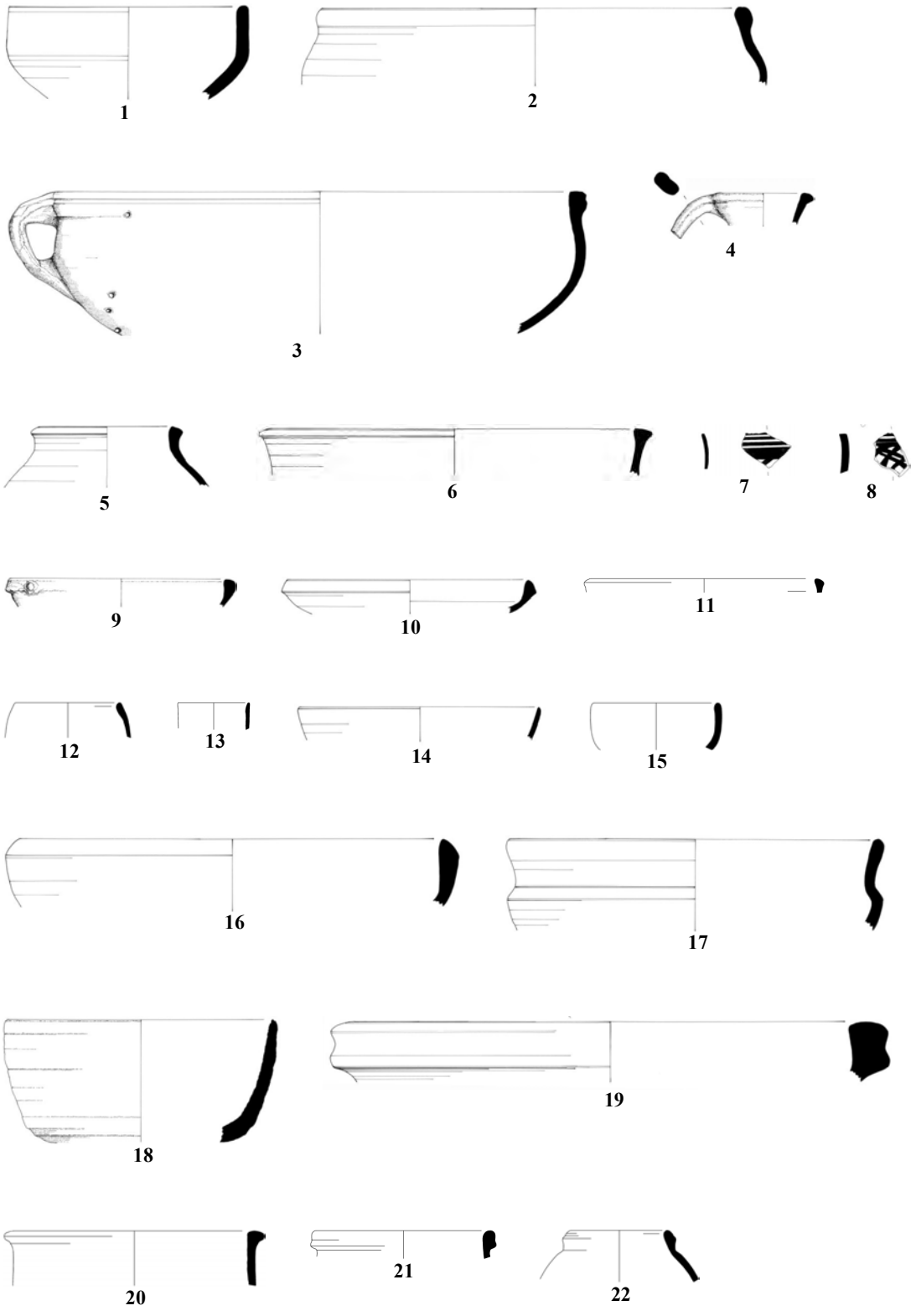


Plate 7.3.2: KEN Area M Str. II-III, II

■ ■ ■ ■ ■ 10 cm

Plate 7.3.2: KEN Area M Str. II-III, II									
#	Reg#	Locus	Basket	Str.	IP	Vessel	Type	Ware	Description
1	82	627	9133	M2	II-III	Bowl	BL13a2	A7	White Slip
2	1026	700	10076	M2a/2b	II-III	Krater	KR3b	A1	White Slip
3	1415	700	10089	M2a/2b	II-III	Krater	KR9		White Slip
4	89	602	9013	M2	II-III	Jug	JG12	A9	
5	1003	700	10076	M2a/2b	II-III	Jar	JR8	A1	White Slip
6	170	629	9270	M2	II-III	Krater	KR?		
7	43	606	9052	M2	II-III		Qurayyah	A10	Painted Design Qurayyah ware
8	41	629	9255	M2	II-III		Qurayyah		Painted Design Qurayyah ware
9	163	635	9269	M2a	II	Bowl	BL7	A2	knob decoration with light gray slip (ext.)
10	1035	725	10237	M1b	II	Bowl	BL9c		White Slip
11	167	633	9268	M1b	II	Bowl	BL9	A1	
12	990	680	9988	M2a	II	Bowl	BL13	A2	
13	1030	707	10136	M2a	II	Bowl	BL17	A1	
14	1014	701	10103	M1b	II	Bowl	BL17b	A1b	Highly Fired Black Core
15	1056	695	10049	M1a	II	Bowl	BL33		White Slip
16	5	613	9039	M1b	II	Bowl	BL37	A2	White Slip
17	196	650	9557	M1b	II	Bowl	BL		White Slip
18	1047	721	10216	M2a	II		HMBL		
19	1053	701	10172	M1b	II	Krater	KR10		
20	996	708	10119	M2a	II	Krater	KR		
21	57	630	9266	M2a	II	Cooking Pot	CP3	A6	Maybe Jug
22	62	624	9180	M1b	II	Cooking Pot	CP13		Slip Mayb Cooking Pot

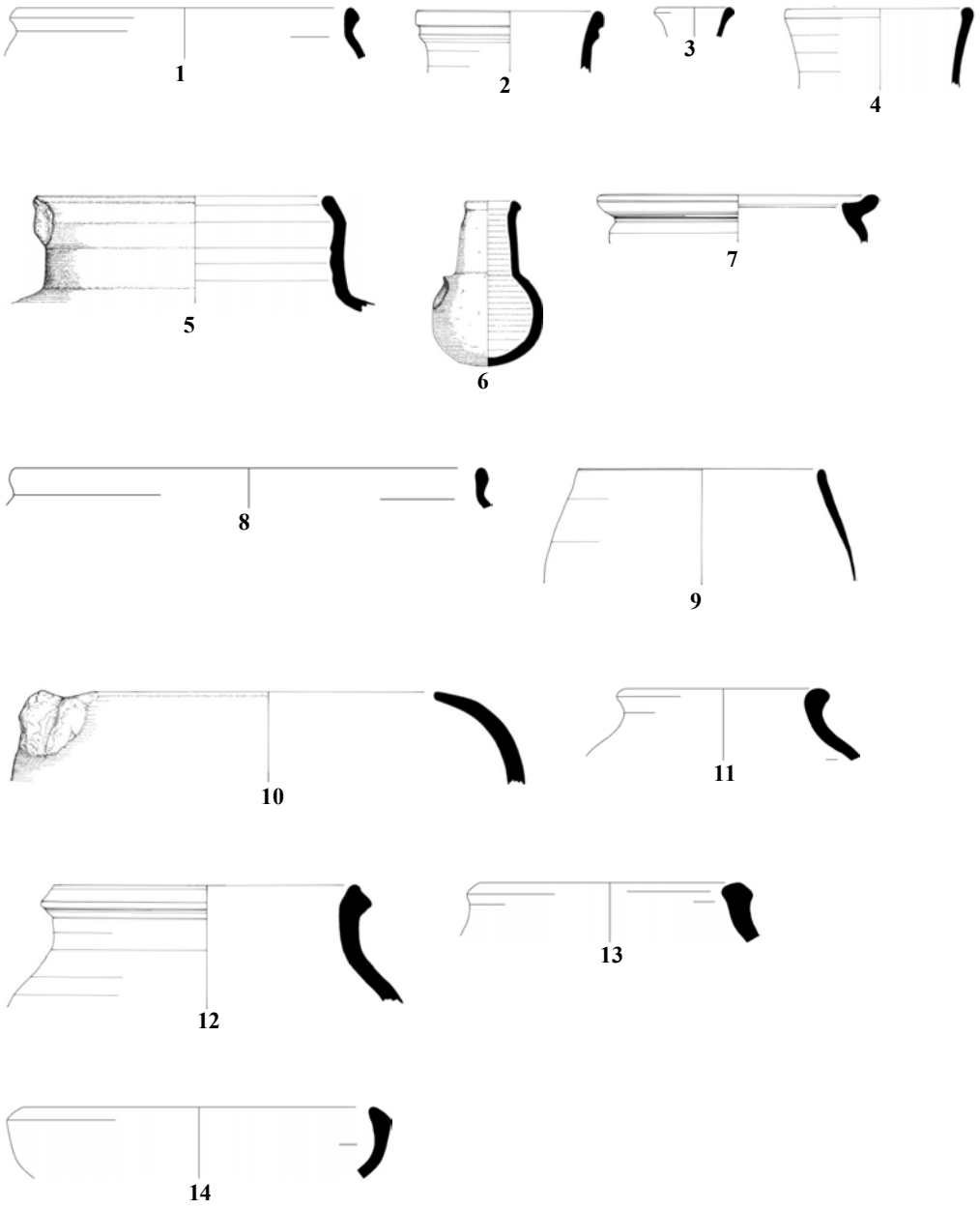


Plate 7.3.3: KEN Area M Str. II, ■ ■ ■ ■ ■ **10 cm**

Plate 7.3.3: KEN Area M Str. II,									
#	**Reg#**	**Locus**	**Basket**	**Str.**	**IP**	**Vessel**	**Type**	**Ware**	**Description**
1	521	681	10007	M1a	II	Cooking Pot	CP14		
2	3	607	9016	M1b	II	Jug	JG3		
3	38	619	9061	M2a	II	Jug	JG10		
4	423	687	10017	M1a	II	Jug	JG15c		White Slip
5	1012	707	10118	M2a	II	Jug	JG42		
6	278	650	9652	M1b	II	Juglet	JT		Red slip with burnish
7	1006	718	10202	M1a	II	Jar	JR6		
8	520	681	10007	M1a	II	Jar	JR8		
9	71	630	9266	M2a	II		HMJR		
10	1040	707	10169	M2a	II		HMJR		Applied Knobs double knob
11	1039	707	10169	M2a	II	Pithos	PT9		
12	1060	663	9772	M1a	II	Pithos	PT13	A3	
13	991	680	9988	M2a	II	Pithos	PT14	A7	
14	1420	0	0	M		Bowl	BL37	A3	

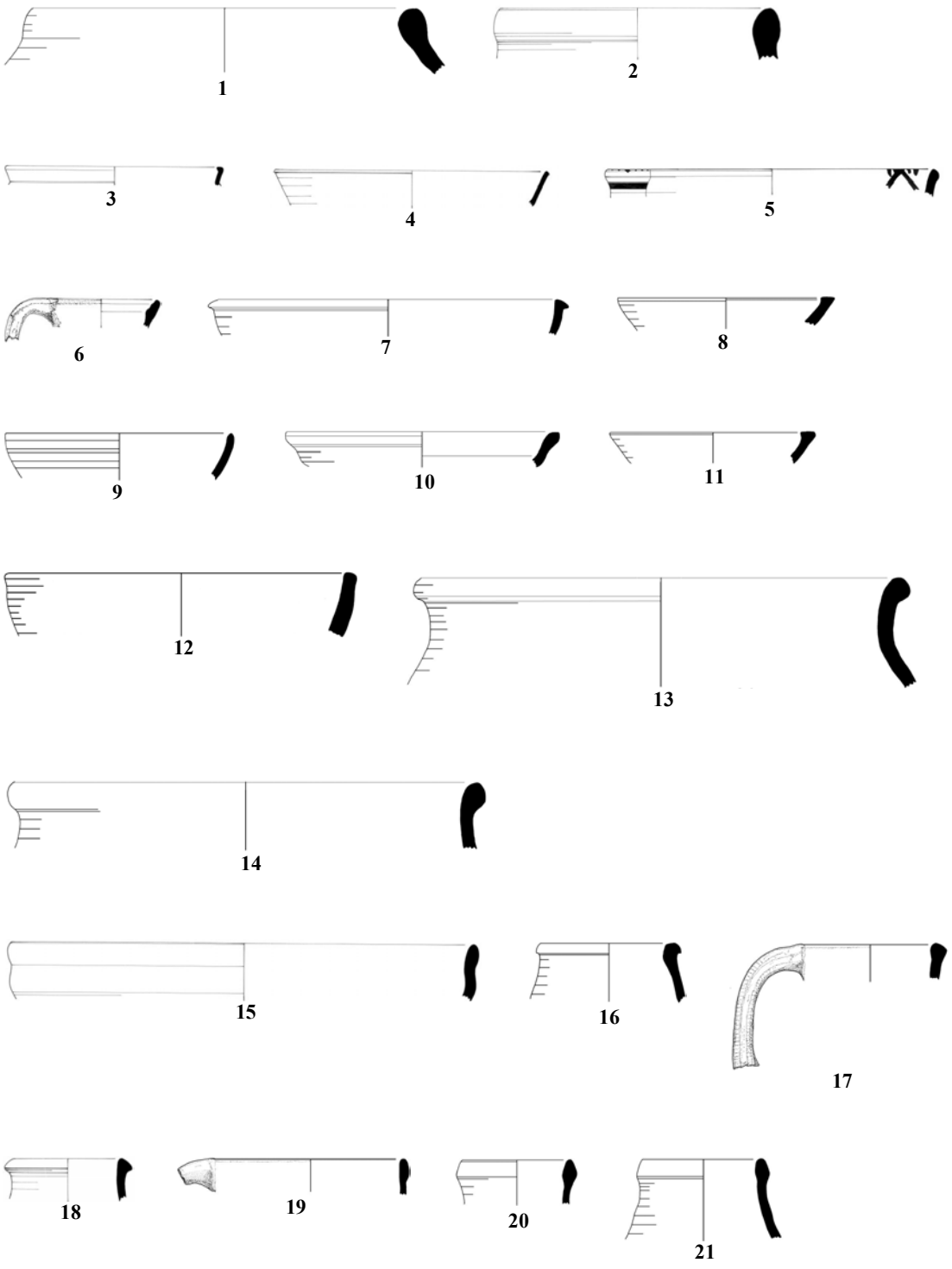


Plate 7.4.1: KEN Area A Str. Virgin, V, IV, III-IV

■ ■ ■ ■ ■ **10 cm**

Plate 7.4.1: KEN Area A Str. Virgin, V, IV, III-IV									
#	Reg#	Locus	Basket	Str.	IP	Vessel	Type	Ware	Description
1	773	93	1933	A4b	Virgin	Pithos	PT10	A2	White Slip (int./ext.)
2	136	166	4128	A4	V	Pithos	PT8	A2b	White Slip
3	364	190	4354	A3a	IV	Bowl	BL1f		
4	382	180	4230	A3a	IV	Bowl	BL17b	A1b	High fired dark gray fabric
5	391	180	4297	A3a	IV	Bowl	BL21a2		Painted Design Slip
6	366	180	4329	A3a	IV	Juglet	JT3		
7	267	41	1242	A3	III-IV	Bowl	BL3a3		
8	341	36	1204	A3	III-IV	Bowl	BL10	A1	
9	180	41	1263	A3	III-IV	Bowl	BL16	I1	Red Slip and Horizontal Burnish (int./ext.)
10	345	40	1234	A3	III-IV	Bowl	BL24	A1	Red Slip (ext.)
11	178	40	1289	A3	III-IV	Bowl	BL		
12	181	41	1263	A3	III-IV	Bowl	BL		
13	884	97	2127	A3	III-IV	Krater	KR6		White Slip (ext.)
14	885	97	2127	A3	III-IV	Krater	KR6		
15	95	161	4095	A3	III-IV	Krater	KR18		
16	263	40	1306	A3	III-IV	Jug	JG2		Cream Slip (ext.)
17	352	58	1399	A3	III-IV	Jug	JG4		
18	46	161	4110	A3	III-IV	Jug	JG4d		White Slip
19	344	40	1225	A3	III-IV	Jug	JG6		
20	769	94	1934	A3	III-IV	Jug	JG6		
21	770	94	1934	A3	III-IV	Jug	JG6		

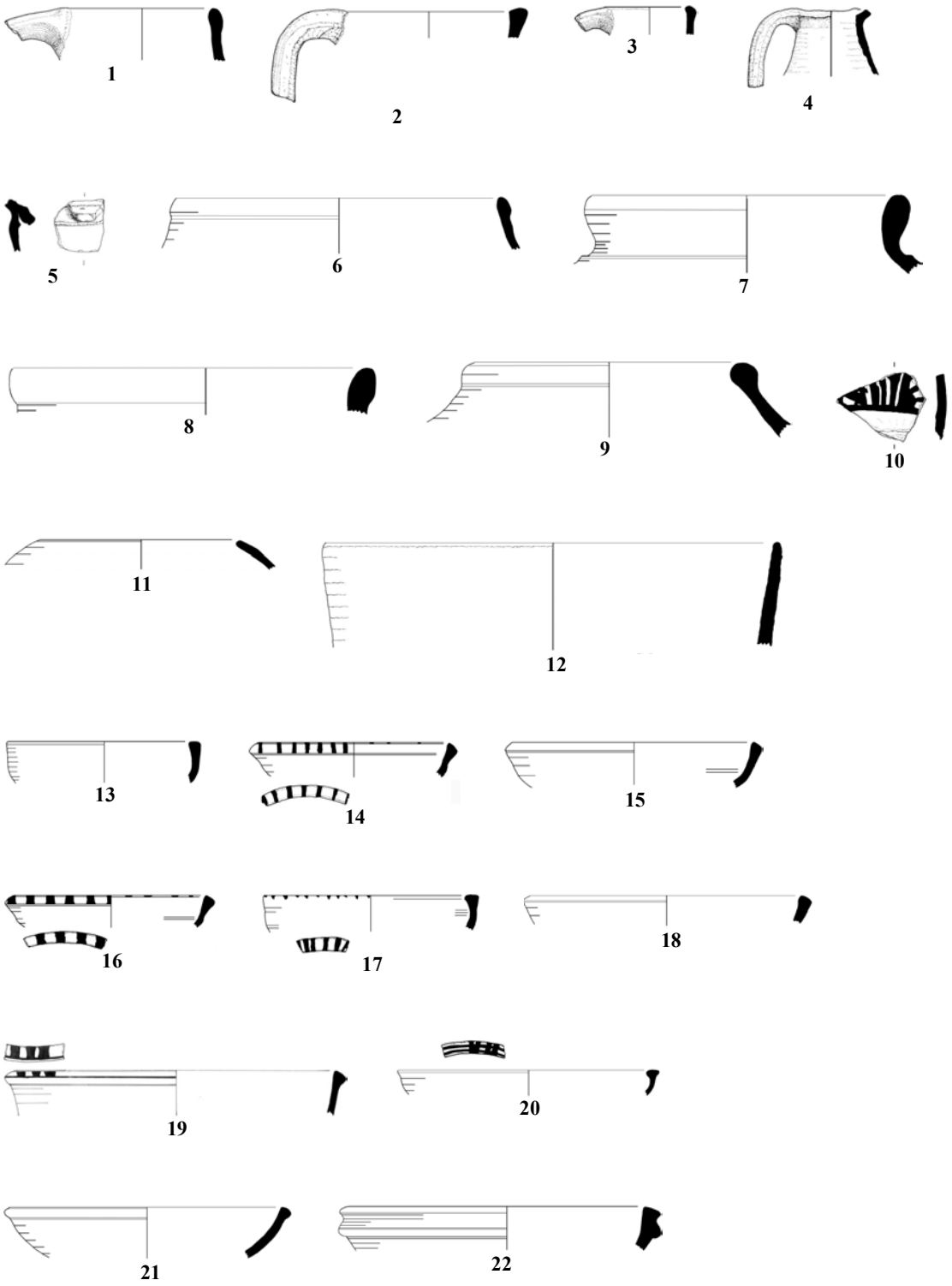


Plate 7.4.2: KEN Area A Str. III-IV, II

■ ■ ■ ■ ■ **10 cm**

Plate 7.4.2: KEN Area A Str. III-IV, II									
#	Reg#	Locus	Basket	Str.	IP	Vessel	Type	Ware	Description
1	883	97	2127	A3	III-IV	Jug	JG6		
2	762	89	1900	A3	III-IV	Jug	JG9		
3	265	41	1242	A3	III-IV	Jug	JG14		
4	771	89	1900	A3	III-IV	Juglet	JT23		
5	51	161	4110	A3	III-IV	Jar	JR5		White Slip
6	886	97	2127	A3	III-IV	Jar	JR42		
7	266	41	1242	A3	III-IV	Pithos	PT5	A2	
8	706	89	1824	A3	III-IV	Pithos	PT8		White Slip (int./ext)
9	269	53	1327	A3	III-IV	Pithos	PT10		
10	264	40	1306	A3	III-IV		Qurayyah		dark gray Painted Design Incision band on body sherd along with vertical painted bands attached to a horizontal band. Appears to be crossing bands below the horizantal bands to the left of vessel.
11	449	58	1450	A3	III-IV		Holemouth		Ashy
12	882	97	2127	A3	III-IV		HMBL		
13	153	21	1154	A2a	II	Bowl	BL3a1		
14	490	62	1516	A2a	II	Bowl	BL3a1		Black Horizontal Bands and on Rim White Slip Interior/Exterior
15	554	62	1623	A2a	II	Bowl	BL3a1	A1	
16	606	62	1623	A2a	II	Bowl	BL3a1		Black Painted Design on rim
17	612	62	1623	A2a	II	Bowl	BL3a1		Black Horizontal Bands White Slip (int./ext.)2 Sherds probably same vessel
18	636	77	1727	A2b	II	Bowl	BL3a1		
19	9	157	4021	A2a	II	Bowl	BL3a1		Painted Design Slip
20	634	77	1727	A2b	II	Bowl	BL3a2		Black Painted Design on rim White Slip (int./ext.)
21	333	37	1198	A2b	II	Bowl	BL3a3		
22	337	21	1361	A2a	II	Bowl	BL3a4		White Slip (int./ext.)

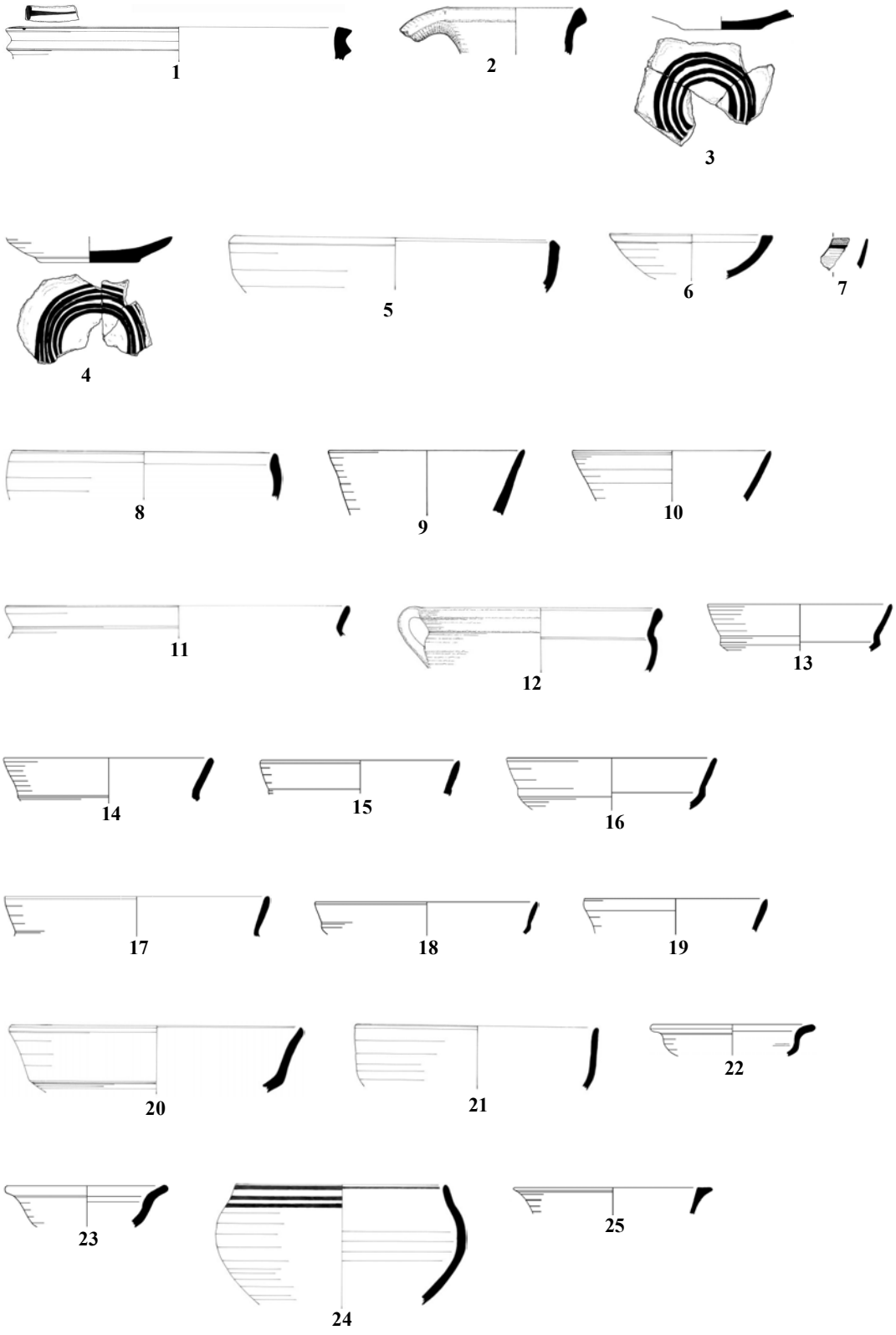


Plate 7.4.3: KEN Area A Str. II

■ ■ ■ ■ ■ 10 cm

Plate 7.4.3: KEN Area A Str. II									
#	Reg#	Locus	Basket	Str.	IP	Vessel	Type	Ware	Description
1	126	168	4171	A2a	II	Bowl	BL3a4		Painted Design
2	630	77	1727	A2b	II	Bowl	BL3base		Black Horizontal Bands White Slip I(int.)
3	1077	62	1623	A2a	II	Bowl	BL3base		Black Horizontal Bands White Slip (int./ext.)
4	1308	21	0	A2a	II	Bowl	BL3 Base		
5	257	189	4341	A2a	II	Bowl	BL9	A1	Slip
6	210	168	4158	A2a	II	Bowl	BL10	A3	
7	563	74	1640	A2b	II	Bowl	BL12b	A7	Pale Red, Black Painted Design Bichrome
8	250	187	4328	A2a	II	Bowl	BL13	A2	White Slip
9	114	21	1108	A2a	II	Bowl	BL17	A1	White Slip (int./ext.)
10	154	21	1154	A2a	II	Bowl	BL17	A1	
11	283	179	4245	A2b	II	Bowl	BL21a2		
12	339	174	4202	A2b	II	Bowl	BL21b	A9	
13	325	21	1418	A2a	II	Bowl	BL22	A1	White Slip (int./ext.)
14	329	21	1418	A2a	II	Bowl	BL22		
15	450	61	1451	A2a	II	Bowl	BL22		Burnish Interior
16	460	21	1452	A2a	II	Bowl	BL22		
17	553	77	1717	A2b	II	Bowl	BL22		Burnish Interior/Exterior Ring Burnishing
18	558	76	1710	A2b	II	Bowl	BL22		White Slip Interior/Exterior Assyrian, Ring Burnished
19	561	76	1710	A2b	II	Bowl	BL22		
20	249	187	4328	A2a	II	Bowl	BL23	A2	Slip Burnish
21	352	170	4208	A2a	II	Bowl	BL23	A2	
22	258	25	1315	A2a	II	Bowl	BL30	A1	
23	615	62	1623	A2a	II	Bowl	BL30	A1	
24	122	174	4190	A2b	II	Bowl	BL32	A1	White Slip (int./ext.) with Black Horizontal lines on neck
25	568	74	1670	A2b	II	Bowl	BL33		Red Slip Burnish (int./ext.)

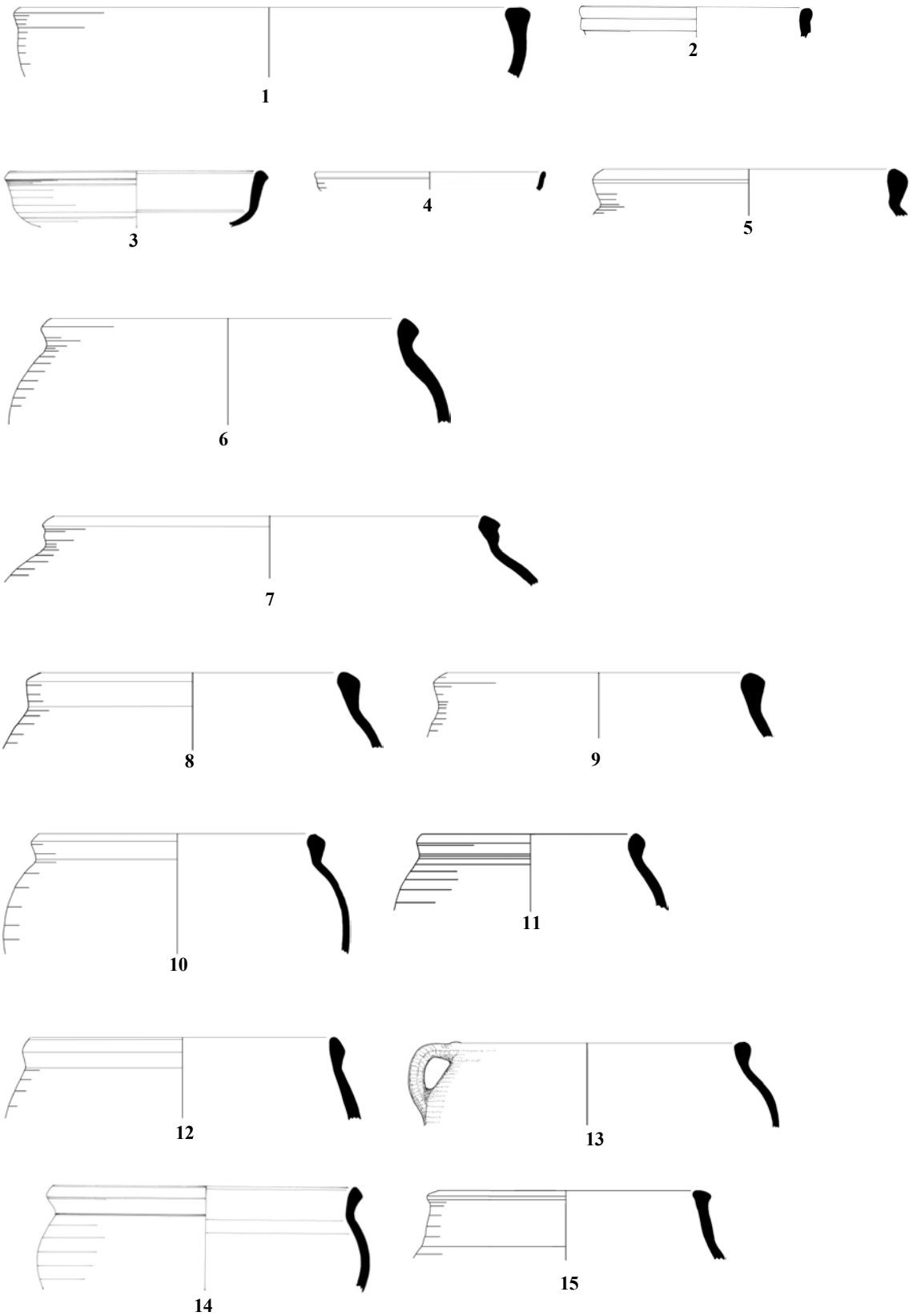


Plate 7.4.4: KEN Area A Str. II

■ ■ ■ ■ ■ **10 cm**

Plate 7.4.4: KEN Area A Str. II									
#	Reg#	Locus	Basket	Str.	IP	Vessel	Type	Ware	Description
1	709	83	1814	A2b	II	Bowl	BL34	A2	
2	117	171	4174	A2a	II	Bowl	BL47		
3	268	187	4320	A2a	II	Bowl	BL		Red Slip and Burnish (int./ext.); Rich in Dolomite, Poss. Import.
4	621	74	1670	A2b	II	Bowl	BL		Check Jar Forms
5	488	62	1516	A2a	II	Krater	KR3		
6	590	62	1668	A2a	II	Krater	KR3		White Slip Exterior Blistering
7	596	62	1623	A2a	II	Krater	KR3a2		White Slip (int./ext.)
8	598	62	1623	A2a	II	Krater	KR3		White Slip (ext.)
9	599	62	1623	A2a	II	Krater	KR3a2		
10	261	25	1315	A2a	II	Krater	KR3b		
11	354	56	1364	A2b	II	Krater	KR3b	A2	
12	464	62	1561	A2a	II	Krater	KR3b		White Slip Exterior
13	564	76	1710	A2b	II	Krater	KR3b		
14	253	187	4328	A2a	II	Krater	KR3b	A2	
15	6	13	1030	A2a	II	Krater	KR4	A7	Very Pale Brown Slip Probable join from Reg No. 1. Containing (L:18 B:1057; L:11 B:1020)

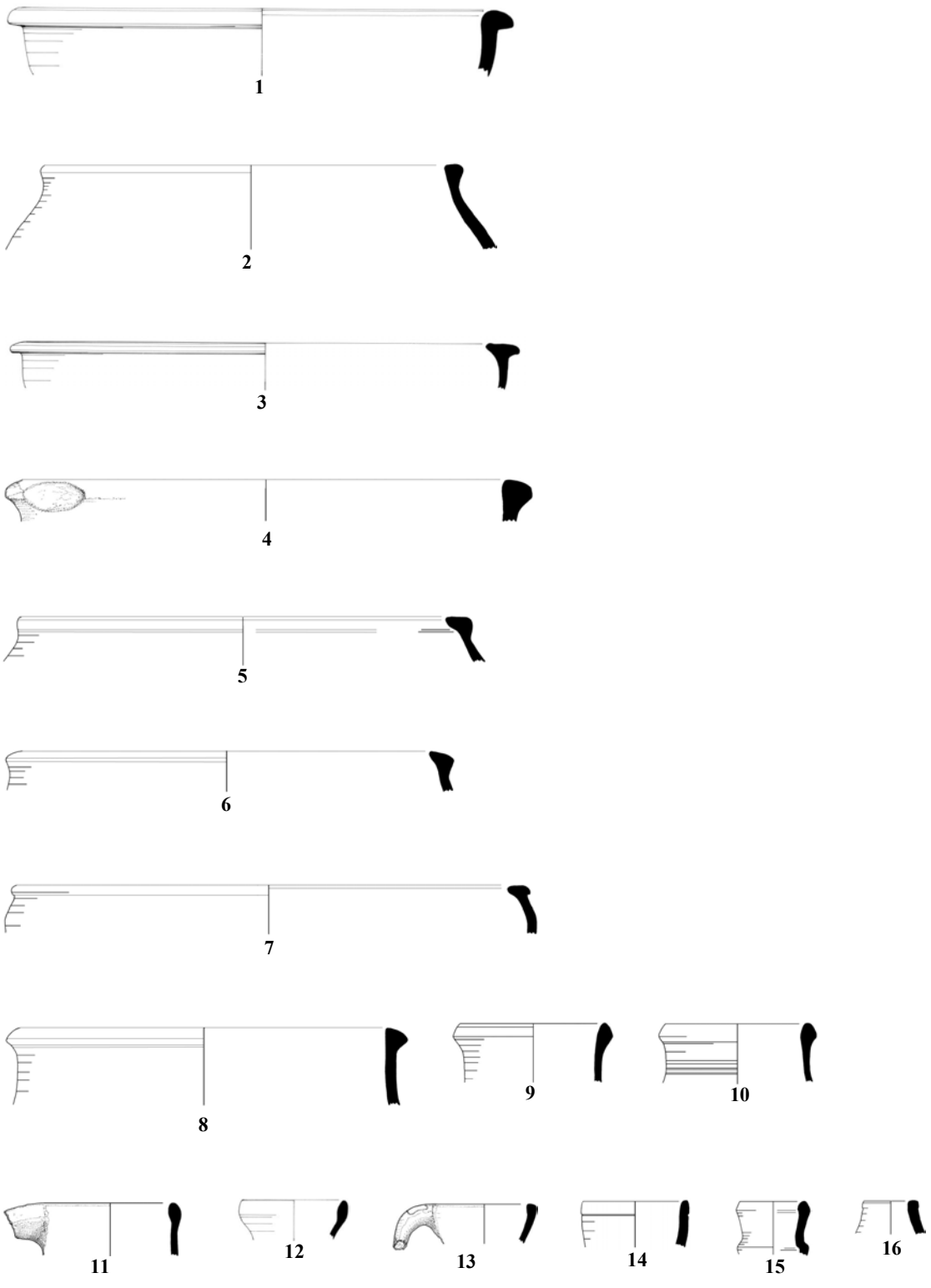


Plate 7.4.5: KEN Area A Str. II

■ ■ ■ ■ ■ 10 cm

Plate 7.4.5: KEN Area A Str. II									
#	Reg#	Locus	Basket	Str.	IP	Vessel	Type	Ware	Description
1	258	193	4377	A2b	II	Krater	KR5		
2	487	62	1516	A2a	II	Krater	KR6		
3	351	170	4208	A2a	II	Krater	KR7		
4	349	37	1181	A2b	II	Krater	KR9		White Slip (ext.)
5	928	92	2061	A2b	II	Krater	KR11b		White Slip Interior/Exterior Probably same vessel as 932
6	932	103	2172	A2b	II	Krater	KR11b	A1	White Slip Exterior Probably same vessel as 928
7	732	92	1925	A2b	II	Krater	KR14		White Slip Exterior Burnish (Int.)
8	631	77	1727	A2b	II	Krater	KR25		White Slip (int./ext.)
9	332	37	1198	A2b	II	Jug	JG4		White Slip Interior/Exterior Ridges at lower end of neck
10	467	62	1561	A2a	II	Jug	JG4d	A2	White Slip Interior/Exterior Probably part of Reg. No. 466
11	731	92	1925	A2b	II	Jug	JG6		
12	299	179	4245	A2b	II	Jug	JG6		White Slip
13	355	56	1364	A2b	II	Jug	JG14		White Slip (ext.)
14	623	28	1728	A2a	II	Jug	JG15b		White Slip (int./ext.) Possible Burnishing Tool
15	482	62	1516	A2a	II	Jug	JG17		White Slip (ext.)
16	183	49	1259	A2b	II	Jug	JG		

