

MARITIME TRADE IN THE SOUTHERN LEVANT
FROM EARLIEST TIMES THROUGH THE MIDDLE
BRONZE IIA PERIOD

VOL. I: TEXT

A Thesis submitted to the University of Oxford
in Fulfillment of the Requirements
for the Degree of Doctor of Philosophy (D. Phil.)

Trinity Term 1998

EZRA S. MARCUS

Wolfson College

To the Breitsteins (Haifa) and the Hatters (London)
without whose support and affection this work would
never have been completed.

Abstract

Maritime Trade in the southern Levant from earliest times through the Middle Bronze IIA period

Ezra S. Marcus
Wolfson College
D.Phil., Trinity Term 1998

This thesis is a study of maritime trade along the southern Levantine littoral zone from earliest times until the Middle Bronze IIA period (ca. 1950-1750 BCE). Throughout antiquity this region served as a land and sea bridge for traffic between Egypt and the eastern Mediterranean and Near Eastern worlds. This work examines the impact of this seaborne traffic on the southern Levant and the increasing importance of maritime trade. Following the introductory first chapter, which outlines the goals of this work and its approach, Chapter Two examines the long-term commercial relationship between Egypt and the southern Levant, and demonstrates that the latter functioned as a primary and then a secondary supplier of raw materials, but always as a geographical intermediary for Egypt's foreign relations. With that relationship established and qualified, Chapter Three examines the terrestrial and maritime means of communication, and surveys the history of maritime activity in the southeastern Mediterranean, which reaches its first major peak in the Middle Bronze IIA period with the establishment of numerous ports. Chapter Four surveys the material evidence for this seminal period, examining the artifactual evidence for trade in its proper regional and chronological context. Chapter Five synthesizes this evidence and suggests a maritime commercial model for the growth of southern Levantine urban culture, and its material prosperity. It is argued that the growth of maritime trade was among the principal factors shaping southern Levantine coastal society, segments of which were drawn to settle in the Egyptian Delta, *inter alia*, by commerce and craft. Finally, it is suggested that the economic prosperity of these Deltaic Canaanites may have contributed to their successful usurping of political control from the Egyptians and their founding of a Canaanite (Hyksos) Kingdom at Tell el-Dab'a, ancient Avaris.

Table of Contents

Dedication	
Abstract	
Table of Contents	
Acknowledgments.....	i
Abbreviations.....	iii
List of Tables	iv
List of Figures	v

Volume I.

Chapter 1. Introduction: A Maritime Levantine Middle Bronze Age?	1
The Maritime Mediterranean and Bronze Age Internationalism	4
The MB IIA Levant: From Patriarchal to International Age	6
Chapter 2. From Nile to Cedar Forest and Silver Mountain:	
the southern Levant and east Mediterranean trade.....	10
1. The <i>longue durée</i> of Egyptian-Levantine relations	10
2. First traverse and contact	12
3. Chalcolithic expeditionary trade to the Nile Valley	13
4. The Egyptian Levantine colony and Uruk maritime expansion?	17
4.1 Egyptian colonization of the southern coastal plain	18
4.2 True imports from the Nile valley	21
4.3 Other evidence for inter-regional and international trade in the	
southern Levant	22
4.4 Levantine imports in Egypt	25
4.5 Summary of the evidence for Egyptian colonization	28
4.6 Uruk maritime expansion into Egypt?	30
4.7 Summary of the Egyptian Levantine colony and Uruk maritime expansion	34
5. Early Dynastic shipping, the Old Kingdom “Byblos run” and inland Levantine urbanism	35
5.1 Pictorial depictions and textual references relating to the Levant	36
5.2 Levantine imports to the Nile Valley	38
5.3 Imports from beyond the Levant	42
5.4 Evidence for international and inter-regional trade in the southern Levant	43
5.5 The beginning of the commercial maritime container	49
5.6 Byblos	52
5.7 Contacts with Cyprus, Anatolia and the Aegean	56
5.8 The “Byblos” run and the southern Levant	58
6. The First Intermediate Period and the South Levantine Intermediate Bronze Age	58
6.1 Pictorial depictions and textual references in Egypt relating to the Levant	60
6.2 Imports to Egypt from the Levant and beyond	61
6.3 Foreign imports in the southern Levant	61
6.4 Byblos and northeast Mediterranean trade	62
6.5 Dim trade in a Dark Age?	62
7. The Middle Kingdom and its foreign relations	64
7.1 Pictorial depictions and textual references relating to Levantines	
and the Levant	65
7.2 Imports from the Levant	76
7.3 Imports from beyond the Levant	77
7.4 Byblos and the Lebanon	79
7.5 Egyptian Exports to Syria, Cyprus, Anatolia, and the Aegean	80
7.6 Tell el-Dab`a and the rise of the Asiatic “Hyksos” kingdom in the eastern Delta	80
8. Northeastern Mediterranean Trade	85
9. Summary	88

Chapter 3. By Land or by Sea in the Southeastern Mediterranean	89
1. Terrestrial movement and transportation	89
2. Seafaring and seamanship	92
2.1 Physiographic factors	93
2.2 Ancient Navigation	95
2.3 Ancient seafaring in the eastern Mediterranean: a theoretical model	99
2.4 Seafaring and maritime activity along the Levantine coast from Prehistoric times through the Middle Bronze Age	102
2.5 Boat representations and longshore traffic during the EB I Period	117
2.5 Archaeological evidence for ships	118
2.7 Anchors	119
2.8 Anchorages and harbors	120
2.9 Ethnographic aspects of east Mediterranean maritime activity	121
3. By land or by sea?	122
Chapter 4. The Material Cultural Landscape of the MB IIa Southern Levant	123
1. Northern Coastal Plain	124
1.1 Akhziv	125
1.2 Kabri	127
1.3 Nahariya	131
1.4 Akko	134
1.5 Tel Bira	137
1.6 Khirbet Kurdaneh (Afek)	137
2. Carmel Coast	138
2.1 Tel Nami	138
2.2 Tel Dor	141
2.3 Tel Mevorakh	143
3. Sharon Coastal Plain	145
3.1 Tel Burga	145
3.2 Tel Esur – Barqai.....	146
3.3 Tel Zeror	146
3.4 Khirbet Ibriktas	146
3.5 Tel el-Ifshar (Hefer)	147
3.6 Tel Poleg	152
3.7 G`Ein Zurekiyeh	153
3.8 Small Yarkon river basin sites	153
3.9 Tel Qasile	153
3.10 Tel Gerisa	154
3.11 Tel Aphek	156
4. Southern Coastal Plain and Shephelah	161
4.1 Jaffa	162
4.2 Bat Yam	162
4.3 East of Yavne Yam	162
4.4 Bank of Nahal Sorek	163
4.5 Dhaharat el-Humraiya	163
4.6 El-Jisr	164
4.7 Yavne-Yam	164
4.8 Gezer	165
4.9 Tel Migne - Ekron	165
4.10 Ashkelon	166
4.11 Tell Beit Mirsim	166
4.12 Tell el-`Ajjul	167
5. Jezreel Valley	169
5.1 Tel Me`amer	169
5.2 Tel Qashish	170
5.3 Tel Yoqneam	170

5.4 Tell Qiri - Hazorea	170
5.5 Megiddo	170
5.6 Tel Shimron	177
5.7 `Afula	178
6. The Galilee Highlands	180
6.1 Safed	181
7. Mount Carmel Highland	183
8. Central Highland (Samaria and Judea)	184
8.1 Tell el-Farah (N)	184
8.2 Shechem	184
8.3 `Ain es-Samiyeh and Sinjil	185
8.4 Jerusalem	185
8.5 Beth Shemesh	186
8.6 Gibeon	186
8.7 Khirbet Kufin	186
8.8 Khirbet Kirmil	187
8.9 Efrat	187
9. Upper Jordan (Hula) Valley	187
9.1 Tel Dan	188
9.2 HaGosherim	192
9.3 Kefar Szold (T. Kalil)	193
9.4 Tel Na`ama	193
9.5 Tel Hazor	193
9.6 Ginossar	195
9.7 Golan Heights sites	195
10. Lower Jordan Valley (including the Beth Shean Valley and Transjordan)	196
10.1 Beth Shean	196
10.2 Gesher	197
10.3 Tel Rehov	197
10.4 Tell el-Hayyat	198
10.5 Jericho	201
11. The Negev, Arava, and Sinai arid zones	201
Chapter 5. Maritime Trade and the MB IIA Southern Levant	203
1. The Distribution of Traded Objects	203
1.1 Levantine Painted Ware	203
1.2 Tell el-Yahudiyah Ware	204
1.3 Middle Cypriot Ware	205
1.4 "Anatolian" cut-away vessels	206
1.5 Metals	206
1.6 Organic Imports	208
1.7 Semi-precious Stones and other Lithics	208
1.8 Egyptian and Egyptianizing objects	209
2. Additional Cross-cultural Contacts	209
2.1 Small Finds	209
2.2 Writing	209
3. Settlement Pattern and Specialization	211
4. Towards a Radiocarbon Chronology of the MB IIA Period	213
4.1 Relative Chronology	213
4.2 Historical Synchronism	214
4.3 Radiocarbon Chronology	216
5. On the transition from IBA to MB IIA	219
6. Maritime activity and the origin of MB IIA urban culture	221
7. Tell el-Daba` and beyond	222
8. Conclusion	223

Volume II.

Table of Contents i

List of Tables ii

List of Figures iii

Bibliography..... 225

Tables 1-20

Figures 1 – 12

Acknowledgments

As perhaps befitting a thesis on cross-cultural maritime interaction, the present work is the product of research carried out in two very different locales: Oxford on the River Isis (Thames) and Haifa on the Mediterranean Sea. In Haifa, many of the basic questions were formulated; in Oxford they were challenged, expanded, refined, and the answers first drafted. But it was back in Haifa, near the regions where many of the processes detailed herein actually occurred, that this work was completed.

No thesis should be done in a vacuum, and it is indeed my sincerest honor to be beholden to so many friends, colleagues, and relations, who have encouraged and engaged, and left me to my own designs when most I needed it. I arrived in Oxford at those rarest of moments, when a critical mass of maritime-oriented brown-bag lunchers were meeting weekly in the seminar room in the back of the Ruskin Lecture room of the Ashmolean Museum. There, led by Andrew and, usually, Susan Sherratt, at a point as far from the sea as anywhere in the British Isles, I found dear friends and colleagues, who shared my passion for the “wine-dark” Mediterranean. In particular, I thank the Sherratts (and family), Cyprian Broodbank, Claire Calcagno, and Lucy Blue, for their friendship and encouragement during the best and worst of times. Many others at Oxford, too numerous to mention, I must thank collectively. However, a special mention must be to the researchers at the Research Lab for Archaeology and Art History: Dr. M. Tite, C. Doherty, Dr. M. Eiland, Dr. S. Stokes, among others. At the Oxford Radiocarbon Unit, I thank R. Housley and C. Bronk Ramsey for helping me in my initial work on radiocarbon and its significance. The fellows and members of Wolfson College were always a vital source of support.

My studies in Oxford were made possible by grants from the British Council, for which I am indebted, in Israel, to the University of Haifa Graduate School, Peter Sanderford, and Naomi Arkus, and, in Oxford, to Fiona Fenton, my angel of mercy on more than one occasion. While in Oxford I enjoyed the support of the British Foreign Office Overseas Research Scheme, Wolfson College Graduate Awards, and travel support from the College, the sub-Faculty for Archaeology and the Graduate Students Office. A grant from the IMO-Hatter Trust was crucial in offsetting my fees during my second year. In my last two years I was honored with a Junior Research Fellowship from Wolfson College.

Upon my return to Haifa, I was awarded scholarships from the University and a Maurice Hatter Fellowship. Combining teaching and D.Phil. research proved to be a blessing and a curse. My students will never know how much they helped me to clarify my ideas, and how often their seminars were laboratories, where I tested my theories. When teaching demands became intolerable, the department chair, Prof. Y. Mart, and the Dean of the Faculty of the Humanities, Prof. E. David, kindly lessened my load. To them, and to all my former instructors and now colleagues, Professors M. Artzy, A. Raban, E. Spanier, I offer my thanks. My friend and colleague, Y. Kahanov kindly read Chapter Three and provided useful comments. I thank S. Shalev for tolerating my incessant questions about ancient metals. In Israel, in general, I have benefitted from stimulating conversations with numerous scholars, among them D. Ilan, Y. Goren, A. Maeir, and the late Prof. P. Beck.

Large portions of this thesis were read by A. Brody; his friendship and encouragement were a source of support that can never be truly requited. My brother, Adam Marcus, Esq., generously donated otherwise billable hours to the editing of the text. Any errors, omission, or run-on sentences, are my fault alone.

This research was supervised by Dr. Roger Moorey, who from our first meeting until the submission of this work, has been a constant source of kindness, encouragement, and lucid guidance. Words cannot satisfactorily express my appreciation for his role in helping me formulate and focus my ideas, and bring this work to fruition.

Last, but not least, I must thank my family in the U.S. for their never ending support. I also take this opportunity to thank and honor my adopted families. More than anyone else, the Breitstein family, Steve, Genoveba, et al. (especially Avinoam, my “scan-man”), have been my backbone, from my arrival in Israel as a graduate student, to my journey to Oxford, and to the very end of this project. They also made sure that I would be cared for by another family, the Hatters in London, Maurice and Irene, whose generous support made this all possible, and whose warmth always made me feel welcome in their home.

Abbreviations

BA: Bronze Age
BCE: Before Common Era
BP: Before Present
CE: Common Era
CW: Combed Ware
EBA: Early Bronze Age
FIP: First Intermediate Period
ha: hectare = 10,000 m² = 10 dunams = 2.5 acres
IBA: Intermediate Bronze Age
INAA: Instrumental Neutron Activation Analysis
knot: one nautical mile per hour (=1.852 km/hr)
L.: Locus
LBA: Late Bronze Age
LFPW: Light-Faced Painted Ware
LPW: Levantine Painted Ware
MBA: Middle Bronze Age
MB IIa: Middle Bronze IIa
MC: Middle Cypriot
MK: Middle Kingdom
MM: Middle Minoan
msl: (modern) mean sea level
MW: Metallic Ware
NK: New Kingdom
nm: nautical mile (=1.852 km)
OB: Old Babylonian
OK: Old Kingdom
p.c.: personal communication
RPW: Red Polished Ware
SIP: Second Intermediate Period
TEY: Tell el-Yahudiyah Ware
T.#: Tomb number
WPCL: White Painted Cross Line
WPCW: White Painted Composite Ware
WPPL: White Painted Pendant Line

List of Tables

- Table 1. Relative chronological sequence between Egypt and the southern Levant
Table 2. Twelfth Dynasty Rulers – “High” and “Low” Chronologies
Table 3. Tell el-Dab`a
Table 4. Comparison of means of ancient transport
Table 5. Winds of the eastern Mediterranean
Tables 6. MB IIA sites by sub-regions
 6.1 Northern Coastal Plain
 6.2 Carmel Coast
 6.3 Sharon Plain
 6.4 Southern Coastal Plain and Shephelah
 6.5 Jezreel Valley
 6.6 Galilee Highlands
 6.7 Carmel Highland
 6.8 Central Highlands
 6.9 Upper Jordan Valley and Golan sites (Hula Valley and immediate environs)
 6.10 Lower Jordan Valley sites (including Beth Shean Valley and TransJordan)
Table 7. Tel Kabri
Table 8. Nahariya
Table 9. Akko
Table 10. Tel el-Ifshar
Table 11. Tel Aphek
Table 12. Tel Dan
Table 13. Tell el-Hayyat
Table 14. Traded Objects in the Coastal Plain, Jezreel Valley, and the Galilee Highlands
Table 15. Traded Objects in the Carmel and Central Highlands, and the Upper and Lower Jordan Valleys
Table 16. Occurrence of MB IIA Trade Objects by Sub-phase
Table 17. Relative synchronization of the MB IIA sites of the Northern, Carmel, and Sharon Coastal Plains, and the Jezreel Valley
Table 18. Relative synchronization of the MB IIA sites in the Upper and Lower Jordan Valley
Table 19. Intermediate Bronze Age Radiocarbon Determinations
Table 20. Middle Bronze IIA Radiocarbon Determinations

List of Figures

- Figure 1. A. Arrival of sea going ship from the time of Sahure (after Wachsmann 1998: fig. 2.3)
B. Associated cargo from Sahure's relief (after Smith 1965: fig. 7)
- Figure 2. A,B. Light-faced Painted Ware. C. Red Polished Ware. D,E. Metallic Ware jars (after Stager 1992: figs. 10:1, 12:1-2, 14:7,13).
- Figure 3. 'Amu caravan from tomb of Khnumhotep (no. 3) at Beni Hasan (Newberry 1893: pls. XXIX and XXXI).
- Figure 4. A. Scene of pottery making and ship construction from tomb of Khnumhotep (no. 3) at Beni Hasan (Newberry 1893: pl. XXIX).
- Figure 5. Cylinder seal from Tel El-Dab'a depicting a sailboat and patron gods (from Bietak 1989a: fig. 10).
- Figure 6. Depiction of Canaanite boat from the New Kingdom tomb of Kenamun (from Davies & Faulkner 1947: pl. 8).
- Figure 7. EBI boats from Megiddo (after Engberg and Shipton 1934: p. 30, fig. 10g,h).
- Figure 8. a. Old Kingdom anchors from Abusir (from Frost 1979: fig. 1)
b. MB IIa anchor types (from Nibbi 1992: fig. 10).
- Figure 9. 1993 Radiocarbon Calibration Curve
- Figure 10. Calibrated Radiocarbon Determinations
- Figure 11. Calibrated MB IIa Radiocarbon Determinations.
- Figure 12. Calibrated IBA-MBA Radiocarbon Relationships
- Figure 13. Principal MB IIa sites mentioned in texts

Chapter 1

Introduction: A Maritime Levantine Middle Bronze Age?

The locations of the seaports along the Mediterranean shore appear to have played a remarkably key role in the development of the country's road network. The courses of virtually all of the lateral roads between the central highlands of Judah, Samaria, and Galilee and the coastal plain were determined to a large degree by the positions of Canaan's seaports. . . . The country's road system, its historical geography, and its history were thus *profoundly influenced by these modest coastal harbors* [emphasis added].

The Roads and Highways of Ancient Israel

David A. Dorsey

Perhaps no other statement regarding the relationship between land and sea better exemplifies the general scholarly view towards the latter than this quote from the concluding remarks of a recent comprehensive study of the Iron Age road network of the southern Levant (Dorsey 1991: 208).¹ On the one hand, it embodies the perceptive observation that a detailed analysis of the terrestrial evidence reveals that the factors dictating the location of the country's ports were crucial arbiters in the development of the settlement landscape of this region, rather than inland developments. On the other hand, what makes this observation perceptive also reveals its inherent bias—it derives from a study whose typically terrestrial approach does not consider any maritime factors in its analysis. This bias is not unique; rather, it is a general reflection of the limited degree to which scholars recognize that, beyond being a cultivable strip of land between the desert and the sea, the southern Levant is a region with a 250 km long coastal, maritime zone. Whether this zone was of any importance or had significance in any historical, cultural, or economic sense requires at the very least a recognition of this characteristic. Thus, for example, given Dorsey's conclusion one might suggest that maritime activity of some sort along this seaboard was the *raison d'être* for those “modest coastal

¹The many names for this region, e.g., Holy Land, Eretz Israel, Canaan, Palestine, and the southern Levant, all attest to a history as fragmented as its geographical makeup, and carry theological and political weight. Given the geographical and temporal framework of this work, the geographical term *Levant* is employed to encompass the eastern seaboard of the Mediterranean from Gaza in the south to the beginning of the Gulf of Alexandretta (Cilicia) in the north. A rough north-south division places modern Israel and Gaza in the southern Levant while Lebanon and Syria comprise the north. The terms *Canaanite* and *Canaan* are employed to describe, respectively, the material culture of the people and the region they inhabited in the Levant during the Bronze Age. The term “people of Canaan” is mentioned at MBA Mari (Sasson 1984a; Bonechi 1992: 9; Malamat 1998c: 5). For a more thorough discussion of the geographical and ethnic connotations of this term, see Na'aman (1994 *contra* Lemche 1991).

harbors”. However, such a suggestion is beyond the conceptual framework of a work that devotes scarcely a single paragraph to the sea and shipping (Dorsey 1991: 4-5). Moreover, although relying on evidence from a variety of periods, the result is a basically synchronic discourse, treating the entire Iron Age road network as an isochronic phenomenon (Dorsey 1991: xvii, 52-6). Given that much of this Iron Age settlement array is not divorced of Bronze Age (BA) antecedents, a diachronic approach might reveal the history of earlier road networks and, concomitantly, their dependence, or lack thereof, on BA ports. As the Middle Bronze Age (MBA), specifically the Middle Bronze IIa (MB IIa) period (ca. 2000-1750)², marks the establishment of most southern Levantine ports, it is thus an important juncture for any serious study of the maritime history of this region. This thesis seeks to be a beginning to such a history, focusing on the role of maritime activity, settlement location, and economic interaction on regional and international scales in the development of society, economy, and polity in the southern Levant from earliest times through the MB IIa period.

Beyond being the seminal stage for the development of coastal sites, the MB IIa period is perceived as a watershed because of a number of other features. First, no other BA period had as much impact on the settlement landscape (Gophna 1984), which is particularly apparent to anyone who has stood below the massive ramparts that define the physical shape of so many Levantine tells. While this might seem of little consequence, this land-form created attractive, available, and secure locales, and were thus, in a sense, physical anchors for much of the subsequent settlement landscape. Similarly, it is generally accepted that *mutatis mutandis* many elements of material culture, socio-political structures, etc., which continued throughout Canaanite civilization until the Iron Age, originated in this period (Dever 1987; Kempinski 1992c: 210; Ilan 1995a: 315).

Second, it is the first period in which substantial artifactual evidence exists for the inclusion of the Levant in the wide-spread maritime activity of the eastern Mediterranean, involving Egypt, Cyprus, Anatolia, and the Aegean (Sherratt & Sherratt 1991; Marcus 1991; Artzy & Marcus 1991; Artzy 1995). Although relatively small in overall numbers, the distribution of these artifacts requires a meaningful explanation. Recent discoveries of Aegean-style frescoes at MB IIb Tell Kabri and, purportedly, Late Bronze Age (LBA)/New Kingdom (NK) Tell el-Dab`a, along with previously unappreciated examples from Alalakh (Niemeier 1995; Bietak 1995), have raised, chronologically, the notion of an east

²Other chrono-cultural schemes refer to this period as “MB I”, however the traditional nomenclature is preferred by this author until the character of the incipient MB phase is clarified. Unless otherwise noted all calendrical dates are indicated as BCE. Radiocarbon “date” is synonymous with “determination”, “measurement” and “assay”. This implies a recognition that a radiocarbon date is not a true date, but a laboratory measurement of the amount of radiocarbon expressed in units ordered as “year” BP=Before Present, i.e., 1950 CE. Calibrated calendrical ranges, using the 1993 curve (Stuiver & Pearson 1993; Pearson & Stuiver 1993), were calculated using OxCal ver. 2.17 (Bronk Ramsey 1995) and are indicated as CAL BCE to two standard deviations (2 σ), unless otherwise noted.

Mediterranean *koine* or “internationalism” from the Late Bronze Age into the Middle Bronze Age. These high-profile artifacts might simply be cataloged as part of the general distribution of traded artifacts, but their presence in the archaeological record indicates much more substantial and complex interactions and, as will be demonstrated, are the tail-end of a much longer historical process.

Third, the widespread distribution and selective similarity of Canaanite material culture during this period, e.g., city planning, architecture, pottery, metalwork, and other crafts (Gerstenblith 1983), from Egypt to northern coastal and inland Syria, suggests intensive and sustained communication across fairly long distances. Previous explanations for this phenomenon, which have often been enmeshed with the question of MB IIA cultural origins, have been unsatisfactory. These range from unicausal exogenous factors like movements of West Semitic Amorites (Dever 1976: 5-6, 9-10, 15; 1977: 84-6), Egyptian imperialism (Albright 1928), ambiguously defined notions of craft exchange and land-based trade (Gerstenblith 1983: 125), or an endogenous process like rural agricultural revival (Tubb 1983: 57; Falconer 1994a; Magness-Gardiner 1997: 315), or a combined, but vague peer-polity interaction (Bunimovitz 1992: 228; 1996: 18-9; Ilan 1995a: 298, 301)—a broader explanatory model is needed.

Last, and perhaps most historically significant, the MB IIA period marks the beginning of the only demonstrable large-scale expansion of Canaanite culture and population outside of its traditional boundaries onto foreign soil (Ward & Dever 1994: 47), until the Phoenician expansion during the Iron Age. Canaanite cultural interaction with, and expansion into, Egypt during this period had far reaching historical implications, including: (i) the establishment of Canaanite (Hyksos) rule in the Nile Delta; (ii) socio-linguistic developments in the Egyptian language (Hoch 1994) and the invention of the Canaanite alphabet (Sass 1989); and (iii) a salient impression on Egyptian policy towards the Levant, which was expressed as a trauma of foreign occupation that was preserved as late as the first century CE. As the Hyksos domination and its aftermath are distinct political and economic episodes, in which maritime activity and trade had a somewhat different character, the period up to the rise of this kingdom marks a convenient, albeit artificial terminus for this seminal investigation.