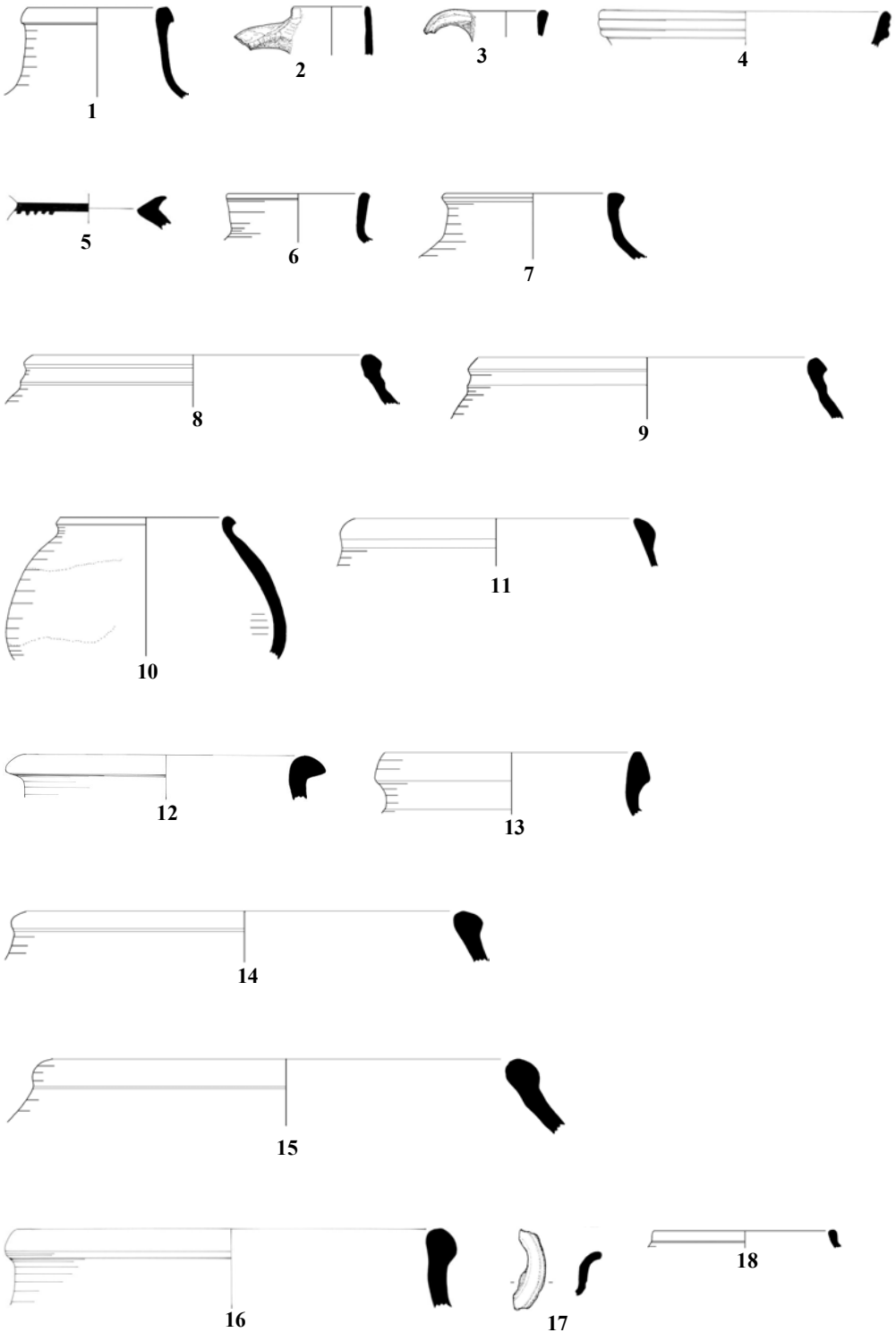


Plate 7.4.6: KEN Area A Str. II

■ ■ ■ ■ ■ 10 cm

Plate 7.4.6: KEN Area A Str. II									
#	Reg#	Locus	Basket	Str.	IP	Vessel	Type	Ware	Description
1	463	21	1452	A2a	II	Jug	JG		White Slip Exterior
2	350	37	1181	A2b	II	Jug	JG		Broken Rim
3	766	74	1901	A2b	II	Juglet	JT3		White Slip(ext.)
4	208	168	4158	A2a	II	Jar	JR4		White Slip
5	263	174	4190	A2b	II	Jar	JR6	A2	Painted Design
6	257	25	1315	A2a	II	Jar	JR7		
7	351	34	1153	A2a	II	Jar	JR7	A9	
8	331	37	1198	A2b	II	Jar	JR15	A2	White Slip (ext.)
9	445	21	1361	A2a	II	Jar	JR15		
10	486	62	1516	A2a	II	Jar	JR47		
11	705	74	1784	A2b	II	Jar	JR		coated with slag, copper and ash
12	106	171	4174	A2a	II	Pithos	PT2	A7	White Slip
13	446	28	1477	A2a	II	Pithos	PT4		
14	456	70	1566	A2b	II	Pithos	PT10		White Slip (ext.)
15	704	74	1784	A2b	II	Pithos	PT10		White Slip (ext.)
16	340	174	4202	A2b	II	Pithos	PT10		
17	632	77	1727	A2b	II		Lp		
18	551	74	1640	A2b	II		holemouth		2 Color Core Gray/Pale Red

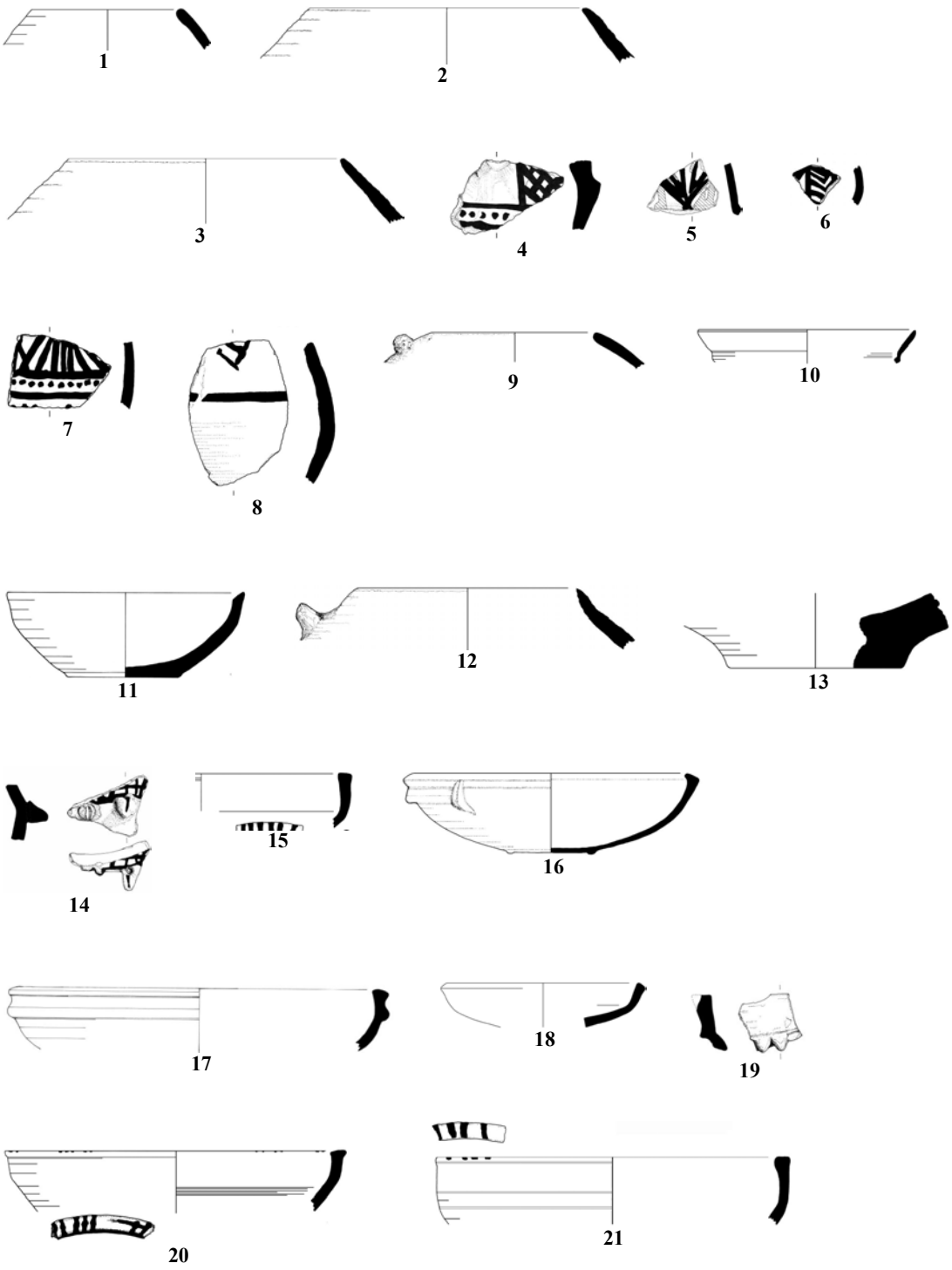


Plate 7.4.7: KEN Area A Str. II, I

■ ■ ■ ■ ■ 10 cm

Plate 7.4.7: KEN Area A Str. II, I									
#	Reg#	Locus	Basket	Str.	IP	Vessel	Type	Ware	Description
1	162	31	1112	A2a	II		HMJR		
2	334	37	1198	A2b	II		HMJR	A2b	Hand-made
3	565	76	1710	A2b	II		HMJR		Hand-made
4	336	21	1361	A2a	II		Qurayyah		Black Painted Design on rim White Slip Exterior Cross-hatch and dots within straight painted bands
5	324	21	1418	A2a	II		Qurayyah		pale red, dark gray, Painted Design Bichrome painted design
6	557	76	1710	A2b	II		Qurayyah		Black Chevron Painted Design
7	574	62	1561	A2a	II		Qurayyah		Black Painted Design Qurayyah Monochrome
8	586	62	1668	A2a	II		Qurayyah?		Black Painted Design on rim White Slip Exterior
9	605	62	1623	A2a	II		HMJR		Hand-made
10	620	62	1623	A2a	II	Bowl	BL22		White Slip (int./ext.)
11	881	30	1159	A2a	II	Bowl	BL11		
12	1327	21	1326	A2a	II		HMJR		Grooved
13	1334	74	1846	A2b	II		Base		
14	101	174	4190	A2b	II		Painted		Painted Design Knob handle decoration like denticulation
15	455	63	1519	A1b	I	Bowl	BL3a1		Black Horizontal Bands on Rim White Slip (int./ext.)
16	1060	79	1847	A1b	I	Bowl	BL3a4	I1	Red Slip Burnish Interior/Exterior Draw
17	7	155	4014	A1b	I	Bowl	BL3a4	A2	White Slip
18	401	184	4291	A1b	I	Bowl	BL3a4		Painted Design Slip
19	144	163	4139	A1b	I	Bowl	BL3a8		Denticulated Denticulated
20	174	44	1298	A1b	I	Bowl	BL3b3	A1	Black Horizontal Bands White Slip Interior/Exterior painted bands on interior and rim of bowl
21	447	55	1448	A1b	I	Bowl	BL3b3		Black Painted Design on rim White Slip

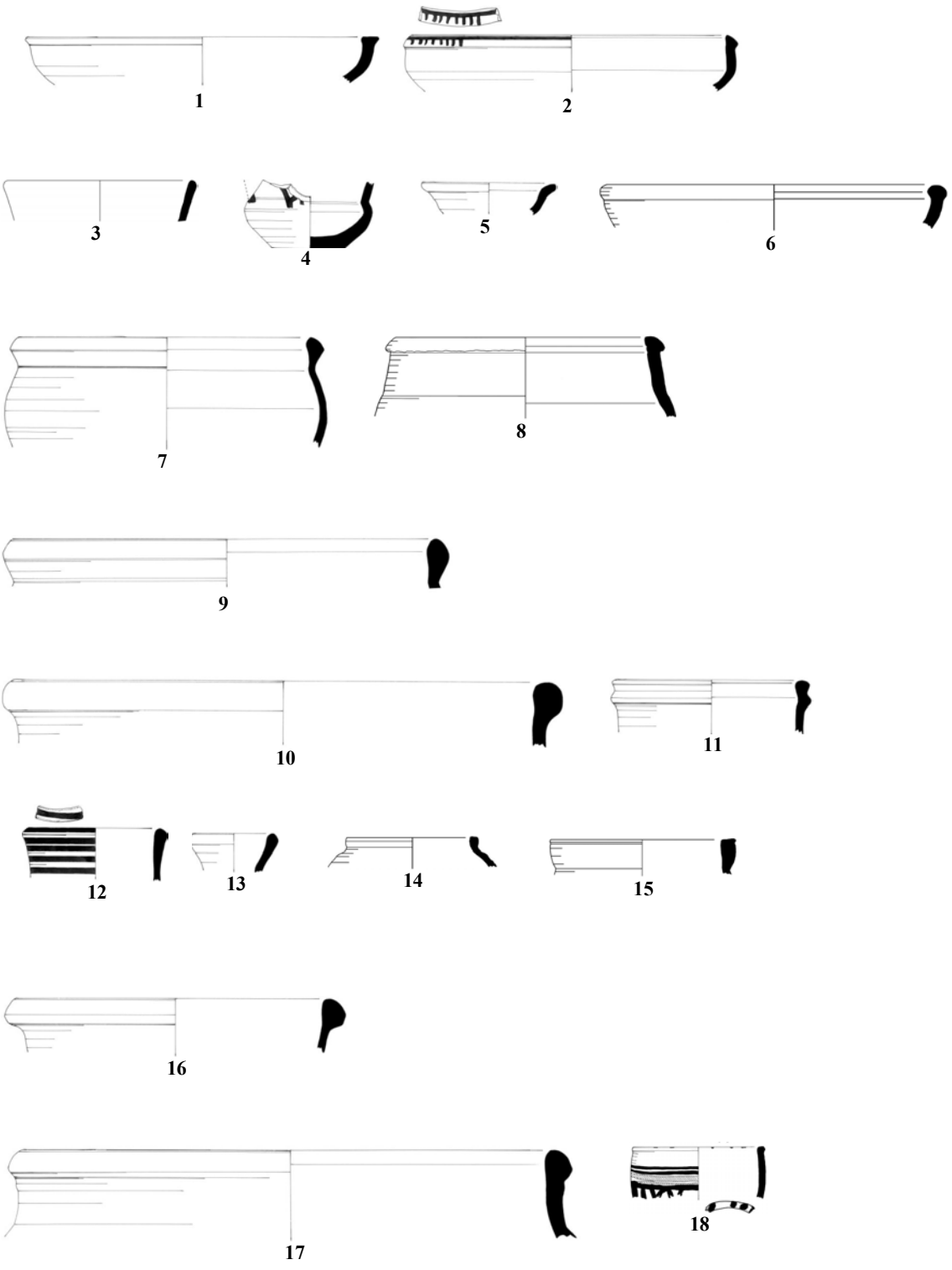


Plate 7.4.8: KEN Area A Str. I

■ ■ ■ ■ ■ 10 cm

Plate 7.4.8: KEN Area A Str. I									
#	Reg#	Locus	Basket	Str.	IP	Vessel	Type	Ware	Description
1	404	158	4147	A1b	I	Bowl	BL3b1		Painted Design Slip
2	1460	183	4299	A1b	I	Bowl	BL9b	A2	Painted Design linked with L.187
3	333	183	4299	A1b	I	Bowl	BL14b2		Slip
4	32	158	4036	A1b	I	Bowl	BL21a1		Painted Design Slip
5	149	163	4139	A1b	I	Bowl	BL24b	A1	White Slip (ext.)
6	10	12	1026	A1b	I	Bowl	BL38		White Slip very few inclusions in temper
7	347	176	4231	A1a	I	Krater	KR3b	A2	White Slip
8	1	18	1057	A1b	I	Krater	KR4		Very Pale Brown Slip
9	332	183	4299	A1b	I	Krater	KR13		White Slip
10	356	183	4271	A1b	I	Krater	KR24		White Slip
11	269	183	4271	A1b	I	Jug	JG3		
12	1461	183	4268	A1b	I	Jug	JG15c		Painted Design Slip
13	274	183	4246	A1b	I	Juglet	JT19		
14	448	55	1448	A1b	I	Jar	JR16		
15	703	81	1813	A1a	I	Jar	JR43		
16	109	163	4139	A1b	I	Jar	JR51		Painted Design
17	325	183	4299	A1b	I	Pithos	PT10	A2	
18	578	79	1730	A1b	I		Qurayyah		Black, Weak Red Horizontal Bands White Slip Exterior Bichrome

Plate 7.4.9: KEN Area A Str. I, ■ ■ ■ ■ ■ **10 cm**

Plate 7.4.9: KEN Area A Str. I,									
#	Reg#	Locus	Basket	Str.	IP	Vessel	Type	Ware	Description
1	266	183	4246	A1b	I	Bowl	BL		Painted Design Slip possible part of Krater
2	7	0	0			Krater	KR11		

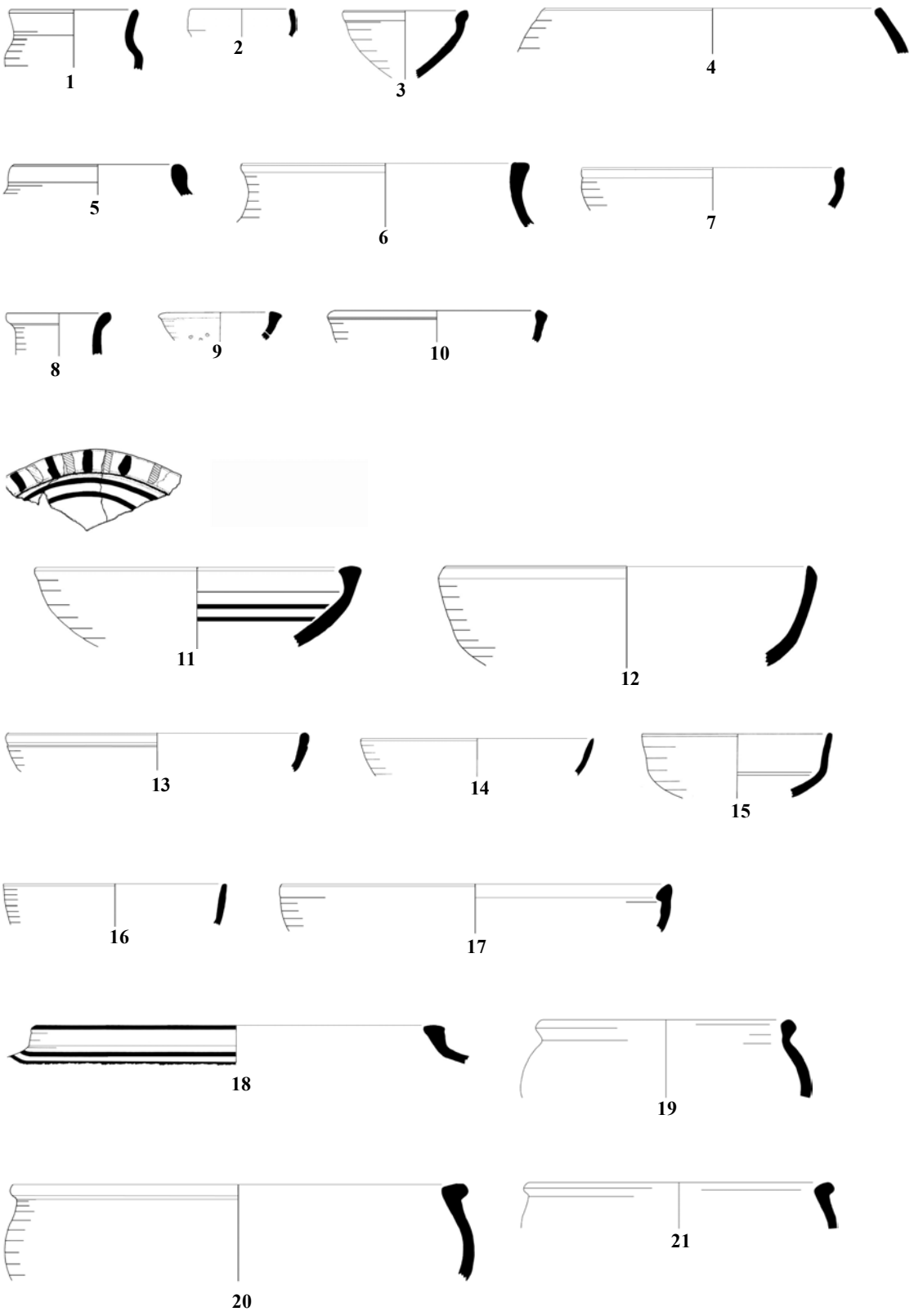


Plate 7.5.1: KEN Area S Str. VI, V, III

■ ■ ■ ■ ■ **10 cm**

Plate 7.5.1: KEN Area S Str. VI, V, III									
#	Reg#	Locus	Basket	Str.	IP	Vessel	Type	Ware	Description
1	965	352	7725	S4	VI	Bowl	BL21a1		
2	970	350	7715	S4	VI	Bowl	BL26	A2	
3	971	350	7715	S4	VI	Bowl	BL31	A8	White Slip (int./ext.); Similar to Ware 8 but contains glassy slag
4	964	347	7657	S4	VI		HMBL		White Slip (int./ext.) Pot Mark on handle
5	969	350	7715	S4	VI	Jar	JR1		
6	961	351	7716	S4	VI	Jar	JR45		
7	887	341	7518	S3	V	Bowl	BL31	A1	
8	888	344	7540	S3	V	Jug	JG18		
9	926	336	7521	S2b	III	Bowl	BL3a1		White Slip (ext.)
10	945	338	7441	S2b	III	Bowl	BL3a1		White Slip (int./ext.)
11	914	336	7521	S2b	III	Bowl	BL3b1	B1	Black Horizontal Bands and Rim Burnish Exterior Bichrome
12	792	336	7321	S2b	III	Bowl	BL9	A2	White Slip (int./ext.)
13	381	311	6174	S2b	III	Bowl	BL15b	A9	
14	987	336	7444	S2b	III	Bowl	BL17	A2	White Slip (int./ext.)
15	910	336	7521	S2b	III	Bowl	BL23	A2	White Slip (ext.
16	956	339	7442	S2b	III	Bowl	BL23	A2	White Slip (int./ext.)
17	989	336	7444	S2b	III	Bowl	BL38		White Slip (int./ext.)
18	782	336	7321	S2b	III	Krater	KR3a2		Black Horizontal Bands White Slip Exterior Black paint almost completely eroded away revealing unslipped exterior light-reddish brown
19	844	336	7321	S2b	III	Krater	KR3		
20	990	336	7444	S2b	III	Krater	KR8	A9	White Slip (Int./ext.) Possibly same sherd as 967
21	962	336	7689	S2b	III	Krater	KR8		White Slip (Int./ext.)

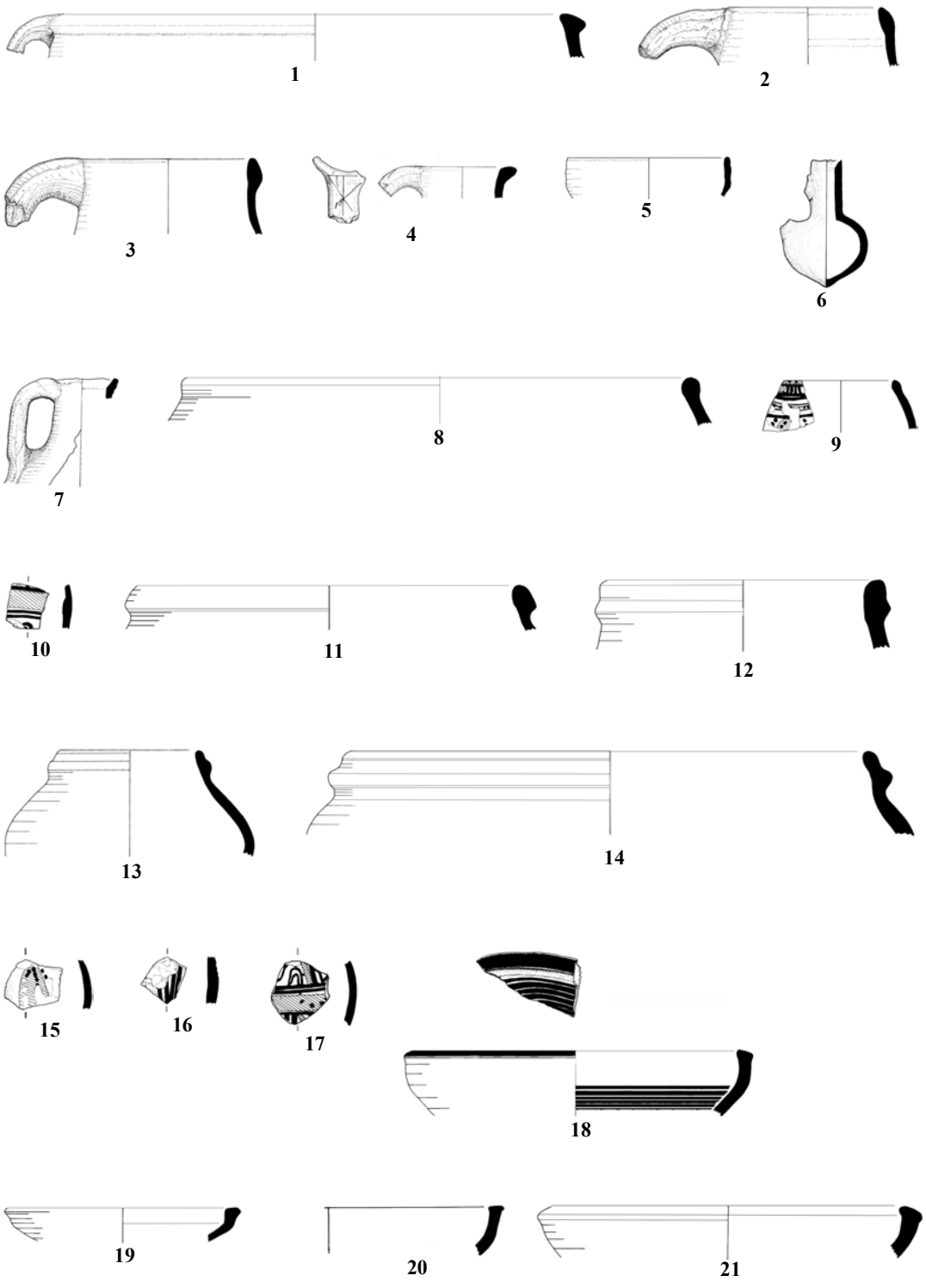


Plate 7.5.2: KEN Area S Str. III, II

■ ■ ■ ■ ■ **10 cm**

Plate 7.5.2: KEN Area S Str. III, II									
#	Reg#	Locus	Basket	Str.	IP	Vessel	Type	Ware	Description
1	908	336	7521	S2b	III	Krater	KR11		White Slip (Int./ext.)
2	843	336	7321	S2b	III	Jug	JG6		White Slip (ext.)
3	992	336	7444	S2b	III	Jug	JG6		
4	787	339	7377	S2b	III	Jug	JG14	A1b	Incised decoration on handle
5	975	336	7444	S2b	III				
6	880	336	7322	S2b	III	Juglet	JT19		
7	826	332	7107	S2b	III	Juglet	JT23		
8	942	337	7440	S2b	III	Jar	JR1		
9	842	339	7377	S2b	III		Qurayyah		black, red, pinkish-white Painted Design Bichrome
10	890	338	7543	S2b	III		Qurayyah		Black, Weak Red Horizontal Bands White Slip (ext.) Bichrome
11	786	336	7321	S2b	III	Pithos	PT5		White Slip (ext.)
12	924	336	7521	S2b	III	Pithos	PT20b		White Slip (ext.)
13	988	336	7444	S2b	III	Cooking Pot	CP2	A6b	Diameter does not fit form
14	784	336	7321	S2b	III	Cooking Pot	CP6		White Slip (ext.)
15	583	325	6597	S2b	III		Qurayyah		Black, Weak Red Horizontal Bands White Slip Exterior Bichrome
16	891	338	7543	S2b	III		Qurayyah		Black Painted Design on rim White Slip Exterior Bichrome
17	576	318	6523	S2b	III		Qurayyah		Black, Weak Red Horizontal Bands
18	804	331	7228	S2a	II	Bowl	BL3a1	A2	Black Horizontal Bands Buseirah ware on different fabric
19	829	334	7144	S2a	II	Bowl	BL3a3		Black Horizontal Bands and on rim White Slip (ext.) 2 Color core light gray/light red
20	611	322	6868	S2a	II	Bowl	BL3a4		
21	290	307	6014	S2a	II	Bowl	BL3b2		White Slip Interior/Exterior

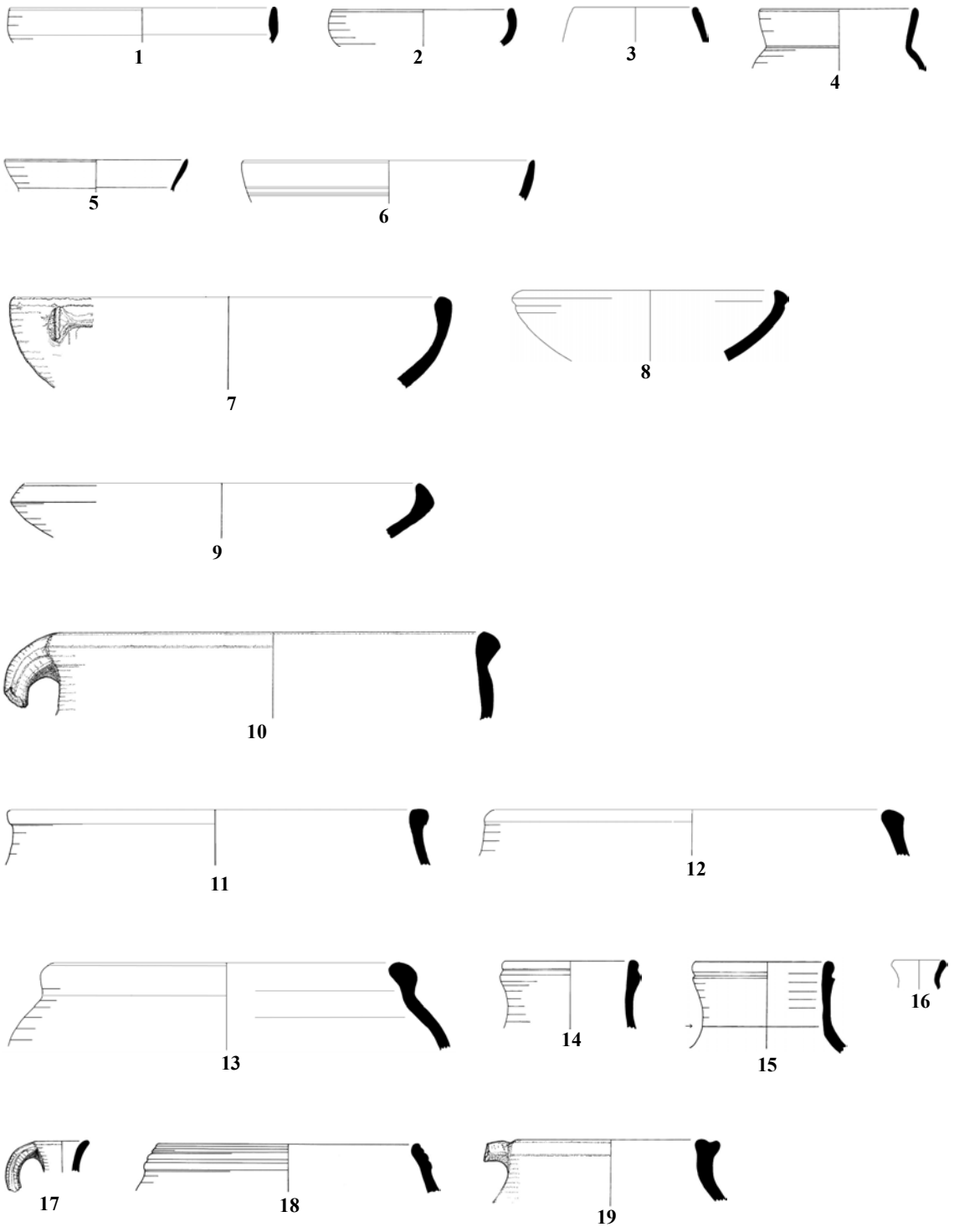


Plate 7.5.3: KEN Area S Str. II

■ ■ ■ ■ ■ **10 cm**

Plate 7.5.3: KEN Area S Str. II									
#	Reg#	Locus	Basket	Str.	IP	Vessel	Type	Ware	Description
1	432	301	6099	S2a	II	Bowl	BL13b	A2	White Slip (ext.), ashy
2	433	301	6099	S2a	II	Bowl	BL13c	A2	White Slip (ext.) ashy
3	375	310	6171	S2a	II	Bowl	BL15b	A2	Grooved White Slip (int./ext.) grooved below rim and further down
4	899	340	7529	S2a	II	Bowl	BL21a1	A2	
5	808	331	7228	S2a	II	Bowl	BL22	A1	Burnish Interior/Exterior
6	797	331	7108	S2a	II	Bowl	BL23	A2	White Slip (ext.)Burnish (int.)
7	799	331	7228	S2a	II	Bowl	BL28	A2	Attached Bar handle, interior blackened with soot
8	793	331	7326	S2a	II	Bowl	BL29	A9	
9	718	322	6868	S2a	II	Bowl	BL35		White Slip (int./ext.)
10	423	301	6168	S2a	II	Krater	KR3		
11	734	328	6871	S2a	II	Krater	KR6		White Slip (int./ext.)
12	859	327	7325	S2a	II	Krater	KR9		White Slip (int./ext.)
13	653	322	6544	S2a	II	Krater	KR13		
14	356	301	6097	S2a	II	Jug	JG3		
15	701	327	6759	S2a	II	Jug	JG3		
16	435	301	6099	S2a	II	Jug	JG10		White Slip (int./ext.)ashy
17	410	307	6102	S2a	II	Juglet	JT3		White Slip (ext.)
18	788	331	7367	S2a	II	Jar	JR4		White Slip (int./ext.)
19	285	301	6006	S2a	II	Jar	JR19		White Slip (ext.)