The basic premise of this thesis is that existing approaches have been deficient not only in failing to emphasize the maritime component, but in neglecting or negating it entirely. Moreover, that many if not all of the salient features enumerated above and detailed below are best understood within a maritime approach to the evidence, integrating, with some modification, existing terrestrial approaches. The goals of this study are to demonstrate: i) that maritime activity, so readily accepted as a significant feature of the LBA southern Levant, was a feature already in the pre- and proto-historic period, reaching its first peak in the MB IIA period, thus legitimizing its recent epithet as “the dawn of internationalism” (Ilan 1995a); ii) that MB IIA Canaanite culture and society was influenced by maritime activity and the

establishment of ports cities, both of which were fuels that drove the prosperous economy; iii) that the widespread distribution of Canaanite material culture in the eastern Mediterranean represents communication on a magnitude that must have been predicated on seaborne transport, perhaps from the very beginning of the MB IIa period; and iv) that the rise and economic flourish of the Canaanite-Hyksos kingdom that dominated much of lower Egypt after the Middle Kingdom (MK) can best be understood within a maritime commercial model in which Tell el-Dab`a was the primary hub of a vast eastern Mediterranean network.

The Maritime Mediterranean and Bronze Age Internationalism

The terrestrial bias alluded to above is not limited solely to scholars of the Levant. Indeed, this conceptual myopia exists on a much broader scale. Writing a history of the peoples or the cultures encompassing an aquatic basin, rather than according to a terrestrial demarcation, was only relatively recently pioneered by Braudel (1972) and followed by others (e.g., Chaudhuri 1985). In his landmark work, more often quoted for its contribution to the *Annales* school's structural conceptualization of time (Bintliff 1991; Knapp 1992; 1993: 7-19; Levy & Holl 1995), Braudel went beyond simply acknowledging the Mediterranean as a geographical center surrounded by a world composed of disparate entities. He saw a broad geographical and rhythmic commonality that should be considered even in the treatment of individual regions. Much in the same way that scholarship views the river as the common and uniting ecological feature in the earliest civilizations, such is the Braudellian conception of the Mediterranean sea—its physical form and processes, behavior, rhythms, and cycles make the sea a common, uniting ecological factor impacting throughout Mediterranean society, agriculture, polity, and civilization. As the largest inland sea on the planet and the only one in contact with three continents, its central position in the arena of human history makes the Mediterranean Sea particularly deserving of this type of conceptualization.

Acknowledging the Mediterranean Sea as a geographical *axis mundi* does not necessarily lead to it being viewed as a source of social, cultural, or economic commonality and interaction between its constituent parts. The question of the relative importance of cross-cultural interaction and exchange, international trade, especially its maritime component, in the BA Mediterranean society, economy, and polity, has been widely discussed (e.g., Gale 1991a; Laffinueur & Basch 1991; Oates 1993; Mathers & Stoddart 1994; Laffinueur & Betancourt 1997). Proponents of the importance of exchange in its broadest sense—the movement of goods between hands (cf. Renfrew 1975)—cite the distribution of traded items, material cultural and other influences, and socio-political developments, while opponents look to the relatively small quantities of traded items in the archaeological record, autonomous process and invention, and geographical and technical limitations as both an explanation and an indication of the minimal role of trade. Without embarking on a full discourse on this complex

subject, a few points should be noted. The reluctance of some scholars to recognize that traded items may be more than simply bric-a-brac is partly temporal chauvinism and partly parochialism, and perhaps an overly zealous reaction to the sins of diffusionism. A foreign item in a reliable archaeological context may foster numerous explanations for its occurrence, but it cannot be discounted or ignored, even if it demonstrates previously inconceivable technical abilities or élan, or because it crosses formerly sacrosanct cultural borders, or scholarly biases (Bass 1997; Sherratt & Sherratt 1991: 352-3). In all cases, an explanatory model should strive to incorporate all the available data, however limited it may be in absolute numbers. Moreover, lest seemingly limited terrestrial artifact distributions lead to minimalist interpretations of the scope of BA maritime trade, the following observation regarding archaeological visibility must be acknowledged:

If the Uluburun ship had reached the Aegean and dispatched its cargo of Cypriot pottery, then the quantity of Cypriot ceramics from the Aegean would have tripled, which serves to demonstrate clearly that the archaeological record, even with respect to non-perishable goods, does not necessarily represent the true nature and magnitude of the trade in question (Pulak 1997: 243).

In addition to the quantitative versus qualitative argument, assessing the impact of trade on society and the issue of agency requires a discriminating approach, which must rigorously and repeatedly test the archaeological and historical record. Among the trade or cross-cultural exchange-oriented models that have been proffered are various notions of “World-Systems”, which operate through a range of core-periphery-margin relations, but are ultimately based on the exchange of raw materials and finished goods (Kohl 1987; Algaze 1989; 1993; 1995; Sherratt & Sherratt 1991; Sherratt 1993; Levy, et al. 1997). Many different trade mechanisms and agencies may be suggested (Renfrew 1975), including the establishment of foreign enclaves or trade diasporas (Curtin 1984: 1-14), some of which may have operated within “gateway” communities located on a geographical or cultural interface (Burghardt 1971; Hirth 1978), or in “central-places” at the focus of a regional market (Berry 1967). Whichever mechanism should prove to have the greatest explanatory utility, the ethnographic record of long-distance, cross-cultural interaction, which may involve the acquisition of social prestige by means that leave absolutely no material remains, provides a final caveat against undue reliance on positivism (Helms 1988; Broodbank 1993: 315).

On land the principal variable in any interaction model is distance, which is presumed to be inversely related to impact or influence, a phenomenon Bairoch (1988: 11) called the “Tyranny of Distance”. In contrast, for maritime interaction, distance must be translated into time, which is reduced considerably by the increased rate of movement. Moreover, impact and influence must be modified by a factor equivalent to the potential increase in the regularity of

contact and the quantities and size of cargo. Thus, unlike a terrestrial regression model (Hodder 1974), a maritime interaction model must be receptive to occasional punctuated increases of significant magnitude in cultural, economic, and political relations. Ultimately, the differences between terrestrial and maritime interaction, in intensity, orientation, and organization, may lead to the parallel development of distinct social and economic systems, even in proximate and geographically contiguous areas (Fox 1971: 29-38).

The MB IIa Levant: From Patriarchal to International Age

The past few decades have seen a major change in the way scholars perceive the MB IIa period in the southern Levant. At its inception in the late 1930s, the chrono-cultural nomenclature proposed by Albright saw this period as a brief, non-urban, precursor of the fully urbanized MB IIb period. The reasons for this perception and its adoption to an extreme by Kenyon (1960: 155), was partly because of Biblical Archaeology's need for a patriarchal period, partly as an archaeological correlate for the purported movements of so-called "Amorites" (Dever 1976: 5-6, 9-10, 15; 1977: 84-6; Kamp & Yoffee 1980), but primarily because most of the excavated sites, by these scholars and others, were in regions that were peripheral to what are now known as the core areas of the MB IIa cultural phenomenon. Apart from a few excavations, such as at Tel Aphek (Ory 1936; 1938), and other small MB IIa sites and cemeteries, the one major exception to this bias was the excavation of Megiddo, but its partial publication and Kenyon's authoritative articles (1958; 1969) negated the full implications of its MB IIa strata. An additional diversion was caused by Yadin (1978), who rejected the notion of a long MB IIa period of fortified cities coeval with a strong Egyptian Twelfth Dynasty on historical grounds, and whose excavations at Hazor seemed to confirm his view (Yadin 1972: 201-6). Only in the 1970s, with the resumption of excavation at Tel Aphek (Kochavi 1975), and the synthesis of its finds with sites in the Coastal Plain (Kochavi, Beck & Gophna 1979; Gophna & Beck 1981; 1988), did a radical shift begin to take place. This shift is best reflected in the landmark work of Gerstenblith (1980; 1983), who, *inter alia*, refined the relative chronological sequence, although not without some criticism (Beck 1985: 194-6), and demonstrated the lengthy urban nature and foreign contacts, both of which were particularly linked with the northern Levant.

The urban nature of this period is reflected in such attributes as settlement pattern, city plan, and public architecture.³ Numerous spatial and demographic studies of the settlement

³Recently, Falconer (1994a: 309-12; 1994b: 122-3) has suggested an alternate definition for BA urbanism, which terms a city as any site that is incapable of agricultural self-sufficiency, i.e., the subsistence demands of the calculated population are greater than the carrying capacity of the area accessible by the assumed daily walking distance of BA farmers. By this calculation, sites greater than 35 ha are definitely urban, sites smaller than 4 ha are rural, while sites that fall in the intervening continuum are of uncertain character. Space prohibits a full critique of this approach,

history have shown it to be a multi-tiered hierarchical system, which is weighted towards the lowlands, especially the Coastal Plain (Gophna & Beck 1981; 1988; Broshi & Gophna 1986; Marcus 1991; Falconer 1994a: 326; 1994b: 124-7; Falconer & Savage 1995: 38, 52-5, table 1; Ilan 1995a: 301-5; Dever 1997: 287-9). The geometric plan of many urban centers suggests that the inhabitants had both a strong affinity for the Syro-Mesopotamian city “model” and access to the requisite city planners and engineers (Kempinski 1992a; 1992e). Public architecture, including city walls, rampart fortifications, mudbrick gates, temples, palaces, perhaps elite buildings, and some burial traditions, specifically vaulted built tombs, also show an origin or, at least, an affinity to northern antecedents (Kaplan 1971; Kempinski 1992b: 127-36; Oren 1992; Magness-Gardiner & Falconer 1994: 135-8; Ilan 1995a: 300-1, 313-4; 1995b: 129-32; Bonfil 1997).

The most dominant material cultural feature, and the most archaeologically visible reflection of resource expenditure are the MB IIA fortifications, which begin with free-standing walls, often with glacis, and are followed chronologically by massive ramparts. In particular, the ramparts have been subjected to numerous studies of their taxonomic division, function, social significance, and origin. Typologically, these may be roughly divided into free-standing walls, walls with glacis, and rampart fortification, all with complex structural components that vary by site and environment (Kaplan 1975; Kempinski 1992b: 127-32). Functionally, these constructions served both civil, martial, and social roles. As a civilian construction, the massive ramparts, in particular, served to raise the site above the alluvial plain, or above the seashore, and protect it against inundation (Parr 1968: 43; Kaplan 1975: 2-3). As military architecture, the glacis and ramparts both protected the foundations of walls (Yadin 1955; Stager 1991: 30) and deterred high-intensity (foreign and local armies) and low-intensity (raids) threats. As social edifices, by delimiting the perimeter of the site, the fortifications defined the city's inhabitants, and projected the power of the local authority over the non-urban population, whose archaeologically invisible numbers were the requisite manpower for their construction (Bunimovitz 1992; Finkelstein 1992b). In the absence of walls at the top of most ramparts, the military role of these constructions has been called into question, and a social or propagandistic function has been offered in its place (Bunimovitz 1992: 227-8; Finkelstein 1992b: 205-7). While there is no denying the imposing character of these massive artificial mounds, and their place within the Syro-Mesopotamian urban concept, such symbolism would have little effect if it was not predicated on a tradition of functional efficacy that was reinforced by periodic displays of its potency. In light of the increasing evidence for walls on the ramparts of Ashkelon and Dan (Finkelstein 1992b: 205), the increasing evidence for Egyptian military forays into the Levant (*see infra* Chapter 2), the tradition of warrior burials (Philip 1995c), and

which, in any event, must be scaled down (Dever 1993b: 99-100), and adapted for geographical constraints (e.g., coastal sites of limited proximate hinterland), the demands of the agricultural schedule (Hopkins 1987), and the local ethnographic evidence for the use of the *mazra'a*, the seasonal field abode of farmers (Esse 1991: 19-23).

the albeit equivocal evidence of archaeological destruction layers, the possibility of real warfare, both foreign and internecine, must be considered. Whatever their function may have been, sophisticated organizational skills were necessary to raise these constructions (Finkelstein 1992b: 208-14; Bunimovitz 1992: 226-7), which were funded by the surplus material wealth of these urban centers, probably in much the same way that field hands were paid, according to a text from Hazor (Horowitz & Shaffer 1992a).

The source of the material prosperity that fueled the urban process, and enabled the construction of ramparts and palaces, has been largely ignored. However, the recent focus of research and debate on the nature of relations between Tell el-Dab`a and the Levant, and the rise of the Hyksos Kingdom (e.g., Oren 1997a), may provide a partial answer as the role of the southern Levant in east Mediterranean trade is further elucidated. In addition, excavations on the southern Levantine coast, including the aforementioned Aegean frescoes, have led to a renewed consideration of the nascent international nature of this period (Artzy & Marcus 1992; Kislev, Artzy & Marcus 1993; Ilan 1995a; Teissier 1996: 6-7). Previously, apart from discussions by primarily maritime-oriented researchers (Raban 1985; 1991a; 1995b; Marcus 1991; Artzy & Marcus 1991; Artzy 1995), and occasional allusions by others to trade and possible ports (Tufnell 1962: 1; Prausnitz 1975; Harif 1978; Thompson 1979: 53-4; Gophna 1984: 31; Kochavi 1989c; 1992), the notion of MB IIA southern Levantine maritime trade on any scale has been generally ignored or denied outright (Weinstein 1975: 7-9, fig. 3; Dever 1976: n. 78; 1987; Ziffer 1990; Falconer 1994a). This denial derived primarily from a myopically static approach to coastal paleogeography, which led to the disregard of potential ports (Dever 1976: n. 78; Aharoni 1979: 17; Gerstenblith 1983: 4). However, recently there are indications that maritime trade is beginning to gain more general acknowledgement as a reality, if not as an important mechanism in the development of MBA culture (Ilan 1995a; Bietak 1996: 14-20, 55-63; 1997: 103-4; Dever 1997: 289; Holladay 1997: 203-5).

In order to fully appreciate the role of maritime trade on the southern Levant, the discussion first turns, in Chapter 2, to Egypt and its external relations with the Southern Levant and beyond, in order to understand the evolution of these relations and their long term impact on the southern Levant. Other trade networks of the eastern Mediterranean and ancient Near East are considered only insofar as they shed light on the role of the southern Levant as alternately primary and secondary trade partner, and cross-cultural nexus for Egypt. Having demonstrated the long term nature of these relations, Chapter 3 considers the physical mechanisms of interaction, surveying and contrasting land-based and seaborne communications and reviewing the evidence for maritime activity along the southern Levant. This chapter will demonstrate that the coastal zone was a necessary maritime nexus in Egypt's primary relations with the northern Levant and beyond. After examining the southern Levant's role in the maritime network of the eastern Mediterranean, Chapter 4 surveys the material cultural landscape of the Levantine MB IIA period in order to present the evidence for interaction and

traded commodities in their proper archaeological and relative chronological contexts. Finally, Chapter 5 brings together the evidence into a meaningful maritime model for the rise and flourish of the southern Levant in the MB IIA period. With this conclusion, it is hoped that the validity of a maritime approach to Levantine archaeology will have been demonstrated, and the writing of a maritime history of the southeastern Mediterranean will have begun.

Chapter 2

From Nile to Cedar Forest and Silver Mountain: the southern Levant and east Mediterranean trade

Egypt and Mesopotamia, the two earliest Ancient Near Eastern civilizations, arose in lush alluvial plains watered by large rivers that enabled surplus agricultural production and served as the main arteries of communication. The Nile, the Tigris, and the Euphrates were unifying ecological features for the distant and disparate populations that emerged as complex societies. Beyond governing and facilitating subsistence, and distributing surplus production, these rivers, along with land and sea routes, were the by-ways for the import of foreign exotica and staple products. Early on, both of these great civilizations became dependent on materials that were unavailable in their immediate environs. To ensure access to and delivery of these materials they developed and relied on basic transportation technology, common and esoteric knowledge of distant places, and long-distance social relations. These relations included those living at or near the source as well as the middleman or inhabitants of the interstitial areas. The impact of these relations could involve socio-political equals as well as unequals, resulting in a variety of influences and developments. A thorough treatment of Ancient Near Eastern trade is beyond the scope of this thesis, nor is it its goal. Instead, this chapter seeks to outline the evolution of trade relations along the eastern Mediterranean littoral, particularly in the way they affected the cultures of the southern Levant leading up to and including the MB IIa period. By its name, this chapter alludes to the seminal work of Marfoe (1987), which posited a firm link between local process and long distance interactions involving the Levant, the eastern Mediterranean, and the Ancient Near East. Emphasis will naturally be placed on Egypt, because of the intimate nature of its relations with the Levant throughout history. Inland Syria and Mesopotamia will be considered, but only as they relate directly to the issues at hand.

1. The *longue durée* of Egyptian-Levantine relations

As is evident in works such as Redford's (1992) recent tour de force, the rich intimacy of Egyptian-Levantine relations are a mainstay amidst the changing palimpsest of history. From prehistoric until modern times, it is impossible to consider the totality of any historical period in Egypt or the Levant without some consideration of the other (Table 1). Even in periods when such contact is absent, that absence is noteworthy and lamented by modern writers as much as their ancient counterparts (*viz.* The Admonitions of Ipuwer). Yet this contact is often nebulous and difficult to characterize and, when recorded, alternates between animosity, familiarity, and cordiality.⁴ This

⁴At a conference on relations between Egypt and Canaan in the fourth and third millennium BCE, held at the Hebrew Union College in Jerusalem on May 14-15, 1998 (N.B. other presented papers will simply be referred to this note), Toby Wilkinson drew a distinction between the official portrayal of Asiatics in Egyptian art and literature and the actual relations during the pre- and Early Dynastic periods, a distinction that also holds for many other periods.

ambiguity is to be expected between lands that were not only situated on two sides of a desert divide, but also were intermittently favored by the swinging pendulum of cultural, economic, and political superiority. Despite the subject's breadth—or perhaps precisely because of it—there is an obvious lack of a conceptual thread or a cohesive model to guide the reader across the millennia of interaction. In some respects the Braudellian approach of long term patterns, punctuated by “events”, is a useful way of summarizing the continuous features of this historical axis.

In quantitative terms of raw materials and potential, Egypt is by far the wealthier of the two countries. Surplus agricultural produce (grain, pulses, vegetables, and fruits, etc.), and plant products (e.g., papyrus, etc.) abound. As a corollary, the surpluses supported domesticated animals and, more importantly, a large workforce of craftsmen. In addition, the lithology of the surrounding deserts offered workable stone and metals. One need only glance at the resource map provided by Baines & Malek (1980: 21) to envision the full spectrum of possible Egyptian exports from prehistoric times through later antiquity (Sperber 1976). The realization of this potential was gradual, a long process dependent on a variety of technological (e.g., level of craft specialization, transportation, etc.), social (e.g., degree of stratification, displays of status, etc.) and economic (e.g., demography, production, etc.) parameters. Despite its wealth, Egypt lacked many crucial products, along with the knowledge of their use and manipulation. Among these were long woods, various arboreal oils and resins, certain orchard fruits and their by-products (olive oil and wine), bitumen, various metals, and other materials, whose demand far transcended subsistence and became imbued with social, religious, and even political value.

The Levant must be viewed at a different and smaller scale (cf. Joffe 1993: 23-4). The sub-regional variation in rainfall and agricultural carrying capacity, the fragmented geography, and the ecological diversity, meant that the Levant lagged far behind in quantitative agricultural potential, but was blessed with a qualitative variety of products and basic raw materials, although some were beyond the margins of the settled areas. In socio-economic terms, the absence of a single unifying dominant ecological feature, such as a major river, lake, or mountain, may have destined this region to greater socio-ethnic and cultural diversity than its powerful neighbor, and a relative multiplicity of subsistence strategies. Many of the products that the Egyptians came to covet initially came from the southern Levant, or were transshipped from more distant regions overland or by sea. But the assymetry of scale and the narrowing area of dry farming meant that the Levantine region most proximal to Egypt was not necessarily capable of meeting the demands of the growing Nile Valley civilizations alone. Even with growing Egyptian interest in more distant regions, the southern Levant maintained a role of nexus, of transshipper, of bystander, or of last settled region before the desert divide. For the Levant, Egypt's exports were initially luxuries or prestige items, but ultimately a melange of organic staple products (e.g., flax linen, papyrus, etc.) entered the relationship as well. Finally, Egypt had a traditional role as a safety net in times of famine, either as a refuge for mobile groups or as a source of much needed food, for which Levantine polities could trade. The latter role began to emerge already in the Bronze Age, although this is not readily detectable in periods prior to the appearance of texts.

A number of themes are covered in what follows. The primary focus is on the nature of the contact between Egypt and the Levant from prehistoric times through the Twelfth Dynasty-MB IIA period, and the varying asymmetry of cultural and political superiority between these two regions. Inter-regional and intra-regional trade in the Levant are discussed inasmuch as they may reflect the organizational infrastructure behind all types of exchange, and the marshalling of material surplus for export. Similarly, evidence of administration (e.g., seals, public architecture, etc.) is seen as reflective of the level of bureaucratic sophistication for organized redistributive and commercial economies.

This survey is not meant to be comprehensive. The lack of consistency in the available evidence, both synchronically and diachronically, is an obstacle difficult to overcome. For example, New Archaeology's natural science and materials-based approach is much more common in anthropologically-oriented research on prehistory, and gradually declines among researchers in later periods, but this situation is changing rapidly. Thus, some raw materials and finished goods are occasionally dealt with in more detail in earlier periods than in later ones, either because by then their exchange and use are considered self-evident (e.g., basalt grinding stones), or because the basic research for the evidence of these periods is still lacking. Lastly, as this work focuses particularly on the maritime and coastal aspects of this relationship, some inland areas, such as Trans-Jordan and parts of the Hill Country, are not dealt with in as much detail. This choice should not be construed as a negation of their importance, but rather a recognition that their specific geographic situation, which deserves a different approach, sets them apart, from time to time, from the maritime spheres of interaction.

2. First traverse and contact

First and foremost, from earliest times onward, Egypt and the southern Levant can be compared to two stations on either side of an increasingly inhospitable stretch of highway: the Sinai peninsula. Before the advent of sedentary life, relations were predicated on their position at either side of the sole landbridge “out of Africa” and into Asia. Everything from early hominids to anatomically human hunter-gatherers traversed this route, whichever the direction they took (O. Bar-Yosef 1995), or whatever the impetus that drove them (Sherratt 1997). These groups and societies moved in migrations and had interactions, which are ill understood, although their existence is well documented in lithic and physical anthropological comparanda.⁵ As portions of humanity gradually abandoned mobility for sedentary life, it was on the Levantine side of the desert divide that agriculture first succeeded, with its Nilotic counterpart lagging behind on the order of perhaps three calendrical millennia (Hassan 1988: 144-5; Bard 1994: 265-7; Wenke 1989: 135-8). Floral domesticates along with other elements and

⁵The first demonstrable evidence of the transportation of anything other than an “idea” (e.g., lithic technology) are fragments of *Aspatharia* shells, which originate in the Nile Valley, at two Natufian sites: ‘Ain Mallaha (‘Eynan) and Abu-Ghosh (Reese, Mienis & Woodward 1986: 79). In addition, material analysis of ochre from the Hayonim Cave shows it to have originated in the eastern desert of Egypt or the Saudi Arabian Red Sea coast (Zackheim 1997).

innovations (e.g., lithic and ceramic attributes, domesticated animals, and textile technology) from the Levant were introduced into Lower Egypt during the Nilotic Neolithic, which is roughly contemporary with the Levantine Pottery Neolithic through early Chalcolithic (Hassan 1988: 145, fig. 2; Levy 1992: fig. 4). This transmission is unreciprocated in the contemporary Levantine archaeological record, but the crucial introduction of agricultural domesticates should not necessarily be seen, socio-economically, as any different from other items of exchange (Runnels & Van Andel 1988). This “first contact” between south Levantine and Nilotic sedentary communities seems archaeologically ephemeral, as it resumed only in the Chalcolithic period.

3. Chalcolithic expeditionary trade to the Nile Valley

The Chalcolithic period marks the first stage where material evidence and chronological synchronization provide some basis for characterizing Egyptian-Levantine relations. During this stage of prehistory, which is coeval with Naqada I (Amratian and Badarian cultural units), the asymmetry of complexity between the two regions is quite distinct and favors the southern Levant in terms of socio-cultural and technological development (Levy 1992). Recent studies have highlighted aspects such as settlement hierarchy, formal cemeteries, regional and local cultic centers or temples, varied modes of agricultural and pastoral production, and craft specialization as indicative of relatively advanced socio-cultural developments, particularly, but not exclusively in the Beer Sheva Valley (Gilead 1988; Levy 1995).⁶ Although the bulk of crafts relied on relatively local resources (Gilead 1988: 426), long distance expeditions for the procurement of native ores in Timna', Transjordan, and Sinai, and perhaps the import of naturally occurring alloys from regions far to the north, were the basis for copper production at Beer Sheva valley sites (Shalev 1994; Ilani & Rosenfeld 1994; Hauptmann & Weisgerber 1992; Tadmor, et al. 1995).⁷ Some lithic industries (Rosen 1986; 1993), and possibly

⁶Among these crafts are pottery production (Goren & Gilead 1987; Gilead & Goren 1989; Goren 1990b; Goren 1995), metallurgy (Shalev & Northover 1993a; Shalev 1994; Tadmor, et al. 1995), and basalt vessels (Amiran & Porat 1984; Gilead & Goren 1989).

⁷At present the extent of our knowledge of the copper sources during this period is growing, but still incomplete (Shalev 1991; 1994). While there is evidence for Chalcolithic metallurgical operations at Feinan (Hauptmann 1989; Hauptmann, et al. 1992: 6-7; Hauptmann & Weisgerber 1992: 62-3), the dating of the evidence from Timna' is problematic (Shalev 1994; Rothenberg & Glass 1992; Sebbane, et al. 1993; Avner, Carmi & Segal 1994: 276). Feinan appears to have been the ore source for the production of utilitarian tools (Shalev 1994: 633; Tadmor, et al. 1995: 136-8), but the source of the ores used for prestige items remains unknown. Analysis of the ores at Feinan (and Timna', as it derives from the same formation) exclude it as the source for the antimony-arsenic copper or the arsenic-nickel copper used for the production of prestige products (Hauptmann, et al. 1992; Hauptmann & Weisgerber 1992: 62-3; Shalev 1994: 633; Tadmor, et al. 1995: 138-42). Among the suggested origins for these natural alloys are Antioch, and eastern Anatolia to Central Iran (Tadmor, et al. 1995: 140-3; Shalev 1996: 161-2). However, recent work by Ilani & Rosenfeld (1994) suggests a local arsenical source in the Sinai, but antimony and nickel were not detected. Wherever the source of these alloys, the limited distribution of these artifacts within the Levant argues against these being imported finished products, but rather as a raw material (Shalev 1996: 162). As the petrography of the stone core in a macehead from Shiqmim is consistent with a source in the Aravah (Shalev, et al. 1992), an unknown, local production site, somewhere in the region is most likely, or perhaps it is the product of

turquoise (Beit-Arieh 1980: 56-8, 61-2), also depended on distant sources. At settlement sites, inter-regional trade is attested in raw materials and finished products.⁸ More frequently, however, specialized contexts (e.g., ritual centers, hoards, and burials) contain non-local raw materials and finished objects.⁹ The few stamp seals, including one made of a Syrian stone, and a single seal impression from a basket may be evidence for the emulation of Syro-Mesopotamian administrative practices (Joffe 1993: 55, n. 5; Ben-Tor 1995; Bourke 1997: 99).

Rare Egyptian imports to the Chalcolithic southern Levant include: *aspatharia* shells (Reese, Mienis & Woodward 1986: 79-80; D. Bar-Yosef 1995); an alabaster jar from the temple at 'En Gedi (Ussishkin 1980); an alabaster pendant from Gilat (Alon & Levy 1989: 165, 208, 210, table 1); a number of petrographically substantiated Egyptian pottery sherds from the northeastern Sinai and Gilat (Oren & Gilead 1981: 30-3, fig. 9:10; Goren 1995: 293); other still unanalyzed ceramic objects of Egyptian affinity from Nahal Besor D2, Gezer and Tuleilat el-Ghassul (De Cree 1991: 22); and two flint tools of Egyptian affinity found on the surface of Gerar 100 (Gazit & Gophna 1993). Hippopotamus ivory was used to fashion a number of objects found at Shiqmim, which have Egyptian parallels, but the raw material could also have come from the Coastal Plain (Levy, et al. 1991: 405, 411, figs. 14-15, 20; Levy 1992: 345-6, fig. 1; Levy & Alon 1992). The most important find of recent years are eight rings of gold and electrum from the Nahal Qanah Cave (Gopher, et al. 1990; Gopher &

itinerant coppersmiths (Gates 1992). While no remains of the "lost-wax" casting process has been found, all aspects of the utilitarian copper production, apart from mining and sorting, are documented at the habitation sites, including those fairly close to the mines (Shalev 1991; 1994: 636; 1995: 115; Adams & Genz 1995).

⁸These include basalt and phosphorite (Amiran & Porat 1984; Gilead & Goren 1989; Goren 1989a; 1991b; Philip & Williams-Thorpe 1993), copper, which is limited to the Beer-Sheva valley and sparse occurrences in the north (Shalev 1994: 633, fig. 1), lithics (Rosen 1987; 1993), ivory (Perrot 1959; Barnett 1982: 23), shells (D. Bar-Yosef 1995: 453-4), and ceramics (Gilead 1988: 426; Gilead & Goren 1989). Note the inspiration for the few ivory figurines is no longer thought to be Egyptian (De Cree 1991: 23-4; Kantor 1992: 12).

⁹This distribution owes itself to complex factors beyond the scope of the present work (Levy & Shalev 1989; Rosen 1986; 1993). Among these finds are: ceramics (Alon & Levy 1989: 204-7; Goren 1995); Anatolian obsidian (Yellin, Levy & Rowan 1996); copper, copper-alloys, and gold (Moorey 1988; Levy & Shalev 1989; Gopher, et al. 1990; Gopher & Tsuk 1991: 19, 23, xxi-xxvi; 1996: 114-23; Gal, Smithline & Shalem 1997: 151), with the rare exception of Gilat (Yellin, Levy & Rowan 1996: 366); ivory (Gilead 1988: 427; Moorey 1988: 182; Gopher & Tsuk 1991: xxiii, xxviii; 1996: 124-5; Gal, Smithline & Shalem 1997: 152), including a box made of an elephant tusk of unknown species from Nahal Mishmar (Bar-Adon 1980: 22; Tadmor, et al. 1995: 96); stone (Ussishkin 1980: 10; Alon & Levy 1989: 196-8, fig. 10; Alon 1990; Gopher & Tsuk 1991: xxiii, xxvi, 23; 1996: 109-13, 128-9), including examples of pumice from Gilat and Nahal Qanah (Alon 1990: 1, 3, 10; Gopher & Tsuk 1996: 128); violin figurines generally distributed in the southern Levantine arid zones with outliers at Byblos, the Peqi'in cave, and underwater at Dor (Alon & Levy 1989: 184-90; Gal, Smithline & Shalem 1996: 23-4; 1997: 152; Kingsley & Raveh 1996: 19, pl. 13); shells (Gopher & Tsuk 1991: xxii, xxviii; 1996: 128-9; Levy & Alon 1982: 47-8, fig. 10); and possibly a lapis lazuli bead at Nahal Mishmar, which has generally been thought to be out of context (Bar-Adon 1980: 150; Moorey 1987: 37-8), although an attribution to the Roman phase of the cave seems unlikely (De Cree 1991: 23). Lastly, Philip and Rehren (1996: 138-43) suggest indirect evidence for use of silver.

Tsuk 1991; 1996: 119-23, 165-72).¹⁰ Lastly, two studies suggest Egyptian influence on the local iconography (Mozel 1979; Gates 1992).

In Egypt, Levantine raw materials (e.g., wood, resin, copper, and turquoise) are reported in Amratian and Badarian contexts (Kantor 1992: 12; Prag 1986a: 71-2; Ward 1991: 13-4, 16; Lucas & Harris 1962: 429-38). The most substantial evidence for contacts with the southern Levant comes from Maadi, a Naqada I to early Naqada II settlement near Cairo (Bard 1994: 277-9; Hassan 1988: 160-1; Levy 1992: 348-50; Hoffman 1979: 200-14; Rizkana & Seeher 1984; Wenke 1989: 140; 1991: 300; TutundÅiç 1993).¹¹ Among the architectural finds in this nearly 20 ha settlement were four subterranean structures, which while unparalleled in Egypt, are similar to those found in the Beersheva valley (Rizkana & Seeher 1989: 49-56; Levy, et al. 1991: 405; Levy 1992: 348-9, fig. 2-3; Hoffman 1979: 201-2, fig. 54). Other Levantine cultural features include an intra-mural jar burial (Hassan 1988: 160; Hayes 1964: 130-1; Rizkana & Seeher 1989: 67-8), lithic tools (Schmidt 1992: 32-3), and a ceramic butter churn made of local Nile clay (Levy 1992: 349-50; Rizkana & Seeher 1987: 46-7).¹² Apart from the butter churn, there are no other Levantine forms or imported pottery detected at Maadi prior to the EB I (Porat & Seeher 1988); however, aspects of the local ceramic production at El-Omari to its south may have been brought from the Levant (Bard 1994: 277).¹³ Other imported finds include: small objects of cedar wood, bitumen, and copper ingots and ore from Feinan or Sinai, which was processed at the site (Rizkana & Seeher 1984: 239; 1989: 24-5, 71-2; Hassan 1988: 427; Pernicka & Hauptmann 1989; Hauptmann 1989: 120, 129; Kroll 1989; Bard 1994: 278).¹⁴ A small ring made of a

¹⁰Although an Egyptian origin for this gold seems likely (Gopher, et al. 1990: 441), gold traces have been found in the southern Negev and as an ore with twenty percent silver in a Lower Galilee quartz rock (Gilat, et al. 1993; Shalev 1993: 12).

¹¹The poor preservation of the site and the lack of stratigraphic control do not permit the assignment of most of the crucial data to precise phases (Rizkana & Seeher 1989: 74-5). Except where otherwise noted, many of the finds should be considered coeval with either the south Levantine Chalcolithic or EB I (Rizkana & Seeher 1989: 80-3).

¹²One complete vessel and one possible fragment were found. The complete example was found inside a subterranean structure. Beyond the obvious cultural coincidence noted by Rizkana & Seeher (1989: 47), the find spot suggests that this vessel may date to the earliest phases at the site.

¹³Kantor (1992: 12), following Kaplan (1959), notes a southern Levantine loop-handled jar at Hemamieh, but this and Kaplan's other parallels have yet to be analyzed petrographically. She also notes some other examples from Badari (Brunton & Caton-Thompson 1924: 24, pl. XVI:7).

¹⁴Cedar comprises eleven percent (N=95) of the wood finds (Kroll 1989: table 5). Copper was found in all phases and areas of the site (Rizkana & Seeher 1989: 13). Chemical analysis of five objects and seven ore samples shows a similarity between the ores and the objects, and sources in the southern Levant; one axe with a high nickel content is from an unknown source (Pernicka & Hauptmann 1989). Ward (1991: 16) notes that there is sparse evidence for small, hammered copper objects, and no evidence for copper manufacturing at any other Egyptian site during this period. J. Golden (*see supra* n. 4) presented metallographic evidence for the use of conveniently shaped ingot-like lumps of metal for the production of sheet metal during the EB I period, which may explain the occurrence of ingots at Maadi and other pre-LBA contexts.

Levantine basalt, perhaps a spindle whorl, was found on the surface (Porat & Seeher 1988: 217, 228, n. 5). Analysis of the human remains from Maadi and nearby Wadi Digla suggest an indirect morphological relationship between South Levantine and Lower Egypt populations (Klug & Beck 1985; Beck & Klug 1990).¹⁵ Thus, the evidence suggests the physical presence of representatives of the Beersheva culture at Maadi, but for what purpose? Hoffman (1979: 200-14) and Hassan (1988: 160-1) both liken Maadi to a commercial enterprise, where goods and people moved between the Nile Valley and the Levant. The discovery of domesticated donkey remains (Bökönyi 1985), and ceramic boat models (el-Alfi 1992: 340), complements the evidence for means of long-distance transportation from the southern Levant (*see infra* Chapter 3). Certainly, Maadi's position at the apex of the Delta does mark, as Hoffman (1979: 201) noted, the inauguration of this location as an economic and political center. Maadi may have been the trade node via which gold passed on its way to the Nahal Qanah.¹⁶ If land-based resource procurement was the basis for supplying raw materials for certain crafts in the Beer Sheva valley culture, it is tempting to view the presence of Levantines at Maadi as another manifestation of their search for raw materials and exotica, and their role in fostering foreign relations.

Other evidence for Egyptian foreign contacts may harbor an indirect south Levantine route. Based on raw materials, technological and stylistic criteria, and the general lack of similar finds in the interstices, Prag (1978; 1986a) argued that maritime trade between Egypt and Byblos, particularly in resin, wood, and silver, began in the Chalcolithic period. Ben-Tor (1991: 3-4) rejected this notion of regular maritime contacts, but his claim of the lack of cedar imports prior to the Old Kingdom is contradicted by the aforementioned evidence from Maadi (Davies 1995). Ward (1991: 13, n. 2) cautiously acknowledges some indirect contact, and notes that if not cedar, some coniferous woods were being imported, probably from the Lebanon (Lev-Yadun & Gophna 1992). The exceptional nature of Byblos (Gilead 1988: 426-9) logically singles it out as a possible exchange node. The presence of carnelian at Byblos (Prag 1986a: 70) and a single pendant of this material at Kalavassos *Ayious* on Cyprus (Todd 1986: 21) strengthens the notion that cabotage was one of the means of trade.¹⁷ The absence of similar luxury items in the southern Levant could be the result of the paucity of coastal settlements or the lack of excavation. This lacuna should be balanced by the recent

¹⁵While an extensive sample was used for this analysis (Beck & Klug 1990: table 5.1), the inclusion of skeletal remains from the Shiqmim cemetery and other southern Levantine Chalcolithic sites (Levy & Alon 1982; Levy 1987) would be quite useful.

¹⁶In their tripartite division of this period, based on calibrated radiocarbon determinations, Joffe & Dessel (1995) distinguish temporally between Nahal Qanah and Maadi/Wadi Digla, but this distinction does not hold when using 2 σ ranges.

¹⁷Besides sources in Egypt, Arabia and Sinai, Anatolia is cited as another source of carnelian (Moorey 1994: 97-8). The subterranean pit dwellings discovered at Kalavassos *Ayious* and nearby Kalavassos *Kokkinoyia/Pamboules* (Todd 1986: 20-1) offer an additional, albeit enigmatic, parallel with the contemporary Beersheva culture and Maadi.

discovery of the Nahal Qanah gold and south Levantine cultural affinities at Byblos (e.g., pottery, butter churn, violin figurine, and, perhaps, copper; see Prag 1986a: 63). Although it is generally thought that Egypt received its obsidian from Abyssinia (Zarins 1989), analysis of a knife from el-Tell el-Iswid (South) may point to an Anatolian origin (Schmidt 1992: 34).¹⁸

Among the factors in the collapse of the south Levantine Chalcolithic, Joffe (1993: 36-7) suggests that growing commercialization may have caused social fissioning in what Levy (1995: 240-3) has called a “debt-based” society. How this process impacted on Chalcolithic elites, whose disappearance by the EB I period can be seen in the loss of nearly all the characteristic prestige or cult symbols (Joffe 1991: 9-10; 1993: 36-7; Merhav 1993), still requires more investigation. In contrast, interaction, trade, and commercialism are seen by some as positive factors in the rise of the Egyptian state and the impetus for the Naqadan expansion into Lower Egypt (Trigger 1987; Hassan 1988: 166-75; Von der Way 1992a: 8-10 [discussion]; Bard 1994: 281-2), a phenomenon which opens a new chapter in Egyptian-Levantine relations.

4. The Egyptian Levantine colony and Uruk maritime expansion?

The rise of the Egyptian state during the second half of the fourth millennium is a long, complex, and still not fully understood process, with numerous explanations and avenues of research still to be explored (Hassan 1988: 164-75; Wenke 1989; 1991; Bard 1994; Köhler 1995). Whichever model one posits to explain this process, it did not take place in a vacuous state of insularity; rather it occurred at a time when Egyptian culture displayed complex foreign contacts and influences from Mesopotamia while exporting the trappings of its own culture and society into the southern Levant. As the history of this time period is shrouded by the foggy veil of proto-literacy, the social, religious, economic factors, and foreign influences that coalesced to lay the foundation for the unified Egyptian state, may never be fully understood (Wenke 1991). Although this foggy veil has long been pierced by vague and perhaps biased later historical references to proto-kings and events, it is only slowly being lifted by radiocarbon determinations (Hassan 1980; 1987; Levy 1992; Brandl 1992: n. 1; Kempinski & Gilead 1991: 171; Joffe 1993: 41; Gilead 1988: 399-406; Boehmer, Dreyer & Kromer 1993; Wenke 1991: 288-9). From this we learn that the Nile Valley developments of Naqada II-III (e.g. cultural nucleation and Uruk influences) are almost indistinguishable, chronologically, and therefore seemingly contemporaneous with the earliest South Levantine EBA phase (Gophna 1995: 279, table 1; Levy, et al. 1997: 7, table 1; Table 1).¹⁹ The present discussion will seek to outline the character of these relations as they set the background for future Egyptian-Levantine relations.

¹⁸Chalcolithic-EB I period cotton fibers found in eastern Jordan may also hint at contacts with either the East, east Africa, or the Upper Nile (Betts, et al. 1994).

¹⁹Braun and Van den Brink (1998) was received too late to be incorporated into this study, but the authors' conclusions do not radically alter the views presented here.

4.1 Egyptian colonization of the southern coastal plain

The collapse of the Beer Sheva Valley Chalcolithic culture and other regional clusters does not herald a complete depopulation of the region. Evidence exists for a major shift in settlement location (Gophna 1995; Gophna & Portugali 1988: 12-4, figs. 1-2; Finkelstein & Gophna 1993; Joffe 1993: 41-8), changes in metal production and distribution (Shalev 1994), new ceramic wares (Stager 1992: 28-9), and, as noted above, a radical change in the elite groups and their symbols of prestige.²⁰ With these changes comes some evidence for a continuity in ceramics, cross-craft skeuomorphs, utilitarian metallurgy, and aspects of ritual behavior (Joffe 1993: 39; Joffe & Dessel 1995: 514; Amiran 1985; Shalev 1994; Beck 1995: 8-13; de Miroschedji 1993a; Stager 1992: 29-30), all of which indicate the survival of Chalcolithic vestiges.²¹ The socio-political vacuum of slow, small-scale social reorganization in the early phases of the EB Ia (see Joffe 1993: 41-3 for a summary) was met by a socially and technologically complex superior foreign entity: an Egyptian colony.²²

The literature on the Egyptian presence in the southern Levant during the EB I period is extensive (Brandl 1992; Gophna 1995: 277-9; Ben-Tor 1991; Stager 1992: 31-3; Finkelstein & Gophna 1993). While many scholars of the Levant have characterized this relationship in terms of later models of military intervention and imperialism, others have argued for a commercial relationship and peaceful coexistence (see summaries by Gophna 1995: 277 & Levy et al. 1997: 6-7). Some have sought to look towards Egypt as the catalyst for Levantine urbanization (Kempinski 1992d: 423-4), while others have demurred (Gophna 1995: 279). Even on the Egyptian side, relations with the southern Levant are raised as an issue in state formation (Trigger 1987; Bard 1994). All the explanations and interpretations are predicated upon the distribution of foreign finds in the archaeological record, but it is only with the recent application of archeometric techniques that local Egyptian industries have been identified and understood, and the full extent of the Egyptian colony realized. Kempinski & Gilead (1991: 187) are correct in warning against the loose application of the term “colony” to this phenomenon without any definition of the term. While the debate over the precise semantics of this phenomenon will no doubt continue, enough evidence has now accumulated to satisfy most definitions of colony, namely the presence of an Egyptian expatriate society that maintained relations with its homeland and possessed a full-range of societal components, from the administrative elite to the farmer—all of these in a geographical zone, between the Yarkon and Besor rivers, the sea, and the hills.

²⁰For discussions of the Central Hills and the northern reaches of Canaan, see, respectively, Finkelstein & Gophna (1993) and Esse (1991: 143-52). For the periodization of the EB I, see Stager (1992: 28-34) and Gophna (1995: 279, table 1).

²¹One such vestige is the depiction of pack animals (*see infra* Chapter 3).

²²The recent salvage excavations of EB Ia sites along the coast of Ashkelon will no doubt shed important light on this process (Braun & Gophna 1996; Baumgarten 1996; Golani 1996; Gophna 1997).

4.1.1 Egyptian architecture

At three sites, Tel `Erani, En Besor, and Afridar, Egyptian-style buildings were constructed using Egyptian building techniques (Brandl 1992: 445; Kempinski & Gilead 1991: 175-6, fig. 9; Kempinski 1992d: 422-3; Gophna & Gazit 1985). This combination of form and fabrication indicates that the architectural style desired by the inhabitants was met by architects and masons who came from an Egyptian building tradition. Although still not completely excavated, the discovery of an Egyptian-style tomb at Nahal Tillah with a dromos may be another example of Egyptian architecture in the region (Levy, et al. 1997: 14-6, 34-5, 45-6).

4.1.2 Egyptian administration and bureaucracy

Locally produced cylinder seals from Gezer, En Besor, and possibly Nahal Tillah, indicate the production of administrative devices that were derived from an Egyptian iconographic idiom (Brandl 1992: 446; Levy, et al. 1997: 18). Numerous seal impressions from En Besor, Tel `Erani, Tel Halif, and Nahal Tillah are local derivations of Egyptian seals (Brandl 1992: 446-7; Ben-Tor 1991: 6-8; Schulman 1983; 1992; 1994; Kempinski & Gilead 1991: 171; Levy, et al. 1995: 28-9; 1997: 16-8). Petrographic and chemical analysis of the clay from seven sealings from En Besor and Nahal Tillah show conclusively that these were impressed on local clays, which suggests a local application of an Egyptian bureaucratic administration (Porat 1989a; Ben-Tor 1991: 6-8; Schulman 1992; 1994; Levy, et al. 1997: 16-8).²³ Porat's analysis (1989a: 86) demonstrates that some of En Besor bullae derive from other regions, perhaps as official consignments for the local authority.²⁴ At present, given the lack of good parallels for these seal designs in Egypt (Ben-Tor 1991: 6-8), or material analysis, there is no evidence for sealed shipments from the southern Levant to Egypt.

4.1.3 Egyptian pottery

When discussing the EB I period, the term "Egyptian pottery" encompasses a complex range of artifacts. Egyptian pottery has been a facet of our understanding of the material culture of the southern Levant during the EB I-II since the excavations of Tel `Erani (Brandl 1989). Initially, the presence of kitchenware lent credence to the notion of an Egyptian physical presence in the region (Gophna 1976). Only recently, however, has a detailed analysis of the pottery permitted a full understanding of the relations between the Egyptian people, their potters, and their pots in the southern

²³The results indicated that the clay of four of the seven sealings is comparable with the silty clay from En Besor, two of the seven are of a quartz-tempered loessy fabric comparable with Fara H, Taur Ikhbeineh, or Nizzanim; the remaining sample is of a calcareous clay from somewhere else in the southern Levant (Porat 1989a: 60). An impression from Nahal Tillah, which may read "chief/ruler of the city/fortress of the foreign country X" (Levy, et al. 1997: 18), is the first hint at the type of political organization that may have been in place.

²⁴Baruch Brandl (*see supra* n. 4) hypothesizes the use of miniatures (jars, bread loaves, etc.) from Tel `Erani as a manifestation of Egyptian administration similar to the one reconstructed for Mesopotamia by Schmandt-Besserat (1978). In this scheme, the small clay sealings sealed loops or bags of miniatures in a kind of docket or bill of lading.

Levant. Egyptian ceramic types, which draw their morphological, functional, and cultural inspiration from the Nile valley, have been found in large quantities in the colonization zone, diminishing in numbers and frequency towards the north and the east (Porat 1989a: 57; 1992: 433, fig. 1; Brandl 1992: 444, map).²⁵ Within this zone, a number of sites (ʿEn Besor, Taur Ikhbeineh, Tel ʿErani, and Nahal Tillah) stand out for their richness of numbers and range of forms within the Egyptian ceramic assemblage (Gophna 1990; 1992a; Oren & Yekutieli 1992; Brandl 1989; Levy, et al. 1995: 28; 1997: 25-38). At Tel ʿErani, for example, sherds of over one thousand vessels have been identified (Brandl 1992: 441).

The presence at Tel ʿErani of hybrid vessels, reflecting a mixture of Canaanite and Egyptian traits (Brandl 1989: 376-9), is now clearly substantiated by petrographic analysis (Porat 1986-1987; 1989a; 1992).²⁶ Four distinct petrographic groups were identified: loessy or silty clays, Nile clays, marly clays, and sedimentary clays. The loessy or silty group is a south Levantine fabric from which particular Egyptian types were made, including bread molds, various bowls, various drop-shaped jars, other storage jars, and hybrid forms—all vessels associated with food preparation, eating, or drinking. No kitchenware was imported from Egypt (Porat 1989a: 50; 1992: 433-4, table 4). This petrographic group is found only in the colonization zone; no examples were found outside this zone, not even in the Sinai (Porat 1992: 435, fig. 3; Brandl 1992: 446, map).²⁷ Technologically, this group differs considerably from the local Canaanite pottery tradition in source material, temper, the addition of organic temper, higher firing temperature, and the extensive use of the pottery wheel—all characteristics of Egyptian ceramic traditions (Porat 1989a: 50-2, 61-2 tables 9.3, 9.7; 1992: 433-4, table 6). Slight differences in fabric among the sites suggest that these wares were being produced at several locales (Porat 1986-1987: 112-5; 1989a: 55-7; 1992: 433, table 4). As Porat (1989a: 85-6; 1992: 434) concludes, side by side with a Canaanite pottery tradition, an Egyptian tradition, i.e., Egyptian potters, were producing Egyptian wares for Egyptian households.²⁸ Recently, a cache, perhaps a foundation deposit, of Egyptian vessels made in the Egyptian technique using local clay was

²⁵Limited examples are found outside this zone (e.g., Arad and Beth Yerah), often in later levels (Porat 1992; Brandl 1992: 443).

²⁶Porat's petrographic sample is the most extensive undertaken for this period to date. From the southern Levant, she has sampled over three hundred Egyptian vessels of eleven types from seventeen different sites; 1,049 local Canaanite vessels of eighteen types from twenty-six sites; and from Egypt, fifty-three Canaanite vessels of seven types from nine sites and 109 Egyptian vessels of thirteen types from ten sites (Porat 1989a: figs. 5.1-5.2, appendix 2a; 1992: 433, fig. 2, tables 1 & 2). Further sampling and analysis of EBA ceramics has been undertaken by Goren (1990a; Oren & Yekutieli 1992; Levy, et al. 1997: 35-8).

²⁷Sinai kitchenware was supplied from Egypt (Porat 1992: 435).

²⁸The presence of hybrid types (Brandl 1992: 445-6; Porat 1989a: 3, 52, 55-6) indicates communication and some craft transfer between the two traditions, although the evidence from Nahal Tillah may indicate that this craft transfer may not have been widespread (Levy, et al. 1997: 34).

found at an EB I temple at Megiddo (Finkelstein 1997; D. Ussishkin, *see supra* n. 4), which is the first such assemblage outside the colonization zone.