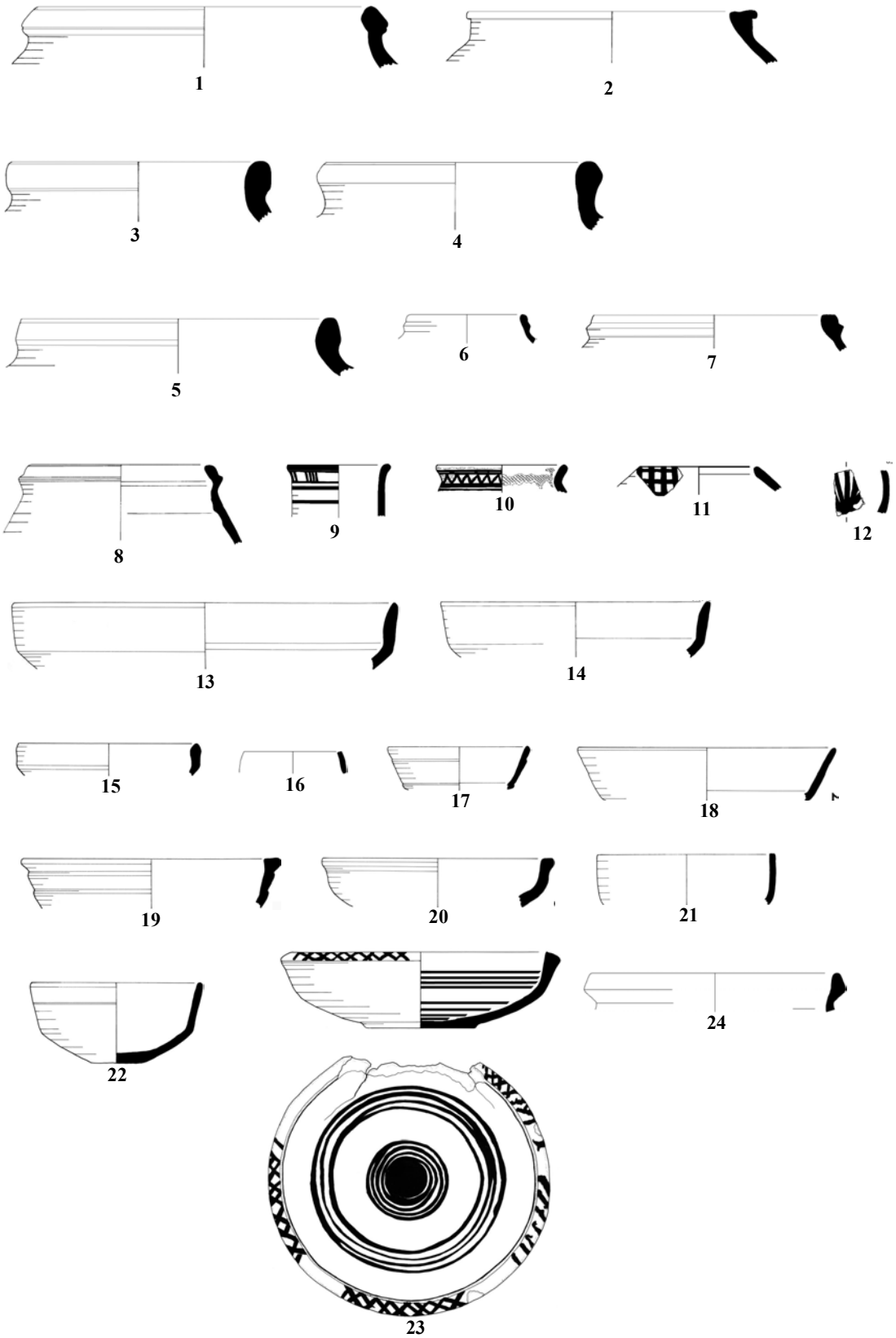


Plate 7.5.4: KEN Area S Str. II, I

■ ■ ■ ■ ■ 10 cm

Plate 7.5.4: KEN Area S Str. II, I									
#	Reg#	Locus	Basket	Str.	IP	Vessel	Type	Ware	Description
1	801	331	7228	S2a	II	Jar	JR		White Slip (ext.)
2	834	331	7012	S2a	II	Pithos	PT3	A9	Grooved
3	359	301	6097	S2a	II	Pithos	PT5		White Slip Exterior Ashy on outside of Vessel
4	1228	322	6626	S2a	II	Pithos	PT5		Draw
5	821	333	7227	S2a	II	Pithos	PT8		White Slip (ext.)
6	897	340	7529	S2a	II	Cooking Pot	CP2		White Slip (ext.)
7	358	301	6097	S2a	II	Cooking Pot	CP3		White Slip (ext.)Ashy on outside of Vessel
8	676	322	6758	S2a	II	Cooking Pot	CP?		White Slip (int./ext.)
9	901	340	7529	S2a	II		Qurayyah		Black Horizontal Bands White Slip Exterior
10	301	301	5935	S2a	II		Qurayyah		gray, dark gray, light reddish-brown Painted Design Dark gray painted design on gray coating.
11	803	331	7228	S2a	II		Qurayyah?		Black Painted Design
12	802	331	7228	S2a	II		Qurayyah		Black Painted Design Qurayyah
13	220	263	5873	S1	I	Bowl	BL13	A2	White Slip Exterior Burnish int.
14	740	312	6973	S1	I	Bowl	BL13	A2	White Slip (int./ext.) Burnish Interior
15	227	263	5873	S1	I	Bowl	BL13b	A1	White Slip (int./ext.)
16	214	294	5806	S1	I	Bowl	BL16b	A9	
17	34	263	5076	S1	I	Bowl	BL22		White Slip (int./ext.) fine horizontal grooves below rim and above carination
18	100	274	5429	S1	I	Bowl	BL23	A2	
19	101	274	5429	S1	I	Bowl	BL25b	A10	White Slip (int./ext.) with stepped grooves
20	196	263	5809	S1	I	Bowl	BL36		White Slip (int./ext.)Most of vessel is covered with a very dark gray ashy silt
21	37	268	5435	S1	I	Bowl	BL		White Slip (int.)
22	878	317	6863	S1	I	Bowl	BL13		Almost Complete
23	879	275	5989	S1	I	Bowl	BL3b		Black Horizontal Bands White Slip (int./ext.)r Complete
24	21	262	5074	S1	I	Krater	KR1		

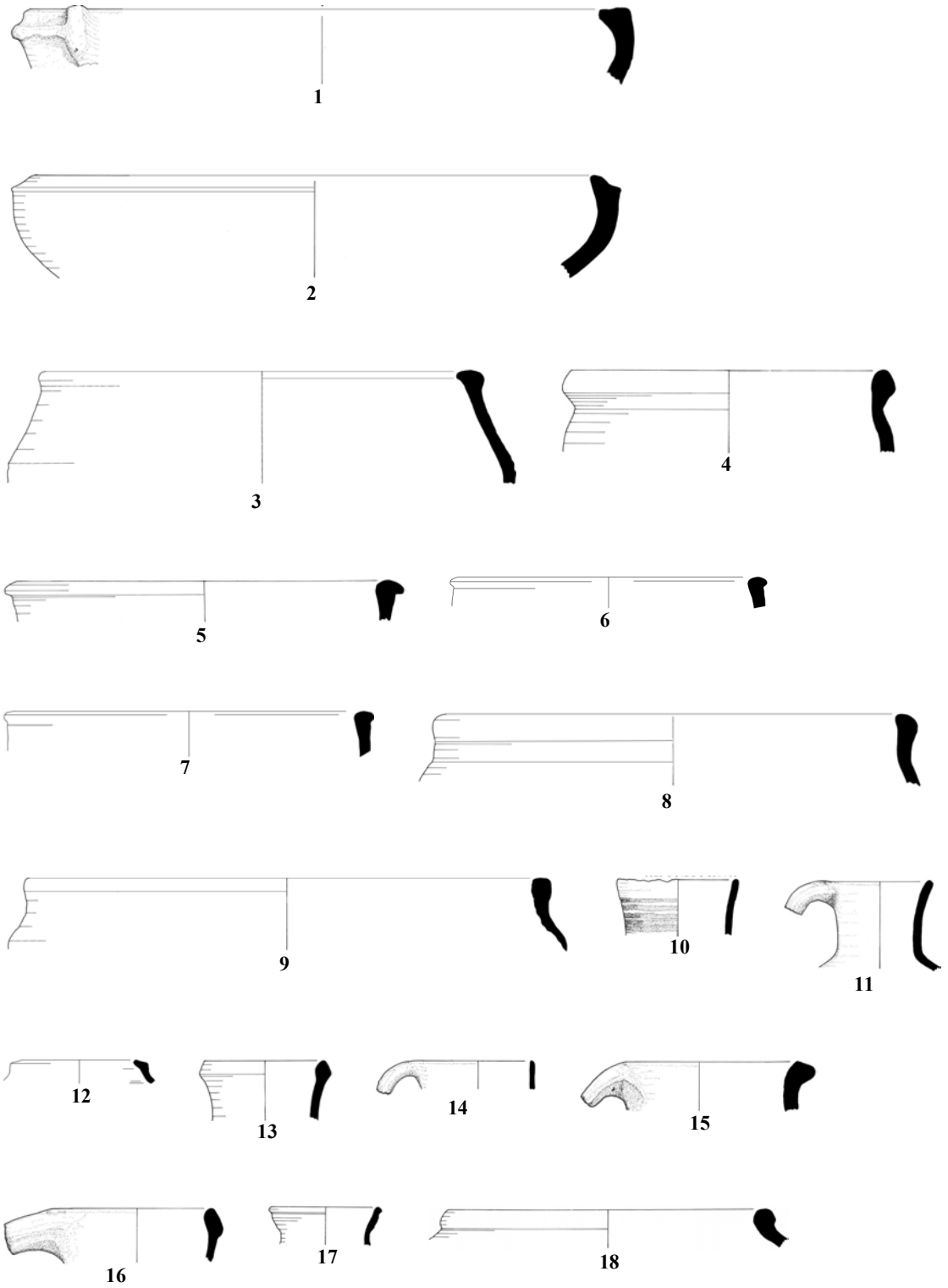


Plate 7.5.5: KEN Area S Str. I

■ ■ ■ ■ ■ **10 cm**

Plate 7.5.5: KEN Area S Str. I									
#	Reg#	Locus	Basket	Str.	IP	Vessel	Type	Ware	Description
1	190	263	5809	S1	I	Krater	KR10		The majority of the vessel is very dark gray from ashy deposit
2	208	263	5809	S1	I	Krater	KR10		
3	746	312	6973	S1	I	Krater	KR11	A1	White Slip (int./ext.)
4	52	263	5267	S1	I	Krater	KR3		White Slip (ext.)
5	226	263	5873	S1	I	Krater	KR8		
6	73	263	5436	S1	I	Krater	KR8		
7	224	263	5873	S1	I	Krater	KR8		
8	123	268	5596	S1	I	Krater	KR9		White Slip
9	742	312	6973	S1	I	Krater	KR9		White Slip (int./ext.)
10	69	275	5280	S1	I	Jug	JG15c		Black Painted Design on rim White Slip glassy dolerite inclusions
11	569	312	6541	S1	I	Jug	JG15		
12	200	263	5809	S1	I	Cooking Pot	CP20	A7	
13	74	263	5436	S1	I	Jug	JG4		Top of rim is eroded away; glassy dolerite
14	191	263	5809	S1	I	Jug	JG8		White Slip (int./ext.)
15	85	268	5137	S1	I	Jug	JG9		White Slip
16	186	263	5873	S1	I	Jug	JG9		
17	217	263	5873	S1	I				White Slip (ext.)
18	234	263	5873	S1	I	Jar	JR1		White Slip (ext.)

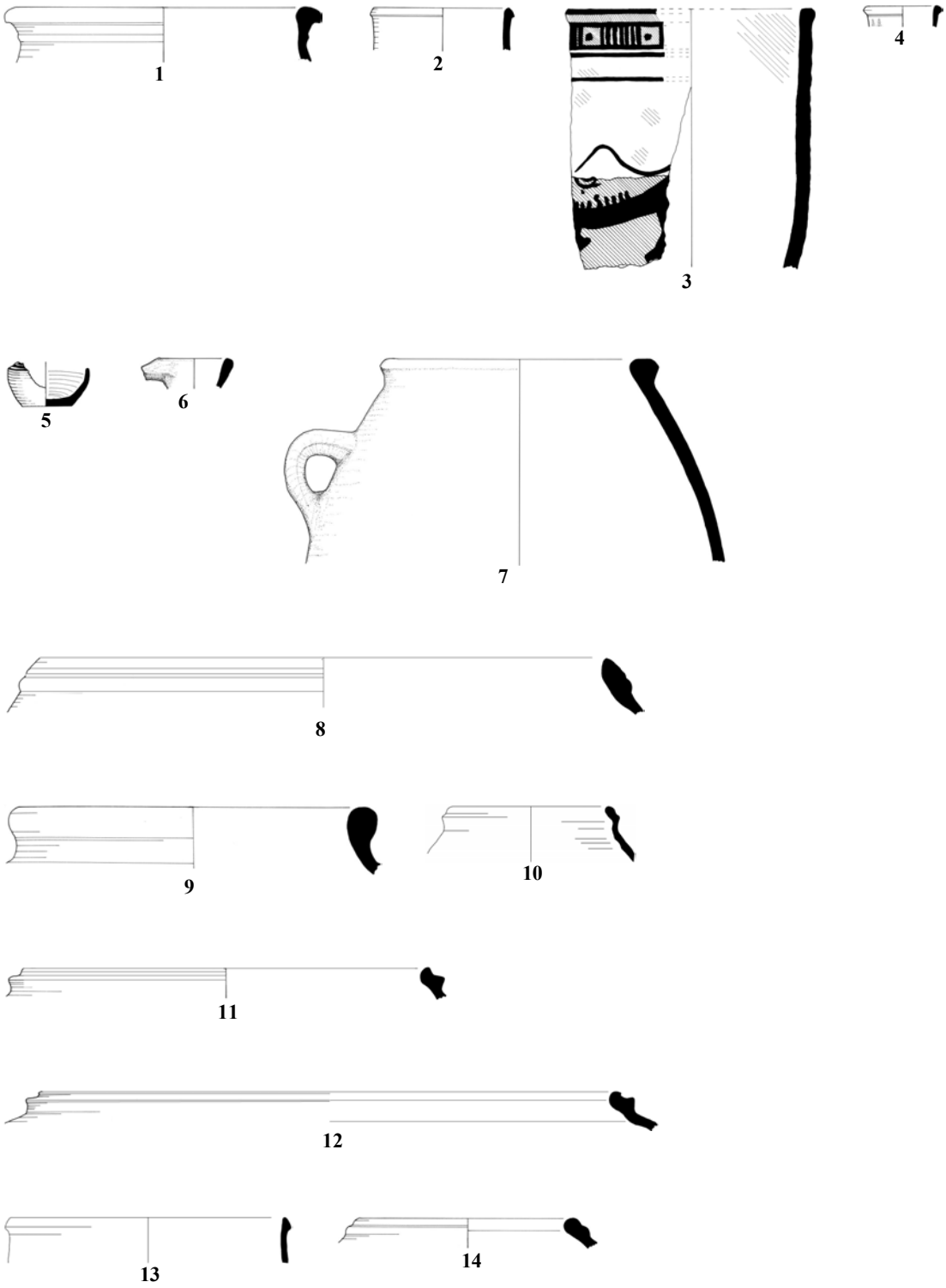


Plate 7.5.6: KEN Area S Str. I

■ ■ ■ ■ ■ **10 cm**

Plate 7.5.6: KEN Area S Str. I									
#	Reg#	Locus	Basket	Str.	IP	Vessel	Type	Ware	Description
1	51	271	5502	S1	I	Jar	JR20		Black Horizontal Bands
2	202	263	5809	S1	I	Jar	JR41		White Slip (int./ext.)
3	608	317	6863	S1	I		Qurayyah?		Black Painted Design
4	81	266	5253	S1	I	Juglet	JT1		Gray Painted (ext.)
5	571	264	5615	S1	I	Juglet	JT22	I4	Black Horizontal Bands Burnish Exterior Cypro-Phoenician
6	58	266	5189	S1	I	Juglet	JT3		White Slip
7	789	317	5756	S1	I	Pithos	PT10		Connected with sherds from L.331 B. 7228
8	198	263	5809	S1	I	Pithos	PT19		
9	137	270	5597	S1	I	Pithos	PT5		White Slip
10	49	268	5501	S1	I	Cooking Pot	CP?		White Slip (int./ext.) Probably part of the same rim as Reg No. 48
11	70	275	5280	S1	I	Cooking Pot	CP1	A6b	glassy slag inclusions
12	197	263	5809	S1	I	Cooking Pot	CP1	A6	
13	514	317	6468	S1	I	Cooking Pot	CP10		
14	232	263	5873	S1	I	Cooking Pot	CP3	A6	

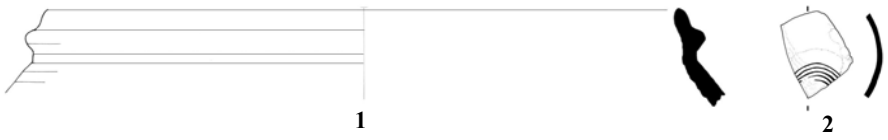


Plate 7.5.7: KEN Area S Str. I

■ ■ ■ ■ ■ 10 cm

Plate 7.5.7: KEN Area S Str. I									
#	Reg#	Locus	Basket	Str.	IP	Vessel	Type	Ware	Description
1	39	268	5191	S1	I	Cooking Pot	CP		White Slip (ext.)
2	280	263	5873	S1	I		FL2	I1	Pink, Black Horizontal Bands Red Slip Burnish (ext.)

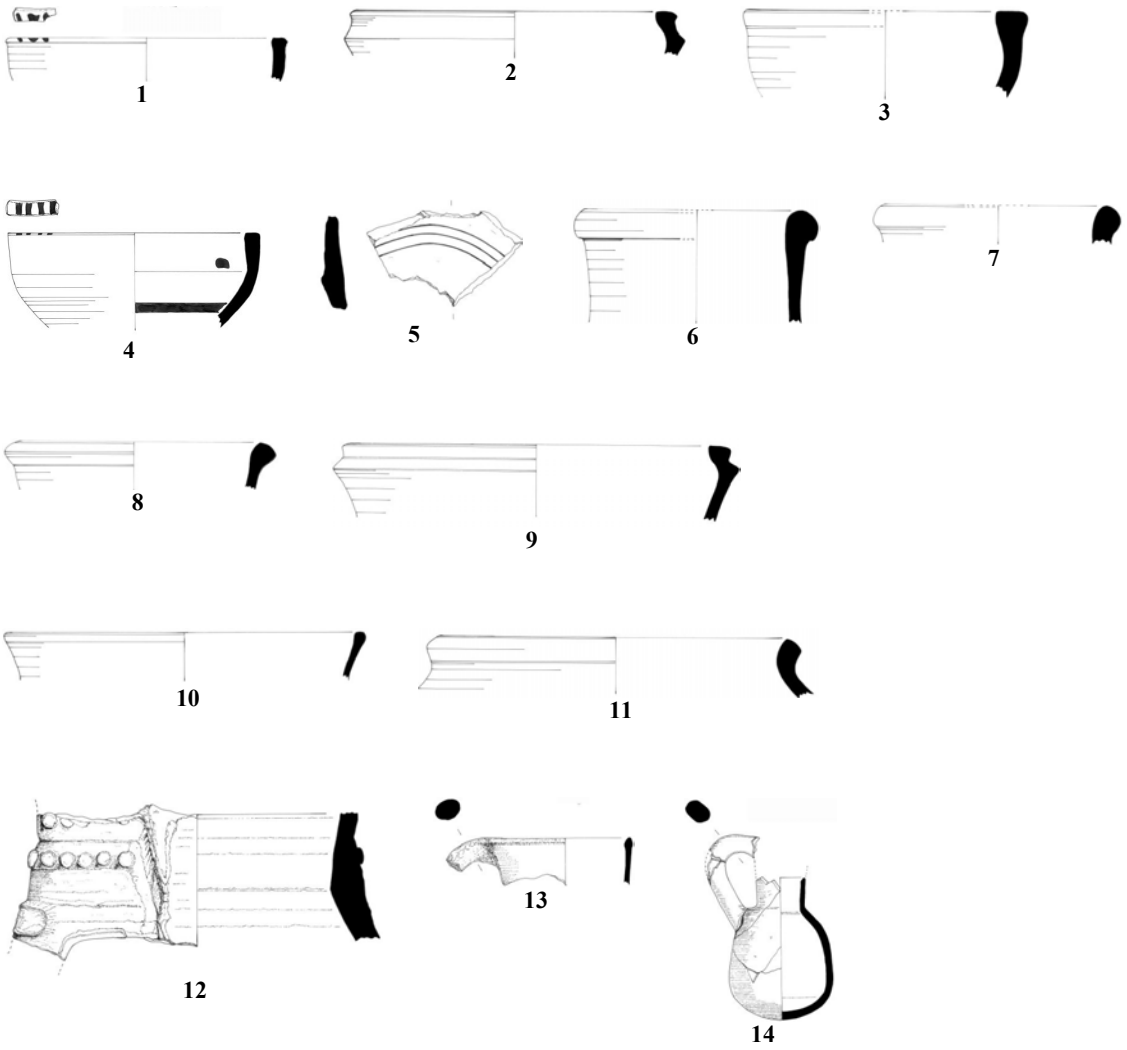


Plate 7.6.1: KEN Area F Str. IV, III-IV, III, I

■ ■ ■ ■ ■ **10 cm**

Plate 7.6.1: KEN Area F Str. IV, III-IV, III, I									
#	Reg#	Locus	Basket	Str.	IP	Vessel	Type	Ware	Description
1	104	888	1370	F2b	IV	Bowl	BL3		Painted Design and White Slip
2	154	900	1376	F2b	IV	Bowl	BL3		White Slip
3	216	900	1461	F2b	IV	Bowl	BL3		White Slip
4	218	900	1429	F2b	IV	Bowl	BL3		Painted Design and White Slip
5	240	900	1503	F2b	IV				Painted Design
6	241	900	1503	F2b	IV	Jar	JR		White Slip
7	103	888	1370	F2b	IV	Pithos	PT		White Slip
8	231	888	1413	F2b	IV	Bowl	BL		White Slip
9	227	905	1431	F2	III-IV	Bowl	BL13	A2	White Slip
10	234	905	1431	F2	III-IV	Krater	KR		
11	197	902	1388	F2	III-IV	Pithos	PT		White Slip
12	28	861	1183	F2a	III		FV	A1	Fenestrated Vessel with attached button decoration
13	20	803	1020	F1a	I	Jug	JG		
14	279	819	1189	F1a	I	Juglet	JT		

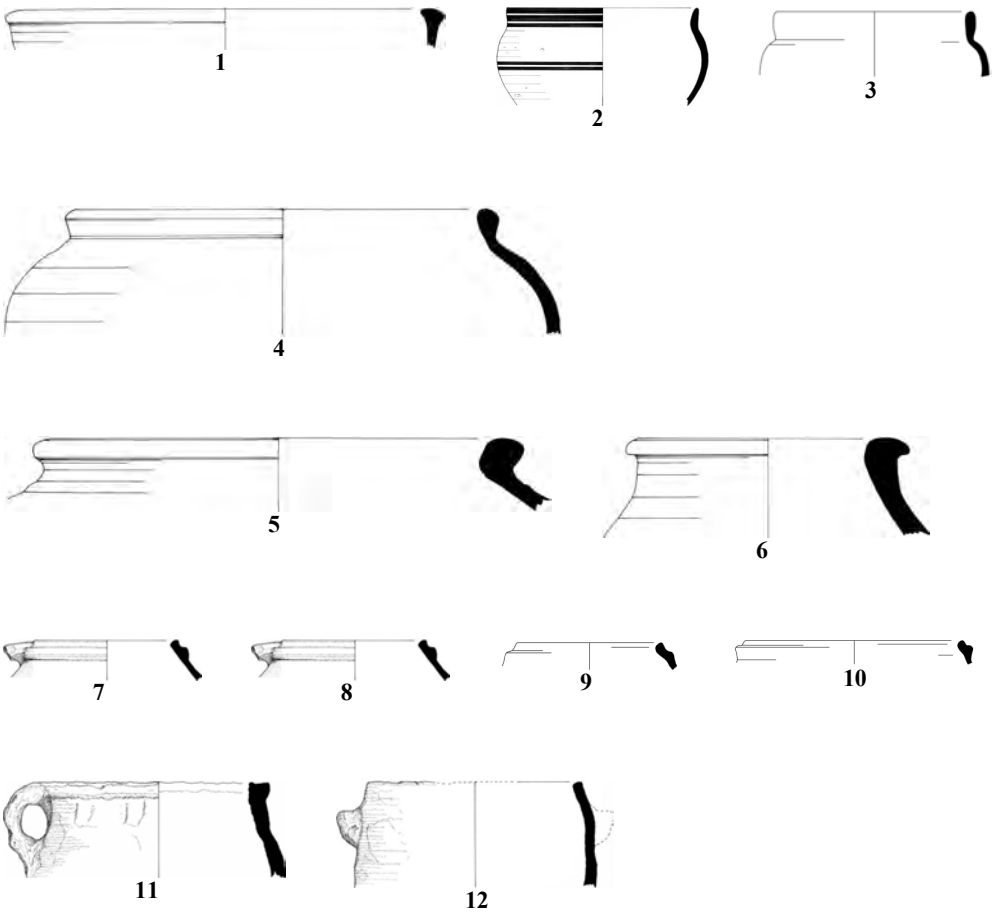


Plate 7.7.1: RHI04 Sounding A

■ ■ ■ ■ ■ 10 cm

Plate 7.7.1: RHI04 Sounding A									
#	Reg#	Locus	Basket	Str.	IP	Vessel	Type	Ware	Description
1	282	518	139			Bowl	BL3b3	A3	White Slip (int./ext.)
2	122	510	100			Bowl	BL32	A1	Painted Black Horizontal Lines on neck
3	268	515	123			Bowl	BL32		Painted Black Horizontal Lines on neck
4	242	519	146			Krater	KR3B	A2	
5	236	510	111			Pithos	PT2	A2	
6	254	515	122			Pithos	PT3		
7	121	518	139			Cooking Pot	CP15	A6	
8	121	518	139			Cooking Pot	CP15	A6	
9	295	525	158			Cooking Pot	CP16		
10	296	525	158			Cooking Pot	CP18		
11	123	500	1				HMJR		
12	100	506	72				HMJR		

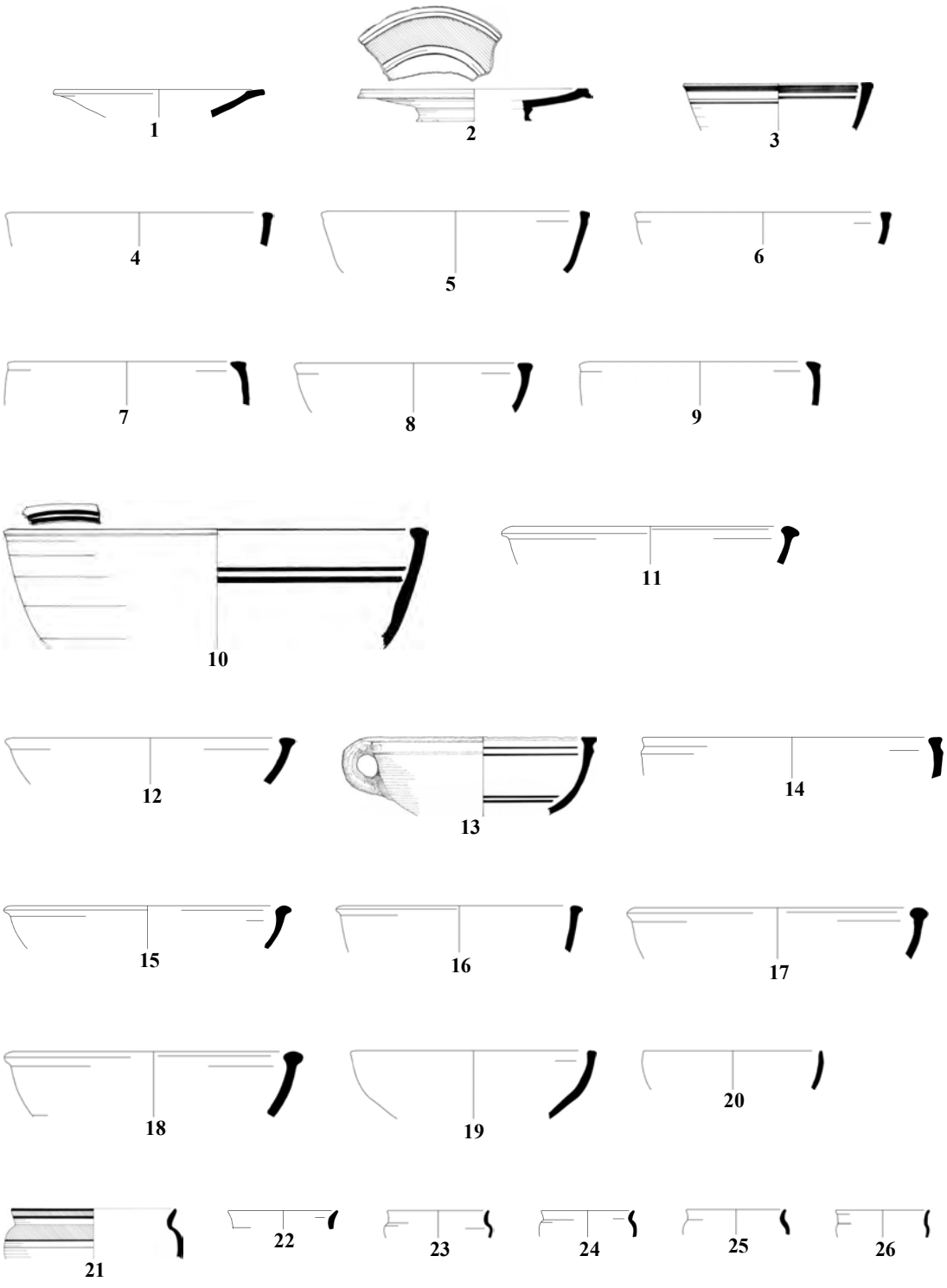


Plate 7.8.1: RHI04 Sounding B

■ ■ ■ ■ ■ 10 cm

Plate 7.8.1: RHI04 Sounding B									
#	Reg#	Locus	Basket	Str.	IP	Vessel	Type	Ware	Description
1	104	531	211			Bowl	BL1c		
2	120	536	263			Bowl	BL2		
3	125	533	206			Bowl	BL3A3		
4	1016	534	222			Bowl	BL3a5		
5	874	535	261			Bowl	BL3a5		
6	588	532	199			Bowl	BL3a5		Black Painted horizontal lines
7	408	530	187			Bowl	BL3b3		
8	358	531	211			Bowl	BL3b2		
9	504	531	197			Bowl	BL3b3		
10	562	534	222			Bowl	BL3c1	B1	
11	596	532	199			Bowl	BL3c1		
12	711	533	209			Bowl	BL3c1		
13	118	531	211			Bowl	BL3d	B1	
14	632	533	206			Bowl	BL4		
15	932	537	268			Bowl	BL4b		
16	1019	534	222			Bowl	BL4c		
17	1020	534	222			Bowl	BL5		
18	935	537	268			Bowl	BL5		
19	153	533	209			Bowl	BL8		
20	459	530	210			Bowl	BL16c		
21	101	533	206			Bowl	BL20		
22	458	530	210			Bowl	BL20	B4	
23	137	531	197			Bowl	BL20	B5	
24	181	531	197			Bowl	BL20	B4	
25	477	531	197			Bowl	BL20		
26	478	531	197			Bowl	BL20		

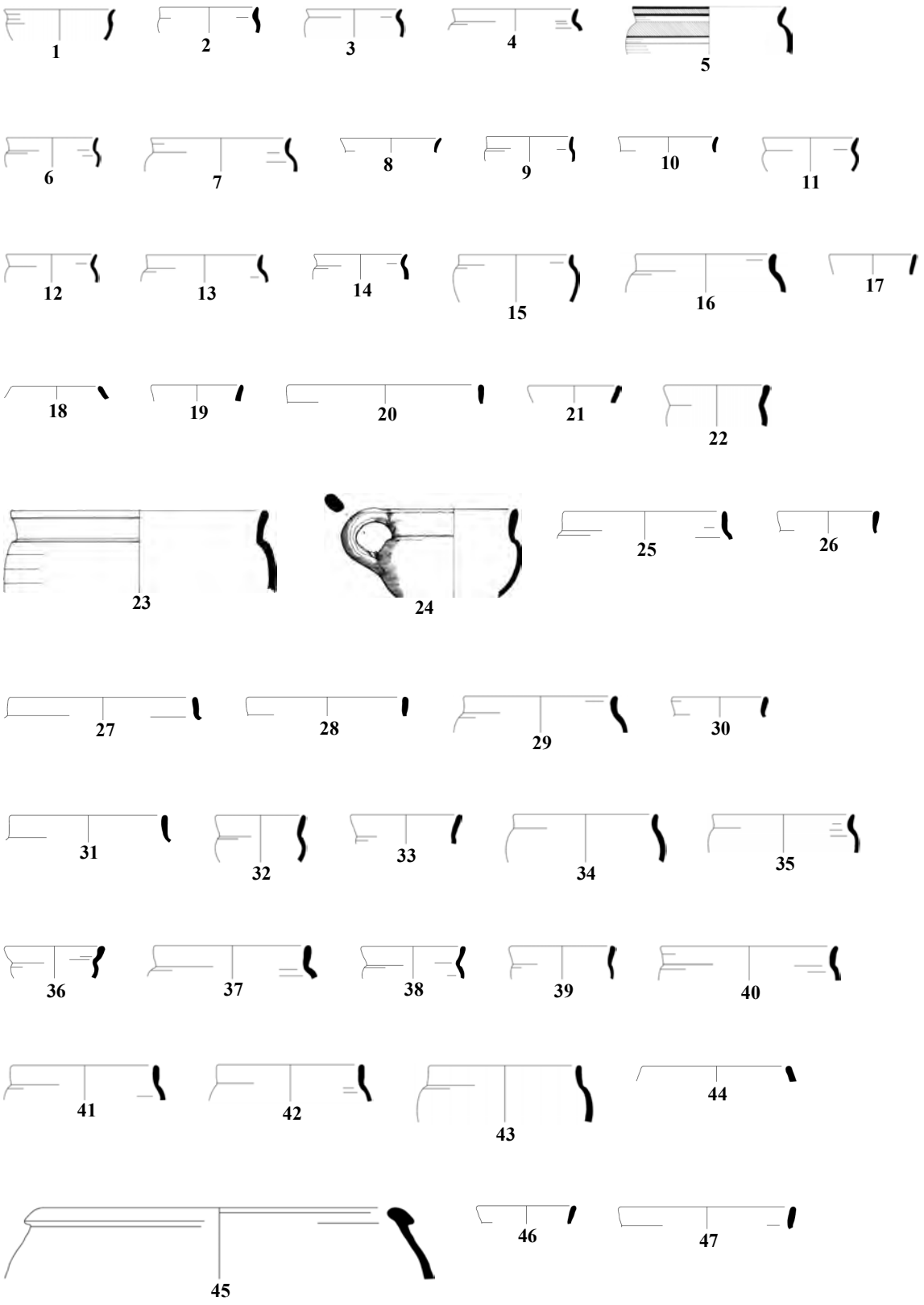


Plate 7.8.2: RHI04 Sounding B

■ ■ ■ ■ ■ **10 cm**

Plate 7.8.2: RHI04 Sounding B									
#	Reg#	Locus	Basket	Str.	IP	Vessel	Type	Ware	Description
1	479	531	197			Bowl	BL20		
2	481	531	197			Bowl	BL20		
3	170	532	268			Bowl	BL20		
4	587	532	199			Bowl	BL20	B4	
5	101	533	206			Bowl	BL20		
6	149	533	206			Bowl	BL20	B5	
7	184	533	206			Bowl	BL20		
8	637	533	206			Bowl	BL20	B5	
9	705	533	209			Bowl	BL20		
10	729	533	209			Bowl	BL20		
11	127	534	222			Bowl	BL20		
12	1105	534	222			Bowl	BL20	B4	
13	1107	534	222			Bowl	BL20		
14	160	536	263			Bowl	BL20	B4	
15	961	537	268			Bowl	BL20		
16	476	531	197			Bowl	BL21a3		
17	1112	534	222			Bowl	BL21a3		
18	869	535	261			Bowl	BL21a3	B4	
19	763	536	263			Bowl	BL21a3	B4	
20	767	536	263			Bowl	BL21a3	B4	
21	926	537	268			Bowl	BL21a3		
22	1063	538	277			Bowl	BL21a3	B1	
23	429	530	187			Bowl	BL21b		
24	766	536	263			Bowl	BL21b		
25	398	531	211			Bowl	BL21b		
26	480	531	197			Bowl	BL21b		
27	482	531	197			Bowl	BL21b	B4	
28	590	532	199			Bowl	BL21b		
29	618	532	217			Bowl	BL21b		
30	707	533	209			Bowl	BL21b		
31	156	534	222			Bowl	BL21b		
32	803	534	222			Bowl	BL21b		
33	1081	534	222			Bowl	BL21b	B4	
34	1090	534	222			Bowl	BL21b	B4	
35	1092	534	222			Bowl	BL21b	B4	
36	1100	534	222			Bowl	BL21b		
37	1101	534	222			Bowl	BL21b	B4	
38	1102	534	222			Bowl	BL21b		
39	1103	534	222			Bowl	BL21b	B4	
40	1106	534	222			Bowl	BL21b		
41	1108	534	222			Bowl	BL21b	B4	
42	867	535	261			Bowl	BL21b		
43	871	535	261			Bowl	BL21b	B4	
44	956	537	268			Bowl	BL21b		
45	962	537	268			Bowl	BL21b		
46	963	537	268			Bowl	BL21b		
47	964	537	268			Bowl	BL21b		