4.1.4 Egyptian flint tools

Alongside the local lithic industry, analysis has revealed imported flint tools from Egypt and a high proportion of locally-made Egyptian flint tools, produced by resident Egyptian craftsmen (Rosen 1988). Examples are found sporadically along the coast at Tel Aviv (“Country Club” site), Azor, and Yavne-Yam, with the richest assemblages in the south at the sites of En Besor, Gaza Site H, and, in particular, Tel `Erani (Rosen 1988; Brandl 1992: 441, 446). Of the one thousand lithic artifacts from Tel `Erani analyzed by Rosen, two hundred are of Egyptian type (Rosen 1988: 106-7). Functionally, the assemblage is varied, and includes sickle blades, which were used as agricultural tools or in bread and beer production (Rosen 1988: 115; Brandl 1992: 446). Regarding the question of an Egyptian military presence, Rosen (1988: 115-6) notes the absence of transverse arrowheads, a common weapon at Egyptian sites in Sinai. Acknowledging the scarcity of a comparable Canaanite lithic assemblage that can be attributed to the earliest sub-phases of the EB I period, Rosen (1988: 113-5) makes the following points in support of his identification of resident Egyptian knappers: the Egyptian flints were found only in sites with locally produced ceramics, architecture, and other aspects of locally produced Egyptian material culture (cf. Brandl 1992: 444, map); with the abandonment of these sites, this lithic element disappears completely; the frequency of local lithic elements provides a marked contrast to the greater variety of the Egyptian tool kit; and, lastly, the preference for particular raw materials indicates craftsmen other than those who produced the Canaanite flint assemblage. The functional convergence or redundancy shows that these are not individual elements of a single tool kit, but represent distinct and parallel industries.

4.1.5 Other evidence for Egyptian industry or presence

Cosmetic stone palettes from Azor, Tel `Erani, Lachish, and Site H are reported to be locally made (Brandl 1992: 450), although the basis for this determination is not given. Analysis of the skeletal remains from Azor suggest that some of the individuals are of African origin (Ben-Tor 1975: 9).

4.2 True imports from the Nile valley

True Egyptian imports from the Nile valley are found primarily within the colonization zone, but also beyond its limits (Brandl 1992: 444, map). Among these finds are luxury items such as beads of gold and various semi-precious stones from tombs at Azor; cosmetic palettes; beetle and bull's head amulets; alabaster objects; an unidentified green bead in the shape of an Egyptian vessel from Tel Halif (Seger 1990: 71, fig. 58:6); part of a diorite vessel from Lachish (Brandl 1992: 460); and a stone vessel

out of context from Yoqneam (Brandl 1992: 469).²⁹ Prestige or ritually oriented items include a discoid macehead from Megiddo (Brandl 1992: 465) and a faience statue from 'En Besor (Gophna 1993b). Utilitarian lithic objects include fine flint tools from Azor, Yavne Yam, Lower Horvat 'Illin, and Nahal Tillah (Ben-Tor 1975: 24, pl. 21:4; Gophna 1969; Marder, Braun & Milevski 1995: 78-79, n. 18, fig. 10; Levy, et al. 1997: 42, fig. 29a), and a diorite stone axe from the Tel Aviv 'Country Club' site (Gophna 1978: 138-40, fig. 4:3). Organic products may have arrived in closed vessels, of which the *aspatharia* shells from Arad, Azor, and Tell el-Far'ah (N) are the only known examples (Reese, Mienis & Woodward 1986: 80-82).

True ceramic imports are represented solely by storage jars of various types and sizes, which are produced of Nile silt and marly clays (Porat 1989a: 45-56, 75-77; Brandl 1989: 368-79; Gophna 1990: 151-8).³⁰ They occur in sites within the colonization zone alongside locally produced Egyptian wares, albeit in much smaller numbers (Porat 1992: table 4). Outside of this region, these are the only Egyptian vessels found (Porat 1992: fig. 3).³¹ They presumably contained organic commodities that were desired by the Egyptian population and not available in the southern Levant (Gophna 1990: 159).

4.3 Other evidence for inter-regional and international trade in the southern Levant

Although most investigations of trade in the southern Levant tend to focus on Egypt, evidence for both inter-regional trade and international trade with other regions is documented in the archaeological record. Since Hennessy's research (1967), little has been done on the northern connections, apart from architectural, ceramic, and glyptic similarities with Byblos (Ben-Tor 1985; 1989; Braun 1989). Such contacts will need to be reassessed in light of recent finds of cedar and Turkey oak wood, both probably from Lebanon (Gophna & Lipschitz 1996), an Amuq F bowl at EB Ia Taur Ikhbeineh (Oren & Yekutieli 1992: 371, fig. 10:15, pl. 9), and a Jemdat Nasr type vessel found

²⁹For gold beads and semi-precious stones such as amethyst, agate, chalcedony, and jasper, see Ben-Tor (1975: 23, fig. 12:9, pl. 22:5). A jade pendant is reported at Site 177, near Dor, which is dated to the Chalcolithic-EB I (Olami 1984: 162, fig. 161:7). Jade is often misidentified; it is probably of jasper or serpentine (Lucas & Harris 1962: 396-7). Cosmetic palettes from Jericho, Halif (Brandl 1992: 458), and Bab edh-Dhra' (Schaub & Rast 1989: 452-6, fig. 261), with other possible examples at Beth Yerah and Gaza (Brandl 1992: 467-8). A possible steatite beetle amulet was found at Nahal Tillah (Levy, et al. 1997: 22, fig. 17:2). Bull's head amulets come from Tell el-Asawir and Azor (Brandl 1992: 449-50). Another amulet, fashioned in marble, is reported from 'En Besor (Gophna 1993a: 394). Alabaster finds include: beads at Tell el-Asawir (Brandl 1992: 449; Ben-Tor 1982: 5); a cylindrical vase at Yotvata in the Arava (Brandl 1992: 469); a macehead from Lower Horat 'Illin (Marder, Braun & Milevski 1995: 79); and pendants from the Tel Halif terrace 'Silo site' (Alon & Yekutieli 1995: 181, fig. 28:2) and 'En Esor (Yanai & Horowitz 1996).

³⁰To Brandl's summary should be added a petrographically documented Egyptian vessel from an EB Ib tomb at 'En Esor (Yanai & Horowitz 1996), a bottle and a storage jar from Lower Horvat 'Illin (Marder, Braun & Milevski 1995: 79). Apart from a sherd bearing a *serekh*, no petrographically Egyptian ceramic imports were found at Nahal Tillah (Levy, et al. 1997: 31).

³¹Note that only one jar was sampled from 'Ai (Porat 1989a: appendix 2a). Numerous other vessels were found (Brandl 1992: 454-5, fig. 2), including bowls, suggesting that this firm geographical division may need to be modified.

with local and Egyptian finds in an EB Ib tomb at 'En Esur (Yanai & Horowitz 1996: 71). Although beyond the scope of this work, many seemingly insignificant finds and materials have eluded any synthetic treatment.³² The presence of Dead Sea bitumen at a few sites may hint at the network that supplied Egypt.³³

4.3.1 Seals and sealing

In addition to locally made Egyptian cylinder seals and impressions in the zone of colonization, which are associated with an Egyptian administration, cylinder and stamp seals and impressions were also found outside this zone. These finds appear at numerous sites, summarized by Ben-Tor (1978), a corpus that is continuously growing.³⁴ Seals and seal impressions suggest the beginnings of the use of symbols in some form of economic or administrative system (Helms 1987b). These symbols are complex derivations from Mesopotamia and Iran, which were transmitted in a variety of directions via Syria and Byblos (Teissier 1987), and to some extent via Egypt (Beck 1984).

4.3.2 Pottery

A number of studies of pottery production have noted a change from a low level of inter-regional interaction, reflected by a multiplicity of styles, to a more inter-regionally integrated and standardized craft (Joffe 1993: 53; Esse 1989b). Porat (1989a) does not synthesize her study of Canaanite pottery by sub-phases within the EB I, but she notes increasing specialization and inter-regional communication within the period.³⁵ Inter-regional trade is demonstrated by storage jars made of dolomitic raw materials of the Central Hills that were found at numerous sites in the southern Coastal Plain (Porat 1989a: 47-9, table 8.5A, fig. 8.1A). Rare examples of basalt-tempered jars at Tell el-Far'a (N) and Tel Malhata suggest trade with eastern Galilee and the Beit Yerah area, respectively (Porat 1989a: fig. 8.1A, table 8.5B). Hole-mouth jars made of calcite-tempered calcareous clay may also have been brought to Coastal Plain sites (Porat 1989a: 47). A basalt-tempered hole-mouth jar

³²These include semi-precious stones (Ben-Tor 1975: 23; Talbot 1983; Hestrin & Tadmor 1963: 285, fig. 15), tabular fan scrapers (Rosen 1983; 1989), and basalt objects (Amiran & Porat 1984: 17; Braun 1990; Philip & Williams-Thorpe 1993).

³³E.g., Arad (Nissenbaum, et al. 1984); Lower Horvat 'Illin (Marder, Braun & Milevski 1995: 84-86); and Tel Dalit (Gophna 1996: 134).

³⁴This corpus includes: Arad (Beck 1984), 'En Shadud (Braun 1985: 77-89), Beth Yerah (Esse 1990), Kabri (Kempinski 1991), Bab edh-Dhra' (Lapp 1989: 3), Jawa, and Tell Um Hammad (Helms 1987b), a list that is not intended to be comprehensive.

³⁵One might argue that her study is biased towards Arad, which makes up 22 percent of the sample (Erani is next highest with nearly 16 percent), but her sampling from other sites is fairly regular and covers all the sub-phases of the period (see above n. and Porat 1989: appendix 2a). There is still much that may be gleaned from her results, but one must acknowledge that this is a pioneering study; as macro and micro-scopic study of ceramics becomes *de rigueur* the subject will certainly be elucidated further.

from Nahal Tillah is from a still unidentified Levantine source (Levy, et al. 1997: 38). Petrography also supports the identification of a workshop at Aphek, which produced carinated bowls that were traded to other sites by the end of EB I (Beck 1985a; Porat 1989a: fig. 8.1A, table 8.5B).

4.3.3 Metals

The beginning of the Early Bronze Age marks a significant change in the realm of mining, production, and distribution of copper. In contrast to the Chalcolithic period, when no manufacturing was carried out near the mines, there is increasing evidence to suggest that smelting and manufacturing were carried out near the sources of ore. No direct evidence for smelting is documented at Feinan during this period (Hauptmann & Weisgerber 1992: 63; Hauptmann, et al. 1992: 6-7),³⁶ but recent finds indicate some manufacturing activity was carried out in the vicinity (Shalev 1994: 635-6; Adams 1992).³⁷ One mine shaft from Timna' is radiometrically dated to the EB I (Avner, Carmi & Segal 1994: 277), but dating the evidence here, as with the sources in southern Sinai, is complicated by the difficulty in dating arid zone sites (Sebbane, et al. 1993; Avner, Carmi & Segal 1994). Ilan & Sebbane (1989: 148, 153) suggest that sources in south Sinai were utilized based on, *inter alia*, the similarity in the composition of EB I and EB II copper awls, the latter of which are more convincingly derived from that region. The argument for a change in exploitation relies partly on the absence of evidence for smelting at habitation sites (Ilan & Sebbane 1989: 143). Furthermore, the presence of 'industrialized' smelting slag at some sites (Shalev 1994: 635; 1995: 115) suggests that the primary smelting was carried out elsewhere. Evidence for manufacturing comes in the form of slag, crucibles, and molds that have been found at habitation sites along the Coastal Plain at Palmahim, Besor-Site H, and Ashkelon (Shalev 1994: 635; Golani 1996), inland at Tel 'Erani, Arad, and Small Tel Malhata (Ilan & Sebbane 1989: 143, n. 5), and at Tell esh-Shuna in Jordan (Baird & Philip 1994: 118). Unlike Chalcolithic metallurgy, all copper objects were made of the same unalloyed material, and as with other metals, formed by open-mold casting and forging (Shalev 1994: 633-6). With the exception of Tell esh-Shuna, all of the available evidence for the manufacture of copper objects is limited to sites south of Jaffa. In contrast to the Chalcolithic, the distribution of finished products in the EB I period is relatively random all over the southern Levant, suggesting general abundance and access to this material and its products: tools, weapons, jewelry, etc. (Shalev 1994: 633-6, figs. 1-3; Philip 1989; Miron 1992; Ilan & Sebbane 1989: 143-53, fig. 2).³⁸

³⁶There had been some earlier indications by Hauptmann, Weisgerber & Knauf (1985: 172) of EB I mining at Feinan (cited in Ilan & Sebbane 1989: 148), but activity during this period is not reflected in later publications.

³⁷It is not clear whether this development in EB specialization emerges from the Chalcolithic sites in the Feinan area (Adams & Genz 1995).

³⁸There is still no unanimity regarding the date of the Kfar Monash hoard (Hestrin & Tadmor 1963; Miron 1992: 25; Shalev 1994: 635), but some tend towards an EB I attribution (Ben-Tor 1975:

Silver, whose source is generally considered to be in Anatolia (Prag 1978: 40-1; Lucas & Harris 1962: 245-9) is not common in the southern Levant in EB I contexts.³⁹ Among the few examples are a silver bowl, rings, a pin, and other fragments.⁴⁰

4.4 Levantine imports in Egypt

The EB I period is characterized by an increasing number of archaeologically visible imports from the southern Levant. Invisible commodities may be inferred by the presence of pottery vessels, which most likely contained organic products. Occasionally, some evidence, such as resin or bitumen (Prag 1986a: addendum; Rizkana & Seeher 1989: 71-2), is preserved or discovered through analysis. The nature of these commodities reveals much about the desires of the burgeoning Egyptian state and its elites. The development of an Egyptian taste and demand for oils, resins, bitumen, wood and its by-products, wine, and copper, would establish a pattern for Egyptian foreign relations that would last, *mutatis mutandis*, the entire Pharaonic period. How the Egyptian elites developed a taste and demand for these products is not clear. While it can certainly be demonstrated by the EB I, its beginnings may date back to an earlier period. Other seemingly less exotic foodstuffs are suggested, such as moringa oil, honey, and legumes (Ward 1991: 15-6), but the archaeobotanical record does not entirely support these suggestions, and, e.g., the translation of moringa should probably be amended to olive (Stager 1985: 174-5; Lev-Yadun & Gophna 1992).

4.4.1 Copper

Beginning with the Naqada II period, increasing numbers of copper tools made in open molds were in use throughout Egypt (Ward 1991: 16-7; Ilan & Sebbane 1989: 153). The only evidence for manufacturing is at Maadi, whose copper appears to have come from Feinan (*see supra* p. 15). As no evidence has been found for the utilization of local Egyptian sources prior to the Twelfth Dynasty (Garenne-Marot 1984), the metallurgical evidence from Maadi and the Egyptian finds in the Sinai suggest that the copper was being brought from sources in the southern Levant, including Sinai (Ilan

26-7; Philip 1988: 199-200; 1989: 110-2). Philip (1988: 199-200; 1989: 158-9, 193-4) argues for centralized control of copper production, but does not deny the widespread distribution of its products.

³⁹For the rejection of Egypt as the source of silver, see Philip & Rehren (1996: 137-40); *contra* Gale & Stos-Gale (1981: 294). (See their conclusion regarding a Pre-dynastic silver rim.)

⁴⁰E.g., silver bowl from Tell Fara (N) (de Vaux 1951: 587, fig. 13, pl. XXVIIIa; Amiran 1979), various rings from tombs at Azor (Ben-Tor 1975: 24, fig. 12:10-12, pl. 22:6) and Tel Aviv-HaQiryat (Ritter-Kaplan 1979: 241), a pin from Bab edh-Dhra' (Schaub & Rast 1989: 313, fig. 185), an earring from Ashkelon (Golani 1996), and a single ring and fragment of silver sheet from Tell esh-Shuna (Philip & Rehren 1996: 137). Joffe (1993: 56, n. 7) refers to a silver ring in an EB tomb at Jericho, but according to Kenyon (1965: 30) both objects are corroded copper. The fragments of silver sheet from Kfar Monash may also be included in this list (Philip & Rehren 1996: 137; Hestrin & Tadmor 1963: 285).

& Sebbane 1989: 153).⁴¹

4.4.2 Pottery and its influences

Levantine ceramics have been discovered at numerous Gerzean or Naqada II-III period sites, primarily in tombs (Kantor 1992: 12-7). Most of the vessels are storage jars, with ledge and loop handles, but other closed and unusual forms (e.g., kernos, churn, etc.) are known as well. Elements of these vessels, such as ledge and loop handles, are considered to have influenced Egyptian ceramic forms (Kantor 1992: 12-3; Bard 1994: 282), although the precise chronology and mechanism of transfer is still not fully understood. Compared with the generally sporadic occurrences along the middle and upper Nile (Kantor 1992: 12-4), the greatest concentration of these imports is at the Deltaic sites of Maadi, Minshat Abu Omar and Tell Ibrahim Awad (Kroeper 1986-1987: 78-79; 1989; TutundÅiç 1989; 1993; Van Den Brink 1992: 53, fig. 9).⁴² The exception to this pattern of distribution is the extraordinary number of Levantine jars at the elite cemetery (labeled "U") at Abydos (Dreyer 1992; 1992: 62-64). While single chamber tombs Uo and Up contained two Levantine jars, and a multi-chamber tomb Ua contained twenty-five Levantine jars, a large twelve chamber tomb Uj, which may have belonged to a ruler, held as many as seven hundred vessels, a quantity of which contained grape pips or the residues of resined wine (Dreyer 1992: 294-7, pls. 2, 3, 5; Dreyer, Hartung & Pumpenmeier 1993: 33-5, 49-56, figs. 4, 11; McGovern, et al. 1997: 9-11).⁴³ Lastly, an unusual occurrence is a group of eight to nine Levantine jugs discovered in Qustul, Nubia (Williams 1986: 78-80, table 22, fig. 48).⁴⁴

Analysis of Canaanite jars of various types from a number of sites shows that they were produced in the southern and central Levant, some of dolomite tempered wares specifically from the

⁴¹Oren (1989: 400, n. 7) reports several kilograms of copper ore at a northern Sinai site, which is far less than Kempinski cites (1989e: 165). These finds deserve more attention, as the presence of unrefined ore in EBA contexts does not correlate with what is known of the organizational trend of the copper industry.

⁴²At Maadi, for example, these wares comprise three percent of settlement pottery (Bard 1994: 278), while at Minshat Abu Omar imports are one percent (Kroeper 1989: 420).

⁴³Petrographic analysis of these jars have revealed that some were produced according to south Levantine ceramic traditions using locally available materials (N. Porat & Y. Goren, *see supra*, n. 4). Note that one of the clay sealings of the Abydos jars was composed of Nile clay, which suggests bottling some where in Egypt (McGovern, et al. 1997: 11-2). Until a correlation is made between the petrography and the organic remains, the full implications of this important context and its finds will not be fully realized.

⁴⁴Williams (1986: n. 63) notes that they appear to be made of the same fabric as Egyptian wares, prompting Kantor (1992: 13) to suggest that they are copies rather than imports. Together with the unpublished evidence from Abydos Tomb Uj, this suggests that Levantine pottery was in enough demand to support resident Levantine potters in the Nile valley.

Central Hill Country (Porat & Seeher 1988; Porat 1989a: 63-4, 70-71, appendix 5b).⁴⁵ Given the geographical origin of these vessels, their design as containers for liquids (Raban 1980), their emergence as a prestige item, a trait evinced by their presence in tombs and pictorial depiction by the First Dynasty (Amiran 1969b), it is likely that they contained resins, olive oil, or wine (Finkelstein & Gophna 1993; Ward 1991: 13-4).⁴⁶

4.4.3 Lithics

As in the preceding period, evidence for Levantine influence on the lithic technology of the Delta, specifically sickle blades, continues at Maadi and now appears at Tell el-Far`in (Buto) and el-Tell el-Iswid (Kantor 1992: 12-3; Schmidt 1992: 34-5; 1993). The aforementioned surface occurrence of a small basalt ring, perhaps a spindle whorl, from Maadi, if not of Chalcolithic date, belongs to this period.

4.4.4 Wood products

Evidence for the use and transport of wood and its byproducts in the EBA comes from two sources, which are not always reconcilable: the archaeological and historical record. The incompatibility of these sources derives from a number of methodological limitations. For textual sources, there is the fundamental question of the reliability of identifying a particular ancient term with a specific arboreal species (Meiggs 1982: appendix 2). Even with a correct identification in one time period, the same term in another age may be questionable. Meiggs (1982: appendix 3) notes that confusion between various species occurs even in later historical periods. While such problems of identification may not plague the modern paleobotanist, some limitations are imposed by the poor preservation of wood, except when charred, which until recently resulted in relatively small representative samples from individual sites and regions. Many key excavations were performed at a time when archaeologists were not cognizant of the need to collect wood samples; when they did, the lack of conservation of anything less than a find of museum quality means that identifications carried out before the advent of the scanning electron microscope cannot always be reconfirmed (Western & McLeod 1995: 77-78). Palynological data complements these identifications (Baruch 1986). In recent years, improvements in collection and analysis have meant that a meaningful, if sometimes heated, dialogue can now take place between the paleobotanist and the philologist (Ward 1991; Lev-Yadun & Gophna 1992). Advances in the analysis of organic residues of oils or resins (Mills & White 1989), however, have yet to be applied to the questions at hand (cf. Prag 1986a: addendum). In light of the

⁴⁵Buto (N=1), Maadi (N=10), Minshat Abu Omar (N=6), Hierkonpolis (N=1), Naqada (N=2), and El-tell es-Iswid (N=6). Porat's exclusion of any southern Levantine Chalcolithic imports from the Maadian ceramic assemblage is an excellent example of how petrography can occasionally be used as a dating method (Porat & Seeher 1988).

⁴⁶Kempinski notes that these narrow necked jars are a functional feature for the transportation of wine (Dreyer 1992: 299).

quantities of imported Levantine pottery, residue analysis would be a welcome contribution to the discussion.

Archaeological remains of wood are the only evidence for Predynastic imports of wood. At Maadi, eleven examples of cedar were discovered, including a lid and a small stick (Kroll 1989; Rizkana & Seeher 1989: 25). Although these could have been fashioned from timber, they may have arrived as small wood or as finished products (Rizkana & Seeher 1989: 25). An example of juniper is also reported (Davies 1995: table 1).⁴⁷

4.5 Summary of the evidence for Egyptian colonization

Until recently, previous models seeking to explain the Egyptian presence in the southern Levant, e.g., short military incursion, imperial aspiration, commercial relations, etc (Gophna 1995: 277), have suffered from a lack of recognition of the locational, technological, and chronological characteristics of Egyptian finds abroad. Brandl's (1992) summary of Egyptian finds in the southern Levant shows a clear and defined distribution within a limited geographical zone for a distinct time frame. Imported luxury or prestige items and storage jars demonstrate that there was a demand for Egyptianalia and food products from the Nile Valley. More importantly, the discovery that many Egyptian finds (e.g., ceramic, lithic, administrative, etc.) were produced locally demands a more holistic and complex interpretation. Physical anthropology suggests the presence of Egyptians who were buried abroad. The study of craft traditions demonstrates that artisans from an Egyptian cultural milieu were resident in the region for the entire period. Egyptian architecture was constructed by Egyptian masons at three sites, two of which, Tel 'Erani and 'En Besor, demonstrate large Egyptian assemblages. These two sites may have served, respectively, as a sort of capital and a border post for the local Egyptian administration (Brandl 1992: 442; Gophna 1993a: 394; Schulman 1994), although Levy et al. (1997: 46) suggest that Nahal Tillah was an additional administrative center. This local administration is reflected by the seal impressions and cylinder seals, perhaps indicating some sort of intra-regional, centralized, and redistributive agricultural economy. Petrographic analysis demonstrates the presence of locally produced Egyptian wares and indicates that Egyptian potters worked in at least two locales, supplying Egyptian expatriates with the kitchenware to maintain households at no less than eleven sites (Brandl 1992: 444, map). These households also utilized the products of Egyptian flint knappers who produced Egyptian sickle blades for the residents of three sites (Brandl 1992: 444, map). This specific industry suggests that Egyptian farmers were settling in this region as well.⁴⁸ Stone

⁴⁷Juniper is distributed in the north-central mountains of Sinai and in Jordan (Liphschitz & Biger 1995; Lev-Yadun, Herzog & Tsuk 1995). An example of this species is reported at Timna during the Chalcolithic period (Liphschitz & Biger 1995: 123, table 1), but the evidence for human activity at the site during this period is equivocal.

⁴⁸A.M. Rosen (*see supra* n. 4) suggests that flood plain farming may have been practiced by Egyptian farmers in adapting to the southern Levant's environment. What experience or technology they may have imparted to local agriculturalists is unclear.

workers are also indicated by the locally produced pallettes. Only one possible example of Egyptian ritual was found—the statuette at 'En Besor. Its context in an Egyptian residency suggests that it was not merely a secular luxury import. Thus, a full array of social and craft activities are represented in a limited geographical zone, from primary food production to centralized administration. All lived side-by-side with local Canaanite communities in unfortified settlements lacking any material remains that might be suggestive of warfare or enmity. This evidence clearly suggests an intentional colonial endeavor, in which Egyptians came to this region in order to remain physically resident, but vigorously maintained their social, economic, and ethnic identification by their daily activities, cuisine, and communication with their home country. The presence of royal *serekhs* at numerous sites (Brandl 1992: 447, map; Joffe 1993: 52; Levy, et al. 1995: 29-33) may be a reflection of their deference to Egyptian political authority or royalty, or the latter's involvement or control of the entire enterprise.⁴⁹

A number of salient points must be considered before attempting to understand the intention of this Egyptian enterprise. First is the chronology of the phenomenon. Based on the evidence from Taur Ikhbeineh, Besor Site H, and other sites, the arrival of the Egyptians, with their potters, begins at the very earliest phase of EB I and shows its greatest inspiration from the material culture evident at Maadi and its Lower Egyptian contemporaries (Oren & Yekutieli 1992; Gophna 1995: 277-8). Second, its spatial distribution must be considered. This foreign entity continues to expand geographically and develop in size and scope throughout the EB I sequence. Developments among the Egyptians in the southern Levant parallel the developments in material culture in Egypt, suggesting that whatever the purpose of the initial colony, it continued to serve the interests of the Upper Egyptian Naqada culture that gradually dominated Lower Egypt. Some differences in distribution and intensity can be discerned between early and late EB I phases (Brandl 1992: 447, map; Gophna 1995: 277-8). One particular discontinuity has been noted in the Egyptian presence in the lower Besor region where Site H is abandoned in favor of the establishment of the border post at nearby 'En Besor, which did not occur before the peak of Upper Egyptian expansion into Lower Egypt (Gophna 1992a). Some view this second phase as a south Levantine expression of the expansion of Naqada culture (Oren & Yekutieli 1992: 381-2). The final point to be considered is the scale of the phenomenon. In Ben-Tor's (1991: 8) opinion, based on the percentage of the ceramic and lithic finds at Tel 'Erani, the resident Egyptians numbered in the several hundreds. This estimate is crude and will need to be refined by further analysis of the increasingly available evidence and tested by various theoretical criteria. In a notional sense, he is essentially correct. The Egyptian colony was not a small-scale, ephemeral phenomenon. The duration of this self-replicating expatriate society spanned the entire EB I period and is represented, at the very least, by a variety of craftsmen, farmers, and administrators. Unless

⁴⁹According to Brandl (1992: 447, map), examples from Palmahim and Erani were incised on locally-produced vessels. One of the two examples from Nahal Tillah was incised on an imported Egyptian vessel (Levy, et al. 1995: 32; 1997: 19-21, fig. 17:3a-b).

these classes of individuals were merely mutually self-serving, other Egyptian dependents and customers may also be inferred, and their true number is inestimable at present.⁵⁰

Clearly, this Egyptian entity required a significant investment in terms of resources and manpower. Communication with mother Egypt required the maintenance of a lifeline across northern Sinai (Oren 1973b; 1989). This investment and its organization necessitated, at the very least, the tacit approval of the elites and emerging rulers of Egypt; whether a royal hand initiated or guided this enterprise is a matter of conjecture, royal symbols, e.g., *serekhs*, notwithstanding. In either case, the fruits of this colonial apparatus—raw materials and imported agricultural commodities—were conspicuously consumed in tombs, indicating that they were highly prized by the Egyptian elite. Thus began a pattern of Egyptian interest in maintaining the supply of Levantine products that continued into the Pharaonic period. In order to ensure this supply at the dawn of the Early Bronze Age, the Egyptians relied on their own administrative mechanism for the acquisition of goods from the southern Levant. Furthermore, the demand for this supply was one of the factors in the changing agricultural and horticultural strategies of Levantine communities, both in the lowlands and highlands, and may have been Egypt's indirect contribution to more complex social organizations, i.e., urbanization (Finkelstein & Gophna 1993: 11-4; Stager 1985; Esse 1989a).⁵¹ As important as this supply was, it was not irreplaceable. With the rise of a united Nile Valley, the Egyptians abandoned their colony, gradually favoring relations with more northern communities and finally a firm relationship with the Lebanese port of Byblos. In the southern Levant, this abandonment is archaeologically undetectable; neither a gradual, nor a sudden disengagement has been discerned. All that can be demonstrated is the lack of any evidence of local production of Egyptian material culture and a decline in Egyptian imports. If some assimilation into the indigenous culture occurred, it is as poorly documented as the evidence for any impact or influence of Egyptian culture upon the Canaanites, alongside whom they resided for nearly two hundred years. For the southern Levant, it is a period of growing nucleation and social organization: the rise of a widespread local urban culture. What may have motivated these shifts will be considered shortly.

4.6 Uruk maritime expansion into Egypt?

Relations between the two earliest Near Eastern civilizations have long engaged scholarly attention, partly in order to better utilize Egypt's and Mesopotamia's chronological anchors as the

⁵⁰One other explanation for the 'Egyptian' presence in the southern Levant is that this sub-culture represents a highly Egyptianized south Levantine (or other) group; rather than ethnic Egyptians. This view would require some still unknown evidence for this acculturation process, perhaps somewhere in the Delta at the end of the Chalcolithic period, and a bit of dulling to the edge of Occam's razor.

⁵¹This is not the place for a detailed discussion of which came first, stable and complex society, and then specialized highland horticulture (Stager 1985), or vice versa (Finkelstein & Gophna 1993: 13). We need more refined excavation of the incipient EB Ia highland sites, with better retrieval of botanical remains, before this question can be answered.

foundation for written history, and partly out of a need to establish the primogenitor of civilization. This aspiration often led to unicausal explanations for the rise of civilization like mass migrations, conquests, or some form of diffusionism (Moorey 1987: 36; Hoffman 1979: 293; Childe 1953: 238-44). As the taxonomic “shopping list” of civilization's traits (e.g., writing, monumental architecture, etc.) was assembled, the emerging pattern seemed to point towards a Sumerian cradle supplying these attributes not only to neighboring regions, but to distant lands, including Egypt (Frankfort 1951: appendix). Later, the scholarly pendulum swung away from emphasizing direct influence to focus on independent, pristine origins (Trigger 1983: 37; Moorey 1987: 36). Today, a much more sober view is directed at both extremes, but a complex long-distance relationship is still evident (Moorey 1987; 1995; Kantor 1992: 14-7; Largacha 1993; Mark 1997). This relationship manifests itself at a very distinct time (Naqada II), during a crucial and formative stage in Egyptian history. As large complex social organizations were emerging and the first Egyptian initiative into the southern Levant was beginning, a major pulse of Mesopotamian influence swept over the Nile Valley in the southwesternmost extension of what is commonly called the Uruk expansion.

The emergence of Mesopotamian civilization outside the southern Sumerian core area is seen as the result of an expansion of Uruk culture, which fostered and maintained complex trade relations with the Iranian plateau and the greater Tigris-Euphrates river systems as far as Anatolia through a series of enclaves, outposts, and stations (Algaze 1989; 1993). This is not the place for a detailed discussion of the supra-historical and supra-regional issues of what Algaze (1993: 5-10) calls a cycle of “momentum toward empire”. Suffice to say that aspects of Uruk culture and civilization: pottery, administration (e.g., tokens, seals, impressions, and simple numerical notation tablets), architecture, and iconography, are found throughout the aforementioned regions, which are in proximity to sources of raw materials (e.g., copper and wood), trade routes, and markets. The westernmost expression of this phenomenon, which is nearest to the Levant, is found along the Euphrates between Habuba Kabira and Jerablus Tahtani (Algaze 1993: 24-30; Strommenger 1980; Peltenburg, et al. 1995; Peltenburg, et al. 1996; Sørenhagen 1986). While Uruk-type pottery is found further to the south at el-Kowm, near Palmyra, and at Jawa in the Black Desert of Jordan, but these sites fall short of the full Uruk expansion assemblage (Algaze 1993: 56; Joffe 1993: 55-6; Helms 1987c).⁵² From the margin of this periphery to Egypt no similar Mesopotamian finds are known

⁵²Algaze (1993: 56, tables 1 & 2) leaves the characterization of el-Kowm as an Uruk outpost an open question, particularly in light of the absence of the administrative evidence (e.g., tablets, seals, impressions, etc.) for regional and long distance trade. Joffe (1993: 55) is keen to see the Uruk-like pottery at Jawa as evidence of the arid zone pathways of contact between Mesopotamia and the southern Levant, a link also expressed by Mark (1997: 126). Elsewhere I have suggested that Jawa be characterized as an arid zone gateway for southern Syria (Marcus 1995b). This suggestion was based primarily on the work of Braemer (1993), but now see also McClellan & Porter (1995). The complexity of these arid zone contacts can be seen in the seal impressions from Jawa and Um Hammad, whose best parallel is from Tepe Gawra (Helms 1987b), a site that seems to have remained independent of the Uruk network (Algaze 1993: 71-72, 85-86).

(Moorey 1987: 40-1).⁵³

The distribution of Uruk finds in Egypt have been amply dealt with by Moorey (1987; 1990; 1995) and Kantor (1992: 14-7). The range of portable finds include raw materials, such as lapis lazuli, and finished goods including stamp and cylinder seals, and ceramic jars whose contents are unknown (Moorey 1987: 37); so far, the evidence of stone vessels is less conclusive (Moorey 1990: 64*). The assimilation of Mesopotamian artistic elements, particularly from its Susian embodiment, into Egyptian iconography—with all that these symbols may (Smith 1992) or may not connote—is extensive and seems to be the result of a complex process of selection and transmogrification. The arrival of Mesopotamian motifs as impressions on commodity consignments may have been mediated via the northern Levantine ports of Byblos and Ugarit (Moorey 1987: 39; 1990: 62*-4*, 67*; Teissier 1987). Another artistic element, the high-ended boats found painted on pottery, in the Hierakonpolis tomb painting, and incised in numerous petroglyphs, was previously seen both as an example of the contacts between Egypt and Mesopotamia and as representation of their carrier. However, they appear only to bear a superficial resemblance to “Mesopotamian” examples (Moorey 1987: 39; Vinson 1994: 17; Mark 1997: 69-87).⁵⁴ The introduction of monumental mudbrick architecture and niched facades are both seen as having derived from an ultimately Mesopotamian source (Moorey 1987: 40). The discovery of locally-made clay wall pegs (nails) and cones, and the presence of mudbricks at Tell el-Fara'in (Buto), suggest that the inspiration for these architectural elements may have come from a Mesopotamian structure (i.e., temple or palace) built in the western Delta (Moorey 1990; Von Der Way 1987: 247-50; 1988: 248-9; 1991: 54-7; 1992: 1992).⁵⁵ The material culture from Buto is the only demonstrable evidence for the physical presence of bearers of Uruk culture (masons and people who used this structure, e.g., merchants?) in Egypt, and may hint at other craftsmen as well (Moorey 1990: 64*-67*). Lastly, what functional or structural debt, if any, is owed by Egypt's writing system to that of Sumer is still unclear (Moorey 1987: 40), although like the more ancient Mesopotamian writing,

⁵³Space does not permit a full response to Mark's suggestion (1997: 23-4, fig. 9) regarding “Mesopotamian” pottery at Azor. Suffice it to say that typology, chronology, and possibly ceramic fabric indicate a different mechanism for this transfer.

⁵⁴See also the extensive references to the controversy in Casson (1971: 12, n. 5). In Vinson's (1994: 17) opinion, the Gebel el-Arak knife handle is the lone example of a Mesopotamian boat representation in Egypt. So little is known of seacraft in the interstices during this period that, if high-ended boats are not Egyptian in origin, perhaps a Levantine derivation should also be considered (see *infra* Chapter Three). See also the discussion by Basch (1987: 57-62).

⁵⁵The precise stratigraphic horizon of the wall cones and pegs (nails) is unclear (Von der Way 1988: 249), and the mudbricks are only found in situ in Buto Layer IIIa (Von der Way 1992: 3), which is a late Naqada II stratum (Köhler 1992: 8). The excavator presumes, however, that the use of mudbricks should be expected already in Layer I=Naqada IIb (Von der Way 1991: 54; 1992: 5), presumably along with the earliest wall pegs (Von der Way 1992: 220). Until the stratigraphical attribution of this important evidence is clarified, at best it can only be associated with the end of the period of Uruk imports on Egypt. Three clay rods were found at Maadi, but their limited number and the lack of any evidence for mudbrick architecture seem to preclude their being part of a wall decoration (Rizkana & Seeher 1989: 13), but opinions differ (Largacha 1993: 62).

Egypt's script originated as an administrative device (Postgate, Wang & Wilkinson 1995; Bard 1992).

Up until the late 1980s the distribution of Mesopotamian finds in Egypt was limited to an area from the apex of the Delta southwards, with a large concentration in the south near the point where the Nile bends towards Wadi Hammamat (Moorey 1987: fig. 4.1). The lack of similar concentrations in the Delta or in the Syro-Levantine interstices, along with the identification of "Mesopotamian" boats among the rock carvings of Wadi Hammamat, led some to suggest a Persian Gulf→ Indian Ocean→ Red Sea route as the way in which these influences and objects travelled.⁵⁶ The absence of any reciprocal Egyptian elements or materials in Mesopotamia, apart from perhaps gold and some possible, but dubious, influences on stone bowl production (Moorey 1987: 41; 1990: 64*; Largacha 1993: 64) was always a difficult hole to fill in the argument for a route around the Arabian Peninsula.⁵⁷ Increasing artifactual evidence from inland Syria, particularly Habuba Kabira, and other contemporaneous contacts, such as those between Egypt and the Levant, intra-Levantine contacts, and glyptic evidence (Teissier 1987) led Moorey (1987; 1990) to suggest a somewhat complex and still archaeologically invisible east Mediterranean maritime or trans-Levantine terrestrial route from Mesopotamia to the Egyptian Delta.⁵⁸ In addition, recent surveys and excavations in the Delta have begun to fill the lacunae in our knowledge of its settlement history, indicating more extensive habitation in the Predynastic period than had previously been supposed (Borghouts 1988; Van Den Brink 1988; 1993).⁵⁹ The discovery of the aforementioned Uruk-type finds at Buto, along with sherds of Syrian Amuq and south Levantine wares (Moorey 1990: 62*; Köhler 1992: 20-2, figs. 8-9; 1992: 8-10, fig. 3), lends support for one of Moorey's Syria to Delta routes.⁶⁰ Further support comes from a possible

⁵⁶Although contact between southern Mesopotamia and the Persian Gulf, at least as far as the Straits of Hormuz, dates back to Ubaid times (Potts 1990: 37-89; Roaf & Galbraith 1994), a similar lack of interstitial Uruk-type evidence along the remaining route is instructive, as is the present lack of any contemporary evidence for complex societies, as is a later Pharaonic network (Moorey 1987: 39; 1995: 9-10). Connections between the Nile and the eastern desert, and human habitation in the Arabian peninsula, including a flint from Aden with purported affinities to Predynastic Egyptian types, are still offered as evidence for this route (Majer 1992).

⁵⁷Similarly, the cessation of these influences by the end of the Predynastic period was never explained by proponents of this model (Mark 1997: 130-1).

⁵⁸See also the arguments of Mark (1997). Among the extensive evidence he brings in support of a connection between the Delta and northern Mesopotamia, is the distribution of bear and monkey figurines, respectively, in Egypt and Mesopotamia, where neither is indigenous (Mark 1997: 45-6). Unfortunately, his otherwise detailed study is somewhat brief and unsubstantiated.

⁵⁹The reason for the Predynastic Delta being a terra incognita is that these settlements are generally several meters below the flood plain under the water table (Hassan 1997: 55; Wenke 1991: 290-2). The work of the Dutch at Tell el-Fara'in (Buto) is one example of the difficulty and technological sophistication necessary to explore these sites (Von Der Way 1986: 209-10, fig. 9, pl. 28).

⁶⁰These examples warrant petrographic analysis. Note that all of these imports are assigned to Layers IIIa-IIIc, a Late Naqada II - early Naqada III phase (Köhler 1992: fig. 9), which is coeval with the earliest in situ mudbrick architecture.

Egyptian sherd and a south Levantine ledge handle from Habuba Kabira-South (Moorey 1990: 62*-63*, Ill. 1b-c; Sørenhagen 1986: 22, figs. 23-24).⁶¹ Whether a maritime or terrestrial route was utilized is not known with any certainty, however the evidence favors the former (see also Largacha 1993: 65-67), perhaps with the involvement of the south Levantine coast (Gophna & Lipschitz 1996). With the exception of a Late Uruk stone chalice reported at Maadi (Hassan 1988: 161), a possible lapis lazuli bead at Nahal Mishmar, the Amuq F sherd at Taur Ikhebeineh, and a Jemdat Nasr period vessel at 'En Esor (*see supra* p. 23), no eastern Delta or interstitial finds are known. Geomorphological investigations place Buto on a lagoon or salt marsh near the paleocoastline of the Delta (Wunderlich 1988; Hassan 1997: 66-68, fig. 4; Van Den Brink 1993: 295), supporting its identification as a coastal settlement or proto-harbor.⁶² In this respect, Stager's (1992: 41) historical analogy of Buto with the Greek colony of Naukratis in the Western Delta is instructive, particularly in light of the connection that both sites had with the North Syrian coast. Whether Buto, or another as yet undiscovered Deltaic town, was the gateway for other imported items from the northern Levant and beyond, such as silver (Moorey 1987: 41; 1990: 68*; Prag 1978) and lead (Gale & Stos-Gale 1981: 115), is still unclear.

4.7 Summary of the Egyptian Levantine colony and Uruk maritime expansion

The Egyptian colonization of the southern Levant and the Uruk expansion's Deltaic branch are two parallel phenomena that are chronologically complementary, but seem to be, phenomenologically, mutually exclusive enterprises. Within the limitations of current dating methods (comparative typology and radiometric dating) their beginnings are chronologically indistinguishable. The Uruk presence and its material manifestation can be described as a pulse of influence that arrives, flourishes and disappears, leaving a distinct mark on the symbols of power, prestige, and kingship. The Egyptian colonization set patterns that left an indelible mark on Egypt's foreign policies and commodity demands on the Levant. In terms of the mechanism of cultural transfer, little evidence can be demonstrated for any overlap, although this may be remedied by future excavations. Both phenomena are similar in that they represent the establishment of expatriate communities in distant lands in order to access raw materials and markets. While the Uruk expansion covered a much greater area and distance, materials research of the Egyptian colonization apparatus has revealed its sophistication and intensity to a much greater degree.⁶³ While the former may have only had a slight ripple of indirect influence on the

⁶¹Sørenhagen (1986: 22) considers the ledge-handle to be a Late Chalcolithic example, while Moorey (1990: 62*) wonders whether it might be of Egyptian derivation. Again, analysis is warranted as there are petrographic criteria for distinguishing both the chronological and the geographical attribution.

⁶²Mark (1997: 104-5) notes the association between Buto and Hathor, who, among her many epithets, becomes a patron goddess of seafaring.

⁶³While Algaze (1993: 124-5) mentions of the need to carry out chemical characterization analysis, he does not appear to be cognizant of the need for a more detailed study of the individuals (e.g., masons, potters, etc.) who inhabited his trade diasporas.

southern Levant, the latter established a pattern of economic relations that would shape the region throughout much of the Bronze Age.

On very different scales both phenomena also represent a material expression of the expansion of ancient cognitive geography and an assimilation of exotic material and knowledge (Helms 1988) into acts of conspicuous consumption. Why the Egyptian elite chose Mesopotamian symbols for their own expression of kingship and status is as difficult to explain as why the south Levantines did not absorb Egyptian culture despite a more intimate, intense, and lengthy association. Egyptian society as a whole did not witness Mesopotamian society, order, or kingship. At most they encountered an enclave of merchants who controlled access to exotic products that the burgeoning Egyptian elite demanded (Moorey 1987: 42-3; Largacha 1993: 67-69), resulting in the borrowing and misassociation of Mesopotamian symbols and their meaning (Teissier 1987). For the Egyptians, exotic people bearing and controlling exclusive access to exotica from far-away never-to-be-seen lands was equated with power and status, not from an association with a powerful central authority, but through a connection with the exotic unknown. If a maritime route was indeed in use, the arrival of people on ships from a distance (or even better from over the horizon) would have increased the impact of such imagery on Egyptian society.⁶⁴ For the southern Levantines, whose elites were only beginning to emerge, Egypt was neither distant nor as yet all-powerful and thus did not represent a culture to be emulated. By the time such symbols were needed, Syro-Mesopotamian sources were emulated (Beck 1995), perhaps for ethno-linguistic or cultural reasons.

5. Early Dynastic shipping, the Old Kingdom “Byblos run” and inland Levantine urbanism

The unification of the Nile Valley into one of the first great states of antiquity began a long period of centralized administration of nearly all aspects of society and economy in the vast land of the Nile.⁶⁵ In terms of Egypt's relations with the outside world, the state and members of its social structure desired imported exotica and raw materials to an increasingly greater scale. In addition to their timeless role as signs of wealth and prestige, these imports increasingly became staples of local industries that served the ever-growing elite in life and in embellishing their dead. The role of the state in securing these imports is readily apparent during this period, or at least is claimed by rulers through official artistic and written declarations. By far the most important of the trade enterprises undertaken, in terms of bulk quantity, were state-sponsored maritime activity to the Levant, particularly to Byblos.⁶⁶ One reflection of the increasing importance of relations with the Levant is

⁶⁴Let us not forget the impact of a few shiploads of fifteenth-sixteenth century CE Europeans on primitive island bands of natives and sophisticated Mesoamerican states alike.

⁶⁵For the origins and organization of the state, the intensification of many developmental trends, and the history of the ED and OK periods, see, *inter alia*, Bard (1994); Hassan (1988); Köhler (1995); Kemp (1983; 1989); Trigger (1983; 1987); Edwards (1971); Smith (1971); and Wenke (1991).

⁶⁶The existence of markets should not be excluded even in the temple and palace-oriented economy of the Nile Valley (Hodjash & Berlev 1980).

the intensification of settlement and the concentration of national and economic centers (Memphis) in Lower Egypt, with its Deltaic gateway at sites like Mendes and Minshat Abu Omar (Wenke 1991: 312, 314, 317; Van Den Brink 1993).

As in previous periods, the archaeological record presents the tangible, material evidence of trade. However, with the advent of writing, a new source is added. Many Egyptian texts relating to the outside world are brief, yet reveal something of Egypt's interests and actions. Moreover, with the Early Dynastic period, the cultural units that were previously transformed into temporal ranges begin to be replaced by the Manethian sequence of dynasties, which, along with the Royal Turin Canon and Palermo Stone, provides a vague historical framework.⁶⁷ While the dating of individual kings is often spurious, radiocarbon determinations show a very good correlation with the historically-derived dynastic date ranges (Hassan 1980; Hassan & Robinson 1987: 123-5, table 1). For convenience, this period of nearly a millennium is considered in a single section rather than being subdivided. Nonetheless, strict chronological distinctions are maintained.

5.1 Pictorial depictions and textual references relating to the Levant

As art and language often go hand-in-hand in the Egyptological record, it is only fitting that they be treated together, although the interpretation of pictorial depictions often seems more equivocal than some textual references, especially as they often seem to become generic visual idioms. The wood and ivory labels depicting Asiatics bearing Canaanite jars, a common scene in later NK depictions, appear at the beginning of the First Dynasty. The smiting of the Asiatic scene also owes its origin to the Early Dynastic period, and is found in Sinai with the vague caption “the first occasion of smiting the East” (Schulman 1989: 436), a “first” followed by extensive written evidence for an Egyptian presence in Sinai from the Third through Sixth Dynasties.⁶⁸ Royal inscriptions refer to military forays into eastern Asiatic (Levantine?) lands with uncertain toponyms and against Asiatic groups described by a variety of ethnonyms (Schulman 1989: 441-3; De Cree 1991: 29; Wright 1985: 248; 1988; Wilson 1950a: 227). In the Sixth Dynasty, the autobiography of Weni, an official who served the courts of Teti, Pepi I, and Menere, recounts five punitive raids against the “sand-dwellers”, burning their houses and uprooting their orchards and vineyards (Lichtheim 1973: 18-23; Breasted 1906: §311, §313-§315; Wilson 1950a: 227-8). Among the forays was a combined sea and land attack on the far side of the “Gazelle's nose”, a mountain range that may have been the Carmel, which is the earliest example of the Egyptian use of ships for military purposes abroad. A number of OK siege depictions may reflect the most extreme exhibition of Egyptian belligerency (Wright 1988: 155-6, figs; Ben-Tor 1982: 13-4).

⁶⁷For the regnal lists see Baines & Malek (1980: 36) and the recent critical evaluation by O'Mara (1997).

⁶⁸Both T. Wilkinson and C. Köhler (*see supra* n. 4) presented evidence for an even greater antiquity to this idiom.