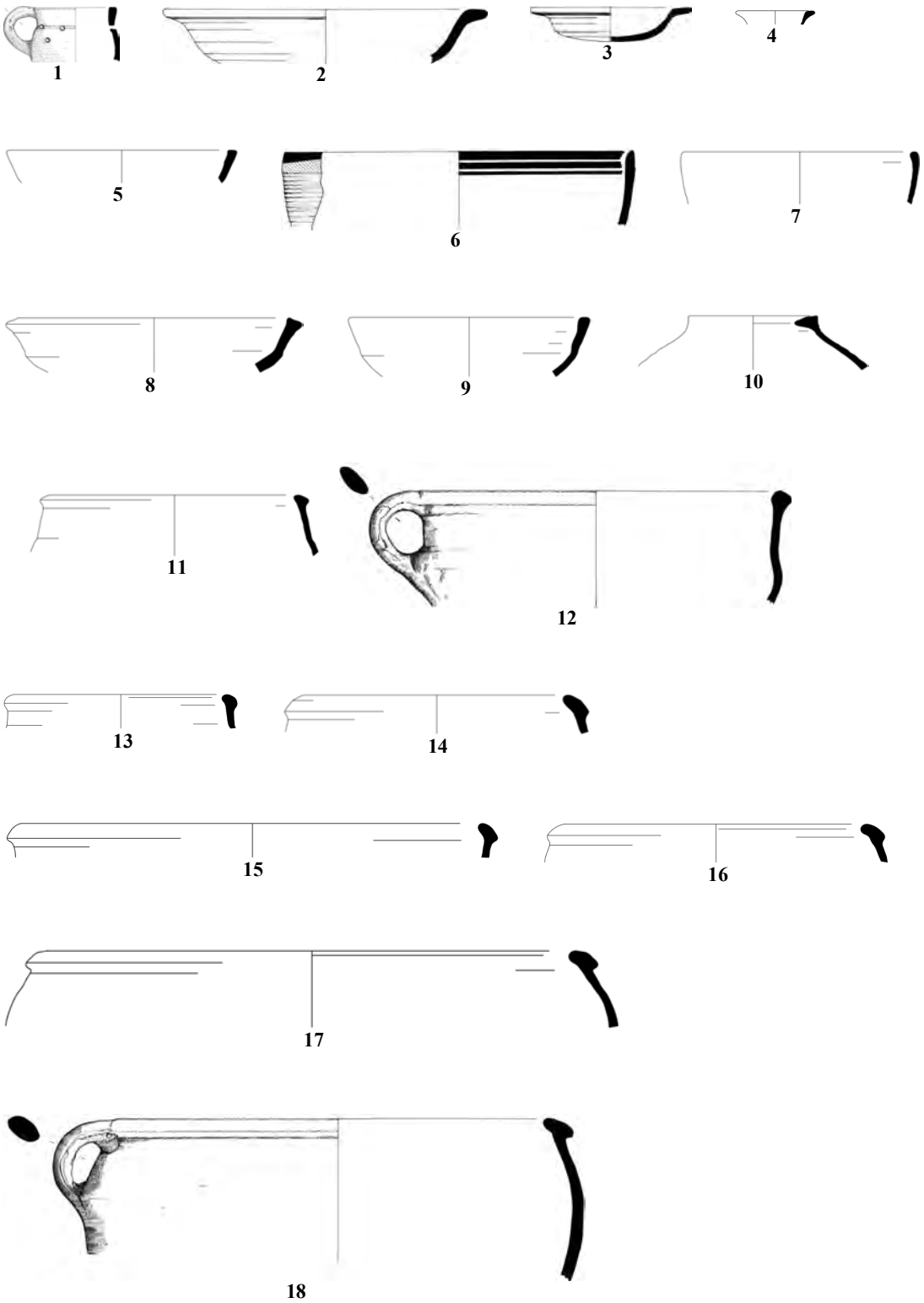


Plate 7.8.3: RHI04 Sounding B

■ ■ ■ ■ ■ 10 cm

Plate 7.8.3: RHI04 Sounding B									
#	Reg#	Locus	Basket	Str.	IP	Vessel	Type	Ware	Description
1	102	531	189			Bowl	BL21f		
2	584	532	199			Bowl	BL30a3	B1	
3	1087	534	222			Bowl	BL30b	B1	
4	330	531	189			Bowl	BL40		
5	891	535	261			Bowl	BL42		
6	1017	534	222			Bowl	BL43		
7	712	533	209			Bowl	BL43		
8	813	534	222			Bowl	BL44		
9	770	536	263			Bowl	BL45		
10	690	533	209			Krater	KR1b	B1	
11	439	530	187			Krater	KR4		
12	583	532	199			Krater	KR4b		
13	495	531	197			Krater	KR14		
14	1086	534	222			Krater	KR15		
15	581	532	199			Krater	KR15d		
16	855	539	279			Krater	KR15d		
17	692	533	209			Krater	KR15e		
18	833	534	222			Krater	KR17	B1	

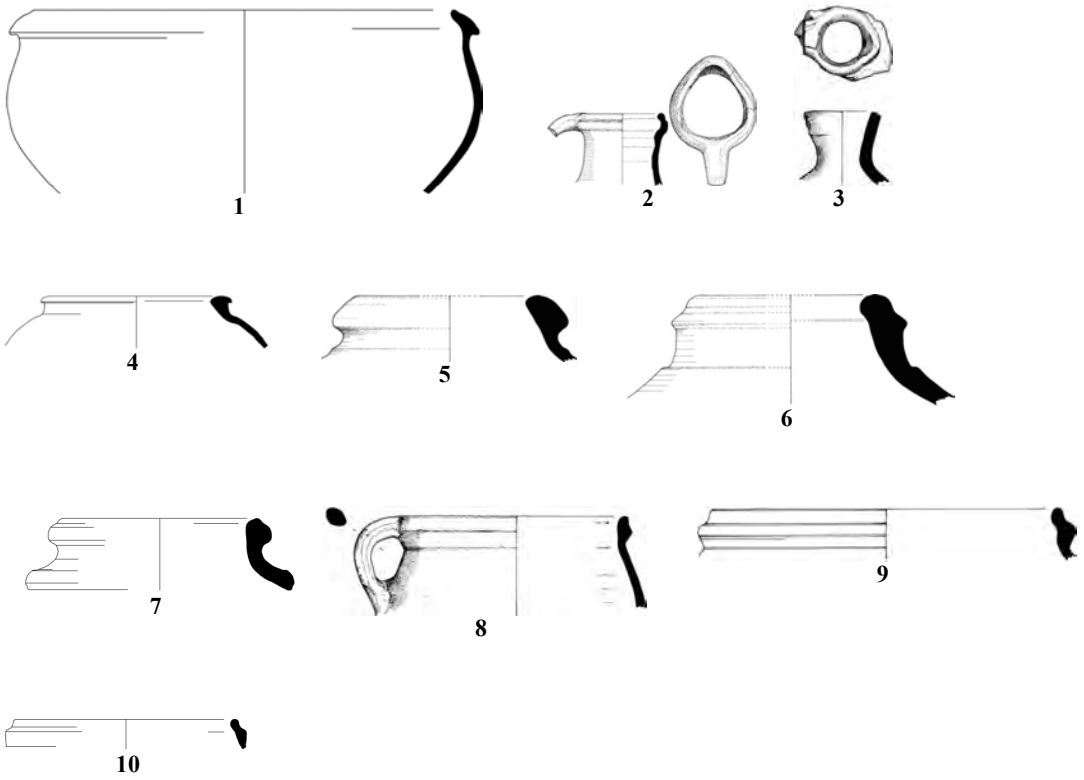


Plate 7.8.4: RHI04 Sounding B

■ ■ ■ ■ ■ **10 cm**

Plate 7.8.4: RHI04 Sounding B									
#	Reg#	Locus	Basket	Str.	IP	Vessel	Type	Ware	Description
1	119	531	211			Krater	KR17		
2	124	534	222			Jug	JG27		
3	1122	534	222			Juglet	JT13		
4	465	530	210			Pithos	PT3	B1	
5	147	534	222			Pithos	PT15	B3	
6	183	531	211			Pithos	PT18	B3	
7	604	532	217			Pithos	PT18	B2	
8	793	534	222			Cooking Pot	CP25		
9	788	536	263			Cooking Pot	CP33		
10	1052	538	277						

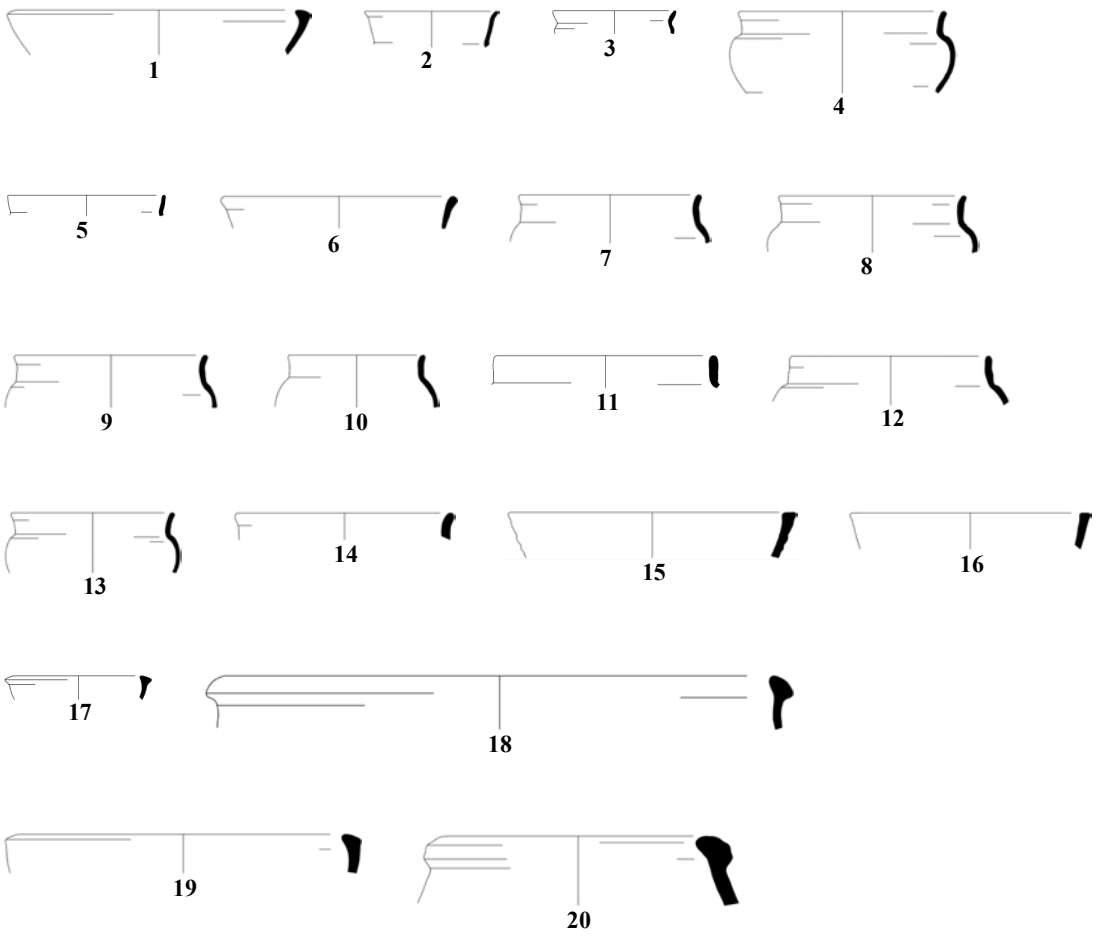


Plate 7.9.1: KAM-A

■ ■ ■ ■ ■ 10 cm

Plate 7.9.1: KAM-A									
#	Reg#	Locus	Basket	Str.	IP	Vessel	Type	Ware	Description
1	190	3013	10114			Bowl	BL3b1		Red
2	168	3013	10131			Bowl	BL12c	B1	R,B&W Burnish
3	202	3006	10015			Bowl	BL20		
4	126	3026	10129			Bowl	BL20b		Black Pale Purple
5	100	3028	10131			Bowl	BL20		R&B
6	259	3016	10057			Bowl	BL21a3		
7	328	3026	10149			Bowl	BL21a3		
8	346	3026	10149			Bowl	BL21a3		Black
9	349	3026	10149			Bowl	BL21a3		B&W
10	112	3027	10130			Bowl	BL21a3	B1	Black Red Burnish
11	58	3032	10189			Bowl	BL21a3		White
12	209	3007	10072			Bowl	BL21b		Red
13	104	3032	10174			Bowl	BL21b	B1	Red Burnish
14	63	3032	10189			Bowl	BL21d		Black Red Burnish
15	319	3036	10241			Bowl	BL41	B1	Black double groove Red
16	154	3013	10056			Bowl	BL56b		R&B
17	223	3026	10112			Bowl	BL56	B1	
18	347	3026	10149			Krater	KR17	B1	White
19	55	3032	10189			Jug	JG3d2		White
20	327	3026	10149			Pithos	PT18b	B1b	

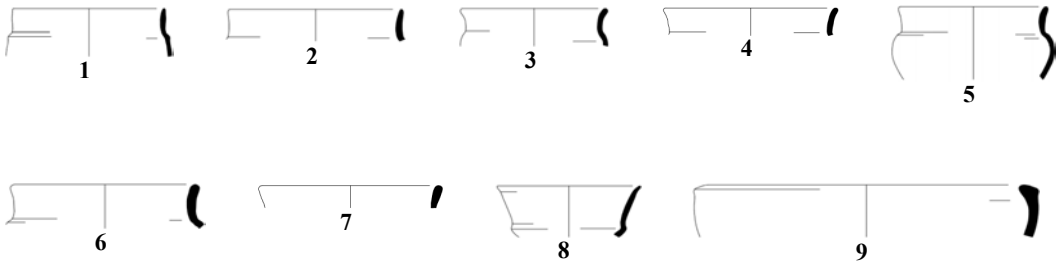


Plate 7.10.1: KAM-B

■ ■ ■ ■ ■ **10 cm**

Plate 7.10.1: KAM-B									
#	Reg#	Locus	Basket	Str.	IP	Vessel	Type	Ware	Description
1	430	3041	10313			Bowl	BL20b	B5	Black
2	117	3030	10179			Bowl	BL21a3		Black
3	47	3037	10263			Bowl	BL21a3		Black Red
4	48	3037	10263			Bowl	BL21a3		Black Cream
5	265	3022	10108			Bowl	BL21b	B1	
6	121	3030	10179			Bowl	BL21d		Black
7	17	3035	10219			Bowl	BL21f		Burnish
8	38	3038	10280			Bowl	BL22d	B1	Black Red Burnish
9	16	3035	10219			Bowl	BL51		White

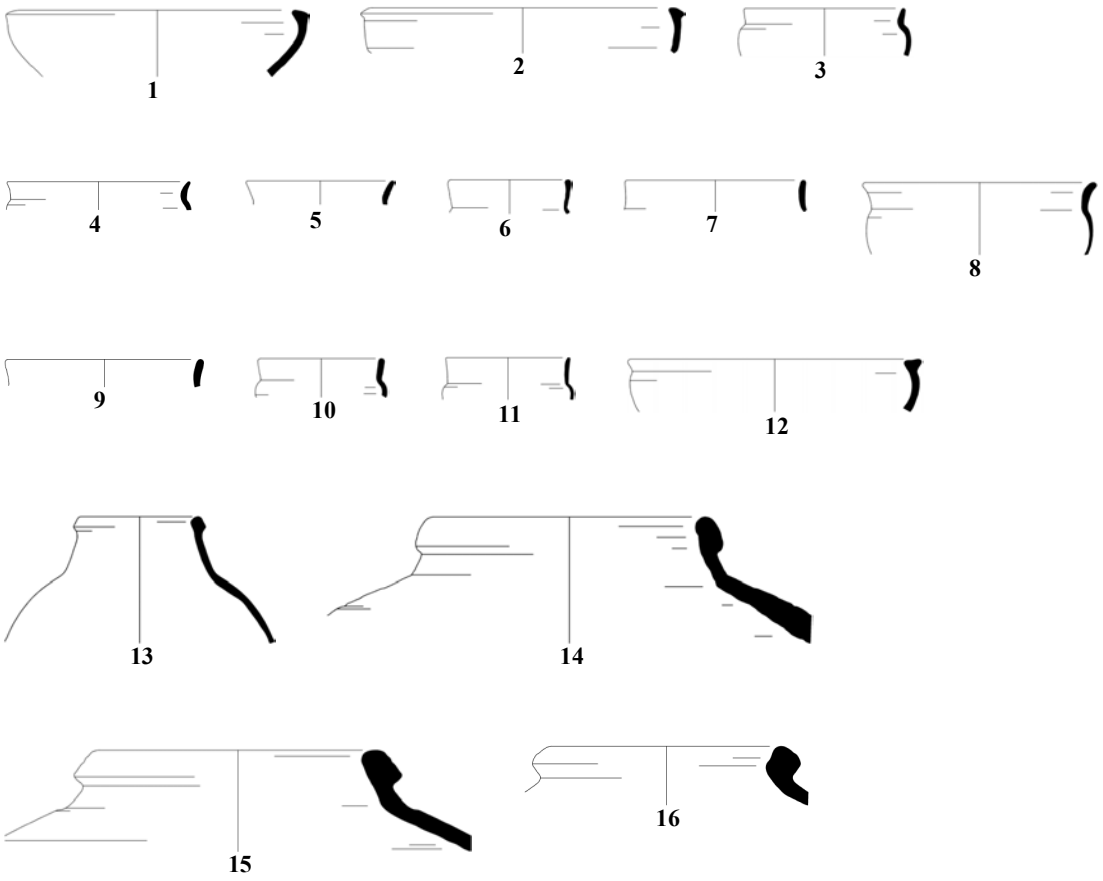


Plate 7.11.1: KIJ

■ ■ ■ ■ ■ **10 cm**

Plate 7.11.1: KIJ									
#	Reg#	Locus	Basket	Str.	IP	Vessel	Type	Ware	Description
1	423	4006	11089			Bowl	BL3b1		
2	468	4000	11004			Bowl	BL3B3		
3	368	4010	11074			Bowl	BL20		
4	1274	4011	11072			Bowl	BL20		Black
5	443	4002	11018			Bowl	BL21a3		
6	382	4009	11051			Bowl	BL21a3		
7	366	4010	11074			Bowl	BL21a3	B1	R&B
8	359	4011	11104			Bowl	BL21a3	B1	
9	402	4012	11101			Bowl	BL21a3		
10	417	4006	11073			Bowl	BL21b		
11	463	4000	11001			Bowl	BL22c	B5	Black Horizontal Band just below rim (int./ext.)
12	355	4010	11088			Bowl	BL52b		
13	427	4006	11073			Jug	JG3d2		White
14	425	4006	11073			Pithos	PT15	B1b	
15	383	4009	11051			Pithos	PT15		
16	386	4009	11051			Pithos	PT18	B1b	

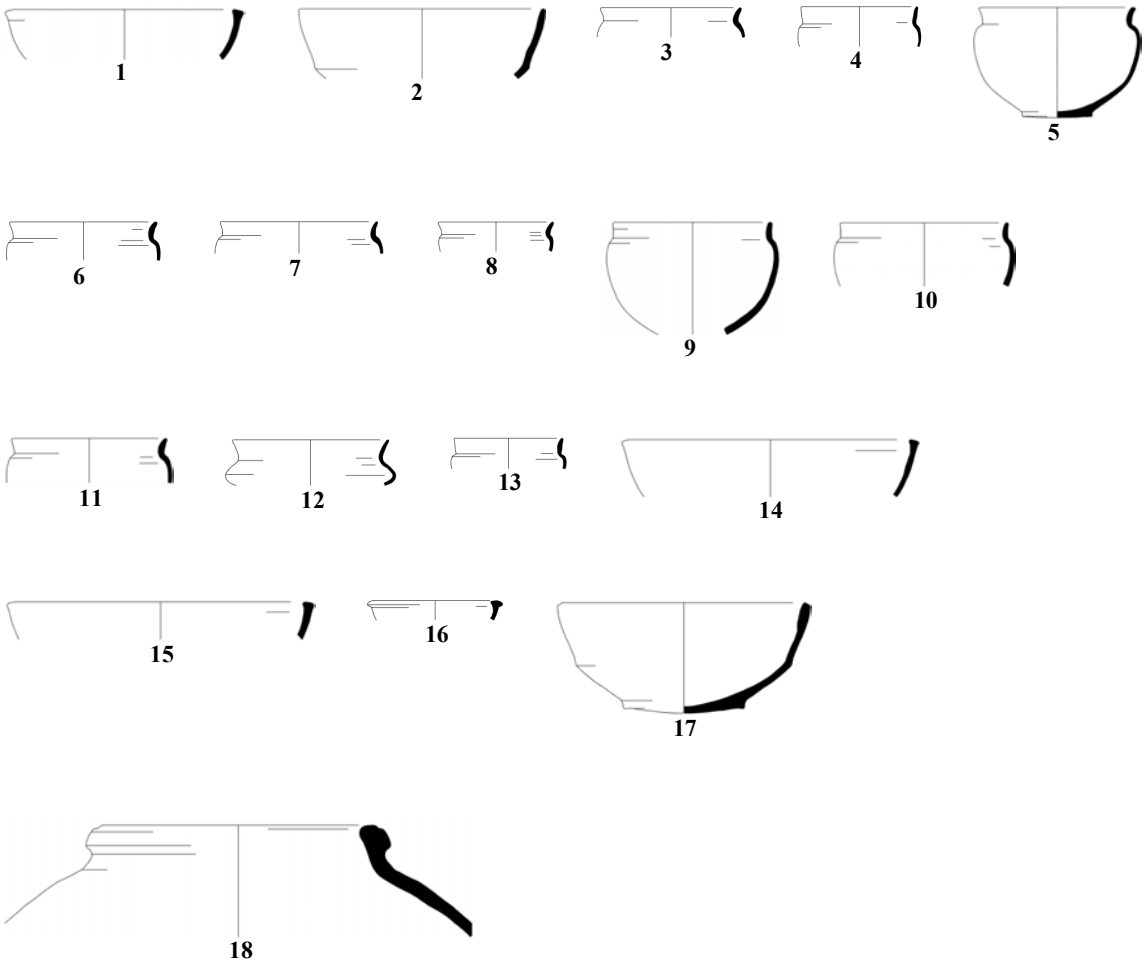


Plate 7.12.1: KIS

■ ■ ■ ■ ■ **10 cm**

Plate 7.12.1: KIS									
#	Reg#	Locus	Basket	Str.	IP	Vessel	Type	Ware	Description
1	1130	5017	12114			Bowl	BL3a1		R&B
2	1201	5013	12096			Bowl	BL10		
3	1162	5000	12001			Bowl	BL20		Black
4	1197	5010	12041			Bowl	BL20		Black
5	1268	5011	12056			Bowl	BL20		Dark Red
6	1173	5012	12095			Bowl	BL20	B5	Black Red
7	1174	5012	12095			Bowl	BL20	B5	Black
8	1113	5013	12038			Bowl	BL20		Black
9	1202	5013	12096			Bowl	BL20		B&W
10	1184	5014	12110			Bowl	BL20		B&W
11	1120	5017	12130			Bowl	BL20		Black Ring Burnish
12	1128	5017	12114			Bowl	BL20g		Black
13	1136	5017	12114			Bowl	BL20	B5	Black
14	1138	5013	12096			Bowl	BL56		Black
15	1172	5016	12112			Bowl	BL56b		
16	1123	5017	12130			Bowl	BL56	B1	Black White
17	1106	5017	12130			Bowl	BL		
18	1152	5014	12097			Pithos	PT18	B1b	

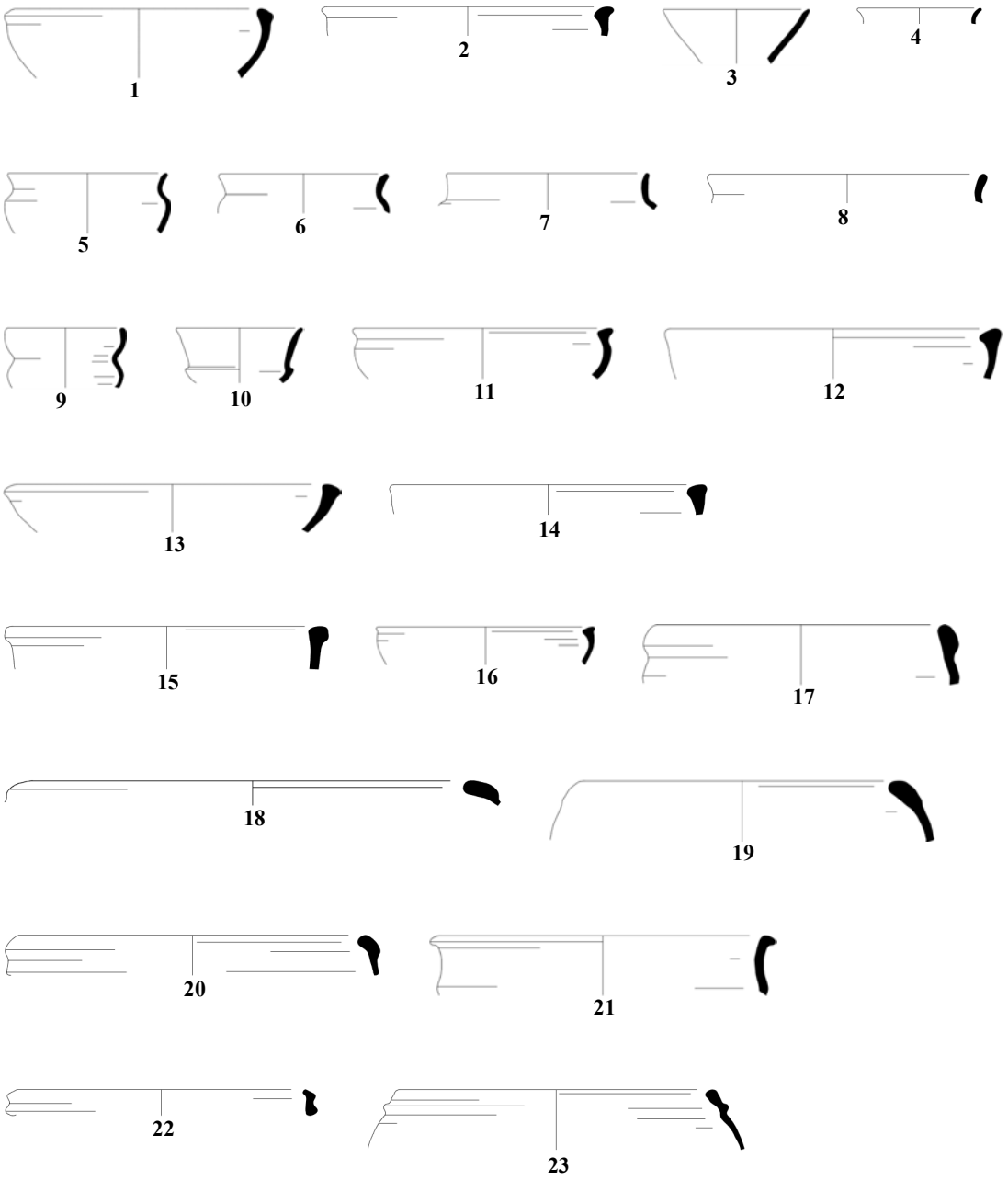


Plate 7.13.1: TW-J

■ ■ ■ ■ ■ **10 cm**

Plate 7.13.1: TW-J									
#	Reg#	Locus	Basket	Str.	IP	Vessel	Type	Ware	Description
1	1368	6013	13128			Bowl	BL3b1		Red Ring Burnish
2	577	6013	13081			Bowl	BL4		Brown
3	954	6008	13035			Bowl	BL12c	B5	Black Red
4	1311	6013	13103			Bowl	BL20		
5	1005	6022	13143			Bowl	BL20c	B5	Black white
6	770	6013	13103			Bowl	BL21a3	B1	Black
7	1310	6013	13103			Bowl	BL21b		Black
8	620	6017	13086			Bowl	BL21d		
9	1063	6020	13132			Bowl	BL21e	B1	
10	748	6017	13129			Bowl	BL22d	B1	Black Red Ring Burnish
11	761	6013	13103			Bowl	BL52		
12	1347	6013	13128			Bowl	BL53b		Black White
13	1353	6013	13128			Bowl	BL53		B&W White
14	993	6022	13143			Bowl	BL53		Black White
15	926	6008	13035			Bowl	BL54		Black White
16	551	6013	13081			Bowl	BL57		
17	952	6008	13035			Krater	KR15		
18	994	6022	13143			Krater	KR15		White
19	757	6013	13103			Krater	KR15b		
20	756	6013	13103			Krater	KR15d		
21	958	6026	13136			Krater	KR19		
22	520	6013	13081			Cooking Pot	CP17		
23	1337	6013	13128			Cooking Pot	CP38		

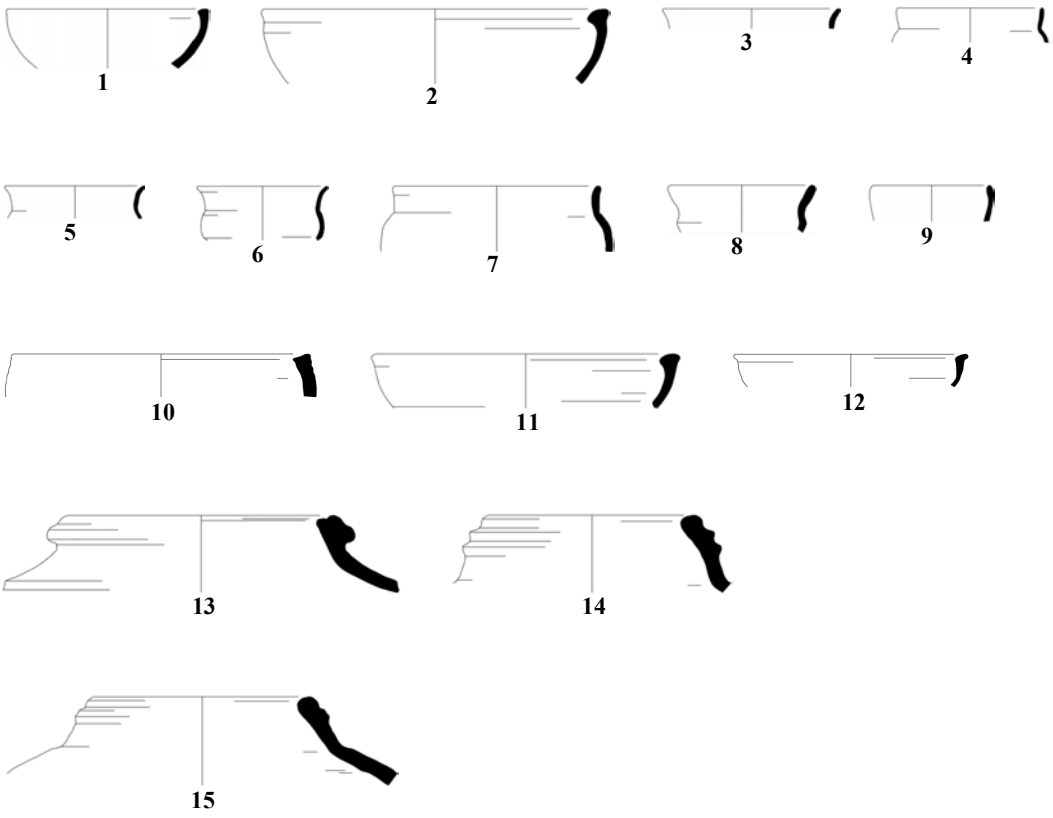


Plate 7.14.1: TW-K

■ ■ ■ ■ ■ 10 cm

Plate 7.14.1: TW-K									
#	Reg#	Locus	Basket	Str.	IP	Vessel	Type	Ware	Description
1	1021	6025	13161			Bowl	BL3a1		Black White
2	974	6028	13210			Bowl	BL3c1		Black White
3	484	6010	13063			Bowl	BL20		Red
4	659	6012	13063			Bowl	BL20	B5	Black Cream
5	715	6016	13080			Bowl	BL20		
6	886	6027	13211			Bowl	BL20b		Black Red
7	895	6027	13211			Bowl	BL21b		
8	702	6015	13105			Bowl	BL21d		
9	690	6018	13147			Bowl	BL21e		
10	658	6012	13063			Bowl	BL41	B1	three-grooves
11	983	6028	13210			Bowl	BL53b		Black White
12	1037	6025	13161			Bowl	BL57	B1	Black Red Burnish
13	1027	6025	13161			Pithos	PT18	B1b	
14	906	6027	13193			Pithos	PT19b	B1	
15	898	6027	13211			Pithos	PT20		

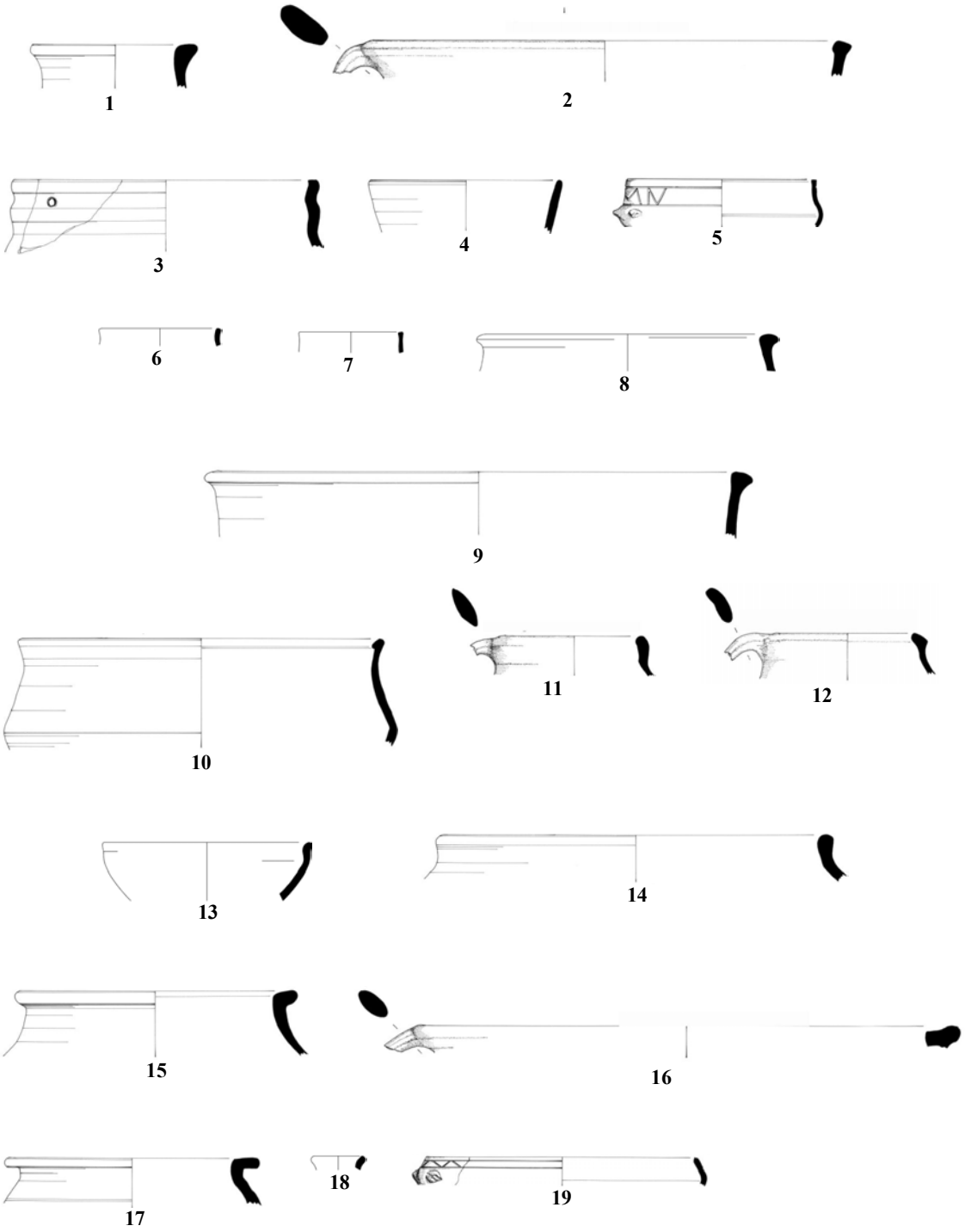
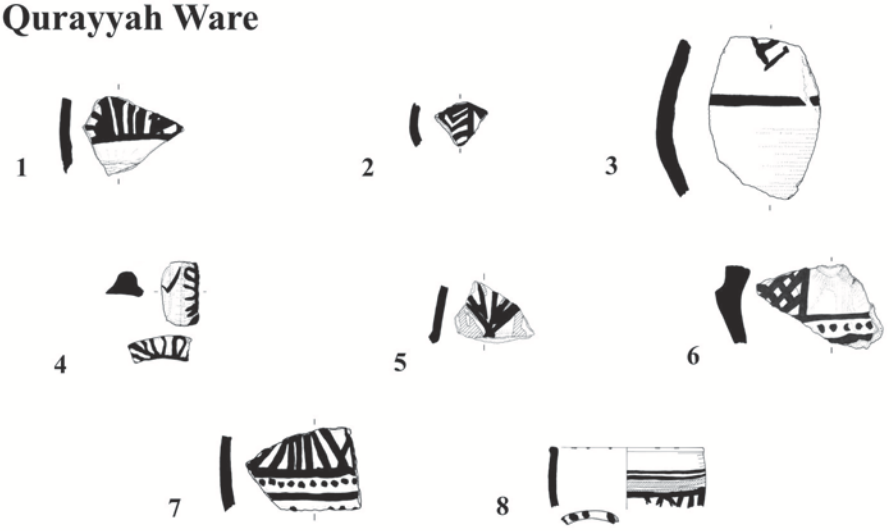


Plate 7.15.1: KAJ06 Str. V-VI, VI, IV-V, III, I, ■ ■ ■ ■ ■ **10 cm**

Plate 7.15.1: KAJ06 Str. V-VI, VI, IV-V, III, I,									
#	Reg#	Locus	Basket	Str.	IP	Vessel	Type	Ware	Description
1	962	119	3213	A4-5	V-VI	Jar	JR		
2	928	121	3231	A5	VI	Krater	KR27		
3	1424	122	3246	A5	VI	Jar	JR		perforated hole in sherd
4	938	105	3196	A3	IV-V	Bowl	BL16	I1	Red Slip and Horizontal Burnish (int./ext.)
5	394	106	3105	A3	IV-V	Bowl	BL18	A4	Cream Slip (ext.), Applied Knob Decoration; high concentration of calcite
6	956	106	3188	A3	IV-V	Bowl	BL18	A4	Decorated unique design inscribed along neck
7	1431	105	3203	A3	IV-V	Bowl	BL18		Inscribed decoration
8	906	105	3041	A3	IV-V	Krater	KR8		White Slip
9	978	118	3205	A3	IV-V	Krater	KR26		
10	937	105	3196	A3	IV-V	Krater	KR27		
11	947	105	3196	A3	IV-V	Jug	JG26		
12	974	118	3205	A3	IV-V	Cooking Pot	CP20		
13	971	118	3205	A3	IV-V				
14	929	105	3196	A3	IV-V	Jar	JR		
15	975	118	3205	A3	IV-V	Jar	JR		
16	908	107	3072	A2	III	Jar	JR6	A5	
17	903	107	3014	A2	III	Jar	JR		
18	490	101	3001	A1a	I	Jug	JG14		
19	1451	0	3212			Bowl	BL18	A4	Inscribed decoration and applied

Area A: Qurayyah Ware



Area S: Qurayyah Ware

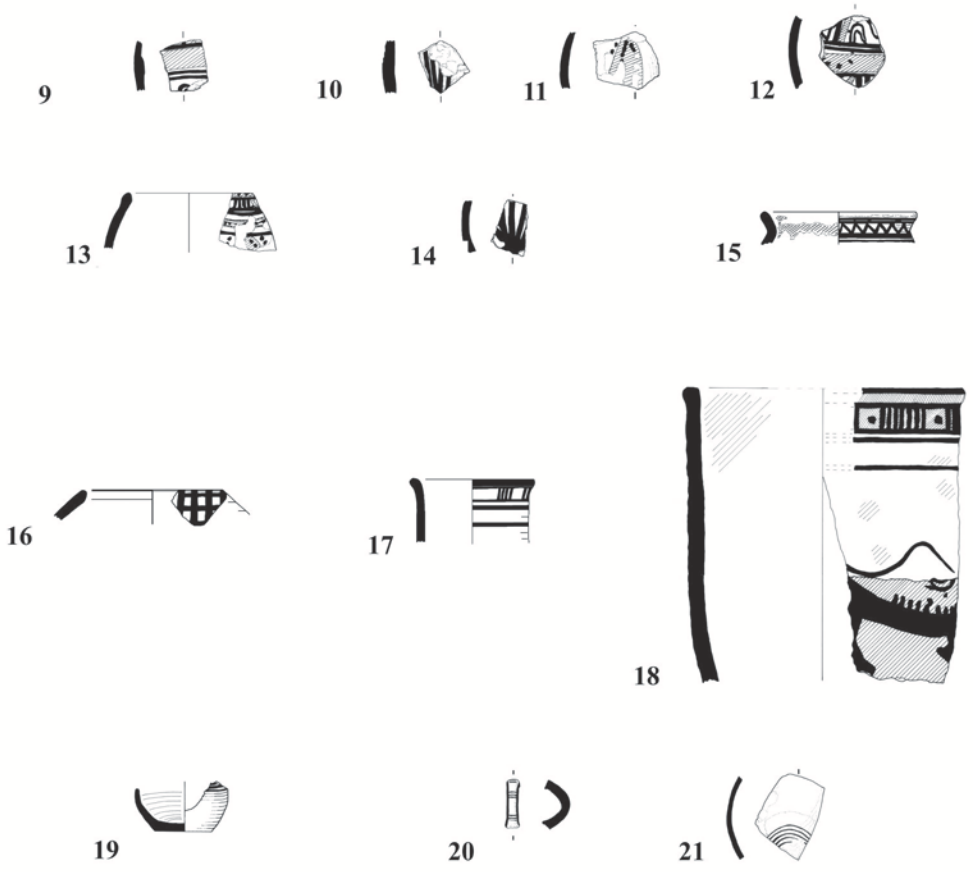


Plate 7.16.1: KEN02 Imports

10 cms

Plate 7.16.1: KEN02 Imports

No.	Reg.	Locus	Str.	Type	Exterior	Interior	Core	Ware	Surface Treatment
1	264	40	A3	Qurayyah	pinkish-white	pinkish-gray	light red	Coarse ware	Dark Gray
2	557	76	A2b	Qurayyah	pink	pinkish-gray	white	Fine ware	Black Chevron Painted Design
3	586	62	A2a	Qurayyah	very pale brown	pinkish-white	reddish-brown	Fine ware	Black Painted Design, Slip Exterior
4	575	62	A2a	Qurayyah	very pale brown		light reddish-brown	Medium-Fine ware	Black Painted Design
5	324	21	A2a	Qurayyah	white	light gray	reddish-brown	Fine ware	pale Red, Dark Gray,
6	336	21	A2a	Qurayyah	white	pink	reddish-yellow	Medium-Fine ware	Black Burnish Interior, Slip Interior/Exterior
7	574	62	A2a	Qurayyah	very pale brown	light brown	light reddish-brown	Fine ware	Black Slip Interior/Exterior, Painted Design
8	578	79	A2a	Qurayyah	white	pale red	pinkish-gray	Fine ware	Black, pale Red Painted Design, Slip Exterior
9	890	338	S2b	Qurayyah	white	pink	pink	Fine ware	Black, Red Painted Design, Slip Exterior
10	891	338	S2b	Qurayyah	pale yellow	pink	pink	Fine ware	Black Painted Design, Slip Exterior
11	583	325	S2b	Qurayyah	pink	pink	pink	Fine ware	Black, Weak Red Painted Design, Slip Exterior
12	576	318	S2b	Qurayyah	white	pink	pink	Fine ware	Black, Weak Red Painted Design, Painted Exterior
13	842	339	S2b	Qurayyah	pink	pink	gray	Fine ware	Black, Red, Pinkish-White Painted Design
14	802	331	S2a	Qurayyah	pale red	pinkish-white	light reddish-brown	Medium-Fine ware	Black Painted Design
15	301	301	S2a	Qurayyah	pink	pink	pink	Fine ware	Gray, Dark Gray, Red Painted Design
16	803	331	S2a	Qurayyah	pale red	pale red	light red	Medium-Fine ware	Black Painted Design
17	901	340	S2a	Qurayyah	light gray	light red	white	Fine ware	Black Slip Exterior, Painted Design
18	608	317	Sl	Qurayyah	pale red	pale red	pinkish-white	Medium-Fine ware	Black Painted Design
19	571	264	Sl	JT22	light red	pale red	light red	Fine ware	Black Applied band horizontal Burnish Exterior, Painted Design
20	573	263	Sl	JT22	pale red		light red	Fine ware	Black Burnish Exterior, Painted Design
21	280	263	Sl	JT22	light reddish-brown	light reddish-brown	light red	Fine ware	Pink/Black Concentric painted bands, Slip and Burnish Exterior

REFERENCES

Abu-Lughod, L. 1986. *Veiled Sentiments: Honor and Poetry in a Bedouin Society*. Berkeley: University of California Press.

Adams, R. B. 1992. "Romancing the Stones: New Light on Glueck's Survey of Eastern Palestine as a Result of Recent Work by the Wadi Fidan Project.," in *Early Edom and Moab: The Beginning of the Iron Age in Southern Jordan*, vol. 7. Edited by P. Bienkowski, pp. 177 - 186. Sheffield: Sheffield Archaeological Monographs.

Adams, R. B., and H. Genz. 1995. Excavations at Wadi Fidan 4: A Copper Village Complex in the Copper Ore District of Feinan, Southern Jordan. *Palestine Exploration Quarterly* 127:8 - 20.

Adams, R. M. 1965. *Land Behind Baghdad*. Chicago: University of Chicago Press.

—. 1972. "Demography and the "Urban Revolution" in Lowland Mesopotamia," in *Population Growth: Anthropological Implications*. Edited by B. Spooner, pp. 60-63. Cambridge: MIT Press.

—. 1981. *Heartland of Cities--Surveys of ancient settlement and land use on the Central Floodplain of the Euphrates*. Chicago: University of Chicago Press.

Adams, R. M., and H. J. Nissen. 1972. *The Uruk Countryside: the Natural Setting of Urban Societies*. Chicago: University of Chicago Press.

Adams, W. Y., and E. W. Adams. 1991. *Archaeological Typology and Practical Reality: A dialectical approach to artifact classification and sorting*. Cambridge, New York, NY: Cambridge University Press.

Adan-Bayewitz, D. e. a. In Press. Differentiation of Ceramic Chemical Element Composition and Vessel Morphology at a Pottery Production Center in Roman Galilee. Journal of Archaeological Science.

Aharoni, Y. 1967. *Excavations at Tel Arad: preliminary report on the second season, 1963*. Tel Aviv: University of Tel Aviv.

—. 1973. *Excavations at Tel Beer-Sheba, 1969-1971 seasons*. *Beer-Sheba, 1*. [Tel Aviv]: Tel Aviv University, Institute of Archaeology.

—. 1979. *The Land of the Bible: A Historical Geography*. Philadelphia: Westminster Press.

Albright, W. F. 1932. *The Excavation of Tell Beit Mirsim*. New Haven: American Schools of Oriental Research, under the Jane Dows Nies Publication Fund.

—. 1938. *The Excavation of Tell Beit Mirsim, II: The Bronze Age*. Vol. 17. *Annual of the American Schools of Oriental Research*. New Haven.

—. 1961. *The Archaeology of Palestine*. Harmondsworth: Penguin Books.

Algaze, G. 1989. The Uruk Expansion: Cross-Cultural Exchange in Early Mesopotamian Civilization. *Current Anthropology* 30:571-608.

—. 2001. Initial Social Complexity in Southwest Asia: The Mesopotamian Advantage. *Current Anthropology* 42:199-233.

—. 2005. The Sumerian Takeoff. *Structure and Dynamics: eJournal of Anthropological and Related Sciences* 1:1-41.

—. 2005. *The Uruk World System: The Dynamics of Expansion of Early Mesopotamian Civilization, 2nd Edition (revised)*. Chicago: University of Chicago Press.

—. 2005b. *The Uruk World System: The Dynamics of Expansion of Early Mesopotamian Civilization, 2nd Edition (revised)*. Chicago: University of Chicago Press.

Alon, Y. B. 2007. *The Making of Jordan: Tribes, Colonialism and the Modern State*. *Library of modern Middle East studies*. London ; New York: I. B. Tauris.

Amiran, R. 1969. *Ancient Pottery of the Holy Land*. Jerusalem: Israel Exploration Society.

Amiran, R., and E. C. M. van den Brink. 2002. "Early Bronze I Predynastic, and Early Dynastic Primary Data," in *Egypt and the Levant: Interrelations from the 4th through the Early 3rd Millennium B.C.E.* Edited by E. C. M. van den Brink and T. E. Levy, pp. 273-279. London and New York: Leicester University Press.

Arnold, D. E. 1985. *Ceramic Theory and Cultural Process*. *New studies in archaeology*. Cambridge [Cambridgeshire]; New York: Cambridge University Press.

—. 1989. "Patterns of Learning, Residence and Descent Among Potters in Ticul, Yucatan, Mexico," in *Archaeological Approaches to Cultural Identity*, *One World Archaeology*. Edited by S. J. Shennan, pp. 174-184. London; Boston: Unwin Hyman.

Arnold, D. E., J. H. Wilson, and A. Nieves. 2007. "Why Was the Potter's Wheel Rejected? Social Choice and Technological Change in Ticul, Yucatan, Mexico,"

in *Pottery Economics in Mesoamerica*. Edited by C. A. Pool and G. J. Bey. Tucson: University of Arizona Press.

Arnold, D. E. a. A. L. N. 1992. "Factors Affecting Ceramic Standardization," in *Ceramic Production and Distribution: An Integrated Approach*. Edited by G. J. Bey and C. A. Pool, pp. 93-114. Boulder: Westview Press.

Auld, G. 1996. "Re-reading Sanuel (historically): 'Etwas mehr Nichtwissen," in *The Origins of the ancient Israelite states*, *Journal for the study of the Old Testament, 228*. Edited by V. Fritz and P. R. Davies, pp. 160-169. Sheffield, Eng.: Sheffield Academic Press.

Avishur, I. 2007. "Edom," in *Encyclopedia Judaica (2nd Ed)*, vol. 6, pp. 369 - 377. Jerusalem: Keter.

Baines, J., and N. Yoffee. 1998. "Order, Legitimacy, and Wealth in Ancient Egypt and Mesopotamia," in *Archaic States*. Edited by G. M. Feinman and J. Marcus, pp. 199 - 260. Santa Fe: School of American Research.

Balla M. and Gunneweg, J. 2003. The Search for Manufacture Center of Cult Vessels Found in the Iron Age Shrine at ‘En Hazeva in the Arava of Israel. *Atiqot* in press.

Ballard, R. D. S., L. E. Stager, D. Master, D. Yoerger, D. Mindell, L. L. Whitcomb, H. Singh, and D. Piechota. 2002. Iron Age Shipwrecks in Deep Water off Askelon, Israel. *American Journal of Archaeology* 106.

Bar Yosef, O., and A. Belfer-Cohen. 1989. The Origins of Sedentism and Farming Communities in the Levant. *Journal of World Prehistory* 3:447-498.

Barfield, T. J. 1990. "Tribe and State Relations: The Inner Asian Perspective," in *Tribes and State Formation in the Middle East*. Edited by P. S. Khoury and K. J., pp. 153-184. Berkeley: University of California Press.

—. 1993. *The Nomadic Alternative*. Englewood Cliffs, N.J.: Prentice Hall.

Barker, G. W., R. Adams, O. H. Creighton, D. D. Gilbertson, J. P. Grattan, C. O. Hunt, D. J. Mattingly, S. J. McLaren, H. A. Mohamed, P. Newson, T. E. G. Reynolds, and D. C. Thomas. 1998. Environment and Land Use in the Wadi Faynan, Southern Jordan: The Second Season of Geoarchaeology and Landscape Archaeology. *Levant* 30:5 - 26.

Barker, G. W., D. D. Gilbertson, and D. J. Mattingly. 2007. *Archaeology and Desertification: The Wadi Faynan Landscape Survey, southern Jordan* Oxford: Oxbow Books.

Barth, F. 1969a. "Introduction," in *Ethnic Groups and Boundaries: The Social Organization of Culture Difference*. Edited by F. Barth, pp. 9-38. Boston: Little, Brown and Company.

—. 1969b. "Pathan Identity and its Maintenance," in *Ethnic Groups and Boundaries: The Social Organization of Culture Difference*. Edited by F. Barth, pp. 117-134. Boston: Little, Brown and Company.

—. 1994. "Enduring and Emerging Issues in the Analysis of Ethnicity," in *The Anthropology of Ethnicity: Beyond "Ethnic Groups and Boundaries"*. Edited by H. Vermeulen and C. Govers. Amsterdam; Hague, Netherlands: Spinhuis; Distribution outside The Netherlands, M. Nijhoff International.

Bartlett, J. R. 1965. The Edomite King-list of Gen. 36:31-39 and 1 Chron:43-50. *Journal Theological Studies* 16:301-314.

—. 1969. Land of Seir and the Brotherhood of Edom. *JTS* 20:1-20.

—. 1977. The Brotherhood of Edom. *JSOT* 4:2-27.

—. 1978. Conquest of Sihon's Kingdom: A Literary Reexamination. *JBL* 97:347-351.

—. 1978. Yahweh and Qaus: Response to Martin Rose *JSOT* 5:35-38.

—. 1982. Edom and the Fall of Jerusalem, 587 B.C. *Palestine Exploration Quarterly* 114:13 - 24.

—. 1989. *Edom and the Edomites*. *Journal for the Study of the Old Testament, Supplement Series 77*. Sheffield: Sheffield Academic Press.

—. 1992. "Biblical Sources for the Early Iron Age in Edom," in *Early Edom and Moab*. Edited by P. Bienkowski, pp. 13 - 19. Sheffield: J.R. Collis Publications.

—. 1995. "Edom in the Nonprophetical Corpus," in *You Shall Not Abhor An Edomite - Edom and Seir in History and Tradition. Scholars Press, Atlanta.* Edited by D. V. Edelman, pp. 13 - 21. Atlanta: Scholars Press.

Bates, D. G. a. A. R. 2001. *Title Peoples and Cultures of the Middle East*. Upper Saddle River, NJ: Prentice Hall.

Bawden, G. 1983. "Painted Pottery of Tayma and Problems of Cultural Chronology in Northwest Arabia," in *Midian, Moab and Edom*. Edited by J. F. A. Sawyer and D. J. A. Clines, pp. 37-52 Sheffield: Journal for the Study of the Old Testament Supplement.

Beck, L. 1983. "Iran and the Qashqai Tribal Confederacy," in *The Conflict of Tribe and State in Iran and Afghanistan*. Edited by R. Tapper, pp. 284-313. New York: St. Martin's Press.

—. 1986. *The Qashqa'i of Iran*. New Haven: Yale University Press.

—. 1990. "Tribe and the State in the Nineteenth- and Twentieth-Century Iran," in *Tribes and State Formation in the Middle East*. Edited by P. S. Khoury and K. J., pp. 185-225. Berkeley: University of California Press.

Beit-Arieh, I. 1989. "New data on the relationship between Judah and Edom toward the end of the Iron Age," in *Recent Excavations in Israel: Studies in Iron Age Archaeology*, vol. 49, *Annual, American Schools of Oriental Research*. Edited by S. Gitin and W. G. Dever, pp. 125-131. Winona Lake: Eisenbrauns.

—. 1991. Horvat sup c Uza: A Fortified Outpost on the Eastern Negev Border. *BA* 54:126.

—. 1995. "The Edomites in Cisjordan.," in *You Shall Not Abhor an Edomite for He is Your Brother: Edom and Seir in History and Tradition*, *Archaeological and Biblical Studies 3*. Edited by D. V. Edelman. Atlanta: Scholars Press.

—. 1995. *Horvat Qitmit: An Edomite Shrine in the Biblical Negev*. Tel Aviv: Institute of Archaeology, Tel Aviv University.

—. 1996. Edomites Advance into Judah - Israelite Defensive Fortresses Inadequate. *Biblical Archaeology Review* 22:28-36.

—. Editor. 1999. *Tel 'Ira - A Stronghold in the Biblical Negev*. Vol. 15. *Tel Aviv University Monograph Series*. Tel Aviv: Tel Aviv University Institute of Archaeology.

Beit-Arieh, I., and B. Cresson. 1985. An Edomite Ostracon from Horvat ‘Uza. *Tel Aviv* 96-101.

Ben-Arieh, S. 1981. Late Bronze Age Tomb from Tell Jedur. *Eretz-Israel* 115-27.

Bender, F. 1974. *Geology of Jordan*. Berlin: Gebruder Borntraeger.

Bennett, C.-M. 1974. Excavations at Buseirah, Southern Jordan, 1972: Preliminary Report. *Levant* 6:1-24.

—. 1975. Excavations at Buseirah, Southern Jordan, 1973: Third Preliminary Report. *Levant* 7:1-19.

—. 1977. Excavations in Buseirah, Southern Jordan. *Levant* 9:1-10.

Bennett, C. M. 1966. Fouilles d'Umm el-Biyara: Rapport Preliminaire. *Revue Biblique* 73:372 - 403.

—. 1982. Neo-Assyrian Influence in Transjordan. *Studies in the History and Archaeology of Jordan* I:181-187.

—. 1983. "Excavations at Buseirah (Biblical Bozrah)," in *Midian, Moab, and Edom : the history and archaeology of late Bronze and Iron Age Jordan and north-west Arabia*, *Journal for the study of the Old Testament, 24*. Edited by J. F. A. Sawyer and D. J. A. Clines, pp. 9-17. Sheffield: JSOT Press.

—. 1984. Excavations at Tawilan, Southern Jordan 1982. *Levant* 16:1-23.

Bennett, C.-M., and P. Bienkowski. 1995. *Excavations at Tawilan in Southern Jordan*. *British Academy monograph in archaeology, no. 8*. Oxford: Published for the British Institute at Amman for Archaeology and History by Oxford University Press.

Ben-Shlomo, J. Uziel, and A. M. Maeir. 2009. Pottery Production at Tell es Safi/Gath: A *Longue Duree* Perspective. *Journal of Archaeological Science* xxx:1-16.

Bentley, G. C. 1987. Ethnicity and Practice. *Comparative Studies in Society and History* 29:24-55.

Bentley, R. A., H. D. G. Maschner, and C. Chippindale. 2008. *Handbook of Archaeological Theories*. Lanham, MD: AltaMira Press.

Ben-Yosef, E., Ron, H., Tauxe, L., Agnon, A., Avner, U., Najjar, M., Levy, T.E., Genevey, A. . 2008. Application of Copper Slag in Geomagnetic Archaeointensity Research. *Journal of Geophysical Research* 113:1-26.

Ben-Yosef, E., T. E. Levy, M. Najjar, N. G. Smith, T. Higham, C. Bronk Ramsey, M. Robinson, and L. Tauxe in press. The Beginning of Iron Age Copper Production in the Southern Levant: New Evidence from Khirbat al-Jariya, Faynan.

Ben-yosef, E., M. Najjar, and T. E. Levy. in press. "Rās al-Miyāh Fortresses: New Discoveries at One of the Gateways to the Iron Age Copper Production District of Faynan, Jordan," in *Studies in the History and Archaeology of Jordan* vol. IX. Edited by F. Khraysheh. Amman: Department of Antiquities of Jordan.

Ben-Yosef, E., L. Tauxe, H. Ron, A. Agnon, U. Avner, M. Najjar, and T. E. Levy. 2008. A New Approach for Geomagnetic Archaeointensity Research: Insights on Ancient Metallurgy in the Southern Levant. *Journal of Archaeological Science* 35:2863-2879.

Berman, J. 1994. "The Ceramic Evidence fo Sociopolitical Organization in 'Ubaid Southweatern Iran," in *Chiefdoms and Early States in the Near East: The Organizational Dynamics of Complexity*, *Monographs in world archaeology*. Edited by G. Stein and M. S. Rothman, pp. 23-34. Madison, Wis.: Prehistory Press.

Bettles, E. 2003a. Carinated-Shoulder Amphorae from Sarepta, Lebanon. *Archaeology and History in Lebanon*:60-79.

—. 2003b. *Phoenician Amphora Production and Distribution in the Southern Levant: A Multi-disciplinary Investigation into Carinated-shoulder Amphorae of the Persian period (539-332 BC)* Oxford: Archaeopress.

Bey, G. J., and C. A. Pool. 1992. *Ceramic Production and Distribution: an integrated approach*. Boulder: Westview Press.

Bienkowski, P. 1990. The Chronology of Tawilan and the 'Dark Age' of Edom. *Aram* 2/1, 2:35-44.

—. 1990. Umm el-Biyara, Tawilan and Buseirah in Retrospect. *Levant* 22:91-109.

—. 1992. The Beginning of the Iron Age in Edom: A Reply to Finkelstein. *Levant* XXIV:167 - 169.

—. 1992. "The Date of Sedentary Occupation in Edom: Evidence from Umm el-Biyara, Tawilan and Buseirah," in *Early Edom and Moab - The Beginning of the Iron Age in Southern Jordan*. Edited by P. Bienkowski, pp. 99 - 112. Sheffield: J.R. Collis Publications.

—. Editor. 1992. *Early Edom and Moab - The Beginning of the Iron Age in Southern Jordan*. *Sheffield Archaeological Monographs 7*. Sheffield: J.R. Collis Publications.

—. 1995. The Architecture of Edom. *Studies in the History and Archaeology of Jordan* V:135-143.

—. 1995. "The Edomites: The Archaeological Evidence from Transjordan.," in *You Shall Not Abhor an Edomite for He is Your brother: Edom and Seir in History and Tradition.*, *Archaeological and Biblical Studies 3*. Edited by D. V. Edelman, pp. 41 - 92. Atlanta: Scholars Press.

—. 1995. Observations on Late Bronze-Iron Age sites in the Wadi Hasa, Jordan. *Levant* 27:29-37.

—. 2000. "Transjordan and Assyria.," in *The Archaeology of Jordan and Beyond: Essays in Honor of James A. Sauer*, *Studies in the Archaeology and History of the Levant 1*. Edited by L. E. Stager, J. A. Greene, and M. D. Coogan, pp. 44 - 58. Winona Lake, IN: Eisenbrauns.

—. 2002. *Busayra - Excavations by Crystal-M. Bennett, 1971-1980*. *British Academy Monographs in Archaeology ;no. 13*. Oxford: Council for British Research in the Levant by Oxford University Press.

Bienkowski, P., and R. B. Adams. 1999. Soundings at Ash-Shorbat and Khirbet Dubab in the Wadi Hasa. *Levant* 31:149-72.

Bienkowski, P., R. B. Adams, R. A. Philpott, and L. Sedman. 1997. Soundings at Ash-Shorabat and Khirbat Dubab in the Wadi Hasa, Jordan: the Stratigraphy. . *Levant 29:* 29:41-70.

Bienkowski, P., C. M. Bennett, M. r. Balla, and L. Council for British Research in the. 2002. *Busayra Excavations by Crystal-M. Bennett, 1971-1980*. *British Academy Monographs in Archaeology, no. 13*. Oxford: Published for the Council for British Research in the Levant by Oxford University Press.

Bienkowski, P., and E. van der Steen. 2001. Tribes, Trade, and Towns: A New Framework for the Late Iron Age in Southern Jordan and the Negev. *Bulletin of the American Schools of Oriental Research* 323:21 -47.

Binford, L. R. 1962. Archaeology as Anthropology. *American Antiquity* 28:217-225.

—. 1964. A Consideration of Archaeological Research Design. *American Antiquity* 29:425-441.

—. 1965. Archaeological Systematics and the Study of Culture Process. *Americal Antiquity* 31:203-210.

—. 1982. The Archaeology of Place. *Journal of Anthropological Archaeology* 1:5-31.

—. 2001. *Constructing Frames of Referencs: An Analytical Method for Archaeological Theory Building Using Hunter Gather and Evironmental Data Sets*. Berkley: University of California Press.

Binford, S. R., and L. R. Binford. 1968. *New Perspectives in Archaeology*. Chicago: Aldine Publishing Company.

Biran, A., and R. Cohen. 1981. Aroer in the Negev. *Eretz-Israel* 15:250-273.

Blanton, R. E. 1998. "Beyond Centeralization: Steps Toward a Theory of Egalitarian Behavior in Archaic States," in *Archaic States*, 1st edition, *School of American Research advanced seminar series*. Edited by G. M. Feinman and J. Marcus, pp. 135-172. Santa Fe, N.M.: School of American Research Press.

Blanton, R. E. a. G. M. F. 1984. The Mesoamerican World System. *American Anthropologist* 86:673-82.

Bloch-Smith, E. 2003. Israelite Ethnicity in Iron I: Archaeology Preserves What Is Remembered and What Is Forgotten in Israel's History. *Journal of Biblical Literature* 122:401-425.

Bohannan, P. 1954. The Migration and Expansion of the Tiv. *Africa* 24:2-16.

Boling, R. G. 1988. *The Early Biblical Community in Transjordan*. Sheffield: Almond Press.

Bourdieu, P. 1977. *Outline of a Theory of Practice*. New York: Cambridge University Press.

Braswell, G. E. Editor. 2003. *The Maya and Teothihuacan - Reinterpreting Early Classic Interaction*. Austin: University of Texas Press.

Bruins, H., and J. van der Plicht. 2004. "Desert Settlement in the Central Negev: first ^{14}C indication of Rainwater-harvesting Agriculture in the Iron Age," in *Radiocarbon and Archaeology: Proceedings of the 4th International Symposium*. Edited by T. Higham, C. Bronk Ramsey, and D. C. Owen, pp. 83-98. Oxford: Oxford University School of Archaeology Monograph 62.

Brumfiel. 1983. Aztec State Making: Ecology, Structure and the Origin of the State. *American Anthropologist* 85:261-84.

Brumfiel, E. M., and T. K. Earle. 1987. "Specialization, Exchange, and Complex Societies: An Introduction," in *Specialization, Exchange, and Complex societies*, *New directions in archaeology*. Edited by E. M. Brumfiel and T. K. Earle, pp. 1-9. Cambridge [Cambridgeshire] ; New York: Cambridge University Press.

Bunimovitz, S. 1990. Problems in the "Ethnic" Identification of the Philistine Material Culture. *Tel Aviv* 17:210-22.

Bunimovitz, S., and Yasur-Landau, A. . 1996. Philistine and Israelite Pottery: A Comparitive Approach to the Question of Pots and People. *Tel Aviv* 23:88-101.

Bunimovitz, S., and A. Faust. 2001. Chronological Separation, Geographical Segregation, or Ethnic Demarcation? Ethnography and the Iron Age Low Chronology. *Bulletin of the American Schools of Oriental Research* 322:1- 10.

Byrne, R. M. 2002. Statecraft in Early Israel. PhD, John Hopkins University.

Caldwell, J. 1964. "Interaction Spheres in Prehistory," in *Hopewellian Studies*, *Scientific Papers No. 12*. Edited by J. Caldwell and R. Hall, pp. 134-143. Springfield, Il: Illinois State Museum.

Carneiro, R. L. 1970. A Theory of the Origin of the State. *Science* 169:733-738.

—. 1981. " The Chiefdom: Precursor of the State," in *Transition to Statehood in the New World*. Edited by G. D. Jones and R. R. Kautz, pp. 37-79. Cambridge: Cambridge University Press.

Carr, C., and J. E. Neitzel. 1995. "Intergrating Approaches to Material Style in Theory and Philosophy," in *Style, Society, and Person: Archaeological and Ethnological Perspectives*, *Interdisciplinary Contributions to Archaeology*. Edited by C. Carr and J. E. Neitzel, pp. 3-26. New York: Plenum Press.

—. 1995. *Style, Society, and Person: Archaeological and Ethnological Perspectives*. *Interdisciplinary Contributions to Archaeology*. New York: Plenum Press.

Caton, S. C. 1990. "Antropological Theories of Tribe and State Formation in the Middle East: Ideology and Semiotics of Power," in *Tribes and State Formation in the Middle East*. Edited by P. S. Khoury and J. Kostiner, pp. 74-108. Berkeley: The University of California Press.

—. 1990. *"Peaks of Yemen I Summon" : Poetry as Cultural Practice in a North Yemeni tribe*. Vol. xv. Berkeley: University of California Press.

Centre, R. J. G. 2001. *Jordanian School Atlas (First Edition)*. Amman: Royal Jordanian Geographic Centre.

Charlton, T. H., and D. L. Nichols. 1997. "The CIty-State Concept: Development and Applications," in *The Archaeology of City States: Cross Cultural Approaches*. Edited by N. D.L. and C. T.H., pp. 1-14. Washington D.C.: Smithsonian Institution Press.

Chase-Dunn, and R. Hall. Editors. 1991. *Core /Periphery Relations in Precapitalist Worlds*. Bolder, CO: westview.

Childe, V. G. 1956. *Piecing Together the Past: The Interpretation of Archaeological Data*. London: Routledge and Kegan.

Childs, S. T. 1991. Style, Technology, and Iron Smelting Furnaces in Bantu-Speaking Africa. *Journal of Anthropological Archaeology* 10:332-359.

Chilton, E. S. 1998. "The Cultural Origins of Technical Choice: Unraveling Algonquian and Iroquoian Ceramic Traditions in the Northeast," in *The Archaeology of Social Boundaries*, *Smithsonian Series in Archaeological Inquiry*. Edited by M. T. Stark, pp. 132-160. Washington, [D.C.]: Smithsonian Institution Press.

—. 1999. "One Size Fits All: Typology and Alternatives for Ceramic Research," in *Material Meanings: Critical Approaches to the Interpretation of Material Culture*, *Foundations of archaeological inquiry*. Edited by E. S. Chilton. Salt Lake City: University of Utah Press.

Claessen, H. J. M. 1978. "The Early State: A Structural Approach," in *The Early State New Babylon, studies in the social sciences*. Edited by H. J. M. Claessen and P. Skalnik, pp. 533-596. The Hague Mouton.

Claessen, H. J. M., and P. Skalník. 1978. "The Early State: Models and Reality," in *The Early State*, *New Babylon, studies in the social sciences*. Edited by H. J. M. Claessen and P. Skalník, pp. 637-650. The Hague: Mouton.

—. 1978. "The Early State: Theories and Hypothesis," in *The Early State New Babylon, studies in the social sciences*. Edited by H. J. M. Claessen and P. Skalník, pp. 3-30. The Hague: Mouton.

—. 1978. "Limits: Begining and End of the Early State," in *The Early State*, *New Babylon, studies in the social sciences*. Edited by H. J. M. Claessen and P. Skalník, pp. 619-636. The Hague: Mouton.

Cohen, A. 1971. Cultural Strategies in the Organization of Trading Diasporas. *Meillassoux*:266-282.

Cohen, A. P. 1994. "Boundaries of Consciousness, Consciousness of Boundaries: Critical questions for anthropology," in *The Anthropology of Ethnicity: Beyond "Ethnic groups and boundaries"*. Edited by H. Vermeulen and C. Govers, pp. 59-80. Amsterdam; Hague, Netherlands: Spinhuis ; Distribution outside The Netherlands, M. Nijhoff International.

Cohen, R. 1974. Notes and News: Har Yeruham. *Israel Exploration Journal* 24:133-134.

—. 1978. Ethnicity: Problem and Focus in Anthropology. *ANNUAL REVIEW OF ANTHROPOLOGY* 7:379-404.

Cohen, R., W.G. Dever. 1979. Preliminary Report of the Second Season of the 'Central Negev Highlands Project'. *Bulletin of the American Schools of Oriental Research* 236:41-60.

Cohen, R. 1981. "Evolution, Fission, and the Early State," in *The Study of the State*, vol. 35. Edited by H. J. M. Claessen and P. Skalnik. The Hague; New York: Mouton.

—. 1985. The Fortresses King Solomon Built To Protect His Southern Frontier. *BAR* 11:56-70.

Cohen, R., H. Bernick-Greenberg, D. B.-Y. Mayer, and h.-a. Israel. Rashut. 2007. *Excavations at Kadesh Barnea (Tell el-Qudeirat) 1976-1982*. *IAA Reports, no. 34/1 - 34/2*. Jerusalem: Israel Antiquities Authority.

Cohen, R., and R. Cohen-Amin. 2004. *Ancient Settlement of the Negev Highlands: The Iron Age and the Persian Period*. Vol. II. *IAA Reports, no. 20*. Jerusalem: Israel Antiquities Authority.

Cohen, R., and Y. Yisrael. 1995. The Iron Age Fortresses at En Haseva. *Biblical Archaeologist* 58.

—. 1995. *On the Road to Edom - Discoveries from 'En Hazeva*. Jerusalem: Israel Museum.

Cole, D. P. 1975. *Nomads of the Nomads: The Al Murrah Bedouin of the Empty Quarter*. Chicago: Aldine Pub. Co.

Comaroff, J. L., and J. Comaroff. 1992. *Ethnography and the Historical Imagination*. *Studies in the Ethnographic Imagination*. Boulder: Westview Press.

Costin, C. L. 1991. Craft Specialization: Issues in Defining Documenting and Explaining the Organization of Production. *Archaeological Method and Theory* 3:1-56.

Cowgill, G. L. 1979. "Teotihuacan, Internal Militaristic Competition, and the Fall of the Classic Maya," in *Maya Archaeology and Ethnohistory*. Edited by N. Hammond and G. R. Willey, pp. 51-62. Austin: University of Text Press.

Crowell, B. L. 2004. On the Margins of History: Social Change and Political Development in Iron Age Edom. Unpublished Ph.D. thesis, University of Michigan.