Other references give an indication of what the Egyptians most desired from their neighbors to the north. In a continuation of the portrayal on ED labels from Abydos, a foreign jar in an OK depiction is said to contain sweet oil (Kantor 1992: 20, fig. 6:3). During the reign of Sneferu, first ruler of Fourth Dynasty, the Palermo Stone and Cairo fragment #4 refer to “the bringing of forty ships filled with š wood” and the building of great 100 cubit long vessels and a palace door, variously of š and *mrw* wood (Meiggs 1982: 63; Smith 1971: 167; Breasted 1906: §146-§148; Wilson 1950a: 227). Presumably, this wood was brought from *Kbn* (Byblos), a toponym which figures in a number of OK texts as a city, a source of foreign goods, and as a type of ship (Horn 1963: 52-3; Wright 1988: 146-8; Redford 1992: 38-43). Sea-going ventures are depicted in a relief from the funerary temple of the Fifth Dynasty king at Abusir (Kantor 1992: 20-1, fig. 6:2; Esse 1991: 105; Smith 1965: figs. 6-7; Fig. 1), where a series of fragments depict a shipment of Levantine jugs and tethered bears, while another panel shows the return of eight sea-going vessels carrying Egyptians and Asiatics, who may have been slaves, craftsmen, or shipwrights (Gaballa 1976: 24; Bietak 1988; 1996: 19-20; Wachsmann 1998: 12).⁶⁹ At Saqqara, Asiatics are also shown aboard two sea-going ships in a relief from the causeway of Weni (Hassan 1955). Other Fifth Dynasty tombs at Saqqara depict juniper berries and *pṛt-sni* fruit, which was later known to have been brought from Byblos (Kantor 1992: 20). One nobleman, who was buried in Aswan the late Fifth or early Sixth Dynasty, saw fit to recount his numerous ventures with a companion to Byblos (and Punt), apparently as royal agents (Newberry 1938; Horn 1963: 52-3; Wright 1988: 147-8). By the Sixth Dynasty, an inscription from the tomb of Pepinacht recounts the use of a “Byblos-ship” for a voyage to Punt (Breasted 1906: §360; Säve-Söderbergh 1946: 48; Wright 1988: 148). Lastly, the term *kbn*, enclosed in a crenulated city or fortification sign, appears as a morpheme in the name of the OK official *kbnwntt*, perhaps a Levantine who was buried near the Giza complex (Wright 1988: 147).⁷⁰

⁶⁹Wachsmann (1998: 12) correctly objects to Bietak's suggestion (1988) that the Asiatics are crew members. Wachsmann's alternate suggestion, that the Asiatics themselves are cargo, “held by the scruff of their necks,” is possible, but relies solely on an ambiguously depicted relationship, which is quite consistent with Egyptian artistic treatment of foreigners. Their stance is not one of “adoration,” as suggested by Wachsmann, but part of a ritual associated with entering a port, which is paralleled in the Kenamon relief (Davies & Faulkner 1947) and discussed in its proper context by Brody (1996: 134-6). As to the lack of any depiction of cargo, Wachsmann (1998: 12) seems to have ignored the other parts of the relief. The possibility that some of these Asiatics are shipwrights should not be excluded, nor that the ships themselves are a commodity product that is being delivered. The maritime aspects of these depictions are discussed in Chapter 3.

⁷⁰The date of this tomb is debatable and ranges from the Fourth to Sixth Dynasties (Wright 1988: 147, n. 9).

5.2 Levantine imports to the Nile Valley

During the ED and OK periods, the range of imports from the Levant is fairly consistent with the preceding period, although there seems to be an increase in relative quantities and wider distribution. While some notion of the organic imports is suggested in the following survey, others such as bitumen seem either under-represented or unacknowledged in the literature.

5.2.1 Wood and its by-products

Textual evidence from Egypt indicates two principal types of imported wood: ṣ and *mrw* wood, both of which occur frequently from ED times onwards (Meiggs 1982: 63; Ward 1991: 13-4). Although the precise identity of both terms is still a matter of debate, they most certainly refer to some type of conifer as they were used in Pharaonic times for large ship construction and long flagstaffs (Meiggs 1982: 63, 406).⁷¹ Lucas & Harris (1962: 429-39) list a number of coffins and lids from ED and OK contexts made of imported woods, such as cypress, pine, juniper, and yew.⁷² One of the coffins, which comes from beneath Djoser's Third Dynasty step pyramid, was made of three imported woods: cypress, pine, and either juniper or cedar (Ward 1991: 13). Recent work confirms the import of these woods (and box-wood) for, *inter alia*, coffins, lids and statues (Davies 1995: 148-52, table 1). Pine was used for arrows found at Abydos (Western & McLeod 1995: 80). Some wooden cylinder seals were also carved from box and manna ash, the former from as near as the Lebanon and the latter from as near as Anatolia (Lipshchitz, Bonani & Van den Brink 1997). Although cedar is believed to be the principal wood used in the construction of the 38.5 ton Cheops boat, the precise species of conifer has not been positively identified (Lipke 1984: 25; Davies 1995: n. 21). One board was made of juniper, while cedar and hop hornbeam, a species found in Anatolia, were used for the oar blades (Steffy 1994: 23-5; Lipke 1984: 24-5).

While Ben-Tor (1991: 4) correctly stresses that there is no evidence for the importation of cedar *timber* prior to the Fourth Dynasty, when the royal ship of Cheops was constructed, large coniferous timbers were used in the construction of Dynasty One tombs at Abydos (Prag 1986a: 72; Stager 1992: 40). Thus, it is conceivable that other conifers, including cedar, could have been brought by this time as well; the evidence, however, is still lacking. By the Fourth Dynasty, when cedar timber is clearly available, it is feasible to identify the wood brought by Sneferu (ṣ and *mrw* wood) as referring to cedar and some other type of conifer (Meiggs 1982: 63; Smith 1971: 167). In Davies' (1995: 149) opinion, the increasing archaeological evidence lends strong support for the identification of ṣ as cedar. After the Fourth Dynasty, when a reliable maritime connection is established, the

⁷¹Whether imported timbers were used in the construction of the fleet of boats buried at the Early Dynastic funerary complex at Abydos must await further investigation (O'Connor 1991).

⁷²Cypress, pine, and juniper are found as close as the southern Levant, but yew, a non-resin producing conifer, may have been brought from the Taurus mountains in Asia Minor (Lucas & Harris 1962: 439; Willcox 1992: 7).

import of (cedar) timber became a regular feature of the increasingly closer relations between Egypt and Byblos (Redford 1992: 37-43; Marfoe 1987: 26-8, 32-4).⁷³

Imported oils or resins, whose existence is only inferred for the Predynastic period, are documented items already in the Proto-Dynastic period. Ward (1991: 13-4) notes examples of “oil of ṣ” written on alabaster vases of the First Dynasty king Adj-ib and among food offerings of the Second Dynasty; *sft* which is obtained from the ṣ tree, is frequently mentioned as an offering in the Second and Third Dynasties, sometimes alongside ṣ oil; and *mrw* oil is mentioned on an ivory label and alabaster jar of King Aha as well as on pottery vessels from a cemetery at Abu ‘Umuri. Imported oils or resins are therefore documented prior to the importation of timber, but their source is disputed. Lev-Yadun & Gophna (1992) argue that Ward's (1991: 13-4) southern Levantine source is not supported by the archaeobotanical evidence. While some stands of conifers existed, the most likely source for large quantities of oil is in the northern Levant.

5.2.2 Pottery

In the Protodynastic and OK periods a significant shift can be seen in the type and origin of Levantine pottery imported into Egypt. Storage jars, which were previously imported solely from south central Canaan, were replaced by jugs of decorated and red-polished type, and storage jars of combed & metallic ware that were imported from more northerly regions of the Levant. These imports and their implications have been considered at length most recently by Esse (1991: 103-16), Kantor (1992: 17-21), and Stager (1992: 37-9), whose nomenclature has seemingly sought to clear up much of the confusion caused by the overlap of typological terms and fabric descriptions, and the generic use of the term “Abydos Ware”; still, some confusion remains.⁷⁴ Porat's (1989a: 63-5, appendix 5b) analysis of Dynasty 0 to First Dynasty red-burnished and decorated examples of so-called “Abydos Ware” from Abydos and Tell Ibrahim Awad demonstrates that they can be divided into three petrographic groups.⁷⁵ The following discussion reflects Esse's typological division, and although the term “ware” is used, it refers to a vessel family; only metallic ware describes a petrographically established fabric group.

⁷³Apart from being the focus Egyptian-Levantine relations, the import of timber enabled the construction of riverine craft capable of transporting large stone blocks from Upper to Lower Egypt and enabled Egypt's exploitation of Nubia, where long woods are absent (Adams 1984: 71).

⁷⁴Kantor's scheme is a fabric description that is intended to be independent of typological variations. Both Esse and Stager utilize her nomenclature for what they distinguish in typological terms. Many of the Red-Polished Ware jugs noted by Esse and Stager are actually her Metallic Ware jugs. Note the difference between Kantor's (1992: 19) and Stager's (1992: 37) description for this ware.

⁷⁵Abydos (N=15) and Tell Ibrahim Awad (N=1). Her study supercedes an earlier one (Hennessy & Millett 1963), which relied on a semi-quantitative method whose results show significant discrepancies with later analyses (Porat 1989a: 21-2, table 4.1).

5.2.2.1 Red-Polished Ware

The typological term “Red-Polished Ware” (RPW; Fig. 2c) includes a variety of handleless, single loop, and double-handled jugs that are decorated with red-slip and burnishing. These jugs occur at numerous sites, primarily in tombs of the First Dynasty (Esse 1991: 104-5; Kantor 1992: 19-20, fig. 10-11).⁷⁶ Given the jug from the tomb of the Fourth Dynasty Queen Hetepheres, and the artistic representation of this vessel-type during the time of Sahure in the Fifth Dynasty, the near absence of post-First Dynasty examples may be misleading (Esse 1991: 105). Outside of Egypt these vessels are widespread in the Levant as far north as Qal’at er-Rus on the coast and Tell Judeideh in the Amuq region, in contexts ranging from EB II to EB III (Esse 1991: 104-7; Hennessy 1967: 50, 63, pls. XLVI, L; Stager 1992: 37-8). Some Dynasty 0 to First Dynasty RPW jugs from Abydos and Tell Ibrahim Awad are petrographically identical to the Metallic Ware of northern Israel, whose source is probably in the northern Hula Valley, or possibly along the Lebanese or Syrian coast, but not in the area of Tell Sukas or the Amuq region (Porat 1989a: 64, 71-4; Greenberg & Porat 1996: 16-9).⁷⁷ However, the source of the later OK examples is probably elsewhere (Greenberg & Porat 1996: 18). The exclusion of the Amuq region on petrographic terms is significant. Previous analysis on lattice-burnished sherds from Abydos, an RPW sub-group (Stager 1992: 38), had suggested a similarity with an example from Tell Judeideh in the Amuq region (Esse & Hopke 1986: 333, 337). It now seems more likely that they both derive from a similar source.

5.2.2.2 Light-Faced Painted Ware

Light-Faced Painted Ware (LFPW; Fig. 2a-2b) is distinguished by geometric and linear motifs painted on a light, cream background. Jugs and juglets are the dominant types, and are found only in First Dynasty contexts in Egypt, some bearing similarity to RPW shapes (Kantor 1992: 19, figs. 12-13; Esse 1991: 107, fig. 20). This class is well-represented at EB II sites in the southern Levant, especially at Arad (Esse 1991: 108-9; Stager 1992: 38); the only north Levantine occurrences are some sherds from Tell Judeideh in the Amuq region (Hennessy 1967: 51, pls. XLVI, L).

Porat’s (1989a: 63-65, 70-71, 74-75) analysis of decorated jugs from Abydos shows that apart from a single example, which is identical in composition to the jars imported into Egypt during the Predynastic period from southern Canaan, the remainder belong to her Group 3. One vessel of Group 3 is consistent with the lithology of the eastern Galilee; the remainder lack features indicative of a specific source.⁷⁸

⁷⁶Esse (1991: 105) counts a minimum of 117 examples, ninety-eight of which were found at Saqqara, including one tomb with fifty-six vessels.

⁷⁷Abydos (N=11) and Tell Ibrahim Awad (N=1).

⁷⁸Joffe (1993: 67) misstates that Esse and Hopkins [sic] (1986: 337) suggest that some of the LFPW examples may have originated in the Amuq. Esse & Hopke (1986) only analyzed Combed Metallic Ware, some Red Polished and Khirbet Kerak Wares. They merely suggest that, because a

5.2.2.3 Combed Ware

Apart from “Abydos Ware”, three other overlapping and misused terms are employed for this class of pottery: Combed Ware (CW) (Esse 1991: 109), “Metallic” Ware (Kantor 1992: 19; Greenberg & Porat 1996: 5-6), and “Metallic” Combed Ware (Stager 1992: 38-9). Esse (1991: 114) estimates a minimum of fifty-six two-handled jars, of which forty-seven were found in the Giza necropolis and the remainder in Upper Egypt (Fig. 2d-2e). The earliest example comes from the Tomb of Djer in the First Dynasty, but the greatest numbers are found in the Fourth Dynasty or later (Esse 1991: 114). This ware is widely distributed throughout the Levant, Lebanon, Syria, and as far north as the Orontes Valley (Esse 1991: 109-14; Stager 1992: 38-9).

According to Greenberg & Porat (1996: 18), the examples from the First Dynasty are related to the true Metallic Ware (MW) of northern Israel. True MW vessels, which may possess a variety of surface treatments (e.g., combing, slipping, lime-wash, or burnishing), is a handmade, high-fired pottery ranging in color from red to buff of gray (Kantor 1992: 19; Greenberg & Porat 1996: 5-6). A variety of vessel types are made of this ware (Greenberg & Porat 1996: 6-11, figs. 1-4), but only closed vessels, jars, and jugs are found in Egypt. As noted previously, Porat found that the First Dynasty RPW vessels (group 2) are petrographically identical to the Metallic Ware of EB II-III northern Canaan, which derives from a source in the Upper Jordan Valley or Lebanon (Porat 1989a: 72; Greenberg & Porat 1996: 18-9). The OK examples are much closer, typologically, to the northern coastal Levant (Greenberg & Porat 1996: 18).

Chemical characterization of the metallic ware shows two sub-groups, 2a and 2b, which are similar to Lebanese and Syrian groups; however, their provenance is unclear (Porat 1989a: 74). Using neutron activation analysis and hierarchical cluster analysis on examples of combed ware from Giza (N=20), five distinct elemental clusters were distinguished (Esse & Hopke 1986: 332-5, fig. 31.3). The first three clusters, while internally cohesive, could not be related to any analyzed examples from anywhere in the Levant or the Orontes valley. The fourth group, comprising eight jars, clustered with a sample from Byblos. The fifth group, while not as internally cohesive as the others, showed the closest similarity with examples from southern Canaan. Four other sherds showed similarity with sites in the Shephelah region. Porat (1989a: 74) notes that a number of samples from the Esse & Hopke study are similar to her group 2a, particularly a sample from Byblos. A few of these jars contained coniferous resins (Esse & Hopke 1986: 334; Porat 1989a: appendix 5b; Reisner & Smith 1955: 75).

5.2.3 Copper

There is increasing material and pictorial evidence for local copper manufacture during this period (Garenne-Marot 1985; Schorsch 1992; Lucas & Harris 1962: 212-6). In contrast to the previous periods, the wide range of artifacts (e.g., weapons, tools, fastenings, vessels, statues, etc.) suggests that

sherd from Tell Judeideh clusters with the lattice-burnished sherds from Abydos, the perceived stylistic and decorative relationship between the Amuq and Egypt may be somewhat stronger.

copper was plentiful (Ward 1963: 10; Marfoe 1987: 26; Trigger 1983: 64; Hayes 1953: 41, 46; Edwards 1971: 34, 69; Lucas & Harris 1962: 199-216; Davies 1987: 27-32). Moreover, the sheer quantity of evidence, exemplified by hundreds of objects in the royal mastaba of Djer and the tomb Kha`sekhemwi (Marfoe 1987: 26; Lucas & Harris 1962: 200), indicates a vibrant industry that required voluminous raw material. Although a comprehensive synthetic metallurgical study of copper in Egypt is still lacking, analyses carried out to date have shown that both unalloyed and arsenical copper were widely used (Garenne-Marot 1985: 105-6; Schorsch 1992: n. 3; Lucas & Harris 1962: 214-6).⁷⁹ As in previous periods, copper was still being exported to Egypt from the southern Levant and Sinai (Garenne-Marot 1984), via intermediaries by land and sea, although not via the northern Sinai, for which there is a lacuna in habitation.⁸⁰ Later in the Old Kingdom, direct Egyptian involvement in the exploitation of Sinai copper sources may have taken place alongside the mining of turquoise (Ward 1963: 19-20; Ilan & Sebbane 1989: 159). Royal inscriptions from the time of Sanakht of the Third Dynasty through Pepy II of the Sixth attest to its importance (Kemp 1983: 141). Lastly, the term *ūnty stt*, “Asiatic” copper, appears in the late Old Kingdom (Posener-Kriéger 1969).⁸¹

5.3 Imports from beyond the Levant

In addition to imports from the Levant, other materials and objects suggest that Egypt was receiving imports from more distant regions. Lapis lazuli continues to arrive until the reign of Djer, following which this material is absent through the Old Kingdom (Moorey 1987: 39). The one prominent exception are silver anklets inlaid with lapis (among turquoise and carnelian) in the tomb of Queen Hetepheres of the Fourth Dynasty (Lucas & Harris 1962: 246, 399). This example presents another rare material, silver, presumably still imported from Anatolia, which was used in jewelry and small objects during the Early Dynastic through Old Kingdom, although it is relatively scarce (Lucas & Harris 1962: 246). Anatolia, specifically Tarsus in Cilicia, may be the source of a flask found in a Giza mastaba from the early Fourth Dynasty (Kantor 1992: 20; Mellink 1992: 215).⁸² Regardless of the eventual resolution to the controversy over possible EBA mining of a tin source in southeastern Anatolia (Moorey 1994: 300, extensive bibliography), the rare examples of tin-bronze in ED and OK

⁷⁹A basin and ewer from the time of Kha`sekhemwi is reported to be made of tin-bronze with a small amount of lead (Schorsch 1992: n. 3). The spout of the ewer was made of arsenical copper, while the basin also contained substantial amounts of arsenic.

⁸⁰Y. Yekutieli, paper presented at the HUC conference (*see supra* n. 4).

⁸¹It is not clear if this term refers to a specific alloy or its origin (Redford 1992: 210; Muhly 1976: 213, 218; Garenne-Marot 1984: 103).

⁸²Peltenburg (1995: 38) cites this as a vessel containing traces of a coniferous resin. Examination of the original publication, however, shows that he has confused this vessel with another (Reisner & Smith 1955: 73-75).

Egypt (Lucas & Harris 1962: 219; Stos-Gale, Gale & Gilmore 1984: 29; Cowell 1987: 98; Schorsch 1992: n. 3) is evidence of contact with distant regions.⁸³

5.4 Evidence for international and inter-regional trade in the southern Levant

For the southern Levant the concomitant EB II-III periods represent the first floruit of urban culture. Numerous studies have dealt with the catalysts for this cultural development, its socio-economic characteristics, its chronology, the developments that took place during the third millennium, and lastly, its demise (Weinstein 1984; Seger 1989; Esse 1991; Stager 1992: 34-9; Finkelstein & Gophna 1993; Joffe 1993; Gophna 1995). Among the characteristics of this period are the nucleation of sites into larger, denser, and more socially differentiated (stratified) socio-political agglomerations, fortified settlements, public works, monumental architecture, and greater craft specialization, to list but a few.

Relations with Egypt are marked by a radical decline compared to the intensity of contacts during the previous EB I period. Part of this decrease is no doubt the result of the abandonment of the Egyptian colony. Other factors include changes in the nature of the commodities being exported and the regions from which they derive. While the increasingly northward shift in Egyptian interests may have ended the exclusivity that the producers of horticultural cash-crops had previously enjoyed, the export potential of other commodities, including copper and perhaps bitumen, meant that southern Canaan was not entirely cut-off from Egypt.⁸⁴ In contrast to the previous period, when Egypt took an on-site interest in the acquisition of desired commodities, the rise of local elites meant that there were interested parties that could maintain the necessary organizational and logistical infrastructure to insure the safe arrival of goods to the coastal roads and ports, such as Ashkelon, Tel Gerisa, and Khirbet Kurdaneh (*see infra* Chapter Three). It is particularly instructive that the major fortified centers are located on the inner corridor of the coastal plain, the Shephelah, and the Western Hills, clustering along the highland-lowland interface in order to take better advantage of the agricultural potential of both phytogeographical zones (Gophna & Portugali 1988: 15-6, figs. 4-5; Amiran & Gophna 1989; Portugali & Gophna 1993: 173-5, fig. 5; Joffe 1993: 73-76). This settlement pattern is, seemingly, a more developed network within an interaction zone that had previously served the Egyptians (e.g., Erani and the Halif Terrace) in the south (*see* Portugali & Gophna 1993: fig. 2). The various spatio-demographic analyses cited also show the locations of fortified settlements on the regional interface and the longitudinal and latitudinal routes, all of which are reflections of inter-regional

⁸³See also Muhly (1976: 332) and Frangipane (1985: 218-22, fig. 3). Note the increasing evidence for material connections between the Cilician coast and the Central Taurus mines in the EBA (Yener, et al. 1991).

⁸⁴Evidence exists for bitumen at Arad, small Tel Malhata, Yarmuth, and Tel Dalit (Nissenbaum, et al. 1984; de Miroschedji 1988: 87, pls. 47:2, 48:17; Gophna 1996: 134).

networks.⁸⁵ For example, a similar highland-lowland cluster can be located in the western Jezreel and Lower Galilee leading towards the sites of the Akko Plain (Esse 1991: 146-52, fig. 27; Portugali & Gophna 1993: fig. 5). The EB II settlement pattern of the Huleh Valley shows a bi-polar arrangement with the largest sites (Dan and Hazor) at the northern and southern phytogeographical borders (Greenberg 1990). A contemporary bi-polar lacustrine arrangement could be posited for the Kinneret region with Beth-Yerah at the southern end and Tel Kinnerot and et-Tell (Bethsaida) at the north (Epstein & Gutman 1972: site 111; Esse 1991: fig. 27, site 66; Fritz 1993: 193-95).⁸⁶

5.4.1 Imports from Egypt

With the end of the EB I period, local production of Egyptian material culture ceased and imports from the Nile Valley declined considerably. Moreover, re-analysis of many Egyptian artifacts that had been previously associated with EB II contexts have been reassigned to the EB I period, such as at Tel `Erani (Brandl 1989) and `En Besor (Gophna 1993a: 394). Nevertheless, pottery, faience beads, and a slate palette at Arad (Amiran 1974a; Amiran, et al. 1978: 51, 55, pls. 55, 68:21, 69:16-19), and pottery from Tel `Erani (Brandl 1989: 376), demonstrate that some imported artifacts appear in EB II contexts (Ben-Tor 1982: 6); these all but disappear by EB III (Ward 1991: 18; Ben-Tor 1986: 18).⁸⁷ Other EB II/III finds include *aspatharia* shells (Reese, Mienis & Woodward 1986: 82); various cosmetic palettes in EB III contexts (Jacobs 1996); a cache of First Dynasty alabaster vessels found in an EB III sanctuary at Ai (Amiran 1970; Callaway 1978: 49-50); fragments of alabaster and stone (diorite) vessels from Yarmuth (de Miroschedji 1988: 88, pl. 48:9, 11-12; 1993c: 664-665);⁸⁸ an Early Dynastic stone vase from Tel Kinrot, which was found out of context (Fritz 1993: 195); and an OK jar from Beth Shean.⁸⁹

⁸⁵Among the largely unexplored subjects is the wide distribution of basalt (e.g., de Miroschedji 1988: pl. 49: 7, 11; Williams-Thorpe & Thorpe 1993: 313).

⁸⁶Current excavations at Bethsaida have focused primarily on later periods. See Arav (1995) and cited preliminary reports. For a discussion of the role of the Kinneret as a medium for waterborne transshipment, see *infra* Chapter Three.

⁸⁷For the distribution of faience in the southern Levant, see Peltenburg (1995: n. 32, fig. 1); his distribution map is admittedly not comprehensive. An Egyptian jug from Tel Aphek is associated with EB II levels (Kochavi 1990: 213, fig. 3; Beck & Kochavi 1993: 66), but Brandl (1992: 467) considers it to be of an EB I date, perhaps an heirloom.

⁸⁸A possible *serekh* is also reported, but the vessel may be local (de Miroschedji 1988: 86, pl. 47:8)

⁸⁹An "Abydos" MW jug with incised hieroglyphics from Beth Yerah was presented by Greenberg at the HUC conference (see *supra* n. 4), who associates it and other evidence with an Egyptian presence at the site.

5.4.2 Imports from the North

A number of objects hint at relations with the more northern cultures. An EB III gold plaque of Anatolian style was deposited in a tomb near Khirbet Kerak (Amiran 1993; Kaplan 1975). Whether this is evidence of the export of gold from Anatolia, as suggested by Ben-Tor (1986: 23; Young 1972), or a reflection of local production employing northern artistic influences on Egyptian gold is not clear.⁹⁰ Another possible Anatolian connection can be seen in the ceremonial axes from 'Ai (Ben-Tor 1986: 23; Prausnitz 1955; Parr 1958). Ivory bull's heads, models of ritual beds, and carved bone handles from a number of sites are also considered to be evidence of contact with Syrian or Mesopotamian traditions (Ben-Tor 1986: 23).

5.4.3 Copper

During the EB II-III, the structural shift in the organization of metal production and distribution that began with the Early Bronze Age continues and becomes further entrenched. Copper objects continue to be widely distributed throughout all regions in a variety of utilitarian, martial, and ornamental forms (Shalev 1994: 633-6, figs. 1-3; Philip 1989; Miron 1992; Ilan & Sebbane 1989: 154-8, figs. 9-10). As in the EB I period, all copper objects were made of the same unalloyed material by open-mold casting and forging (Shalev 1994: 635-6, fig. 2), although a number of artifacts from Bab edh-Dhra' were found to be made of arsenical copper (Hauptmann 1990: 57; Hauptmann & Weisgerber 1992: 63).⁹¹ Despite the ubiquity of copper objects, their location of manufacture is uncertain and may have been carried out near the mines (Ilan & Sebbane 1989: 155-6, fig. 9). Shalev (1994: 636; 1995: 115), however, emphasizes a total geographical separation between the process of extraction (mining and smelting) and production. Extensive evidence of smelting has been found at all three known sources of copper in the southern Levant: the southern Sinai, Timna', and Feinan (Shalev 1994: 636; 1995: 115; Ilan & Sebbane 1989: 156).⁹²

In southern Sinai, the EBA population involved in mining and smelting shows strong material cultural affinity (architecture, pottery style and production, etc.) with EB II Arad and other Negev sites (Beit-Arieh 1983; 1986; Porat 1989b; Ilan & Sebbane 1989: 154-8). This affinity is seen as part of a copper exploitation enterprise centered at Arad, although the precise socio-political relationship is not

⁹⁰Regarding the unlikelihood of gold deriving from the Pactolus Valley, see Moorey (1994: 220-1).