Crumley, C. L. 1995. "Heterarchy and the Analysis of Complex Societies.," in *Heterarchy and the Analysis of Complex Societies*, vol. 6. Edited by R. M. Ehrenreich, C. L. Crumley, and J. Levy, pp. 1 - 5. Washington, DC: American Anthropological Association.

D'Altroy, T. N. 1992. *Provincial Power in the Inka Empire*. Washington: Smithsonian Institution Press.

D'Altroy, T. N. a. T. K. E. 1985. Staple Finance, Wealth Finance, and Storage in the Inka Political Economy. *Current Anthropology* 26:187-206.

D'Andrade, R. 1984. "Cultural Meaning Systems," in *Culture theory: Essays on Mind, Self, and Emotion*. Edited by R. A. Schweder and R. A. LeVine, pp. 88-119. Cambridge.

D'andrade, R. 1995. *The Development of Cognitive Anthropology*. Cambridge: Cambridge University Press.

Danin, A. 1983. *Desert Vegetation of Israel and Sinai*. Jerusalem: Cana.

Davies, P. R. 1992. *In Search of "ancient Israel"*. Vol. 148. *Journal for the Study of the Old Testament Supplement Series*. Sheffield: JSOT Press.

de Miroschedji, P. 2002. "The Socio-political Dynamics of Egyptian-Canaanite Interaction in the Early Bronze Age," in *Egypt and the Levant: Interrelations from the 4th through the Early 3rd Millennium B.C.E.*, *New Approaches to Anthropological Archaeology*. Edited by E. C. M. van den Brink and T. E. Levy. London and New York: Continuum.

De Vos, G. A. 1995. "Ethnic Pluralism: Conflict and Accomidation," in *Ethnic Identity*. Edited by L. Romanucci-Ross and G. A. De Vos. Walnut Creek: Altamira Press.

De Vos, G. A., and L. Romanucci-Ross. 1975. "Ethnicity: Vessel of Meaning and Emblem of Contrast," in *Ethnic Identity: Cultural Continuities and Change*, pp. 363-390. Palo Alto, Calif.: Mayfield Pub. Co.

Deal, M. 2007. "An Ethnoarchaeological Perspective on Local Ceramic Production and Distribution in the Maya Haghlands," in *Pottery Economics in Mesoamerica*. Edited by C. A. Pool and G. J. Bey, pp. 39-58. Tucson: The University of Arizona Press.

Dearman, J. A. 1989. "Historical Reconstruction and the Mesha Inscription," in *Studies in the Mesha inscription and Moab*, *Archaeology and biblical studies, no. 02*. Edited by J. A. Dearman, pp. 155-210. Atlanta, Ga.: Scholars Press.

—. 1995. "Religion: A Survey and an Examination of Some Recent Contributions," in *You Shall Not Abhor an Edomite for He is Your Brother: Edom and Seir in History and Tradition*, vol. 3. Edited by D. V. Edelman. Atlanta, Ga.: Scholars Press.

DeBoer, W. R. 1990. "Interaction, Imitation and Communication as Expressed in Style: The Ucayali Experience," in *The Uses of Style in Archaeology*, *New directions in archaeology*. Edited by M. W. Conkey and C. A. Hastorf, pp. 82-104. Cambridge [England]; New York: Cambridge University Press.

Dennell, R. W. 1980. "The Use, Abuse and Potential of Site-catchment analysis," in *Catchment Analysis*, vol. 10. Edited by F. S. Findlow and J. E. Ericson, pp. 1-20. Los Angeles: Anthropology Department, UCLA.

Dever, W. G. 1991. Archaeological Data on the Israelite Settlement: A Review of Two Recent Works. *BASOR* 284:77-90.

—. 1992. "How to Tell a Canaanite from and Israelite?," in *The Rise of Ancient Israel*. Edited by H. Shanks. Washington, DC: Biblical Archaeology Society.

—. 1993. Cultural Continuity, Ethnicity in the Archaeological Record, and the Question of Israelite Origins. *Eretz Israel* 24:22*-33*.

—. 1995a. Will the Real Israel Please Stand Up? Archaeology and Israelite Historiography: Part I. *Bulletin of the American Schools of Oriental Research* 297:61 - 80.

—. 1995b. Ceramics, Ethnicity, and the Question of Israel's Origins. *Biblical Archaeologist* 58:200-213.

—. 1995c. Will the Real Israel Please Stand Up: Part II: Archaeology and the Religions of Ancient Israel. *Bulletin of the American Schools of Oriental Research* 298:37 - 58.

—. 2003. *Who Were the Early Israelites, and Where Did They Come From?* Grand Rapids, Mich.: William B. Eerdmans Pub. Co.

Dever, W. G., H. D. Lance, and R. G. Bullard. 1978. *A Manual of Field Excavation: Handbook for Field Archaeologists*. Cincinnati: Hebrew Union College.

Dicou, B. 1994. Edom, Israel's Brother and Antagonist: The Role of Edom in Biblical Prophecy and Story. *JSOTS* 169.

Dietler, M., and I. Herbich. 1994a. "Ceramics and Ethnic Identity: Ethnoarchaeological Observations on the Distribution of Pottery Styles and the Relationship between the Social Contexts of Production and Consumption," in *Terre cuite et societe: La ceramique, document technique, economique, culturel*, vol. XIV. Edited by D. B. a. F. Audouze, pp. 459-472. Jaun-les-Pins: Editions APDCA

—. 1998. "Habitus, Techniques, Style: An Integrated Approach to the Social Understanding of Material Culture and Boundaries," in *The Archaeology of Social Boundaries*. Edited by M. T. Stark, pp. 232-263. Washington: Smithsonian Institution Press.

DiVito, R. A. 1993. "The Tell el-Kheleifeh Inscriptions," in *Nelson Glueck's 1938 - 1940 Excavations at Tell el-Kheleifeh - A Reappraisal*. Edited by G. D. Pratico, pp. 51 - 63. Atlanta: Scholars Press.

Dornemann, R. H. 1983. *The Archaeology of the Transjordan in the Bronze and Iron Ages*. Milwaukee: Milwaukee Public Museum.

—. 1983. *The Archaeology of Transjordon in the Bronze and Iron Ages*. Milwaukee, WI.

Dresch, P. 1986. The Significance of the Course Events Take in Segmentary Systems. *American Ethnologist* 13.

—. 1988. Segmentation: Its Roots in Arabia and its flowering Elswhere. *Cultural Anthropology* 3.

—. 1990. "Immams and Tribes: The Writing and Acting of History in Upper Yemmen," in *Tribes and State Formation in the Middle East*. Edited by P. S. Khoury and K. J., pp. 252-287. Berkeley: University of California Press.

Duistermaat, K. 2008. *The Pots and Potters of Assyria: Technology and Organisation of Production, Ceramic Sequence and Vessel Function at Late Bronze Age, Tell Sabi Abyad, Syria*. Turnhout: Brepols.

Duncan, J. G. 1930. *Corpus of Dated Palestinian Pottery*. London: British School of Archaeology in Egypt.

Earle, T. K. 1978. *Economic and Social Organization of a Complex Chiefdom: The Halelea District Kaua'i, Hawaii*. *Anthropological Papers 63*. Michigan: University of Michigan, Museum of Anthropology.

—. 1987. "Specialization and the Production of Wealth: Hawaiian chiefdoms and the Inka Empire," in *Specialization, Exchange, and Complex Societies*, *New directions in archaeology*. Edited by E. M. Brumfiel and T. K. Earle, pp. 64-75. Cambridge [Cambridgeshire] ; New York: Cambridge University Press.

Earle, T. K., and J. E. Ericson. 1977. *Exchange Systems in Prehistory*. New York: Academic Press.

Edelman, D. 1996. "Saul ben Kish in History and Tradition," in *The Origins of the ancient Israelite states*, *Journal for the study of the Old Testament, 228*. Edited by

V. Fritz and P. R. Davies, pp. 142-159. Sheffield, Eng.: Sheffield Academic Press.

Edelman, D. V. 1995. "Edom: A Historical Geography," in *You Shall Not Abhor An Edomite - Edom and Seir in History and Tradition. Scholars Press, Atlanta.* Edited by D. V. Edelman, pp. 1 - 11. Atlanta: Scholars Press.

—. 2002. "Ethnicity and Early Israel," in *Ethinicity and the Bible*. Edited by M. G. Brett, pp. 25-55. Leiden: E.J. Brill.

Edens, C. 1994. "On the Complexities of Complex Societies: Structure, Power, and Legitimation in Kassite Babylonia," in *Chiefdoms and Early States in the Near East: The Organizational Dynamics of Complexity*, *Monographs in world archaeology*. Edited by G. Stein and M. S. Rothman, pp. 209-224. Madison, Wis.: Prehistory Press.

Eickelman, D. F. 1998. *The Middle East and Central Asia: an Athropological Approach*, 3rd edition. Upper Saddle River, N.J.: Prentice Hall.

Eisenstadt, S. N. 1986. "Introduction: The Axial Age Breakthroughs - Their Characteristics and Orgins," in *The Origins and Diversity of Axial Age Civilizations*. Edited by S. N. Eisenstadt, pp. 1-28. Albany: State University of New York Press.

Ellerman, D. 2005. "How Do We Grow?," in *Challenge The Magazine of Economic Affairs*, May- June 2005 edition, vol. 48, pp. 50-83.

Emberling, G. 1997. Ethnicity in Complex Societies: Archaeological Perspectives. *JOURNAL OF ARCHAEOLOGICAL RESEARCH* 5:295-344.

Emberling, G., and N. Yoffee. 1999. "Thinking about Ethnicity in Mesopotamian Archaeology and History," in *Fluchtpunkt Uruk: Archaeologische Einheit aus methodologischer Vielfalt. Schriften fuer Hans Joerg Nissen.* Edited by H. Kuehne, R. Bernbeck, and K. Bartl, pp. 272 -281. Rahden/Westf: Verlag Marie Leidorf GmbH.

Engel, T. 1993. Charcoal Remains from an Iron Age Copper Smelting Slag Heap at Feinan, Wadi Arabah (Jordan). *Vegetation History and Archaeobotany* 2:205-211.

Engel, T., and W. Frey. 1996. Fuel Rescources for Copper Smelting in Antiquity in Woodlands From the Edom Highlands to the Wadi Arabah, Jordan. *Flora* 191 (1):29-39.

Ephal, I. 1982. *The Ancient Arabs: Nomads on the Borders of the Fertile Crescent 9th-5th Centuries B.C.* Jerusalem: The Magnes Press, The Hebrew University.

Erickson, J. E. 1977. "Egalatarianism Exchange Systems in California: A Preliminary View," in *Exchange Systems in Prehistory*. Edited by T. K. Earle and J. E. Erickson, pp. 109-126. New York: Academic Press.

Eriksen, T. H. 1993. *Ethnicity and Nationalism Anthropological Perspectives*. London: Pluto Press.

—. 2000. "Ethnicity and Culture: A Second Look," in *Managing Ethnicity: Perspectives from Folklore Studies, History and Anthropology*, *Studies on migration & ethnicity*. Edited by R. Bendix and H. Roodenburg, pp. 185-205. Amsterdam: Het Spinhuis.

Esse, D. L. 1992. The Collard Pithos at Megiddo: Ceramic Distribution and Ethnicity. *JNES* 51:81-103.

Evans-Pritchard, E. E. 1940. *The Nuer*. Oxford: Claredon Press.

Evenari, M., L. Shanan, and N. Tadmor. 1982. *The Negev--The Challenge of a Desert*, 2nd edition. Cambridge: Harvard University Press.

Evenari, M., L. Shannan, N. Tadmor, and Y. Aharoni. 1961. Ancient Agriculture in the Negev. *Science* 133:976-996.

Farajat, S., S., Knauf, E.A. and Zeitler, J.P. 1990. Sadeh: A Lithic-Early Bronze-Iron II (Edomite)-Nabataean Site in Southern Jordan. Report on the Second Exploratory Campaign. *Annual of the Department of Antiquities Jordan* 34:193-225.

Faust, A. 2006a. *Israel's Ethnogenesis: Settlement, Interaction, Expansion and Resistance*. *Approaches to Anthropological Archaeology*. London; Oakville, CT: Equinox Pub.

—. 2006b. "Settlement Patterns and State Formation in Sothern Samaria and the Archaeology of (A) Saul " in *Saul in Story and Tradition* Edited by C. S. Ehrlich and M. C. White. Tubingen: Mohr Siebeck.

Feinman, G. 1991. "Demography, Surplus and Inequality: Early Political Formations in Highland Mesoamerica," in *Chiefdoms: Power Economy, and Ideology*. Edited by T. K. Earle, pp. 229-62. Cambridge: Cambridge University Press.

—. 1994. "Social Boundaries and Political Change: A Comparative View From Ancient Mesoamerica," in *Chiefdoms and Early States in the Near East : The Organizational Dynamics of Complexity*, *Monographs in world archaeology*. Edited by G. Stein and M. S. Rothman, pp. 225-231. Madison, Wis.: Prehistory Press.

Feinman, G. M., J. Neitzel. 1984. "Too Many Types: An Overview of Sedentary Prestate Societies in the Americas," in *Advances in Archaeological Method and Theory*, vol. 7. Edited by M. B. Schiffer, pp. 39-102. New York, N.Y., [etc.]: Academic Press.

Feinman, G. M. 1998. "Scale and Social Organization: Perspectives on the Archaic State," in *Archaic States*, 1st edition, *School of American Research advanced seminar series*. Edited by G. M. Feinman and J. Marcus, pp. 95-134. Santa Fe, N.M.: School of American Research Press.

Feinman, G. M., and J. Marcus. 1998. "Introduction," in *Archaic States*, 1st edition, *School of American Research advanced seminar series*. Edited by G. M. Feinman and J. Marcus, pp. 3-14. Santa Fe, N.M.: School of American Research Press.

Findlater, G. 2000. Dana Archaeology Survey, Archive Report 2000 Season (unpublished report held at the CBRL Amman).

Fine, J. V. A. 1983. *The Ancient Greeks: A Critical History*. Cambridge, Mass.: Belknap Press of Harvard University Press.

Finkelstein, I. 1984. The Iron Age "Fortresses" of the Negev Highland: Sedentarization of the Nomads. *Tel Aviv* 11:82-84.

—. 1988. *The Archaeology of the Period of Settlement and Judges*. Jerusalem: Israel Exploration Society.

—. 1992. Stratigraphy, Pottery and Parallels: A Reply to Bienkowski. *Levant* XXIV:171 - 172.

—. 1992a. Edom in the Iron I. *Levant* XXIV:159-166.

—. 1992b. Stratigraphy, Pottery and Parallels: A reply to Bienkowski. *Levant* XXIV:171-172.

—. 1996. Ethnicity and Origin of the Iron-I Settlers in the Highlands of Canaan - Can the Real Israel Stand Up. *Biblical Archaeologist* 59:198-212.

—. 1997. "Pots and People Revisited: Ethnic Boundaries in the Iron Age," in *The Archaeology of Israel: Constructing the Past, Interpreting the Present*, *Journal for the study of the Old Testament, 237*. Edited by N. A. Silberman, D. B. Small, Philip, and S. Muriel Berman Center for Jewish, pp. 216-37. Sheffield, England: Sheffield Academic Press.

—. 1999. State Formation in Israel and Judah - A Contrast in Context, a Contrast in Trajectory (Middle-Eastern Biblical Archaeology). *Near Eastern Archaeology* 62:35-52.

—. 2005. Khirbet en-Nahas, Edom and Biblical History. *Tel Aviv* 32:119-125.

Finkelstein, I., and E. Piasetzky. 2008. Radiocarbon and the History of Copper Production at Khirbet en-Nahas. *Tel Aviv* 35:82-95.

Finkelstein, I., and N. A. Silberman. 2001. *The Bible Unearthed - Archaeology's New Vision of Ancient Israel and the Origin of its Sacred Texts*. New York: The Free Press.

Finkelstein, I., and L. Singer-Avitz. 2008. The Pottery of Edom: A Correction. *Antiguo Oriente* 6:13-24.

Finlayson, W., and D. Baird. 1995. Dana Archaeological Survey, Phase 1 Report. Report No 204 Centre for Field Archaeology, University of Edinburgh (unpublished report of file at the RSCN Amman).

Flannery, K. V. 1976. "Evolution of Complex Settlement Systems," in *The Early Mesoamerican Village*. Edited by K. V. Flannery, pp. 162-72. New York, NY: Academic Press.

—. 1998. "The Ground Plans of Archaic State," in *Archaic States*, 1st edition, *School of American Research advanced seminar series*. Edited by G. M. Feinman and J. Marcus, pp. 15-58. Santa Fe, N.M.: School of American Research Press.

—. 1999. Process and Agency in Early State Formation. *Cambridge Archaeological Journal* 9:3 - 21.

Fox, R. G., G. W. Cook, A.F.Chase, D. Z. Chase 1996. Questions of Political and Economic Integration: Segmentary Versus Centralized States Among the Ancient Maya. *Current Anthropology* 37:795-801.

Fox, R. G. 1997. *Urban Anthropology: Cities in Their Cultural Setting*. Englewood Cliffs: Prentice Hall.

Frank, F. 1934. Aus der Araba I: Reiseberichte. *Zeitschrift des deutschen Palastina-Vereins* 57:191 - 280.

—. 1994. Vorbericht uber die Grabungen in Barqa el-Heitiye im Gebiet von Fenan, Wadi el Araba (Jordanien) 1990. *Zeitschrigt des Deutschen Pal astina-Vereins* 110 (2):125-150.

Freud, L., and I. Beit-Arieh. 1995. "Pottery," in *H□orvat Qitmit: An Edomite Shrine in the Biblical Negev*, *Monograph*. Edited by I. Beit-Arieh. Tel Aviv: Institute of Archaeology.

Frick, F. S. 1985. *The Formation of the State in Ancient Israel: A Survey of Models and Theories*. *The Social World of Biblical Antiquity Series 4*. Sheffield, England ; Decatur, GA: Almond.

Fried, M. H. 1960. "On the Evolution of Social Stratification and the State," in *Culture in History, Essays in Honor of Paul Radin*. Edited by S. Diamond, pp. 713-731. New York: Published for Brandeis University by Columbia University Press.

—. 1967. *The Evolution of Political Society*. New York: Random House.

—. 1975. *The Notion of Tribe*. Menlo Park, Calif.: Cummings Pub. Co.

Fritz, V. 1994. Vorbericht uber die Grabungen in Barqa el-Hetiye im Gebiet von Fenan, Wadi el-Araba (Jordanien) 1990. *Zeitschrift des Deutschen Palastina-Vereins* 110(2):125-150.

—. 1996. Ergebnisse einer Sondage in Hirbet en-Nahas, Wadi el-'Araba (Jordanien). *Zeitschrift des Deutschen Pälestina Vereins* 112:1 - 9.

—. 1996. "Monarchy and Re-urbanization: A New look at Solomon's Kingdom," in *The Origins of the ancient Israelite states*, *Journal for the study of the Old Testament, 228*. Edited by V. Fritz and P. R. Davies. Sheffield, Eng.: Sheffield Academic Press.

Fritz, V., A. Kempinski, and P. s. Deutscher Verein zur Erforschung. 1983. *Ergebnisse der Ausgrabungen auf der Hirbet el-Msas (Tel Masos) 1972-1975*. *Abhandlungen des deutschen PalÃ¤stinavereins*. Wiesbaden: O. Harrassowitz.

Galaty, M. L., and W. A. Parkinson. Editors. 2007. *Rethinking Mycenaean Palaces II*. Vol. 60. *Cotsen Institute of Archaeology, UCLA*. Los Angeles: Cotsen Institute of Archaeology, UCLA.

Garthwaite, G. 1983. "Tribes, Confederation and the State: An Historical Overview of the Bakhtiari and Iran," in *The Conflict of Tribe and State in Iran and Afghanistan*. Edited by R. Tapper, pp. 314-336. New York: St. Martin's Press.

Gellner, E. 1969. *Saints of the Atlas*. *Nature of human society series*. Chicago: University of Chicago Press.

—. 1983. *Nations and Nationalism*. *New perspectives on the Past*. Ithaca: Cornell University Press.

—. 1984. "Doctor and Saint," in *Islam in tribal societies : from the Atlas to the Indus*. Edited by A. S. Ahmed and D. M. Hart, pp. 21-38. London; Boston: Routledge & Kegan Paul.

—. 1990. "Tribalism and the State in the Middle East," in *Tribes and State Formation in the Middle East*. Edited by P. S. Khoury and K. J., pp. 109-126. Berkeley: University of California Press.

Geraty, L. E., and e. al. 1989. *Madaba Plains Project 1: The 1984 Season at Tell el-'Umeiri and Vicinity and Subsequent Studies*. Berrien Springs, MI: Andrews University.

Gibbon, G. 1989. *Explanation in Archaeology*. Oxford: Basil Blackwell.

Giddens, A. 1984. *The Constitution of Society: Outline of the Theory of Structuration*. Berkeley: University of California Press.

Gifford, C. 1976. *Prehistoric Pottery Analysis and the Ceramics of Barton Ramie in the Belize Valley*. *Memoirs of the Peabody Museum*. Cambridge, Mass: Peabody Museum.

Gifford, J. C. 1960. The Type-variety Method Ceramic Classification as an Indicator of Cultural Phenomena. *American Antiquity* 25:341-47.

Gilboa, A., A. Karasik, I. Sharon, and U. Smilansky. 2004. Towards Computerized Typology and Classification of Ceramics. *Journal of Archaeological Science* 31 681-694.

Gitin, S. 1990. *Gezer III: A Ceramic Typology of the Late Iron II, Persian and Hellenistic Periods at Tell Gezer*. Jerusalem.

Giveon, R. 1971. *Les Bédouins Shosou des Documents Egyptiens. Documenta et Monumenta Orientis Antiqui 22*. Leiden.

Glass, J., Y. Goren, S. Bunimovitz, and I. Finkelstein. 1983. "Petrographic Analysis on Middle Bronze III, Late Bronze and Iron Age I Ceramic Assemblages," in *Shiloh, The Archaeology of a Biblical Site*, vol. 10, *Monograph Series of the Institute of Archaeology*. Edited by I. Finkelstein, S. Bunimovitz, and Z. Lederman, pp. 271-286. Tel Aviv: Tel Aviv University.

Glueck, N. 1934. Explorations in Eastern Palestine I. *Annual of the American Schools of Oriental Research* 14:1-113.

—. 1935. *Explorations in Eastern Palestine II*. *American Schools of Oriental Research. Annual, v. 15 for 1934-1935*. New Haven: American Schools of Oriental Research.

—. 1938. The First Campaign at Tell el-Kheleifeh (Ezion-Geber). *Annual American Schools of Oriental Research* 71:3-17.

—. 1939. Explorations in Eastern Palestine, III. *Annual of the American Schools of Oriental Research* 18-19:1-288.

—. 1939. The Second Campaign at Tell el-Kheleifeh (Ezion-Geber: Elath). *Bulletin American Schools of Oriental Research* 75:8-22.

—. 1940. *The Other Side of the Jordan*. New Haven, Conn.: American Schools of Oriental Research.

—. 1940. The Third Season of Excavations at Tell el-Kheleifeh. *Bulletin American Schools of Oriental Research* 79:2-18.

—. 1946. Some Chalcolithic Sites in Northern Gilead. *Bulletin of the American Schools of Oriental Research* 104:13-16.

—. 1951. Explorations in Eastern Palestine IV. *AASOR*.

—. 1967. Some Edomite Pottery from Tell el-Kheleifeh. Part1. *Bulletin American Schools of Oriental Research* 188:8-38.

—. 1968. *The River Jordan*. New York: McGraw-Hill.

—. 1968. *Rivers in the Desert: a History of the Negev*. New York: W. W. Norton.

Gobo, G. 2008. *Doing Ethnography*. Los Angeles and others: Sage.

Goodblatt, D. M. 2006. *Elements of Ancient Jewish Nationalism*. New York: Cambridge University Press.

Goodby, R. G. 1998. "Patterning and Social Boundaries: Ceramic Variability in Southern New England, AD 1000-1675," in *The Archaeology of Social Boundaries*. Edited by M. T. Stark. Washington, [D.C.]: Smithsonian Institution Press.

—. 1998. "Technical Patterning and Social Boundaries: Ceramic Variability in Southern New England, A.D. 1000-1675," in *The Archaeology of Social Boundaries*, *Smithsonian Series in Archaeological Inquiry*. Edited by M. T. Stark, pp. 161-182. Washington, [D.C.]: Smithsonian Institution Press.

—. 1998. "Technical Patterning and Social Boundaries: Ceramic Variability in Southern New England, AD 1000-1675," in *The Archaeology of Social Boundaries*. Edited by M. T. Stark. Washington, [D.C.]: Smithsonian Institution Press.

Gooselain, O. P. 1998. "Social and Technical Identity in a Crystal Clay Ball," in *The Archaeology of Social Boundaries*. Edited by M. T. Stark, pp. 78. Washington, [D.C.]: Smithsonian Institution Press.

Goren, Y. 1991. The Beginnings of Pottery Production in Israel, Technology and Typology of Proto- Historic Ceramic Assemblages in Etetz- Israel (6th-4th Millenia B.C.E.). Dissertation, Hebrew University.

—. 1995. Shrines and Ceramics in Chalcolithic Israel: The View Through the Petrographic Microscope. *Archaeometry* 37:287-305.

—. 1996. The Southern Levant in the Early Bronze Age IV: The Petrographic Perspective. *Bulletin of the American Schools of Oriental Research* 303:33 - 72.

Goren, Y., I. Finkelstein, and N. Na'aman. 2004. *Inscribed in Clay - Provenance Study of the Amarna Letters and other Ancient Near Eastern Texts*. Tel Aviv: Tel Aviv University Monograph Series 31.

Gosselain, O. P. 1998. "Social and Technical Identity in a Clay Crystal Ball," in *The Archaeology of Social Boundaries*, *Smithsonian Series in Archaeological Inquiry*. Edited by M. T. Stark, pp. 78-106. Washington, [D.C.]: Smithsonian Institution Press.

Grant, E. 1931-1932. *Shems Excavations (Palestine) 1928-1929-1930-1931, Part 2*. *Biblical and Kindred Studies* Haverford: Haverford College.

Graves, M. W. 1991. "Pottery Production and Distribution Among the Kalinga: A Study of Household and Regional Organization and Differentiation," in *Ceramic Ethnoarchaeology*. Edited by W. A. Longacre and R. School of American. Tucson: University of Arizona Press.

Gunneweg, J., Perlman, I. and Asaro, F. . 1988. The Origin, Classification and Chronology of Nabataean Painted Fine Ware. *Jahrbuch des römisch-germanischen Zentralmuseums Mainz* 35:239-53.

Gunneweg, J., and Mommsen, H. 1990. Instrumental Neutron Activation Analysis and the Origin of Some Cult Objects and 'Edomite' Vessels from the Horvat Shrine. *Archaeometry* 33:7-18.

Gunneweg, J., Th. Beier, U. Diehl, D. Lambrecht, and H. Mommsen. 1991. ‘Edomite’, ‘Negbite’ and ‘Midianite’ Pottery from the Negev Desert and Jordan: Instrumental Neutron Activation Analysis Results. *Archaeometry* 33:239.

Gunneweg, J., M. Balla. 2002. "Instrumental Neutron Activation Analysis, Busayra and Judah," in *Busayra: Excavations by Crystal-M. Bennett 1971 - 1980*, vol. British Academy monographs in archaeology. Edited by M. Balla and P. Bienkowski, pp. 483. Oxford [u.a.]: Oxford University Press.

Gunneweg, J., T. Beir, U. Diehl, D. Lambrecht, and H. Mommsen. 1991. 'Edomite, 'Negbite' and 'Midianite' Pottery From the Negac Desert and Jordan: Instrumental Neutron Activation Analysis Results. *Archarometry* 33.

Gunneweg, J., and H. Mommsen. 1995. "Instrumental Neutron Activation Analysis and Cult Objects," in *Horvat Qitmit: An Edomite Shrine in the Biblical Negev*. Edited by I. Beit-Arieh, pp. 280-86. Tel Aviv.

Haiman, M., and Y. Goren. 1992. "“Negbite” Pottery: New Aspects and Interpretations and the Role of Pastoralism in Designating Ceramic Technology," in *Pastoralism in the Levant : Archaeological Materials in Anthropological Perspectives*, *Monographs in world archaeology*. Edited by O. Bar-Yosef and A. M. Khazanov, pp. 143-51. Madison, Wis.: Prehistory Press.

Hall, T. 1999. "World-Systems and Evolution: An Appraisal," in *World-systems Theory in Practice: Leadership, Production, and Exchange*, *American Anthropological Association Meeting*. Edited by P. N. Kardulias, pp. 1-24. Lanham, Md.: Rowman & Littlefield Publishers.

Halpern, B. 1991. "Jerusalem and the Lineages in the seventh Century BCE: Kinship and the rise of Individual Moral Liability," in *Law and ideology in monarchic Israel*, *Journal for the study of the Old Testament*. Edited by B. Halpern, Deborah W. Hobson, pp. 11-107. Sheffield: Sheffield Press.

—. 1996. "The Construction of the Davidic State: An Exercise in Historiography," in *The Origins of the ancient Israelite states*, *Journal for the study of the Old Testament, 228*. Edited by V. Fritz and P. R. Davies, pp. 44-77. Sheffield, Eng.: Sheffield Academic Press.

Hammond, N. 1986. *A History of Greece to 322 B.C.* , 3 edition. Oxford: Oxford University Press.

Hansen, M. H. 2000. "Conclusion. The Impact of City-State Cultures on World History," in *A Comparative Study of Thirty City-state Cultures: An Investigation*, *Historisk-filosofiske Skrifter*. Edited by M. H. Hansen, pp. 597-623. Copenhagen: Kongelige Danske Videnskabernes Selskab.

—. 2000. "The Hellenic Polis," in *A Comparative Study of Thirty City-state Cultures : An Investigation*, *Historisk-filosofiske Skrifter*. Edited by M. H. Hansen, pp. 141-188. Copenhagen: Kongelige Danske Videnskabernes Selskab.

—. 2000. "Introduction. The Concepts of City-State and City-State Culture," in *A Comparative Study of Thirty City-state Cultures: An Investigation*, *Historisk-filosofiske Skrifter*. Edited by M. H. Hansen, pp. 11-34. Copenhagen: Kongelige Danske Videnskabernes Selskab.

—. 2002. "Introduction," in *A Comparative Study of Thirty City-state Cultures: An Investigation*. Edited by M. H. Hansen, pp. 7-22. Copenhagen: Kongelige Danske Videnskabernes Selskab : Commission Agent, C.A. Reitzels Forlag.

Harlan, J. R. 1988. "Natural Resources," in *The Wadi el Hasa Archaeological Survey, 1979-1983, west-central Jordan*. Edited by B. MacDonald, pp. 40-47. Waterloo, Ont., Canada: W. Laurier University Press.

Hart, D. M., and R. K. Falkner. 1985. Annual of the Department of Antiquities of Jordan. *29*:255-277.

Hart, S. 1985. Preliminary Report on a Survey in Edom, 1984. *ADAJ* 29:255-277.

—. 1986. Sela': The Rock of Edom? *Palestine Exploration Quarterly*:91-95.

—. 1986. Some Preliminary Thoughts on Settlement in Southern Jordan. *Levant* 18:51 - 58.

—. 1987. "The Edom Survey Project 1984-85: The Iron Age.," in *Studies in the History and Archaeology of Jordan 3*. Edited by A. Hadidi, pp. 287-290. Amman: Department of Antiquities.

—. 1987. Five Soundings in Southern Jordan. *Levant* 19:33-47.

—. 1988. Excavations at Ghrareh, 1986: Preliminary Report. *Levant* 20:89-99.

—. 1989. The Archaeology of the Land of Edom, Ph.D. thesis., Macquarie University.

—. 1989b. "Ghareh," in *Archaeology of Jordan II: Field Reports. Surveys and Sites*. Edited by D. H.-F. a. J. B. Hennessy, pp. 241-245. Leuven: Peeters.

—. 1992. "Iron Age Settlement in the Land of Edom," in *Early Edom and Moab: The Beginning of the Iron Age in Southern Jordan*, *Sheffield archaeological monographs*. Edited by P. Bienkowski. Sheffield, [Eng.]: J.R. Collis : National Museums and Galleries on Merseyside.

—. 1995. "Area D at Buseirah and Edomite Chronology," in *Trade, Contact, and the Movements of Peoples in the Eastern Mediterranean: Studies in Honour of J. Basil Hennessy*, *Mediterranean Archaeology Supplement* Edited by S. B. a. J. P. Descoeudres, pp. 241-64. Sydney: Meditarch.

—. 1995a. "The Pottery," in *Excavations at Tawilan in Southern Jordan*, *British Academy monograph in archaeology*. Edited by C.-M. Bennett and P. Bienkowski, pp. 53-66. Oxford: Published for the British Institute at Amman for Archaeology and History by Oxford University Press.

—. 1995b. "Area D at Buseirah and Edomite Chronology," in *Trade, Contact, and the Movements of Peoples in the Eastern Mediterranean: Studies in Honour of J. Basil Hennessy*, *Mediterranean Archaeology Supplement* Edited by S. B. a. J. P. Descoeudres, pp. 241-64. Sydney: Meditarch.

Hart, S., and E. A. Knauf 1986. Wadi Feinan Iron Age Pottery. *Newsletter of the Institute of Archaeology and Anthropology, Yarmouk University* 1:9 - 10.

Hauptmann, A., and B. Deutsches Bergbau-Museum. 2000. *Zur Frühen Metallurgie des Kupfers in Fenan/Jordanien*. *Der Anschnitt, 11*. Bochum: Deutsches Bergbau-Museum.

—. 2007. *The Archaeometallurgy of Copper: Evidence from Faynan, Jordan*. *Natural Science in Archaeology*. Berlin; New York: Springer.

Haviv, I. 2000. *Trekking and Canyoning in the Jordanian Dead Sea Rift*. Israel: Desert Breeze Press.

Hegmon, M. 1992. Archaeological Research on Style. *ANNUAL REVIEW OF ANTHROPOLOGY* 21:517.

Hendrix, R. E., P. R. Drey, and J. B. Storfjell. 1997. *Ancient Pottery of Transjordan: An Introduction Utilizing Published Whole Forms--Late Neolithic through Late Islamic*. Barrien Springs, MI: Institute of Archaeology/Horn Archaeological Museum, Andrews University.

Henrickson, E. 1990. "Investigating Ancient Ceramic Form and Use: Progress Report and Case Study," in *The Changing Roles of Ceramics in Society:26,000 B.P. to the Present*. Edited by W. D. Kingery, pp. 83-117. Westerville, Ohio: The American Ceramic Society, Inc.

Herr, L. 1980. The Formal Scripts of Iron Age Transjordan. *Bulletin American Schools of Oriental Research* 238:21-34.

—. 2001. "The History of the Collared Pithos at Tell el- Umeri, Jordan," in *Studies in the Archaeology of Israel and Neighboring Lands*. Edited by S. R. Wolff, pp. 237-50. Chicago: Oriental Institute of the University of Chicago.

Herr, L. G. 1997. The Iron Age II Period: Emerging Nations. *Biblical Archaeologist* 60:114 - 183.

—. 2000. *Madaba Plains Project : the 1992 season at Tall al-`Umayri and subsequent studies*. *Madaba Plains Project series, 4*. Berrien Springs, MI: Andrews University Press in cooperation with the Institute of Archaeology.

—. 2002. *Madaba Plains Project : the 1994 season at Tall al-`Umayri and subsequent studies*. *Madaba Plains Project series, 5*. Berrien Springs, MI: Andrews University Press in cooperation with the Institute of Archaeology.

Herr, L. G., and e. al. 1991a. *Madaba Plains Project 2: The 1987 Season at Tell el-'Umeiri and vicinity and Subsequent Studies*. Berrien Springs, MI: Andrews University.

Herzog, Z. 1984. *Beer-Sheba II: The Early Iron Age Settlements*. *Publications of the Institute of Archaeology, no. 7*. Tel Aviv: Tel Aviv University, Institute of Archaeology : Ramot Pub. Co.

—. 1992. "Settlement and Fortification Planning in the Iron Age," in *The Architecture of Ancient Israel - From the Prehistoric to the Persian Periods*. Edited by A. K. a. R. Reich, pp. 231-274. Jerusalem: Israel Exploration Society.

Herzog, Z., and L. L. Singer- Avitz. 2004. Redefining the Centre: The Emergence of State in Judah. *Tel Aviv* 31 (2):209-244.

Hesse, B. 1990. Pig Lovers and Pig Haters: Patterns of Palestinian Pork Production. *Journal of Ethnobiology*.

Hesse, B., and P. Wapnish. 1997. "Can Pig Remains Be Used for Ethnic Diagnosis in the Ancient Near East?," in *The Archaeology of Israel - Constructing the Past, Interpreting the Present*, *Journal for the Study of the Old Testament Supplement Series 237*. Edited by N. A. Silberman and D. Small, pp. 238-270. Sheffield: Sheffield Academic Press.

Higham, T., J. van der Plicht, C. Bronk Ramsey, H. J. Bruins, M. Roinson, and T. E. Levy. 2005. "Radiocarbon dating of the Khirbat en-Nahas site (Jordan) and Bayesian Modeling of the Results," in *The Bible and Radiocarbon Dating - Archaeology, Text and Science*. Edited by T. E. Levy and T. Higham. London: Equinox.