⁹¹It is not clear whether these artifacts should be considered the result of recycling or the continued utilization of the arsenical sources recently identified in Sinai (Ilani & Rosenfeld 1994).

⁹²For southern Sinai, see Beit-Arieh (1981; 1986). For Timna', see, most recently, Rothenberg & Glass (1992). For Feinan, see Hauptmann (1990), Hauptmann et al. (1992), and Hauptmann & Weisgerber (1992).

clear (Ilan & Sebbane 1989: 154-9).⁹³ Analysis of copper artifacts from Arad point to the southern Sinai as their source (Ilan & Sebbane 1989: 148).⁹⁴ Similarly, exploitation is reported at Timna' (Rothenberg & Glass 1992) and its environs (Avner, Carmi & Segal 1994: 278), although the Timna' data is not without some controversy (Sebbane, et al. 1993: 51; Beit-Arieh 1995).⁹⁵ The most extensive evidence for mining and smelting is found at Feinan, where slag heaps are estimated to be the result of between 100-300 tons of refined copper (Hauptmann 1990: 57; Hauptmann, et al. 1992: 7; Hauptmann & Weisgerber 1992: 63). Chemical analysis of artifacts from a number of sites in Jordan and at Jericho suggests that they were produced of copper from Feinan (Hauptmann & Weisgerber 1992: 57). Thus, there is no reason to exclude Feinan as one of the main sources of copper west of the Jordan river (Hauptmann, et al. 1992: 3). The intensity of the material cultural connection between Arad and southern Sinai has made it almost paradigmatic that the latter was the source of the former's copper. More analyses must be carried out before the complex issue of specifying chemical "fingerprints" for the various copper sources is resolved (Hauptmann, et al. 1992: 3-4). Given its position in the southeasternmost zone of dry-farming, Arad could have served as an interface or gateway for copper arriving from all three sources, which was then distributed northwards and westwards to the Coastal Plain, perhaps to a maritime gateway at Ashkelon (Stager 1990).

Previously, Ilan & Sebbane (1989: 158-9) outlined a pattern of shifting fortunes in EB II-III copper exploitation and trade, in which the southern Sinai sites are finally abandoned, when they are eclipsed by intensified EB III exploitation at Timna' and Feinan. Recent work by them and others, however, has demonstrated the complexity of dating arid zone sites (Sebbane, et al. 1993; Avner, Carmi & Segal 1994). Radiocarbon evidence suggests that the Negev and Sinai sites were not entirely abandoned after the fall of Arad (Avner, Carmi & Segal 1994: 282), although the absence of clear EB

⁹³Kempinski (1985; 1989e: 166) suggests the toponym Arad derives from the Sumerian word for copper URUDU. The genesis of Arad (and its collapse) and the identity of the culture that initiated the relationship between it and southern Sinai are still the subject of a fascinating debate. Is Arad the southernmost extension of the urban EBA Canaanite culture, whose inhabitants were among the prospectors active in southern Sinai (Amiran, Beit-Arieh & Glass 1973; Kempinski 1989e: 166), or is Arad the northernmost extension of an arid zone autochthonous culture (Sebbane, et al. 1993; Govrin 1990; Avner, Carmi & Segal 1994: 282; Finkelstein 1995a: 67-86), interfacing with urban Canaan at their Aradian entrepôt or gateway?

⁹⁴Analysis of the copper sources near the southern Sinai sites show them to be of an extremely low-grade ore, leading Avner et al. (1994: 282) to suggest that the copper smelted at these sites, which is of a much higher grade, originated in sandstone deposits, e.g., Timna' or western Sinai. This suggestion is contradicted by their own observation (Avner, Carmi & Segal 1994: n. 21) that the technical means (bronze tools) of mining sandstone deposits was not available until the Intermediate Bronze Age. While there is no precluding exploitation of sources distant from these sites, it seems equally plausible that the highest grade copper in nearby deposits was mined out in antiquity, leaving only low-grade deposits for modern assays. Avner et al. (1994: 282) are correct that these sites were settled for reasons other than copper, which is all the more reason to draw a distinction between where this population settled and where it mined. For the geology of the copper deposits in Sinai, see Weissbrod (1987: 288-91) and Ilani & Rosenfeld (1994).

⁹⁵See especially the editor's note following Beit-Arieh's article.

III material remains leads Finkelstein (1995a: 85) to argue that these dates may only represent the “weakened activity of a local ‘invisible’ population” (cf. Finkelstein & Perevolotsky 1990; Finkelstein 1992a; 1995a: 23-6; Rosen 1992). In southern Sinai, however, far from the EB III culture of southern Canaan, Egyptian involvement in the exploitation of turquoise and copper during the Old Kingdom may have led to diminished contacts with the more northerly areas and, hence, the lack of comparanda that would have originated from settled urban sites. Thus, although Arad may have fallen out of the equation, utilization of the Sinai sources may have continued, although at a different scale and under different auspices. Arad's decline should be viewed as anything but unicausal (Finkelstein 1995a: 77-86), and the widely available copper in the southern Levant may have been transported via other sites along the Jordan Rift Valley.

5.4.4 Pottery

A number of recent works have emphasized the increasing degree of standardization and specialization of pottery production in the southern Levant during the EB II-III as compared to the previous period (Esse 1989b; 1991; Joffe 1993; Porat 1989a; Beynoun, et al. 1986). Alongside this local production and regionalization were some complex long distance inter-regional exchanges in pottery, that included common and luxury vessels (Porat 1989a: 43, table 8.5, fig. 8.1b).⁹⁶

5.4.4.1 Common vessel classes

In the EB II, arkose-tempered holemouth cooking pots, which were manufactured in southern Sinai (or the southeastern Arava valley), are found at sites throughout the northern Negev, ‘En Besor, southern Sinai, Biq’at Uvda, and especially at Arad, where they are the sole cooking vessel in Stratum III (Porat 1989b: 172-4).⁹⁷ Similarly, fossil shell tempered holemouth jars, which were produced either in the central Sinai or the southern Arava valley, are found throughout the northern Negev, Biq’at Uvda, southern Sinai, and Arad (Porat 1989b: 175-7).

The work of Greenberg & Porat (1996) has demonstrated that the EB II-III metallic ware, which was widely distributed in the northern part of Canaan, was produced of non-local material from a production center, or centers, somewhere in the area near the foot of Mt. Hermon, the Upper Galilee, or further north.⁹⁸ From a single petrographically distinct fabric, EB II potters produced all of the necessary range of forms required, with the exception of cooking pots (Greenberg & Porat 1996: 6-11, 19 figs. 1-3). At sites in northern Canaan, this ware constitutes ca. eighty-five percent of the

⁹⁶Regarding her criteria for distinguishing imported from local vessels, see Porat (1989a: 43-5).

⁹⁷In the following stratum this ware declines to 20% of the total holemouth cooking pots, as locally produced imitations dominate (Porat 1989b: 174).

⁹⁸This ware is petrographically different from the combed, high fired storage jars of the Shephelah and southern Coastal Plain, which are often called metallic ware (Greenberg & Porat 1996: 17).

assemblage, while even at the southernmost sites that have produced quantities of this ware, some 80-110 km away from the nearest possible source (e.g., Tel Qashish and Qiryat Ata), the percentages can still reach fifty percent, with all the vessel types still represented (Greenberg & Porat 1996: 11-2, 19, fig. 5; Porat 1989a: 72).⁹⁹ Further afield, isolated examples of a more limited range of types are found at numerous sites, as far south as Arad and northern Sinai (Greenberg & Porat 1996: 11, fig. 6; Porat 1989a: 43, table 8.5, 72-73, fig. 10.9), where they may have been considered luxury items. During the EB III, this class is rare and the range of types is limited to storage jars and pithoi (Greenberg & Porat 1996: 12). The lack of any analysis of possible examples of MW vessels from Lebanon renders any conclusion premature. However, its presence, usually in restricted types in the Beqa' Valley and similarities between jugs and jars from Byblos and a tomb at Lebea, east of Sidon, with examples from Dan and Hazor (Esse 1991: 111; Greenberg 1996a: 137; 1997: 21; Greenberg & Porat 1996: 11, fig. 11) should remind us of the geographical proximity between the northern Hula valley and the Lebanon, as compared to the more southern regions of Metallic Ware distribution.¹⁰⁰

5.4.4.2 Luxury pottery vessels

In addition to the limited occurrences of Metallic Ware in southern Canaan, far from its core area of use, Porat (1989a: table 8.5b) found numerous lone examples of imported pottery. Examples from Arad include holmouth jars and holmouth cooking pots from the Shephelah and Coastal Plain, and a "snake" decorated storage jar from the Coastal Plain. Sites in the Shephelah (Tel 'Erani and Tel Halif) appear to have received jugs and juglets from Arad. The LFPW vessels from Arad, referred to by Porat as decorated Abydos ware, were made of local materials similar to other storage jars (Porat 1989a: 75). The distribution of the carinated bowl family, which began to be produced and exported from a presumed pottery workshop at Aphek, or its immediate environs, by the end of the EB I period, reaches its floruit during the EB II-III period (Beck 1985a; Porat 1989a: fig. 8.1A, table 8.5B).

Lastly, Khirbet Kerak (or Beth Yerah) Ware, the *fossile directeur* of the EB III, is another example of a widely distributed class of pottery. Ignoring, for the present, the complex issues surrounding the origin of this class of pottery, Esse's study (1991: 138-40, table 4, fig. 25) of the distribution of the various types shows clearly that the greatest variety is concentrated in northern Canaan. With the exception of 'Ai, quantity and range of type decrease outside of this area, and only smaller portable bowls are found south of Beth Shean. The limited technological analysis that has been carried out on this ware demonstrates that despite its exotic appearance and origin, it was produced

⁹⁹Nine examples of Metallic Ware of a limited range of types are reported from Tall Abu al-Kharaz in Jordan (Fischer & Toivonen-Skage 1995). In the absence of a petrographic description, it is not certain if these are related to the ware under discussion, although the macroscopic description does not preclude such an association.

¹⁰⁰The strong contrast between the overall assemblages at Byblos, Lebea, and Dan, and the probability of Metallic Ware production further north in Lebanon should be emphasized (Greenberg 1996a: 137-9).

locally (Chazan & McGovern 1984; Esse & Hopke 1986: 328-332). Porat (1989a: table 8.5, appendix 5c) found that examples of Khirbet Kerak ware at Tell Halif were produced in northern Canaan and at some other unknown foreign locale.

5.4.5 Seals and sealing

Apart from the requisite administrative authority for the building and maintenance of public and monumental architecture (Joffe 1993: 84), and the public granary at Beth Yerah (Esse 1991: 100), seals and sealings (stamp and cylinder) represent the only presumed reflection of the artifices of central organization. Despite the efforts of numerous scholars (Ben-Tor 1978; 1985; Esse 1990; Greenberg 1992b; 1996a: 142-9; Lapp 1989; 1995; Beck 1976; 1984) to elucidate the chronological and iconographic aspects of numerous examples from throughout the EB II-III southern Levant, we are no closer to understanding the economic organization that may have stood behind these symbolic or ideographic artifacts. In the absence of textual evidence, and the lack of impressed bullae, there may never be an adequate explanation of the way in which the inhabitants of this region employed these administrative devices, whose artistic influences and connections span much of the Near East and Aegean. One exception may be the impressions found on pottery vessels (Ben-Tor 1978: 40-1), especially on storage jars of metallic ware. The juxtaposition of the seal impressions with storage jars manufactured at limited, specific workshops may not be coincidental, as is the similar geographical distribution of the impressions and the metallic ware family (cf. Ben-Tor 1978: fig. 25 and Greenberg & Porat 1996: fig. 6). These impressions may represent some form of workshop trademark, label of consignment, or kiln batch; only future study will elucidate this issue.¹⁰¹

5.5 The beginning of the commercial maritime container

Potters, like any other craftsman, respond to the needs of their consumers, pushing the limits of the ceramic medium to create desired form and maximize function. Nowhere is this relationship more apparent than in the development of the commercial maritime container, a storage vessel capable of safely delivering an organic bulk cargo long distances by sea.¹⁰² Although not the first to recognize its particular distinctiveness (Grace 1956; 1979; Amiran 1969a: 140-1; Parr 1973; Zemer 1977), Raban (1980: 1-8) has succinctly outlined the ideal characteristics of this particular jar: it should be simple and inexpensive to produce in large numbers, so as not to impact negatively on the cost of the commodity it contains; it should be of standard dimensions and shape, in order that the volume (and often the commodity) would be easily recognizable to a potential customer, and to maximize the capacity of a ship's cargo hold; and it must be adapted for rugged transport at sea and easily carried.

¹⁰¹N. Porat and R. Greenberg are conducting a petrographic and chemical study of seal-impressed metallic ware (N. Porat, p.c.).

¹⁰²On the LBA Uluburun wreck, jars were also used as a container for loose, bulk cargo, such as beads (Bass 1986: 278; Pulak 1997: 240).

Although on land many relatively light materials (e.g., leather, metal, and plastered or bitumen-sealed baskets) might serve as possible containers, at sea, for long periods of time, organic cargoes required sealed, airtight containers that would not react with the contents or allow them to be spoiled by the constant presence of sea spray and bilge water (Raban 1980: 3-4; Marcus 1995a: 601). The cumbersome, heavy ceramic container was the only solution until the introduction of the wooden stave barrel, perhaps sometime in the Eleventh-Twelfth centuries, C.E (Pryor 1988: 82-83).¹⁰³

In order to achieve the desired characteristics in a ceramic form, a number of attributes evolved (Raban 1980: 1-8, *passim*; Parr 1973: 176-7): an increasingly streamlined, standardized, elongated shape that enlarged the amount of surface area in contact between two adjoining vessels, which helped prevent breakage by distributing the force of impact; a gradually smaller, thicker base to prevent breakage at one of the vessel's primary weak points, and, ultimately, to serve as a third handle; to enable ease of conveyance, strong, firmly attached loop handles were added, again streamlined to prevent sharp knocks on an adjoining vessel wall, and standardized for ease of lashing; shoulder strength to enable the placement of a second or third stack in a ship's hold; a relatively narrow, standardized neck and shaped rim that would enable a "cork" and clay lump to be firmly attached and the vessel stoppered; and, lastly, overall vessel strength and reduced permeability, either by production method (choice of paste and firing technique) or by the use of a sealant (Fig. 2d-2e).

Since Raban's (1980) seminal study, no other synthetic works have dealt with the early development of the BA commercial storage jar. A full consideration of this topic is beyond the scope of the present work, but a number of salient trends should be indicated. While the optimum ceramic form may only have been achieved by the Classical amphora—and even then in countless typological and functional permutations—already at the beginning of the Early Bronze Age, potters began to experiment with various attributes of the storage jar to adapt it for the rigors of transport. Clearly, EB I ledge-handle and loop-handle jars were capable of making the arduous journey from the southern Levant to Egypt, arriving there complete with their contents intact. By the EB II period, the loop-handle replaces the ledge handle on all the storage jars imported into Egypt, and many of the attributes outlined above (thickened walls and base, profiled rim, elongated body, etc.) began to become more widespread in the Old Kingdom. The development of these EB II-III storage jars, and many of the jug types, are seen as a consequence of the demands of sea-borne trade during this period (Raban 1980: 57-62; Stager 1985: 179; 1992: 37-9; Esse 1991: 115-6). Esse's (1991: 115, fig. 21) study of the height of Levantine vessels found in Egypt shows a chronological trend from relatively small LFPW jugs and juglets, to larger RPW jugs, to even larger Combed Ware jars. This most certainly echoes the increasing carrying capacity of the means of transport, from relatively small boats or donkeys to

¹⁰³Pryor (1988: 81) notes, however, that the amphora continued to be used, especially in timber-starved areas, such as Egypt and North Africa.

increasingly larger sailing ships (Esse 1991: 115-6).¹⁰⁴ Unnoticed by him, the bell curves of Esse's histogram also demonstrate greater standardization among RPW and Combed Ware vessels than among LFPW jugs, with the steepest bell curve attained by the Combed Ware jars. Moreover, the identification of MW production centers in northern Canaan and the northern coastal Levant (EB III) demonstrates that these vessels were being mass produced with particular typological and petrographic characteristics (high-fired, less permeable, strong but light weight) that made them ideal for transport and easily packed (Greenberg & Porat 1996).¹⁰⁵

Regarding commercial recognizability, depictions of commercial jars appear on wooden labels and ivory inlays by the First Dynasty (Amiran 1969b) and later in the Old Kingdom, where its contents are indicated to be sweet oil (Kantor 1992: 20, fig. 6:3). Imported jugs are depicted on a Second Dynasty tomb and on a relief from the time of the Fifth Dynasty king Sahure (Kantor 1992: 20, fig. 6:2; Esse 1991: 105). These jugs are a sufficiently recognizable visual idiom by the reign of Qa in the First Dynasty, when they are copied in stone; and by the Third Dynasty they become a hieroglyphic determinative in an offering list (Kantor 1992: 20). Although not depicted or celebrated pictorially, the decoration on LFPW jugs may reflect some form of botanical decoration that indicated its contents (e.g. resin or fruit juice).¹⁰⁶

Thus, while in quantifiable terms there is a relatively limited amount of evidence for the involvement of the EB II-III southern Levant in the export of organic products to Egypt, the emergence of a specialized commercial container that was produced in specific workshops is indicative of a reorientation in the way potters reacted to the necessities of trade. The true MW vessels (jars and jugs) that were produced in northern Canaan and reached Egypt during the Early Dynastic/EB II period are only part of a much broader socio-economic ceramic phenomenon, only hinted at by the examples found in Egypt. However, the wide distribution and occurrence of Metallic Ware at sites in northern Canaan means that the containers cannot be used to pinpoint the origin of the products that were shipped to Egypt. These vessels were produced in one specific area and may have been filled anywhere within their extensive distribution area, to be exported from a coastal zone (e.g.,

¹⁰⁴Esse's model does not incorporate the EB I jars imported into Predynastic Egypt from the southern Levant, but that should be explored following the publication of the large, complete assemblage from Abydos tomb Uj.

¹⁰⁵After its EB II floruit, MW continues to be used solely in the production of storage jars and pithoi, while other forms are made of different fabrics (Greenberg & Porat 1996: 12). This continuity strengthens the notion that potters had found an optimum matching of vessel type and function with fabric, an achievement that consumers were loathe to give up. Note that these are the only closed MW types found at Byblos, Tyre, and Lebea, although those at Byblos are in much greater variation, suggesting an additional production center (Greenberg 1996a: 137).

¹⁰⁶The scholarly literature has been unusually silent regarding the relationship between these decorations and possible contents, despite the fact that it is the only style of painted decoration of this period (Amiran 1974b). It is particularly interesting that many of the motifs (triangles and lozenges filled with dots, wavy lines) reappear in MBA decorations, such as the Levantine Painted and Tell el-Yahudiyah Wares.

the Lebanese coast or the Akko Plain).¹⁰⁷ The significance of this phenomenon is, perhaps, best expressed by what might be described as an hypothesis from a list of Raban's (1980: 6) general "expectations" from the study of the commercial maritime jar:

The presence in the ceramic repertoire of a particular culture of a distinctive type of storage jar, which is significantly different from the remaining jar types in that it is better suited to being carried and shipped, is evidence of the flourishing of long distance maritime trade. The absence of this distinctive type may indicate the opposite (translated from the Hebrew).

A possible corollary is that the production, adoption, and utilization (implementation in the maritime network) of such a vessel reflects the economic orientation of said culture towards long distance maritime trade. Whether these hypotheses can be proven or disproven will require further synchronic and diachronic study.¹⁰⁸

5.6 Byblos

Following the EB I Egyptian colonization phase, no site outside the Nile Valley possesses the range and quantity of Egyptian artifacts, particularly royal and prestige items, as the relatively small site (5 ha.) of Byblos. For this reason alone no discussion of Egypt's relations with the Levant or eastern Mediterranean trade could be complete without consideration of the evidence from this Lebanese coastal site. However, any consideration of this evidence is fraught with difficulty. Excavated by the peeling off of arbitrary 20 cm layers, i.e., without reference to debris layers that may slope irrespective of absolute altitude, much of the voluminous data has often been unusable without reliance on external chronological cross-reference. Fortunately, intra-mural burials, well-preserved and self-contained public architecture, and numerous foundation deposits permit some secure contexts that exert some control over the chronological integrity of the excavated material (e.g., Tufnell & Ward 1966; Negbi & Moskowitz 1966; Negbi 1976; Prag 1986a). For the third millennium, we are fortunate to have the results of the admirable efforts of Saghih (1983), who painstakingly reassembled the contexts and placed them into a stratigraphic architectural sequence.¹⁰⁹ It is not the

¹⁰⁷The lack of imports in Egypt from southern Canaan is instructive. It will be interesting to see whether true metallic ware or a southern Canaanite variant was found at Ashkelon. Gophna (1997: 160, n. 17) considers the ceramics from Ashkelon to belong solely to EB III, but full publication must be awaited.

¹⁰⁸Mazzoni (1987: 150-1) notes a predominantly coastal distribution of CW jars in Syria compared to inland areas, which strengthens its maritime role.

¹⁰⁹This sequence must still be used with caution (Esse 1992).

purpose here to attempt a thorough study or even to fully review the extensive evidence. Instead, a summary of the range of artifacts and a number of general observations will be offered.

Numerous scholars have discussed the close relations between Egypt and Byblos during the ED and OK periods (Ward 1963; Saghie 1983; Wright 1988; Ben-Tor 1982: 11-2). While a number of objects suggest at least indirect contacts as early as the First Dynasty, the real floruit of direct relations does not appear to have begun before the Fourth Dynasty (Ward 1963: 20-2; 1991: 13, 19; Saghie 1983: 104-6). From the Fourth through Sixth Dynasties at least eleven royal names have been found inscribed on objects from Byblos; the most frequent occurrences are in the Sixth Dynasty and the most frequently mentioned rulers are Pepi I and Pepi II (Saghie 1983: 99, table 8, 106; Ward 1963: 21-4; Wright 1988: 148).¹¹⁰ Most of the inscribed objects are stone vessels that were found in what has been called the Baalat-Gebal temple complex, whose architectural plan is suggested to have been influenced by Egyptian examples, and the nearby *enceinte sacrée* (Saghie 1983: 36-8, 106, 121, fig. 12a; Ward 1963: 24; Wright 1988: 149-50). Other inscribed objects are known, including one of an Egyptian official and a local cylinder seal with a hieroglyphic inscription dedicated to three gods and mentioning Byblos (Ward 1963: 21, 24-5; Wright 1988: 149-52; Martin 1998). Although attention is usually focused on the high profile prestige objects (or votive offerings) from Egypt, there is evidence for artistic influences and imported raw materials.¹¹¹ One additional find of importance is a copper axehead found at the mouth of the Adonis river bearing the name of an Egyptian lumberjack crew in hieroglyphs (Rowe 1936: 283-6, pl. XXXVI:1; Wright 1988: 146-7).

The ample artifactual evidence and the epigraphic finds, especially the aforementioned cylinder seal, are often taken as indications of the strong cultural influence that Egypt had on the inhabitants of Byblos, and their own orientation and predilection (Wright 1988: 151-2). Exploring issues of influence is somewhat subjective at a site with problematic stratigraphy, outdated and insufficient collection methods, and a lack of material analysis of the various crafts. Moreover, such processes cannot be assessed in chronological isolation, as many of the clearly MK/MBA influences probably had their origins in the OK/EBA relations. This legacy is particularly apparent in one very important component of EBA Byblos: writing. Among the finds from Byblos are inscriptions written in a so-called “pseudo-hieroglyphic” script (Hoch 1990; 1995; Dunand 1978; Mendenhall 1985; Colless 1992; 1993; 1994; 1995; 1996-1997). Most of these fragmentary inscriptions are on stone, but metal spatulas and two fairly lengthy texts on bronze tablets were also found (Mendenhall 1985: 3;

¹¹⁰Jidejian (1971: 20) claims that there are 36 inscriptions bearing the names of Pepi I and Pepi II.

¹¹¹Figurines, especially of monkeys, are one example (Jidejian 1971: pls. 22-23). Various gold, silver, and carnelian finds attest to imports from the south and north (Saghie 1983: 26-7, 48-51). The presence of jewelry molds (Saghie 1983: 62, fig. 17) is indicative of the local crafts in precious metals. However, as the metal industry is not considered in Saghie's analysis (1983: 87, n. 2), a diachronic review of metal use and development is precluded.

Hoch 1990: n. 2; Sass 1988: 86-7).¹¹² The stone inscriptions were found in later contexts in secondary use, but the inscriptions on metal were associated with the Obelisk Temple and are dated no later than the Middle Kingdom (Mendenhall 1985: 5; Hoch 1990: 115, n. 7). The precise date of the development of this script is not yet clear.¹¹³ Based on the latter context and paleographical study of the signs, the script is believed to have evolved from OK hieroglyphics signs either already in the twenty-fourth century (Mendenhall 1985: 5), or between the Old and Middle Kingdoms (Hoch 1990: 119), but was certainly in its developed stage by the latter.¹¹⁴ Although an accepted decipherment has not yet been achieved, enough of the signs have been identified to establish that this is a syllabic script of a Semitic language (Mendenhall 1985; 1988; 1992: 235-9; Millard 1986: 391; Hoch 1990; Colless 1992: 55-8).¹¹⁵ Clearly, a period of interaction and development must be assumed to have preceded these inscriptions, during which this script was written primarily on perishable material, namely papyrus. No positive evidence has survived, but presumably this writing system served a variety of functions. Although Hoch (1990: n. 2) dismisses their utility, many of these signs are found etched on metal and incised on pottery, which is evidence of the widespread use of these developed signs and, potentially, evidence for their dating.¹¹⁶ Thus, one result of the intimate contact between Egypt and Byblos is the transmission of a writing system, which, as with other influences, does not seem to have reached other any other regions.