Hodder, I. 1979a. Economic and Social Stress and Material Culture Patterning. *American Antiquity*:446-453.

—. 1982. *Symbols in Action: Ethnoarchaeological Studies of Material Culture*. Cambridge: Cambridge University Press.

—. 1986. *Reading the Past: Current Approaches to Interpretation in Archaeology*. Cambridge [Cambridgeshire]; New York: Cambridge University Press.

—. 1990. "Style as Historical Quality," in *The Uses of Style in Archaeology*, *New directions in archaeology*. Edited by M. W. Conkey and C. A. Hastorf, pp. 44-51. Cambridge [England]; New York: Cambridge University Press.

—. 1991. *Reading the Past*, 2 edition. Cambridge: Cambridge University Press.

Hodder, I., and C. Orton. 1976. *Spatial Analysis in Archaeology*. Cambridge: Cambridge University Press.

Hodder, I., M. Shanks, A. Alexandri, V. Buchli, J. Carman, J. Last, and G. Lucas. Editors. 1995. *Interpreting Archaeology: Finding Meaning in the Past*. London: Routledge.

Holl, A. F. C., and T. E. Levy. 1993. From the Nile Valley to the Chad Basin: Ethnoarchaeology of Shuwa Arab Settlements. *Biblical Archaeologist* 16:166-179.

Holland, D. C., and N. Quinn. 1987. "Culture and Cognition," in *Cultural Models in Language and Thought*. Edited by D. C. Holland and N. Quinn, pp. 3-401. Cambridge [Cambridgeshire]; New York: Cambridge University Press.

Hommon, R. J. 1986. "Social Evolution and Ancient Hawai'i," in *Island Societies: Archaeological Approaches to Evolution and Transformation*. Edited by P. V. Kirch, pp. 55-68. Cambridge [Cambridgeshire]; New York: Cambridge University Press.

Jacobsen, T. 1957. Early Political Development in Mesopotamia. *Zeitschrift fur Neuefolge* 18:91-140.

Jamieson-Drake, D. W. 1991. *Scribes and Schools in Monarchic Judah: A Socio-Archeological Approach*. *The Social World of Biblical Antiquity Series, 9*. Sheffield, England: Almond Press.

Jenkins, R. 2008. *Rethinking Ethnicity*. Los Angeles, London: SAGE.

Jobling, W. J. 1981. Preliminary Report on the Archaeological Survey between Ma'an and 'Aqaba, January to February 1980. *ADAJ* 25:105-112.

—. 1983. The 1982 Archaeological and Epigraphic Survey of the 'Aqaba-Ma'an Area of Southern Jordan. *ADAJ* 27:185-196.

Joffe, A. H. 1985. "Settlement Patterns and Social Organization in Early Bronze I and II Canaan."

—. 1991. *Settlement and Society in Early Bronze I and II in the Southern Levant: Complementarity and Contradiction in a Small-Scale Complex Society*. *Monographs in Mediterranean Archaeology*. Sheffield: Sheffield Academic Press.

—. 2002. The Rise of Secondary States in the Iron Age Levant. *Journal of the Economic and Social History of the Orient* 45:425 - 467.

Johnson, A. W., and T. K. Earle. 1987. *The Evolution of Human Societies: from Foraging Group to Agrarian State*. Stanford, Calif.: Stanford University Press.

Johnson, G. A. 1972. "A Test in the Utility of Central Place Theory in Archaeology," in *Man, Settlement and Urbanism*. Edited by P. Ucko, R. Tringham, and G. W. Dimbleby, pp. 769-85. London: Duckworth.

—. 1973. *Local Exchange and Early State Development in Southwestern Iran*. Ann Arbor: Museum of Anthropology, University of Michigan.

Johnson, W. a. 1975. Population, Exchange, and Early State Formation in Southwestern Iran. *American Anthropologist* 77:267-89.

Jones, S. 1997. *The Archaeology of Ethnicity - Constructing Identities in the Past and Present*. London and New York: Routledge.

—. 2008. "Ethnicity: Theoretical Approaches, Methodological Implications," in *Handbook of Archaeological Theories*. Edited by R. A. Bentley, H. D. G. Maschner, and C. Chippindale, pp. 321-334. Lanham, MD: AltaMira Press.

Kamp K., a. N. Y. 1980. Ethnicity in Western Asia During the Early Second Millennium B.C. Archaeological Assemblages and Ethnoarchaeological Perspectives. *BASOR* 237:85-104.

Kansa, E. C., and T. E. Levy. 2002. "Ceramics, Identity, and the Role of the State: The View from Nahal Tillah," in *Egyptian-Canaanite Interaction-From the 4th through 3rd millennium, B.C.E.* Edited by E. C. M. van den Brink and T. E. Levy, pp. 190 - 212. London: Leicester University Press.

Karasik, A. 2008. "Applications of 3D Technology as a Research Tool in Archaeological Ceramic Analysis," in *Beyond Illustration: 2D and 3D Digital Technology as Tools for Discovery in Archaeology.* . Edited by I. B. F. a. A. D.-H. (Eds.). pp. 103-116. Oxford: British Archaeological Reports International Series 1805.

Karasik, A., I. Sharon, U. Smilansky, and A. Gilboa. 2004. Typology and Classification of Ceramics Based on Curvature Analysis. . *Computers Applications and Quantitative Methods in Archaeology - CAA 2003*:472-475.

Karasik, A. e. a. 2005. New Typological Analyses of Holemouth Jars from the Early Bronze Age from Tel Arad and Southern Sinai. *Tel Aviv* 32:20-31.

Kardulias, P. N. 1999. "Multiple Levels in the Aegean Bronze Age World-System," in *World-systems Theory in Practice: Leadership, Production, and Exchange*, *American Anthropological Association Meeting*. Edited by P. N. Kardulias, pp. 179-202. Lanham, Md.: Rowman & Littlefield Publishers.

—. Editor. 1999. *World-Systems Theory in Practice - Leadership, Production and Exchange*. New York: Rowman & Littlefield Publishers, Inc.

Kaufman, I. T. 1982. The Samaria Ostraca: an Early Witness to Hebrew Writing. *Biblical Archaeologist* 45:229-239.

Kemp, B. J. 1989. *Ancient Egypt : Anatomy of a Civilization*. London; New York: Routledge.

Kempinski, A. 1983. "Area A," in *Ergebnisse der Ausgrabungen auf der Hirbet el-Msas (Tel Masos) 1972-197*. Edited by V. Fritz and A. Kempinski, pp. 73-80: Wiesbaden.

Kempinski, A., and I. Gilead. 1991. New Excavations at Tel Erani: A Preliminary Report of the 1985-1988 Seasons. *Tel Aviv* 18:164-91.

Kempinski, A., and R. Reich. Editors. 1992. *The Architecture of Ancient Israel - From the Prehistoric to the Persian Periods*. Jerusalem: Israel Exploration Society.

Khazanov, A. M. 1994. *Nomads and the Outside world*, Second edition. Madison, Wisconsin: The University of Wisconsin Press.

Khoury, P. S., and J. Kostiner. 1990. *Tribes and State Formation in the Middle East*. Berkeley: University of California Press.

King, P. J., and L. E. Stager. 2001. *Life in Biblical Israel*. *Library of ancient Israel*. Louisville, Ky.: Westminster John Knox Press.

Kirch, P. V. 1984. *The Evolution of the Polynesian Chiefdoms*. *New Studies in Archaeology*. Cambridge [Cambridgeshire]; New York: Cambridge University Press.

—. 1986. *Island Societies: Archaeological Approaches to Evolution and Transformation*. *New Directions in Archaeology*. Cambridge [Cambridgeshire]; New York: Cambridge University Press.

Kitchen, K. A. 1992. "The Egyptian Evidence on Ancient Jordan," in *Early Edom and Moab - The Beginning of the Iron Age in Southern Jordan*, vol. 7, *Monograph*. Edited by P. Bienkowski, pp. 21 - 34. Sheffield: J.R. Collis Publications.

—. 2003. *On the Reliability of the Old Testament*. Grand Rapids, MI: Eerdmans Publishing Company.

Kletter, R. 2002. People Without Burials? The Lack of Iron Age Burials in the Central Highlands of Palastine. *IEJ* 52:28-48.

Knauf -Belleri, E. A. 1995. "Edom: The Social and Economic History," in *You Shall Not Abhor an Edomite for He is Your Brother: Edom and Seir in History and Tradition*, *Archaeological and Biblical Studies 3*. Edited by D. V. Edelman, pp. 93 - 117. Atlanta: Scholars Press.

Knauf, E. A. 1992. "The Cultural Impact of Secondary State Formation: The Cases of the Edomites and the Moabites.," in *Early Edom and Moab: The Beginning of the Iron Age in Southern Jordan.* Edited by P. Bienkowski, pp. 47 - 54. Sheffield: Collis.

Kochavi, M. 1993. "Tel Malhata," in *The New Encyclopedia of Archaeological Excavations in the Holy Land*. Edited by E. Stern. Jerusalem: Israel Exploration Society.

Kohl, P. 1979. The "World Economy" of West Asia in the Third Millennium BC. *South Asian Archaeology 1977*:55-85.

—. 1987. "The Ancient Economy, Transferable Technologies and the Bronze Age World-system: A view from the northeastern frontier of the Ancient Near East," in *Centre and Periphery in the Ancient World*. Edited by M. J. Rowlands, M. T. Larsen, and K. Kristiansen, pp. 13-24. Cambridge [Cambridgeshire]; New York: Cambridge University Press.

Kohl, P. L. 1987. "The Use and Abuse of World Systems Theory: The Case of the Pristine West Asian State," in *Advances in Archaeological Method and Theory*, vol. 11. Edited by M. B. Schiffer, pp. 1-36. San Diego: Academic Press, INC.

Kolata, A. L. 1997. "Of Kings and Capitals: Principles of Authority and the Nature of Cities in the Native Andean State," in *The Archaeology of City-states: Cross-cultural Approaches*, *Smithsonian series in archaeological inquiry*. Edited by D. L. Nichols and T. H. Charlton, pp. 245-254. Washington: Smithsonian Institution Press.

Kostiner, J. 1990. "Transforming Dualities: Tribes and State Formation in Saudi Arabia," in *Tribes and State Formation in the Middle East*. Edited by P. S. Khoury and K. J., pp. 226-251. Berkeley: University of California Press.

Kramer, C. 1977. "Pots and People," in *Mountains and Lowlands: Essays in the Archaeology of Greater Mesopotamia*, *Bibliotheca Mesopotamica* Edited by L. D. Levine and T. C. Young. Malibu [Calif.]: Undena Publications.

—. 1979. "Introduction," in *Ethnoarchaeology: Implications of Ethnography for Archaeology*. Edited by C. Kramer, pp. 1-20. New York: Columbia University Press.

—. 1985. Ceramic Ethnoarchaeology. *ANNUAL REVIEW OF ANTHROPOLOGY*:77-102.

—. 1991. "Ceramics in Two Indian Cities," in *Ceramic Ethnoarchaeology*. Edited by W. A. Longacre, pp. 205-230. Tucson: University of Arizona Press.

Kristiansen, K. 1987. "Center and Periphery in Bronze Age Scandinavia," in *Centre and Periphery in the Ancient World*. Edited by M. J. Rowlands, M. T. Larsen, and K. Kristiansen, pp. 74-86. Cambridge [Cambridgeshire]; New York: Cambridge University Press.

Kühne, H., and H. J. Nissen. 1999. *Fluchtpunkt Uruk : archäologische Einheit aus methodischer Vielfalt ; Schriften für Hans Jörg Nissen*. *Internationale Archäologie, Bd. 6*. Rahden/Westf.: Leidorf.

LaBianca, O. S. 1999. "Salient Features of Iron Age Tribal Kingdoms," in *Ancient Ammon*, *Studies in the History and Culture of the Ancient Near East 17*. Edited by B. MacDonald and R. W. Younker. Boston: Brill.

LaBianca, O. S., and R. W. Younker. 1995. "The Kingdoms of Ammon, Moab and Edom: The Archaeology of Society in Late Bronze/Iron Age Transjordan (ca. 1400 - 500 BCE)." in *The Archaeology of Society in the Holy Land*. Edited by T. E. Levy, pp. 399 - 415. London: Leicester University Press.

Lancaster, W. 1981. *The Rwala Bedouin Today*. *Changing Cultures*. Cambridge, [Cambridgeshire]; New York: Cambridge University Press.

Lapidus, I. M. 1990. "Tribes and State Formation in Islamic History," in *Tribes and State Formation in the Middle East*. Edited by P. S. Khoury and J. Kostiner, pp. 25-47. Berkley: The University of California Press.

Lapp, N. 1994. "Who is it that comes from Edom?," in *Scripture and Other artifacts: Essays on the Bible and Archaeology in honor of Philip J. King*. Edited by M. D. Coogan, J. C. Exum, and L. E. Stager. Kentucky: Westminister John Knox Press.

Larsen, M. T. 1976. *The Old Assyrian City State and its Colonies*. Copenhagen: Akabemisk Forlag.

—. 1987. "Commercial Networks in the Ancient Near East," in *Centre and Periphery in the Ancient World*. Edited by M. J. Rowlands, M. T. Larsen, and K. Kristiansen, pp. 47-56. Cambridge: Cambridge University Press.

Lave, J. 1990. "The Culture of Acquisition and the Practice of Understanding," in *Cultural Psychology: Essays on Comparative Human Development*. Edited by J. W. Stigler, R. A. Shweder, G. H. Herdt, and D. University of Chicago. Committee on Human, pp. 309-327. Cambridge; New York: Cambridge University Press.

Lechtman, H. 1977. "Style in Technology: Some Early Thoughts," in *Material CultureS: Styles, Organization, and Dynamics of Technology*. Edited by H. Lechtman and R. S. Merrill, pp. 3-20. St. Paul: West Pub. Co.

Lee, J. a. D. W. 2001. *Statistical Analysis with ArchView GIS*. New York: John Wiley and Sons.

Lemonnier, P. 1986. The Study of Material Culture Today: Towards an Anthropology of Technical Systems. *Journal of Anthropological Archaeology*:147-186.

—. 1990. Topsy Turvey Techniques: Remarks on Social Representation of Techniques. *Archaeological Review from Cambridge*:27-37.

—. 1992. *Elements for an Anthropology of Technology*. Ann Arbor, Mich.: Museum of Anthropology, University of Michigan.

—. 1993a. "Introduction," in *Technical Choices: Transformation in Material Cultures since the Neolithic*. Edited by P. Lemonnier, pp. 1-35. London and New York: Routledge.

Leroi-Gourhan, A. 1943. *Evolution et Techniques: L'Homme et la Matière.* Paris: Albin Michel.

Lévi-Strauss, C. 1963. *Totemism*. Boston: Beacon Press.

—. 1969. *The Elementary Structures of Kinship*. Boston: Beacon Press.

Levy, T. E. Editor. 1987. *Shiqmim I: Studies Concerning Chalcolithic Societies in the Northern Negev Desert, Israel (1982-1984)*. Oxford: BAR International Series 356.

Levy, T. E., R.B. Adams, A. Hauptmann, M. Prange, S. Schmitt-Strecker, and M. Najjar. 2002. Early Bronze Age Metallurgy: A Newly Discovered Copper Manufactory in Southern Jordan. *Antiquity* 76:425.

Levy, T. E. 2006. *Archaeology, Anthropology and Cult: The Sanctuary at Gilat, Israel*. *Approaches to Anthropological Archaeology*. London; Oakville, CT: Equinox.

—. 2007. *Journey to the Copper Age - Archaeology in the Holy Land*. San Diego: San Diego Museum of Man.

—. 2008a. ""You shall make for yourself no molten gods" - Some thoughts on Archaeology and Edomite Ethnic Identity.," in *Sacred History, Sacred Literature: Essays on Ancient Israel, the Bible, and Religion in Honor of R. E. Friedman on His 60th Birthday*. Edited by S. Dolansky, pp. 239-255. Winona Lake: Eisenbraun.

—. 2008b. "Ethnic Identity in Biblical Edom, Israel and Midian: Some Insights from Mortuary Contexts in the Lowlands of Edom," in *Exploring the Longue Durée: Essays in Honor of Lawrence E. Stager*. Edited by D. Schloen, pp. 251-261. Winona Lake, Ind.: Eisenbrauns.

—. 2009. "Pastoral Nomads and Iron Age Metal Production in Ancient Edom," in *Nomads, Tribes, and the State in the Ancient Near East*. Edited by J. Szuchman, pp. 147-176. Chicago: University of Chicago Press.

—. 2009b. "The New Pragmatism: Integrating Anthropological Digital and Historical Biblical Archaeologies," in *Historical Biblical Archaeology and the Future- the New Pragmatism*. Edited by T. E. Tevy. London: Equinox.

—. in prep. "Recent Iron Age Excavations in the Lowlands of Edom and High Precision Radiocarbon Dating: Khirbet en-Nahas 2006 Season and Rujim Hamara Ifdan," in *New Perspectives on the Iron Age Archaeology of Edom in Southern Jordan: Interim Studies of the Surveys, Excavations and Research of the Edom Lowlands Regional Archaeology Project (ELRAP)2006-2008*. Boston: AASOR.

Levy, T. E., R. B. Adams, J. M. Anderson, M. Najjar, N. G. Smith, Y. Arbel, L. Soderbaum, and A. Muniz. 2003. An Iron Age Landscape in the Edomite Lowlands: Archaeological Surveys along the Wadi al-Guwayb and Wadi al-

Jariyeh, Jabal Hamrat Fidan, Jordan, 2002. *Annual of the Department of Antiquities Jordan* 47:247-277.

Levy, T. E., R. B. Adams, A. Hauptmann, M. Prange, S. Schmitt-Strecker, and M. Najjar. 2002. Early Bronze Age Metallurgy: A Newly Discovered Copper Manufactory in Southern Jordan. *Antiquity* 76:425 - 37.

Levy, T. E., R. B. Adams, and A. Muniz. 2004. "Archaeology and the Shasu Nomads- Recent Excavations in the Jabal Hamrat Fidan, Jordan," in *Le-David Maskil: A Birthday Tribute for David Noel Freedman,*. Edited by W. H. C. Propp and R. E. Friedman, pp. 63-89. Winona Lake, IN: Eisenbrauns Books.

Levy, T. E., R. B. Adams, M. Najjar, A. Hauptmann, J. M. Anderson, B. Brandl, M. Robinson, and T. Higham. 2004. Reassessing the Chronology of Biblical Edom: New Excavations and 14C dates from Khirbet en-Nahas (Jordan), 2002. *Antiquity* 78:863-876.

Levy, T. E., R. B. Adams, and R. Shafiq. 1999. Jebal Hamrat Fidan Project: Excavations at the Wadi Fidan 40 Cemetery, Jordan (1997). *Levant* 31:293-308.

Levy, T. E., R. B. Adams, A. J. Witten, J. Anderson, Y. Arbel, S. Kuah, J. Moreno, A. Lo, and M. Waggoner. 2001. Early Metallurgy, Interaction, and Social Change: The Jabal Hamrat Fidan (Jordan) Research Design and 1998 Archaeological Survey: Preliminary Report. *Annual of the Department of Antiquities of Jordan* 45:159-187.

Levy, T. E., and D. Alon. 1987. "Settlemant patterns along the Nahal Beersheva- Lower Nahal Besor: Models of Subsistence in the Northern Negev," in *Shiqmim I: Studies Concerning Chalcolithic Societies in the Northern Negev Desert, Israel (1982-1984)*. Edited by T. E. Levy, pp. 45-138. Oxford: BAR International Series 356.

Levy, T. E., D. Alon, P. Smith, Y. Yekutieli, Y. Rowan, P. Goldberg, N. Porat, E. C. Van Den Brink, A. J. Witten, J. Golden, C. Grigson, E. Kansa, L. Dawson, A. Holl, J. Moreno, and M. Kersel. 1997. Egyptian-Canaanite Interaction at Nahal Tillah, Israel (ca. 4500 - 3000 B.C.E.): An Interim Report on the 1994 - 1996 Excavations. *Bulletin of the American Schools of Oriental Research* 307:1 - 51.

Levy, T. E., J. M. Anderson, M. Wagonner, N. G. Smith, A. Muniz, and R. B. Adams. 2001. Interface: Archaeology and Technology- Digital Archaeology 2001: GIS-Based Excavation Recording in Jordan. *The SAA Archaeological Record* 1:23-29.

Levy, T. E., M. Daviau, R. Younker, and M. Shaer. Editors. 2007. *Crossing Jordan - North American Contributions to the Archaeology of Jordan*. London: Equinox.

Levy, T. E., T. Higham, and M. Najjar. 2006. Response to van der Steen & Bienkowski. *Antiquity* 80 (307):3-5.

Levy, T. E., T. Higham, C. Bronk-Ramsey, N. G. Smith, E. Ben Yosef, M. Robinson, S. Munger, K. Knabb, J. Schultz, M. Najjar, and L. Tauxe. 2008. High Precision Radiocarbon Dating and Historical Biblical Archaeology in Southern Jordan. *Proceedings of the National Academy of Science* 43.

Levy, T. E., and A. F. C. Holl. 2002. Migrations, Ethnogenesis, and Settlement Dynamics: Israelites in Iron Age Canaan and Shuwa-Arabs in the Chad Basin. *Journal of Anthropological Archaeology* V21:83-118.

Levy, T. E., A. Levy, R. Sthapathy, S. Sthapathy, and S. Sthapathy. 2008. *Masters of Fire - Hereditary Bronze Casters of South India*. Bochum: German Mining Museum.

Levy, T. E., and N. Menachem. 1987. "The Ceramic Industry at Shiqmim: Typological and Spatial Consideration," in *Shiqmim*. Edited by T. E. Levy, pp. 313-331. Oxford: BAR International Series.

Levy, T. E., and M. Najjar. 2006. Edom and Copper - The Emergence of Ancient Israel's Rival. *Biblical Archaeology Review* 32:24-35, 70.

Levy, T. E., M. Najjar, and T. Higham. 2007. Iron Age Complex Societies, Radiocarbon Dates and Edom: Working with the Data and Debates. *Antiguo Oriente* 5:13-34.

Levy, T. E., M. Najjar, J. van der Plicht, N. G. Smith, H. J. Bruins, and T. Higham. 2005. "Lowland Edom and the High and Low Chronologies: Edom State Formation, the Bible and Recent Archaeological Research in Southern Jordan," in *The Bible and Radiocarbon Dating: Archaeolog Text and Science*. Edited by T. E. Levy and T. Higham, pp. 129-163. London: Equinox.

Levy, T. E., and N. G. Smith. 2007. "On Site Digital Archaeology: Gis Based Excavation Recording in Southern Jordan," in *Crossing the Jordan- North American Contributions to the Archaeology of Jordan*. Edited by T. E. Levy, M. Daviau, R. Younker, and M. M. Shaer, pp. 47-58. London: Equinox.

Levy, T. E., and E. C. M. van den Brink. 2002. "Interaction Models, Egypt and the Levantine Periphery," in *Egypt and the Levant - Interrelations from the 4th Through the Early 3rd Millennium BCE*, *New Approaches to Anthropological Archaeology*. Edited by E. C. M. van den Brink and T. E. Levy, pp. 3 - 38. London and New York: Continuum.

Lienhardt, P. Editor. 2001. *Shaikhdoms of Eastern Arabia*. New York: PAlgrave.

Lindner, M., Farajat, S. and Zeitler, J.P. 1988. Es-Sadeh: An Important Edomite-Nabatean Site in Southern Jordan - Preliminary Report. *Annual of the Department of Antiquities Jordan* 32:75-99.

Lindner, M. 1992. "Edom Outside the Famous Excavations: Evidence from Surveys in the Greater Petra Area," in *Early Edom and Moab - The Beginning of the Iron Age in Southern Jordan*, vol. 7, *Monograph*. Edited by P. Bienkowski, pp. 143-166. Sheffield: J.R. Collis Publications.

Lindner, M., Knauf, E. A. , Zeitler, J.P. 1996. An Edomite Fortress and A Late Islamic Village Near Petra (Jordan): Khirbat al Mu'allaq. *Annual of the Department of Antiquities.* XL:111-136.

Lindner, M., Knauf, E. A. , Zeitler, J.P., Hubel, H. 1996. Jabal al-Qseir: A Fortified Iron II (Edomite) Mountain Stronghold in Southern Jordan, Its Pottery and its Historical Context. *Annual of the Department of Antiquities.* XL:137-166.

Lindner, M., E.A. Knauf. 1997. Between the Plateau and the Rocks: Edomite Economic and Social Structure. *SHAJ* 6:261-264.

Lindner, M., E.A. Knauf, J. Hübl, and P. Zeitler. 1997. An Iron Age (Edomite) Occupation of Jabal al-Khubtha (Petra) and Other Discoveries on the "Mountain of Treachery and Deceit". *Annual of the Department of Antiquities Jordan* 41:177-188.

Lindner, M., E.A. Knauf, U. Hubner, and J. Hübl. 1998. From Edomite to Late Islamic: Jabal As-Suffaha, North of Petra. *Annual of the Department of Antiquities of Jordan* 42:225-240.

Lindner, M. a. F., S. 1987. An Edomite Mountain Stronghold North of Petra (Ba'ja III). *Annual of the Department of Antiquities of Jordan* 32:175-185.

Lindner, M. K., E. A. ;Hubner, U.; Hubl, Johanes. 1998. From Edomite to Late Islamic: Jabal As-Suffaha North of Petra. *Annul of the Department of Antiquities of Jordan* XLII:225-254.

Lines, J. 1954. Late Assyrian Pottery from Nimrud. *Iraq* 16:164-167.

Lockwood, W. G. 1984. *Beyond Ethnic Boundaries: New Approaches in the Anthropology of Ethnicity*. Ann Arbor, MI: Dept. of Anthropology, University of Michigan.

London, G. 1989. A Comparison of Two Contemporaneous Lifestyles of the Late Second Millennium B.C. *BASOR* 273:37-55.

—. 1995. Decoding Designs: The Late Third Millennium B.C. Pottery from Jebel Qa^{c}aqir. Dissertation, The University of Arizona

Longacre, W. A. 1991. "Ceramic Ethnoarchaeology: An Introduction," in *Ceramic Ehtnoarchaeology*. Edited by W. A. Longacre, pp. 95-111. Tucson: University of Arizona ress.

—. 1991b. "Sources of Ceramic Variability among the Kalinga of Northern Luzon," in *Ceramic Ethnoarchaeology*. Edited by W. A. Longacre, pp. 95-111. Tucson: University of Arizona Press.

Lugenbeal, E. N., and J. A. Sauer. 1972. Seventh-sixth Century B.C. Pottery from Area B at Heshbon. *Andrews University Seminary Studies* 10:21-69.

Lumsden, S. 1999. " Neo-Assyrian Pottery from Ninivah," in *Iron Age Pottery on Northern Mesopotamia, Northern Syria and South-Eastern Anatolia*. Edited by A. Hausleiter and A. Reiche, pp. 3-15. Munster: Ugarit-Verlag.

Lundbom, J. R. 1992. "Jeremiah," in *Anchor Bible Dictionary*, vol. III. Edited by D. N. Freedman, pp. 684698. New York: Doubleday.

Lyman, R. L., M. J. O'Brian, and R. Dunnell. 1997. *The Rise and Fall of Culture History*. New York: Plenum.

Maag, V. 1957. Jacob-Esau-Edom. *ThZ* 13:418-29.

MacDonald, B. 1988. *The Wadi el Hasa Archaeological Survey, 1979-1983, west-central Jordan*. Waterloo, Ont., Canada: W. Laurier University Press.

—. 1992. "Evidence from the Wadi el-Hasa and Southern Ghors and Northeast Arabah Archaeological Surveys.," in *Early Edom and Moab: The Beginning of the Iron Age in Southern Jordan*, *SAM 7*. Edited by P. Bienkowski, pp. 113 - 42. Sheffield: J.R. Collis Publications.

—. 1996. Survey and Excavation: A Comparison of Survey and Excavation Results from Sites of the Wadi al-Hasa and the Southern al-Aghwar and Northeast 'Arabah Archaeological Surveys. *ADAJ* 40:323-337.

—. 1997. Serial Photography and the Southern Ghors (al-Aghwar) and Northeast 'Arabah Archaeological Survey. *SHAJ* 6:93-95.

—. 2000. *"East of the Jordan": Territories and Sites of the Hebrew Scriptures*. Boston: American Schools of Oriental Research.

—. 2004. *The Tafila-Busayra Archaeological Survey 1999-2001, West-central Jordan*. *American Schools of Oriental Research archaeological reports, no. 08*. Boston, MA: American Schools of Oriental Research.

MacDonald, B., R. Adams, and P. Bienkowski. Editors. 2001. *The Archaeology of Jordan*. Sheffield: Sheffield Academic Press.

MacDonald, B., and e. al. 1987. Southern Ghors and Northeast 'Arabah Archaeological Survey 1986, Jordan: Apreliminary Report. *Annual of the Department of Antiquities of Jordan* 31:391-418.

—. 1988. *The Wadi al-Hasa Archaeological Survey 1979-1983, West-Central Jordan*. Waterloo, ON: Wilfrid Laurier University.

MacDonald, B., and K. Amr. 1992. *The Southern Ghors and Northeast Arabah Archaeological Survey*. *Sheffield Archaeological Monographs, 5*. Sheffield, [England]: J.R. Collis Publications.

MacEachern, A. S. 1998. "State Formation and Enslavement in Northern Cameroon and Northeastern Nigeria," in *West Africa during the Slave Trade: Archaeological and Historical Perspectives*. Edited by C. DeCorse. Washington D.C: Smithsonian Institution Press.

Maceachern, S. 1998. "Scale, Style and Cultural Variation: Technological Traditions in the Northern Mandara Mountains," in *The Archaeology of Social Boundaries*, *Smithsonian Series in Archaeological Inquiry*. Edited by M. T. Stark, pp. 107-131. Washington, [D.C.]: Smithsonian Institution Press.

Mara, H. e. a. 2004. "The Uniformity of Wheel Produced Pottery Deduced from 3D Image Processing and Scanning," in *Digital Imaging in Media and Education, Proc. of the 28th Workshop of the Austrian Association for Pattern Recognition (OAGM)*. Edited by W. Burger and J. Scharinger, pp. 197-204. Hagenberg, Austria.

Marchbanks, M. L. 1989. Lipid Analysis in Archeology: An Initial Study of Ceramics and Substance at the George C. Davis. Masters Thesis, University of Texas at Austin.

Marcus, J. 1993. "Ancient Maya Political Organization," in *Lowland Maya Civilization in the Eighth Century A.D. : A Symposium at Dumbarton Oaks, 7th and 8th October 1989*. Edited by J. A. Sabloff and J. S. Henderson, pp. 111-184. Washington, D.C.: Dumbarton Oaks Research Library and Collection.

—. 1998. "The Peaks and Valleys of Ancient States: An Extension of the Dynamic Model," in *Archaic States*, 1st edition, *School of American Research advanced*

seminar series. Edited by G. M. Feinman and J. Marcus, pp. 59-95. Santa Fe, N.M.: School of American Research Press.

—. 2003. Recent Advances in Maya Archaeology. *Journal of Archaeological Research* 11:71-148.

—. 2004. "Primary and Secondary State Formation in Southern Mesoamerica," in *Understanding Early Classic Copan*. Edited by E. E. Bell, M. A. Canuto, and R. J. Sharer, pp. 357-374. Philadelphia: University of Pennsylvania.

Marcus, J., and G. M. Feinman. 1998. "Introduction," in *Archaic States*. Edited by G. M. Feinman and J. Marcus, pp. 3-13. Santa Fe: SAR Press.

Marcus, J., and K. V. Flannery. 1996. *Zapotec Civilization: How Urban Society Evolved in Mexico's Oaxaca Valley*. London: Thames and Hudson.

Marx, E. 1967. *Bedouin of the Negev*. New York: Praeger.

Master, D. 2001. State Formation Theory and the Kingdom of Ancient Israel. *Journal of Near Eastern Studies* 60:117-31.

Matson, F. R. 1965. "Ceramics Queries," in *Ceramics and Man*, *Viking Fund publications in anthropology, no. 41*. Edited by F. R. Matson and R. Wenner-Gren Foundation for Anthropological, pp. 277-287. Chicago: Aldine Pub. Co.

Mattingly, D., P. Newson, J. Grattan, R. Tomber, G. Barker, D. Gilbertson, and C. Hunt. 2007. "The Making of early states: the Iron Age and Nabatean periods," in *Archaeology and Desertification - The Wadi Faynan Landscape Survey, Southern Jordan*, vol. 2, *Wadi Faynan Series*. Edited by G. Barker, D. Gilbertson, and D. Mattingly, pp. 271-303. Oxford: Oxbow Books.

Mayes, A. R. 1989. *The Old Testament in Sociological Perspective*. London: Marshall Pickering.

Mazar, A. 1985. *Excavations at Tell Qasile, Part Two. Various Finds, The Pottery, Conclusions, Appendices*. *Qedem 20*. Jerusalem: Institute of Archaeology, Hebrew University in Jerusalem.

—. 1997. Iron Age Chronology: A Reply to I. Finkelstein. *Levant* 29:157-167.

Mazar, A., N. Panitz-Cohen, and N. Applbaum. 2001. *Timnah (Tel Batash) II : The Finds from the First Millennium BCE*. *Qedem, 42*. [Jerusalem]: Institute of Archaeology, Hebrew University of Jerusalem.

Mazar, A., and E. Stern. 1990. *Archaeology of the Land of the Bible*. *The Anchor Bible Reference Library*. New York: Doubleday.

Mazar, B., Dothan, T. and Dunayevsky, I. 1966. The First and Second Seasons of Excavations 1961. *Atiqot* V.

Mazar, E. 1985. Edomite Pottery at the End of the Iron Age. *IEJ* 35:253-269.

McAnany, P. A. 1995. *Living with the Ancestors: Kinship and Kingship in Ancient Maya Society*. Austin: University of Texas Press.

McCarter, P. K. J. 1996. *Ancient Inscriptions Voices from the Biblical World*. Washington D.C.: Biblical Archaeology Society.

Meshel, Z. 1973. Survey in the Negev. *HA* 45:39-40.

—. 1990. *Neve Yotvatah*. Jerusalem.

—. 2002. "Does Negebite Ware Reflect the Character of Society in the Israelite Period?," in *Aharon Kepinski Memorial Volume: Studies in Archaeology and Related Disciplines*. Edited by E. D. Oren and S. Ahituv, pp. 283-300. Beersheba: Ben Gurion University Press.

Micheal, D. 2007. "An Ethnoarchaeological Perspective on Local Ceramic Production and Distribution in the Maya Highlands," in *Pottery Economics in Mesoamerica*. Edited by C. A. Pool and G. J. Bey, pp. 39-58. Tucson: University of Arizona Press.

Millard, A. R. 1992. "Assyrian Involvement in Edom," in *Early Edom and Moab - The Beginning of the Iron Age in Southern Jordan*. Edited by P. Bienkowski, pp. 35 - 39. Sheffield: J.R. Collis Publications.

Miller, D. 1985. *Artifacts as Categories: A Study of Ceramic Variability in Central India*. *New Sudies in Achaeology*. Cambridge; New York: Cambridge University Press.

—. 1987. *Material Culture and Mass Consumption*. *Social Archaeology*. Oxford, OX, UK; New York, NY, USA: B. Blackwell.

Miller, J. M. Editor. 1989. *Archaeological Survey of the Kerak Plateau*. Atlanta: Scholars Press.

Miller, R. D. 2005. *Chieftains of the Highland Clans: A History of Israel in the Twelfth and Eleventh centuries B.C*. *The Bible in its World*. Grand Rapids, Mich.: William B. Eerdmans.

Mohr-Chavez, K. L. 1992. "The Organization of Production and Distribution of Traditional Pottery in South Highland Peru," in *Ceramic Production and Distribution: An Integrated Approach*. Edited by G. J. Bey and C. A. Pool. Boulder: Westview Press.

Mommsen, H., I. Perlman, and Y. Yellin. 1984. The Provenience of the LMLK Jars. *Israel Exploration Journal* 34:89-113.

Moore, C. B. 1974. "Reconstructing Complex Societies: An Archaeological Colloquium." *Cambridge Archaeology, Seminar, [Cambridge, Mass.], 1974*.

Moreland, J. 2001. *Archaeology and Text*. *Duckworth Debates in Archaeology*. London: Duckworth.

Morris, I. 1997. "An Archaeology of Equalities? The Greek City-States," in *The Archaeology of City-states: Cross-cultural Approaches*, *Smithsonian series in archaeological inquiry*. Edited by D. L. Nichols and T. H. Charlton, pp. 91-106. Washington: Smithsonian Institution Press.

—. 1999. "Negotiated Peripherality in Iron Age Greece: Accepting and Resisting the East," in *World-systems Theory in Practice: Leadership, Production, and Exchange*, *American Anthropological Association Meeting*. Edited by P. N. Kardulias, pp. 63-84. Lanham, Md.: Rowman & Littlefield Publishers.

Mullen, E. T. 1993. *Narrative History and Ethnic Boundaries: The Deuteronomistic Historian and the Creation of Israelite National Identity*. Atlanta, Ga.: Scholars Press.

Mundy, M. 1995. *Domestic Government: Kinship, Community and Polity in North Yemen*. *Society and Culture in the Modern Middle East.* New York, NY: I.B. Tauris; In the U.S.A. and in Canada distributed by St. Martin's Press.

Musil, A. 1907. *Arabia Petraea. I. Moab; II . Edom: Topograischere Reisebricht*. Wien: Alfred Holder.

Na’aman, N. 1979. The Brook of Egypt and Assyrian Policy on the Border of Egypt. *Tel Aviv* 6:68-90.

Na'aman, N. 1996. "Sources and Composition in the History of David," in *The Origins of the Ancient Israelite States*, *Journal for the study of the Old Testament, 228*. Edited by V. Fritz and P. R. Davies, pp. 170-186. Sheffield, Eng.: Sheffield Academic Press.

Na'aman, N., and T.-S. Y. 2006. Dating and the Appearance of Imitations of Assyrian Ware in Southern Palestine. *Tel Aviv* 33 (1):61-82.

Naveh, J. 1962. The Excavations at Mesad Hashavyahu, Preliminary Report. *IEJ* 12:89-113.

—. 1982. *Early History of the Alphabet*. Jerusalem: Magnes Press.

Nicholson, P. T., and H. L. Patterson. 1992. "Ballas Pottery Project: Ethnoarchaeology in Upper Egypt," in *Ceramic Production and Distribution: An Integrated Approach*. Edited by G. J. Bey and C. A. Pool, pp. 25-132. Boulder: Westview Press.

Oakshott, M. F. 1978. "A Study of the Iron Age II Pottery of East Jordan with Special Reference to Unpublished Material from Edom," University of London Institute of Archaeology.

—. 1983. "The Edomite Pottery.," in *Midian, Moab and Edom: The History and Archaeology of Late Bronze and Iron Age Jordan and North-West Arabia.* Edited by J. F. A. Sawyer and D. J. A. Clines. Sheffield: JSOT Press.

Oates, D. 1959. *Fort Shalmaneser: An Interim Report*. London.

Oded, B. 1970. Observations on Methods of Assyrian Rule in Transjordania after the Palestinian Campaign of Tiglath-Pileser III. *JNES* 29:177-186.

—. 1979. *Mass Deportations and Deportees in the Neo-Assyrian Empire*. Wiesbaden: Reichert.

Odum, E. P. 1971. *Fundamentals of Ecology*. Philadelphia: W.B. Saunders.

Orni, E., and E. Efrat. 1971. *Geography of Israel*. New York: American Heritage Press.

Ozment, K. 1999. Journey to the Copper Age. *National Geographic* 195:70-79.

Palmer, C. 2007. "The Wadi Faynan Today: Landscape, Environment, People," in *Archaeology and Desertification: The Wadi Faynan Landscape Survey, Southern Jordan*. Edited by G. Barker, D. Gilbertson, and D. Mattingly. Oxford: Oxbow Books.

Parker, B. J. 1997a. "The Northern Frontier of Assyria: An Archaeological Perspective," in *Assyria 1995*. Edited by R. Parpola. S. and Whiting. Helsinki: The Neo – Assyrian Text Corpus Project.

—. 1997b. Garrisoning the Empire: Aspects of the Construction and Maintenance of Forts on the Assyrian Frontier. *Iraq LIX*:77-87.

—. 2001. "The Mechanics of Empire: The Northern Frontier of Assyria as a Case Study in Imperial Dynamics." *The Neo-Assyrian Text Corpus Project, Helsinki, 2001*.

Parkinson, W. A., and M. L. Galaty. 2007. Secondary States in Perspective: An Integrated Approach to State Formation in the Prehistoric Aegean. *American Anthropologist* 109.

Parr, P. J. 1992. "Edom and the Hejaz," in *Early Edom and Moab: The Beginning of the Iron Age in Southern Jordan,*. Edited by P. Bienkowski, pp. 41-46. Sheffield: J.R. Collis Publications.

Peacock, D. P. S. 1982. *Pottery in the Roman World: An Ethnoarchaeological Approach*. London: Longman.

Pecirkova, J. 1987. The Administrative Methods of Assyrian Imperialism. *Archiv Orientalni* 55:162-175.

Peel, J. D. Y. 2000. "Yoruba as a City-State Culture," in *A Comparative Study of Thirty City-state Cultures: An Investigation*, *Historisk-filosofiske Skrifter*. Edited by M. H. Hansen, pp. 507-518. Copenhagen: Kongelige Danske Videnskabernes Selskab.

Philips, P. 1958. Application of the Wheat-Gifford-Wasley Taxonomy to Eastern Ceramics. *American Antiquity* 24:117-25.

Plog, S. 1990. "Sociopolitical Implications of Stylistic Variation in the American Southwest," in *The Uses of Style in Archaeology*, *New directions in archaeology*. Edited by M. W. Conkey and C. A. Hastorf, pp. 61-72. Cambridge [England]; New York: Cambridge University Press.

Pool, C. A., and G. J. Bey. 2007. "Conceptual Issues in Mesoamerican Pottery Economics," in *Pottery Economics in Mesoamerica*. Edited by C. A. Pool and G. J. Bey, pp. 1-38. Tucson: University of Arizona Press.

Porat, N. 1989. Composition of Pottery--Application to the Study of the Interrelations Between Canaan and Egypt During the 3rd Millennium B.C. Ph.D., Hebrew University of Jerusalem.

Porter, B. W. 2004. Authority, Polity, and Tenuous Elites in Iron Age Edom (Jordan). *Oxford Journal of Archaeology* 23:373 - 395.

Possehl, G. L. 1998. "Sociocultural Complexity Without the State: The Indus Civilization," in *Archaic States*. Edited by G. M. F. a. J. Marcus, pp. 261-291. Santa Fe: School of American Research Press.

Postgate, J. N. 1974. *Taxation and Conscription in the Assyrian Empire*. Rome: Biblical Institute Press.

—. 1992. Land of Assur and the Yoke of Assur. *World Archaeology* 23:247-63.

Pratico, G. D. 1983. Tel el-Kheleifeh 1937-1940. PhD, Harvard

—. 1985. Nelson Glueck's 1938-1940 Excavations at Tell el-Kheleifeh: A Reappraisal. *Bulletin American Schools of Oriental Research* 259:1-32.

—. 1993. *Nelson Glueck's 1938 - 1940 Excavations at Tell el-Kheleifeh - A Reappraisal*. Vol. 3. *American Schools of Oriental Research*. Atlanta: Scholars Press.

Prayer, J., and C. Carr. 1995. "Basketry of Northern Californian Indians: Interpreting Style Heirarchies," in *Style, Society, and Person: Archaeological and Ethnological Perspectives*. Edited by C. Carr and J. E. Neitzel, pp. 259-296. New York: Plenum Press.

Price, B. J. 1978. "Secondary State Formation: An Explanatory Model," in *Origins of State The Anthropology of Political Evolution*. Edited by R. Cohen and E. R. Service, pp. 161-186. Philadelphia: Institute for the Study of Human Issues.

Pritchard, J. B. 1969. *Ancient Near Eastern Texts Relating to the Old Testament* 3edition. Princton, NJ: Princton University Press.

Pryor, J., and C. Carr. 1995. "Basketry of Northern California Indians: Interpreting Style Hierarchies," in *Style, Society, and Person: Archaeological and Ethnological Perspectives*, *Interdisciplinary Contributions to Archaeology*. Edited by C. Carr and J. E. Neitzel, pp. 259-296. New York: Plenum Press.

Raabe, P. R. 1996. *Obadiah: A New Translation with Introduction and Commentary*. New York: Doubleday.

Rabb'a, I. 1994. *The Geology of the Al Qurayqira (Jabal Hamra Faddan) Map Sheet No. 3051 II.* Amman: Geology Directorate Geological Mapping Division Bulletin 28.

Raikes, T. 1980. Notes on Some Neolithic and Later Sites in Wadi Araba and the Dead Sea Valley. *Levant* 12:40-60.

Rainey, A. F. 2001. Israel in Mereneptah's Inscription and Reliefs. *Israel Exploration Journal* 51:57 - 75.

Rast, W. E., and R. T. Schaub. 1974. Survey of the Southeastern Plain of the Dead Sea, 1973. *Annual of the Department of Antiquities of Jordan* 19:5-53.

Ray, P. J. J. 2001. "Tell Hesban and Vicinity in the Iron Age," in *Heshbon* vol. 6. Berrien Springs: Andrews University.

Reich, R. 1992. "Palaces and Residencies in the Iron Age," in *The Architecture of Ancient Israel - From the Prehistoric to the Persian Periods*. Edited by A. Kempinski and R. Reich, pp. 202-222. Jerusalem: Israel Exploration Society.

Renfrew, C. 1972. *The Emergence of Civilization: The Cyclades and the Aegean in the Third Millennium B.C*. London: Methuen.

—. 1977. "Descriptive Models of Exchange," in *Exchange Systems in Prehistory*. Edited by T. K. Earle and J. E. Erickson, pp. 71-90. New York: Academic Press.

—. 1982. "Polity and Power: Interaction, Intensification and Exploitation," in *An Island Polity: The Archaeology of Exploitation in Melos*. Edited by C. Renfrew and M. Wagstaff, pp. 264-90. Cambridge: Cambridge University Press.

—. 1996. "Peer Polity Interaction and Socio-political Change," in *Contemporary Archaeology in Theory*. Edited by R. W. Preucel and I. Hodder, pp. 114-142. Oxford; Cambridge, Mass.: Blackwell.

Renfrew, C., and P. G. Bahn. 2008. *Archaeology: Theories, Methods and Practice*. London: Thames & Hudson.

Renfrew, C., and J. F. Cherry. Editors. 1986. *Peer Polity Interaction and Socio-Political Change*. Cambridge: Cambridge University Press.

Renfrew, C., M. J. Rowlands, and B. A. Segraves. Editors. 1982. *Theory and Explanation in Archaeology: The Southhampton Conference*. New York: Academic Press.

Rice, P. M. 1987. *Pottery Analysis : A Sourcebook*. Chicago: University of Chicago Press.

—. 1991. "Specialization, Standardization, and Diversity: A Retrospective," in *The Ceramic Legecy of Anna O. Shepard*. Edited by B. R. L. a. F. W. Lange, pp. 257-279. Niwot: University Press of Colorado.

—. 1996. Ceramic Analysis: 2. Composition, Production, and Theory. *JOURNAL OF ARCHAEOLOGICAL RESEARCH* 4:133-163.

Rogoff, B. 1990. *Apprenticeship in Thinking: Cognitive Development in Social Context*. New York: Oxford University Press.

Roosens, E. 1994. "The Primordial Nature of Origins in Migrant Ethnicity," in *The Anthropology of Ethnicity: Beyond "Ethnic Groups and Boundaries"*. Edited by H. Vermeulen and C. Govers, pp. 81-104. Amsterdam; Hague, Netherlands: Spinhuis ; Distribution outside The Netherlands, M. Nijhoff International.

Rose, M. 1977. Yaweh in Israel- Qaus in Edom? . *JSOT* 3:28-34.

Rosen, S. A. 1988. A Preliminary Note on the Egyptian Component of the Chipped Stone Assemblage from Tel Erani. *Israel Exploration Journal* 38:105-116.

Rothenberg, B. 1972. *Timna: Valley of the Biblical Copper Mines*. London: Thames and Hudson.

—. Editor. 1988. *The Egyptian Mining Temple at Timna*. Vol. I. London: Institute for Archaeo-metallurgical Studies.

—. 1999. Archaeo-metallurgical Researches in the Southern Arabah 1959 - 1990. Part 2: Egyptian New Kingdom (Ramesside) to Early Islam. *Palestine Exploration Quarterly* 131:149 - 175.

Rothenberg, B., and J. Glass. 1983. "The Midianite Pottery," in *Midian, Moab and Edom*. Edited by D. J. A. C. A. Sawyer, pp. 65-124. Sheffield: Journal for the Study of the Old Testament Supplement.

Rothman, M. S. 1994. "Introduction Part 1. Evolutionary Typologies and Cultural Complexities," in *Chiefdoms and Early States in the Near East : The Organizational Dynamics of Complexity*, *Monographs in World Archaeology*. Edited by G. Stein and M. S. Rothman, pp. 1-10. Madison, Wis.: Prehistory Press.

Routledge, B. 2000. The Politics of Mesha: Segmented Identities and State Formation in Iron Age Moab. *Journal of the Economic and Social History of the Orient* 43:221 - 56.

Routledge, B. E. 2004. *Moab in the Iron Age: Hegemony, Polity, Archaeology*. *Archaeology, Culture, and Society*. Philadelphia: University of Pennsylvania Press.

Roux, V. 2003. A Dynamic Systems Framework for Studying Technological Change: Application to the Emergence of the Potter's Wheel in the Southern Levant. *Journal of Archaeological Method and Theory* 10:1-30.

Rudich, D., and A. Danin. 1978. The Vegetation of the Hazeva Area, Israel. *Israel J. Bot.* 27:160.

S.E., V. d. L. 1977. "Towards a Study of the Economics of Pottery Making," in *Ex horreo*. Edited by B. L. v. Beek, R. W. Brant, and G. V. Watteringe, pp. 68-76 Amsterdam: A.E. van Giffen Instituut voor Praeen y Protohistorie, University of Amsterdam.

Sackett, J. R. 1982. Approaches to Style in Lithic Archaeology. *Journal of Anthropological Archaeology* 1:59-112.

—. 1985. "Style, Ethnicity and Stone Tools " in *Status, Structure, and Stratification: Current Archaeological Reconstructions*. Edited by M. Thompson, M. T. Garcia, F. J. Kense, and R. Tapper, pp. 277-282. Calgary, Alta., Canada: University of Calgary, Archaeological Association.

—. 1986. Isochrestism and Style: A Clarification. *Journal of Anthropological Archaeology* 5:266-277.

Sahlins, M. 1958. *Social Stratification in Polynesia*. Seattle: University of Washington Press.

—. 1961. Segmentary Lineage: An Organization of Predatory Expansion. *American Anthropologist* 63:322-345.

Salzman, P. C. 1983. "Why Tribes have Chiefs: A Case from Baluchistan," in *The Conflict of Tribe and State in Iran and Afghanistan*. Edited by R. Tapper, pp. 262-283. New York: St. Martin's Press.

—. 2000. *Black Tents of Baluchistan*. *Smithsonian Series in Ethnographic Inquiry.* Washington, DC: Smithsonian Institution Press.

Sanders, W. a. D. W. 1988. The Mesopotamian Urban Tradition. *American Anthropologist* 90:521-546.

Sanders, W. T. 1974. "Chiefdom to State: Political Evolution at Kaminaljuyu, Guatemala," in *Reconstructing Complex Societies: An Archaeological Colloquium*. Edited by C. B. Moore and R. American Schools of Oriental, pp. 97-116. Cambridge, Mass.: American Schools of Oriental Research.

Sauer, J. A. 1986. Transjordan in the Bronze and Iron Ages: A Critique of Glueck's Synthesis. *Bulletin of the American Schools of Oriental Research* 263:1-26.

Savage, S. 1997. Descent Group Competition and Economic Strategies in Predynastic Egypt. *Journal of Anthropological Archaeology* 16:226 - 268.

—. 2001. Some Recent Trends in the Archaeology of Predynastic Egypt. *Journal of Archaeological Research* 9:101 - 155.

Schacht, R. M. 1988. Circumscription Theory: A Critical Review. *American Behavioral Scientist* 31:438-448.

Schiffer, M. B. 1975. Behavioral Chain Analysis: Activities Organization and the Use of Space. *Fieldiana Anthropology* 65:103-119.

—. 1992. "A Framework for the Analysis of Activity Change," in *Technological Perspectives on Behavioral Change*. Edited by M. B. Schiffer, pp. 73-93. Tucson: University of Arizona Press.

—. 1992. *Technological Perspectives on Behavioral Change*. Tucson: The University of Arizona Press.

Schloen, J. D. 2001. *The House of the Father as Fact and Symbol: Patrimonialism in Ugarit and the Ancient Near East*. *Studies in the Archaeology and History of the Levant, 2*. Winona Lake, Ind.: Eisenbrauns.

Schneider, E. 1999. "“Assyrisch” Gefäßformen aus Tell Sheikh Hassan (Syrien) und ihre Stellung innerhalb der Keramik des assyrischen Einflußgebietes," in *Iron Age Pottery in Northern Mesopotamia, Northern mesopotamia, Northern Syria and South-Eastern Anatolia*. Edited by A. Hausleiter and A. Reich, pp. 347-375. Munster: Ugarit-Verlag.

Schortman, E., and P. Urban. 1994. Living on the Edge: Core-Periphery Relations in Ancient Southeastern Mesoamerica. *Current Anthropology* 35:401 - 430.

Schortman, E. M., and P. A. Urban. 1987. "Modeling Interregional Interaction in Prehistory," in *Advances in Archaeological Method and Theory*, vol. 11. Edited by M. B. Schiffer, pp. 37-97. San Diego Academic Press INC.

—. 1992. "The Place of Interaction Studies in Archaeological Thought," in *Resources, Power and Interregional Interaction*. Edited by E. M. Schortman and P. A. Urban, pp. 3-22. New York: Plenum Press.

Schreiber, N. 2003. *The Cypro-Phoenician Pottery of the Iron Age*. *Culture and history of the ancient Near East, v. 13*. Leiden; Boston: Brill.

Service, E. R. 1962. *Primitive Social Organization*. New York: Random House.

—. 1975. *Origins of the State and Civilization: The Process of Cultural Evolution*. New York: Norton.

Shahack-Gross, R., and I. Finkelstein. 2008. Subsistence Practices in an Arid Environment: A Geoarchaeological Investigation in an Iron Age Site, The Negev Highlands, Israel. *Journal of Archaeological Science* 35:965-982.

Shanks, M., and C. Tilley. 1987. *Reconstructing Archaeology*. Cambridge: Cambridge University Press.

Shennan, S. 1997. *Quantifying Archaeology*, 2nd edition. Edinburgh: Edinburgh University Press.

Shennan, S. J. 1989. "Introduction: Archaeological Approaches to Cultural Identity," in *Archaeological Approaches to Cultural Identity*, *One World Archaeology*. Edited by S. J. Shennan, pp. 1-32. London; Boston: Unwin Hyman.

Shepard, A. O. 1965. *Ceramics for the Archaeologist*. Washington: Carnegie Institute of Washington.

Shore, B. 1996. *Culture in Mind: Cognition, Culture, and the Problem of Meaning*. New York: Oxford University Press.

—. 1998. *What Culture Means, How Culture Means*. Worcester, Mass: Clark Univ. Press.

Shryock, A. 1997. *Nationalism and the Genealogical Imagination: Oral History and Textual Authority in Tribal Jordan*. *Comparative Studies on Muslim societies*. Berkeley: University of California Press.

Singer-Avitz, L. 1999. Bersheba- A Gateway Community in Southern Arabian Long-Distance Trade in the Eighth Century B.C.E. *Tel Aviv* 26:3-75.

—. 2002. Arad: Iron Age Pottery Assemblages. *Tel Aviv* 29:110-214.

—. 2004. Busayra Painted Ware at Tel Beersheba. *Tel Aviv* 29:110-214.

—. 2007. On Pottery in Assyrian Style: A Rejoiner. *Tel Aviv* 34 (2):182-203.

Skalnick, P. 1981. Positioning the Concept of State in Indigenous Africa. *Social Dynamics* 9:11-28.

Skalník, P. 1978. "The Early State as a Process," in *The Early State*, *New Babylon, studies in the social sciences*. Edited by H. J. M. Claessen and P. Skalník, pp. 597-618. The Hague: Mouton.

Skibo, J. M. 1992. *Pottery Function: A Use-alteration Perspective*. *Interdisciplinary Contributions to Archaeology*. New York: Plenum Press.

Slatkine, A. 1974. Petrographic Study of Ancient Pottery Sherds from Israel. *Museum Haaretz Yearbook* 15-16:101-111.

Small, D. B. 1997. Group Identification and Ethnicity in the Construction of the Early State of Israel: From the Outside Looking in. *JOURNAL FOR THE STUDY OF THE OLD TESTAMENT SUPPLEMENT SERIES*:271-291.

Smith, A. D. 2000. "Sacred Ethnicity: Managing Ethnicity," in *Managing Ethnicity: Perspectives from Folklore Studies, History and Anthropology*, *Studies on migration & ethnicity*. Edited by R. Bendix and H. Roodenburg, pp. 97-120. Amsterdam: Het Spinhuis.

Smith, M. E. 1986. The Role of Social Stratification in the Aztec Empire: A View from the Provinces. *American Anthropologist* 88:70-91.

Smith, M. E., F.F. Berdan. 1992. Archaeology and the Aztec Empire. *World Archaeology* 23:353-367.

Smith, M. E. a. M. G. H. 1994. "Introduction," in *Economies and Polities in the Aztec Realm*. Edited by M. G. H. a. M. E. Smith, pp. 1-42. Albany: Institute for Mesoamerican Studies, State University of New York.

Smith, N. G., and T. E. Levy. 2008. The Iron Age Pottery from Khirbat en-Nahas, Jordan. *BASOR* 352:41-91.

Smith, N. G. e. a. forthcoming. "Pottery Informatics - Web-based Archaeological Search Engine."

Snodgrass, A. M. 1977. *Archaeology and the Rise of the Greek State: An Inaugural Lecture*. Cambridge [Eng.]; New York: Cambridge University Press.

—. 1980. *Archaic Greece: The Age of Experiment*. London: J.M. Dent.

—. 1986. "Interaction by Design: The Greek City-state " in *Peer Polity Interaction and Socio-political Change*. Edited by C. Renfrew and J. F. Cherry, pp. 47-58. Cambridge [Cambridgeshire]; New York: Cambridge University Press.

Southall, A. 1956. *Alur Society*. Cambridge: W. Heffer and Sons.

Sparks, K. L. 1998. *Ethnicity and Identity in Ancient Israel*. Winona Lake, IN: Eisenbrauns.

Spaulding, A. C. 1953. Statistical Techniques for the Discovery of Artifact Types. *American Antiquity* 18:305-13.

—. 1960. "The Dimensions of Archaeology," in *Essays in the Science of Culture*. Edited by G. E. Dole and R. L. Carneiro, pp. 437 - 482. New York: Thomas Y. Crowell.

Spiro, M. E. 1987. "Collective Representations and Mental Representations in Religious Symbol Systems," in *Culture and Human Nature: Theoretical Papers of Melford E. Spiro*. Edited by B. Kilborne and L. L. Langness, pp. 161-184. Chicago: Chicago University Press.

Stager, L. E. 1985. Merenptah, Israel and Sea Peoples: New Light on an Old Relief. *Eretz-Israel* 18:56-64.

Stanish, C. 1997. Nonmarket Imperialism in the Pre-Hispanic Americas: The Inca Occupation of the Titicaca Basin. *Latin American Antiquity* 8:195-216.

Stark, M. T. 1998. *The Archaeology of Social Boundaries*. *Smithsonian Series in Archaeological Inquiry*. Washington, [D.C.]: Smithsonian Institution Press.

—. 1999. "Technical Choices and Social Boundaries in Material Culture Patterning: An Introduction," in *The Archaeology of Social Boundaries*, *Smithsonian Series in Archaeological Inquiry*. Edited by M. T. Stark, pp. 1-11. Washington, [D.C.]: Smithsonian Institution Press.

Stark, M. T. e. a. 1998. "Social Boundaries and Technical Choices in Tonto Basin Prehistory," in *The Archaeology of Social Boundaries*. Edited by M. T. Stark, pp. 208-231. Washington, [D.C.]: Smithsonian Institution Press.

Stern, E. 2001. *Archaeology of the Land of the Bible Volume II - the Assyrian, Babylonian and Persian Periods (732 - 332 B.C.E.* New York: Doubleday.

—. 2008. *The New Encyclopedia of Archaeological Excavations in the Holy Land, Supplementary Volume*. Vol. 5. Jerusalem and Washington D.C.: Israel Exploration Society and Biblical Archaeology Society.

Stone, E. 1997. "City-States and their Centers: The Mesopotamian Example," in *The Archaeology of City-states: Cross-cultural Approaches*, *Smithsonian series in archaeological inquiry*. Edited by D. L. Nichols and T. H. Charlton, pp. 15-26. Washington: Smithsonian Institution Press.

Stone, E. C. 1995. "The Development of Cities in Ancient Mesopotamia," in *Civilizations of the Ancient Near East I,*. Edited by J. Sasson, pp. 235-248. New York: Scribners Press.

Strauss, C., and Quinn N. 1994. "A Cognitive/Cultural Anthropology," in *Assessing Cultural Anthropology*. Edited by R. Borofsky, pp. 284-300. New York: McGraw-Hill.

Sumner, W. 1994. "The Evolution of Tribal Society in the Southern Zagros Mountains, Iran," in *Chiefdoms and Early States in the Near East : The Organizational*

Dynamics of Complexity, *Monographs in world archaeology*. Edited by G. Stein and M. S. Rothman, pp. 47-66. Madison, Wis.: Prehistory Press.

Tapper, R. 1983. "Introduction to Richard Tapper," in *The Conflict of Tribe and State in Iran and Afghanistan*. Edited by R. Tapper. London.

—. 1984. "Holier than Thou: Islam in Three Tribal Societies," in *Islam in Tribal Societies: From the Atlas to the Indus*. Edited by A. S. Ahmed and D. M. Hart, pp. 244-265. London; Boston: Routledge & Kegan Paul.

—. 1988. "Ethnicity, Order and Meaning in the Anthropology of Iran and Afghanistan," in *Le Fait ethnique en Iran et en Afghanistan*. Edited by J.-P. Digard. Paris.

—. 1990. "Anthropologists, Historians and Tribespeople on Tribe and State Formation in the Middle East," in *Tribes and State Formation in the Middle East*. Edited by P. S. Khoury and K. J., pp. 48-73. Berkley: University of California Press

Tappy, R. E. 1992. *The Archaeology of Israelite Samaria*. Vol. I. Atlanta, GA: Scholars Press.

—. 2001. *Archaeology of Israelite Samaria*. Vol. II. Winona Lake, Indiana: Eisenbrauns.

Tebes, J. M. 2006. Age “Negevite” Pottery: A Reassessment. *Antiguo Oriente* 4:95-118.

Thomas, D. H. 1986. *Refiguring Anthropology: First Principles of Probability & Statistics*. Vol. Waveland Press, Inc.: Prospects Heights.

Thompson, R. H. 1991. "The Archaeological Purpose of Ethnoarchaeology," in *Ethnoarchaeology*. Edited by W. A. Longacre, pp. 1-10. Tucon: University of Arizona Press.

Thompson, T. 2000. LESTER GRABBE AND HISTORIOGRAPHY: AN APOLOGIA. *Scandinavian Journal of the Old Testament* 14:140-161.

Tibi, B. 1990. "The Simultaneity of the Unsimultaneous: Old Tribes and Imposed Nation-States in the Modern MiddleEast " in *Tribes and State Formation in the Middle East*. Edited by P. S. Khoury and K. J., pp. 127-152. Berkeley: University of California Press.

Tilley, C. 1989. "Interpreting Material Culture," in *The Meanings of Things: Material Culture and Symbolic Expression*, *One world archaeology, 6*. Edited by I. Hodder. London; Boston: Unwin Hyman.

Toland, J. D. 1993. *Ethnicity and the State*. *Political and Legal Anthropology Series, v. 9*. New Brunswick, N.J.: Transaction Publishers.

Torrence, R. 1986. *Production and Exchange of Stone Tools: Prehistoric Obsidian in the Aegean*. *New studies in archaeology*. Cambridge [Cambridgeshire]; New York: Cambridge University Press.

Trigger, B. G. 1993. *Early Civilizations: Ancient Egypt in Context*. Cairo: American University in Cairo Press.

—. 1998. *Sociocultural Evolution - Calculation and Contingency*. Oxford: Blackwell Publisher.

Tufnell, O., M. A. Murray, and D. Diringer. 1953. *Lachish (Tell ed-Duweir) III : The Iron Age*. London [etc.]: Oxford University Press.

Tushingham, A. D. 1972. *The Excavations at Dibon in Moab: The Third Campaign 1952-53*. Cambridge: American Schools of Oriental Research.

Tuzin, D. F. 2001. *Social Complexity in the Making: A Case Study Among the Arapesh of New Guinea*. London; New York: Routledge.

Ussishkin, D. 2004. *The Renewed Archaeological Excavations at Lachish (1973 - 1994)*. Tel Aviv: Tel Aviv University Monograph No. 22.

van den Brink, E. C. M., and T. E. Levy. Editors. 2002. *Egypt and the Levant: Interrelations from the 4th through the Early 3rd Millennium B.C.E. New Approaches to Anthropological Archaeology*. London and New York: Leicester University Press.

van der Leeuw, S. E. 1977. "Towards a Study of the Economics of Pottery Making," in *Ex horreo*. Edited by B. L. v. Beek, R. W. Brant, and G. V. Watteringe, pp. 68-76. Amsterdam: A.E. van Giffen Instituut voor Praeen yProtohistorie, University of Amsterdam.

—. 1993. "Giving the Potter a Choice: Conceptual Aspects of Pottery Techniques.," in *Technoloigcal Choices: Transformation in Material Cultures Since the Neolithic*. Edited by P. Lemonnier, pp. 238-88. London and New York: Routledge.

van der Steen, E. 2006b. Old is the Kingdom of Edom? A Review of New Evidence and Recent Discussion. *Antiguo Oriente* 4:11-20.

van der Steen, E., and P. Bienkowski. 2006a. Radiocarbon Dates from Khirbat en-Nahas: A Methodological Critique. *Antiquity* 80 (307).

Vanderhooft, D. S. 1991. "The Edomite Dialect and Script: A Review of the Evidence," in *You Shall Not Abhor an Edomite for He is Your brother: Edom and Seir in History and Tradition*. Edited by D. V. Edelman. Atlanta: Scholars Press.

Vermeulen, H., and C. Govers. 1994. "Introduction," in *The Anthropology of Ethnicity: Beyond "Ethnic Groups and Boundaries"*. Edited by H. Vermeulen and C. Govers, pp. 1-10. Amsterdam; Hague, Netherlands: Spinhuis; Distribution outside The Netherlands, M. Nijhoff International.

Vita-Finzi, C., and E. S. Higgs. 1970. Prehistoric Economy in the Mt. Carmel Area of Palastine: Site Catchment Analysis. *Proceedings of the Prehistoric Society* 36:1-37.

Wallerstein, I. 1974. *The Modern World System I.* San Diego: Academic Press.

Ward, W. A. 1972. The Shasu "Bedouin." Notes on a Recent Publication. *Journal of the Economic and Social History of the Orient* 15:35-60.

Watson, P. J. 2008. "Processualism and After," in *Handbook of Archaeological Theories*. Edited by R. A. Bentley, H. D. G. Maschner, and C. Chippindale, pp. 29-38. Lanham, MD: AltaMira Press.

Webb, M. C. 1988. The First States: How or in What Sense-- Did " Circumscribtion" Circumscribe? *American Behavioral Scientist* 31:449-458.

Webster, D. 1975. Warfare and the Evolution of the State *American Antiquity* 40:464-71.

—. 1997. "City-States of the Maya " in *The Archaeology of City-states: Cross-cultural Approaches*, *Smithsonian series in archaeological inquiry*. Edited by D. L. Nichols and T. H. Charlton, pp. 135-154. Washington: Smithsonian Institution Press.

Webster, G. S. 2008. "Culture History: A Culture-Historical Approach," in *Handbook of Archaeological Theories*. Edited by R. A. Bentley, H. D. G. Maschner, and C. Chippindale, pp. 11-28. Lanham, MD: AltaMira Press.

Weippert, M. 1971. *The Settlement of the Israelite Tribes in Palestine; A Critical Survey of Recent Scholarly Debate*. *Studies in Biblical theology, 2d ser., 21*. Naperville, Ill.: A.R. Allenson.

—. 1982. Remarks on the History of Settlement in Southern Jordan during the Early Iron Age. *SHAJ* 1:153-162.

—. 1987. "The Relations of the States East of the Jordan with the Mesopotamian Powers during the First Millennium BC," in *Studies in the History and Archaeology of Jordan II1*. Edited by A. Hadidi, pp. 97-105. Amman: Department of Antiquities.

Welsh, R. L., and J. E. Terrell. 1998. "Material Culture, Social Fields, and Social Boundaries on the Sepik Coast of New Guinea," in *The Archaeology of Social Boundaries*, *Smithsonian Series in Archaeological Inquiry*. Edited by M. T. Stark, pp. 50-77. Washington, [D.C.]: Smithsonian Institution Press.

Wenke, R. J. 1997. "City States, Nation States, and Territorial States: The Problem in Egypt," in *The Archaeology of City-states: Cross-cultural Approaches*, *Smithsonian series in archaeological inquiry*. Edited by D. L. Nichols and T. H. Charlton, pp. 27-50. Washington: Smithsonian Institution Press.

Wheat, J. B., J.C. Gifford, and W.W. Wasley. 1958. Ceramic Variety Type Cluster, and Ceramic System in Southwestern Pottery Analysis. *American Antiquity* 24:34-47.

Whitbread, K. I. 1995. *Greek Transport Amphorae: A Petrological and Archaeological Study*. *Fitch Laboratory occasional paper*. Athens: British School at Athens.

Whiting, C. M. 2007. *Complexity and Diversity in the Late Iron Age Southern Levant: The Investigations of 'Edomite' Archaeology and Scholarly Discourse*. *BAR international series*. Oxford: Archaeopress.

Wiessner, P. 1983. Style and Social Information in Kalahari San Projectile Points. *American Antiquity* 48:253-276.

—. 1985. Style or Isochrestic Variation? A Reply to Sackett. *American Antiquity* 50:160-166.

—. 1990. "Is There a Unity to Style?," in *The Uses of Syle in Achaeology*, *New directions in archaeology*. Edited by M. W. Conkey and C. A. Hastorf. Cambridge [England]; New York: Cambridge University Press.

Willey, G. R., and P. Phillips. 1958. *Method and Theory in American Archaeology*. Chicago: University of Chicago Press.

Wilson, D. J. 1995. *Prehispanic Settlement Patterns in the Casma Valley, North Coast of Peru*. National Geographic Society.

Wilson, R. R. 1977. *Genealogy and History in the Biblical World*. *Yale Near Eastern Researches*. New Haven: Yale University Press.

Wobst, H. M. 1977. "Stylistic Behavior and Information Exchange," in *For the Director: Research Essays in Honor of James B. Griffin*. Edited by C. E. Cleland and J. B. Griffin. Ann Arbor: Museum of Anthropology, University of Michigan.

Wright, H. T. 1986. "The Susiana Hinterlands during the Era of Primary State Formation," in *The Archaeology of Western Iran*. Edited by F. Hole. Washington D.C.: Smithsonian Institution Press.

—. 1998. "Urak States in Southwestern Iran," in *Archaic States*, 1st edition, *School of American Research advanced seminar series*. Edited by G. M. Feinman and J. Marcus, pp. 173-198. Santa Fe, N.M.: School of American Research Press.

Wright, H. T., and G. A. Johnson. 1975. Population, Exchange, and Early State Formation in Southwestern Iran *American Anthropologist* 77:267-89.

Yadin, Y. A., Y.; Amiran, R.; Dothan, T.; Dothan, M.; Dunayevsky, I.; and Perrot, J. 1960. *Hazor II: An Account of the Second Season of Excavations, 1956*. Jerusalem: Magnes.

—. 1961. *Hazor III: An Account of the Third and Fourth Seasons of Excavations, 1957-1958 Plates VOl.* Jerusalem: Magnes.

Yoffee, N. 2005. *Myths of the Archaic State: Evolution of the Earliest Cities, States and Civilizations*. Cambridge, UK ; New York: Cambridge University Press.

Yoffee, N., and G. L. Cowgill. Editors. 1988. *The Collapse of Ancient States and Civilizations*. Tucson: The University of Arizona Press.

Younker, R. W. 1997. Moabite Social Structure. *Biblical Archaeologist* 60:237 - 48.

Zeder, M. 1994. "Of Kings and Shepherds: Specialized Animal Economy in Ur III Mesopotamia," in *Chiefdoms and Early States in the Near East : The Organizational Dynamics of Complexity*, *Monographs in world archaeology*. Edited by G. Stein and M. S. Rothman, pp. 175-192. Madison, Wis.: Prehistory Press.

Zeitler, J. P. 1992. "'Edomite' Pottery from the Petra Region," in *Edom and Moab: The Beginning of the Iron Age in Southern Jordan*, vol. 7, *Sheffield Archaeological Monographs*. Edited by P. Bienkowski, pp. 167-176. Sheffield: Sheffield Academic Press.

Zimhoni, O. 1997. "Lachish Levels V and IV: Comments on the Material Culture of Judah in the Iron Age II in the Light of the Lachish Pottery Repertoire," in *Studies in the Iron Age Pottery of Israel: Typological, Archaeological and Chronological Aspects*. Edited by L. Singer-Avitz and D. Ussishkin, pp. 57-178. Tel Aviv: Tel Aviv University.

Zohary, M. 1962. *Plant Life of Palestine*. New York: The Ronald Press.