Why was Byblos alone so attractive to the Egyptians and why were the Byblians so inclined towards Egyptian culture are difficult questions to answer. Clearly, an economic rationale was behind the maintenance of this intensive and enduring relationship. Byblos' position on the Lebanese Coastal Plain, within a reasonable distance to the forested mountains, its access to the Damascus road and

¹¹²Mendenhall (1985: 3) states that the metal is copper. One of the spatulas has a later Phoenician text suggesting some contemporaneity between the two scripts (Sass 1988: 86-87), or the later re-use of an heirloom.

¹¹³Colless (1992: 74) notes a sign that appears in Texts D & I derives from an Eighteenth Dynasty hieroglyph, which may suggest a sixteenth century date for some of the texts. Text D, a bronze tablet, was found along with Text C in a context that was in use during the Twelfth and Thirteenth Dynasties, but abandoned until the Hellenistic period (Mendenhall 1985: 5). The sign appears repeatedly in Text I, a bronze spatula, which was found near the city reservoir, and is associated with a Twelfth Dynasty context found above a twenty-third century destruction layer (Mendenhall 1985: 5-6). However, the use of the Babylonian calendar in the text suggests a *terminus post quem* of 1750 (Colless 1995: 25-6).

¹¹⁴Hoch (1990: 119, n. 32) draws a connection between the Byblian syllabic script and the Sixth Dynasty group writing system. A similar connection is posited between the Proto-Sinaitic script and MK group writing of foreign names (Sass 1989).

¹¹⁵Translations of the longer texts and some fragmentary inscriptions have been attempted (Mendenhall 1985; Colless 1993; 1994; 1995; 1996-1997). These attempts suggest various royal proclamations, elite dedications, a marriage contract, taxations, disputes, and pledges.

¹¹⁶Another piece of evidence, seemingly ignored by scholars, is a limestone tablet with hieroglyphic signs arranged in registers (Saghieh 1983: 63, 67, fig. 18: no. 17145).

inland Syria, and its anchorage are only part of the answer. Other sites, such as Tyre, Sidon, and Beirut, with access to wood, oils, and other exploitable cash crops, could easily have served a similar capacity, but evidence for that is lacking. It is possible that no other community had achieved the requisite level of organization that Byblos may already have begun to demonstrate in the fourth millennium. Differential access to these resources would account for Egyptian interests at Byblos. However, it must be appreciated that outside Byblos little is known about the Lebanese coast and its immediate hinterland during the EB II-III period. Soundings on the “island(s)” of Tyre exposed two meters of EB II-III accumulation on bedrock, although the narrow exposures and limited ceramic assemblage permit only a general assessment (Bikai 1978: 5-6, 69-71, pls. 57-58, 69, 72).¹¹⁷ Of particular interest is a quartz cylinder seal inscribed with hieroglyphs found in an Intermediate Bronze Age (IBA) level, which dates to the Third to Fourth Dynasties (Bikai 1978: 69, pl. 54:6; Ward 1978a: 84).¹¹⁸ Excavation at Tell `Arqa in the north (Thalmann 1991: 25-32), a tomb at Lebea east of Sidon (Guiges 1937), and surveys carried out in the Beqa`a Valley (Marfoe 1979; Kuschke 1978) provide some additional evidence for the extent of settlement during this period.¹¹⁹

In complete contrast to other Levantines, including those in the southern coastal plain of Canaan in the EB I, among whom the Egyptians lived for as long as 200 years, only the Byblians seem to have assimilated archaeologically visible reflections of Egyptian culture, particularly in aspects of ritual and prestige. How this influence was transmitted is not entirely clear, but the material and inscriptional evidence at Byblos, and the textual and pictorial evidence from Egypt, suggest at least two possible mechanisms: Egyptians present at Byblos and Levantines (Byblians) present in Egypt. Whoever initiated the relationship between Byblos and the Nile Valley, by the second millennium the inhabitants of Byblos used Egypt as a symbol of wealth and status, or to “set itself apart” (Baines 1996: 33). In this respect, Byblos is an anomalous phenomenon, even in Lebanon. Apart from the aforementioned copper axehead and the seal from Tyre, no other Lebanese site has produced any

¹¹⁷Architecture was found only in the final two of seven EB II-III strata, suggesting perhaps intermittent use of the “island” (Bikai 1978: 5-6). Bikai (1978: 69-71) makes some general comparisons with primarily EB II-III assemblages, but note the presence of what appears to be a combed MW jar in this and the subsequent Intermediate Bronze Age stratum. Greenberg (1996a: 135-6) compares types from his late late EB II to early EB III pottery phase at Dan with the Tyrian assemblage.

¹¹⁸Ward (1978a: 84, n. 16) leans towards this OK object being one of many that reached the MBA Levant as heirlooms, but is willing to accept that it arrived during the OK period. The lack of any MBA remains at Tyre, particularly within this IBA context, suggests that the origin of this object is possibly in the preceding EBA occupation.

¹¹⁹It remains to be tested whether the MW jugs and jars at Lebea and Tyre, as well as those in the Beqa` Valley, are related to the production center identified by Greenberg and Porat (1996), or more northern manifestation of this ware.

Egyptian find.¹²⁰ The only other contemporary Egyptian objects from anywhere else in southwestern Asia were also found in an elite context on the floors of Palace G at Ebla, to wit: fragments of a diorite vessel and an alabaster jar that are inscribed, respectively, with the names of Chephren and Pepi I (Scandone-Matthiae 1979; 1982: 14-5; Matthiae 1985: 137, 170, fig. 79). It is quite possible that Byblos was the source, but other possible explanations may be offered (Pinnock 1990: 43-4).¹²¹ In the rich material cultural landscape of the EBA Levant and inland Syria, the meager Egyptian finds (excluding the Byblos anomaly) underscores what our understanding of Egyptian-Levantine relations would be today if Byblos had not been excavated and, perhaps, what some other yet unexcavated coastal site might still yield.

5.7 Contacts with Cyprus, Anatolia and the Aegean

The material evidence for contacts between Egypt, the Levant, and the eastern Mediterranean lands beyond Byblos is of limited quantity, but is varied enough in artifact type and material not to be discounted, particularly as it appears to coincide with increasing evidence for maritime contact between Egypt and the Levant.¹²² With a few exceptions, there is no evidence of reciprocity in the Nile Valley for the Egyptian exports that have been found in Cyprus and Greece, an incomplete pattern that perhaps favors an explanatory model involving intermediaries. Although previously fairly insulated, the archaeological record in Cyprus begins to demonstrate increasing evidence for external contacts during the third millennium (Peltenburg 1995; 1996; Swiny 1986). In addition to the contacts that are evident with the immediate Syro-Cilician mainland (e.g., pottery, obsidian, chlorite, stamp seals, copper, and tin-bronze), Syro-Palestinian flint appears at Kissonerga, and calcite vessels, faience pendants, beads and, gold originating perhaps in Egypt are also found at various sites, although they may have been transmitted by Levantine or Anatolian intermediaries (Knapp 1994: 280-91, fig. 9.4; Peltenburg 1995; 1996: 20-7, fig. 2).¹²³

Tarsus, Mersin, and a few other surveyed sites in southern Anatolia do provide some evidence of ceramic contacts with Syria, Cyprus, and western Anatolia, placing the Cilician coast

¹²⁰The scholarly community is so Byblio-centric that the origin of OK stone vessels purchased on the antiquities market after World War I as being Byblos has never been questioned (Nelson 1934), and are even misattributed to a particular context (Wright 1988: 149, photo caption).

¹²¹Other possible OK exports to Syria, which lack a secure context, are six stone vessels from Ugarit (Caubet 1991: 207-8, pls. I:1-2, VIII:12).

¹²²With a few exceptions all of the finds discussed here appear in contexts from ca. mid-third millennium onward. This work is not the place for a discussion of the merits or demerits of the ongoing debate on Aegean BA chronology (Warren & Hankey 1989; Manning 1995: 104-7, *passim*).

¹²³Peltenburg (1995: 32, n. 9) does not elaborate on the nature or identity of the Syro-Palestinian flints. If these are Canaanite blades, their distribution even in the northern Levant and inland Syria is quite widespread. The origin of the gold at Sotira-Kaminoudhia (Swiny 1986: 38, fig. 3:18) is unknown.

within the existing maritime sphere of activity (Mellink 1991; 1992: 214-5; 1993).¹²⁴ No clear Egyptian remuneration for the Cilician jug found in Giza is known along the coast, or anywhere in Anatolia for that matter, apart from an unprovenanced gold cylinder seal from a hoard bought in Turkey, bearing the names of two Fifth Dynasty rulers, Menkaure and Djedkare (Young 1972: 11, fig. 8), and the name of Sahure on a gold overlay from the infamous Dorak treasure (Kantor 1992: 21).

Regarding contacts with the Aegean, a number of fairly recent studies summarize and discuss the evidence for the importation of raw materials, finished products, artistic motifs, as well as possible influences on crafts (Crowley 1989; Lambrou-Phillipson 1990; Cosmopoulos 1991; Phillips 1991; Warren 1995; Peltenburg 1995: 37-41). The most substantial contemporary evidence is found on Crete, whose position just beyond the southern maritime entry to the Aegean gave it an important position vis à vis the Near East. Finds from Knossos, Aghia Triada, and Mochlos include hippopotamus ivory, both as a raw material and as finished stamp seals, carnelian, amethyst, chalcedony, faience beads, and perhaps gold (Krzyszkowska 1984: 125; 1988: 210; Warren 1995: 1-2; Peltenburg 1995: 38-9).¹²⁵ A Syrian silver cylinder seal, the aforementioned imported raw materials, and evidence for local imitations suggest that Mochlos may have functioned as one of the main gateways for Crete (Branigan 1991; Peltenburg 1995: 38-9). Stone vessels of Predynastic through Sixth Dynasty date are found in Knossos and Aghia Triada, but only two are from secure contexts (Warren 1995: 1-2; Lambrou-Phillipson 1990: 51-2). Although Cycladic finds are known on Crete (Wilson 1994: 39-43), the lack of any Cretan imports in the Cyclades (Broodbank 1993: 326) parallels the absence of any Egyptian, Levantine, Cypriot, or Syro-Mesopotamian imports, with the possible exception of a dagger of Cypriot or Anatolian affinity from Naxos and a cylinder seal from Amorgos, which is of dubious date and provenience (Lambrou-Phillipson 1990: 62-63, 73, 90, 373; Broodbank 1995: 7-8). The foci of maritime activity in the Cycladic archipelago are reflective of distinctively internal dynamics, although ceramic contacts with the Helladic and Anatolian mainland, and the arrival of tin, or tin-bronze, demonstrate that long distance Aegean maritime links existed (Broodbank 1989; 1993; 1995; Stos-Gale, Gale & Gilmore 1984).¹²⁶ The Helladic mainland is similarly devoid of secure finds from the East; however, scholars have long noted the similarities between the glyptics

¹²⁴Mellink (1991) sees the contacts with Cyprus as being driven by the desire for Cypriot copper. Scientific analysis seems to refute the utilization of native copper at this stage (Gale 1991b), although more analysis is needed (Peltenburg 1996: 20, n. 5).

¹²⁵Warren's (1995: 1) argument for the lack of gold coming from the north, where it is plentiful at Troy and Poliochni, is based on its absence in the "intervening Cyclades". Barber (1987: 106), however, notes a single gold bead on Naxos. Numerous explanations may be offered for how north Aegean gold bypassed the Cyclades or made its way via the coast of Anatolia.

¹²⁶If Cycladic metalsmiths had the requisite skill to cupellate silver from lead ores, then this may have been a catalyst for more distant exchange. Note that lead isotope analysis suggests that while Cycladic silver was derived locally, Cretan examples, including a cylinder seal, come from an unknown, perhaps eastern (this author's suggestion), source (Stos-Gale & Macdonald 1991: 270-1, fig. 8c).

of the southern Levant and Syria and the administrative seal system and symbols at Lerna in the Greek Argolid (Ben-Tor 1978: 67-69, 96-99). The strong similarities, which led Ben-Tor (1978: 96) to seek “geographical way-stations” to explain their transmission, may have been confirmed by a recent study of new evidence from Limantepe in southwestern Anatolia (Weingarten 1997). Lastly, a complex, cross-cultural relationship appears to exist among the decorated bones in the eastern Mediterranean, with examples from Syria being stylistically similar (motifs and patterning) to those from Greece (Cycladic and Ionian islands), but closer in shape to those from the southern Levant (Zarzecki-Peleg 1993).¹²⁷

5.8 The “Byblos run” and the southern Levant

The rise of a unified Egypt and eventually the Old Kingdom brought about an intensification, both in terms of scope and quantity, of its demand for foreign materials. This intensification led to state-sponsored maritime ventures that are described and depicted, respectively, in royal inscriptions and reliefs. The abandonment of the land-based colonial apparatus of EB I was in part the result of a need for products more readily available in the northern Levant and by the introduction of larger sea-going vessels that enabled bulk items (e.g., timber) to be transported and, concomitantly, for the mass shipping of smaller items that had previously been transported overland. During the ED/EB II period, organic imports in ceramic containers from southern Canaan are gradually replaced by products carried in specialized containers from northern Canaan and the Lebanon. By the Old Kingdom, Egypt's interests shift further north and Byblos emerges as the principal focus of Egyptian maritime activity, inaugurating what Stager (1992: 40-1) has termed the “Byblos run”. Beyond the Lebanon, remote maritime connections with coastal Syria, Cilicia, Cyprus, and even the Aegean may have been facilitated by middle-men, or by expeditions perhaps undertaken by Levantines (e.g., Byblians). To what extent Byblos served as a gateway for Egyptian materials (e.g., gold) being transported east is unknown. Throughout the “Byblos run” the southern Levant was probably still a secondary supplier to Egypt of some organic products, along with irreplaceable commodities such as copper and bitumen, through a number of coastal settlements that could have served as ports of call. These early ports are still largely unexplored and only future investigation will elucidate their role in the international and local regional exchange networks.

6. The First Intermediate Period and the South Levantine Intermediate Bronze Age

With the last documented CW jar to arrive in OK Egypt, sometime in the early years of Pepi II's reign, appropriately the last king to be mentioned in Sinai or Byblos (Ward 1971: 46; Saghih 1983: 99), the “Byblos run” and state involvement in the acquisition of foreign goods appears to have

¹²⁷The function of these objects is unclear, but traces of kohl on examples from Greece suggests they were used as paint tubes or containers (Zarzecki-Peleg 1993: 11). Further scientific analysis of the craftsmanship and residues might shed further light on this enigmatic artifact and its distribution.

begun its decline. For reasons beyond the scope of this work, the OK Egypt collapsed and a two hundred year interregnum ensued before the re-establishment of a central authority in the Nile Valley.¹²⁸ As the above portends, the First Intermediate Period is a lull in the Egyptian-Levantine relationship. In general, this period is characterized by social and political malaise, civil war, and a cessation in foreign contacts and trade. However, a “total” cessation would not be an entirely accurate characterization, even if it seems insignificant compared to the preceding and succeeding periods. Some overland and perhaps maritime contacts existed, probably fueled by the continued demand by local rulers and nobles for foreign materials. By the 11th Dynasty, which some see as the beginning of the Middle Kingdom (Hayes 1971), an aggressive foreign policy of military expeditions, may have laid the groundwork for the re-establishment of formal contacts with the Levant and Byblos.

The First Intermediate Period is considered to be coeval with the south Levantine Intermediate Bronze Age, a non-urban interlude that has been one of the most contentious and enigmatic archaeological periods under study.¹²⁹ This period is characterized by the end of EBA urban society, particularly in the region west of the Jordan rift. On the eastern side and, the western side of the Central Jordan Valley (Maeir 1997a: 190-6), better evidence for the continuity of habitation and material culture, and some vestiges of the former urbanism, suggest that this region was the socio-economic core of the southern Levant. The region to the west shows a seeming stratigraphic discontinuity, with no more than meager squatter encampments inhabiting EBA tells, rural sites, some cult centers, in a low-level mixed agricultural-pastoral mode of subsistence. The high archaeological visibility in the marginal arid zones is a hallmark of this period and extends as far as the Egyptian Delta (Finkelstein 1995a; Haiman 1996; Oren & Yekutieli 1990). Despite the rural, pastoral-agricultural character of this period, evidence for complex craft specialization and interregional exchange in ceramics, copper, and tin-bronze, demonstrates that interaction existed between procurement zones, production centers, and consumers.¹³⁰

¹²⁸Many studies have dealt with the nature of this collapse and the character of a politically fragmented Egypt (Ward 1971; Bell 1971; Kemp 1983: 112-6; 1989: 25; Wenke 1991: 290, 316-8; Redford 1992: 57-63).

¹²⁹This chrono-cultural term is preferred here over MB I, EB IV, or Intermediate EB-MB because it emphasizes the socio-economic and political character as a non-urban phenomenon between the urban Early and Middle Bronze Ages. This preference does not ignore the EB III legacy inherent in this material culture, nor does it preclude potential relations that may be identified with the subsequent MB IIa period. For the various approaches to the collapse (endogenous or exogenous), origin of the population (local or foreign), socio-economic character, and its relationship to the preceding and succeeding cultures, see, most recently, Dever (1980; 1995), Palumbo (1991), Finkelstein (1989; 1995a: 87-101).

¹³⁰For the ceramics, see Porat (1989b) and Goren (1991a; 1996). Copper alloys objects are widespread (Philip 1988: 196-7; 1989: 165-8; 1995c: 152-3; Palumbo 1991: 109-12; Miron 1992), with the copper apparently arriving by way of arid zone populations, who had access to the mining areas in Feinan, Sinai, and Wadi Arava (Haiman 1996: 14, 18-25, n. 9; Hauptmann, et al. 1992: 7; Rothenberg & Glass 1992; Avner, Carmi & Segal 1994: 283; Finkelstein 1989: 137; 1995a: 100). Analyses of weapons show primarily arsenical copper to have been used, although tin-bronze appears

6.1 Pictorial depictions and textual references in Egypt relating to the Levant

A number of pictorial depictions and brief textual references make either direct or indirect mention of the Levant, its population, or its products. From the first beginning of this period, just after the end of the Sixth Dynasty, is a reference to a nobleman who buries his father with an offering of *sft* oil (Ward 1971: 49). Later, in the Tenth Dynasty, a door is reportedly constructed of ṣ wood (Ward 1971: 50). In addition, some important literary works derive from this period, including the *Instructions for Merikare* (Ward 1971: 22-36; Redford 1992: 66-68).¹³¹ Apart from its didactic lament over the state of Egypt, the text refers to military activities in the western Delta as far as the seashore, to the receipt of *mrw* and *wan*, perhaps juniper, wood, and to Asiatics as robbers inhabiting the eastern Delta, against whom fortifications should be erected (Lichtheim 1973: 97-109, lines 81-83 and 91-100). This advice may have been heeded by the rulers of the Eleventh Dynasty, who demonstrate a more aggressive foreign policy. Under Mentuhotpe (Nebhepetre) I, in addition to texts and pictorial scenes of the familiar “smiting of the Asiatic” formula, other references report an expedition to Sinai, a military campaign to the *Qedem* (eastern) lands, and a, presumably sea-borne, expedition to the “cedar slopes” to cut wood (Ward 1971: 58-62, fig. 8; Redford 1992: 69-70; Hayes 1949: 46, n. j). The tomb of Antef includes a rare depiction of the siege of a fortified Asiatic stronghold (Arnold & Settgast 1965: pl. 2), and a riverine engagement (Settgast 1969), but the location of this walled settlement and the engagement are unknown.¹³² The acquisition of coniferous timber may be reflected in a funerary stela that mentions a coffin made of fresh ṣ wood (Ward 1971: 62), and an expedition by Henu, who records the building of a “Byblos-ship” for a voyage to Punt (Breasted

in the manufacture of daggers (Moorey & Schweizer 1972: 193-4; Khalil 1984; Philip 1989: 182-3; 1991b: 93-7; Hauptmann & Weisgerber 1992: 63; Palumbo 1991: 105-7; Stech, Muhly & Maddin 1985). Regarding the social reasons for the continued use of arsenical copper, alongside tin-bronze, see Philip (1991b: 100-1). Regardless of any social status that this alloy may have enjoyed, the possible arsenical copper source in Sinai (Ilani & Rosenfeld 1994), may indicate that this locally available natural alloy continued to be used despite a better available alloy. The wide variations in arsenic content may be the result of an enrichment process (Shalev 1988; Philip 1991b: 96-7) or the volatility of arsenic (Palumbo 1991: 107). Another sign of administrative complexity may be echoed in the possible continuity of EB III sealing practices, and other symbols and incised marks (Ben-Tor 1978: 44-5, fig. 8:49; Lapp 1989; 1995; Cohen & Dever 1981: 63, n. 10, fig. 9:4; Helms 1987a).

¹³¹For other translations of *Merikare*, see Lichtheim (1973: 97-109) and Faulkner (1973b). Although most completely known from a poorly preserved NK copy, most date the original composition to the Ninth or Tenth Dynasties, during the reign of Akhtoi, who is the only ruler mentioned in the text (Lichtheim 1973: 97), but Parkinson (1991: 52) suggests a date in the late Eleventh or early Twelfth Dynasties.

¹³²If the former is not the continuation of an OK artistic idiom (Schulman 1982: 168-70, 179), then it is a curious representation of sedentary IBA life. Besides other contemporary references to the northern Levant, where fortified settlements are known, Redford (1992: 70) notes the Eleventh Dynasty attack on the Asiatics of *D'ty*, a toponym that may be associated with the Jordan Valley. Schulman (1982: 181-2) places the riverine attack in the Nile valley rather than the southern Levant on the grounds that there are “no rivers worthy of the name”, but a riverine engagement to enable the disembarkation of troops prior to a siege further inland could be possible on a number of perennial coastal rivers.

1906: §432-§433; Säve-Söderbergh 1946: 48), although the precise construction material is unspecified.

6.2 Imports to Egypt from the Levant and beyond

Since Ward's study (1971) no one has detailed the extent of FIP imports. Although there is no precluding a re-use of previously imported products at the beginning of the period, the textual and archaeological evidence suggest that fresh goods were imported, albeit in smaller quantities. Cedar was used for the construction of boxes and coffins, and a model was made of an unidentified conifer (Lucas & Harris 1962: 430-2; Ward 1971: 62; Davies 1995: 146-7, n. 31, table 1, pl. 10:1). Some ceramic forms of southern Levantine or Syrian origin, or inspiration, are found in the Delta and Upper Egypt (Shaheen 1992; Bietak 1996: 9).¹³³ Copper, most likely imported via northern Sinai, was used for a range of objects, including a bowl, a statuette, epsilon axes, and plaques (Ward 1971: 51-4, fig. 7; Hayes 1971: 464; Lucas & Harris 1962: 219; Hayes 1953: fig. 92; Shaheen 1990; Garenne-Marot 1984: 116-7).¹³⁴ Silver is also reported (Lucas & Harris 1962: 246). Lastly, Ward (1971: 54) reports a lapis lazuli bead, which is one of the materials acquired in the aforementioned expedition to the Sinai.

6.3 Foreign imports in the southern Levant

Continuing the EB III trend, imports from Egypt decreased to almost nothing, while contacts and influences from the north continued to increase. Petrographic analysis has identified Egyptian pottery at two sites in the central Negev (Goren 1996: 56). These occurrences are the tail end of a trickle of Egyptian ceramics documented across the northern Sinai (Oren & Yekutieli 1990). Northern (Syrian) exchange and influences are reflected in ceramics, tin-bronze, and possibly the whetstones for local metal production.¹³⁵ A rare luxury import from somewhere in the regions to the northeast is the silver goblet from Ein es-Samiyeh (Dever 1980: 50; Gates 1986; Palumbo 1991: 119). Another rare find is an Aegean or Anatolian double-axe from a shrine at Megiddo (Kempinski 1989a: 41, fig. 18:12; Miron 1992: 85, #310). Shay (1983: 32), following Lucas & Harris (1962: 391), suggests that carnelian beads were imports from Egypt, but other sources in the nearby arid zones may have been

¹³³The fragmentary IBA handmade cooking pots from Tell el-Dab'a were examined by N. Porat and found to be made locally (Bietak 1991a: 31, n. 9), but their precise date will have to be reassessed in light of the new levels found at the site (*see infra* n. 180).

¹³⁴The bowl, of dubious provenance, and the statuette, may be bronze (Lucas & Harris 1962: 219). Analysis of FIP tools and weapons suggest a continuation of arsenical copper alloys alongside sporadic examples of tin-bronzes (Garenne-Marot 1984: 117; Davies 1987: 24, *passim*; Cowell 1987: 98-99, table 2b).

¹³⁵Among these are ceramics (Palumbo 1991: 118-20; Mazzoni 1985; Dever 1980: 50-2); tin-bronze (Philip 1989: 182-3; Palumbo 1991: 105-7; Stech, Muhly & Maddin 1985); and the whetstones from 'Enan, for which (1985) suggests sources in the far north or south. Perhaps the most intriguing question is whether the tin used derived from Anatolian or more eastern sources.

utilized (*see supra* n. 17). Beads of other semi-precious stones (e.g., agate and chalcedony) and materials (e.g., alabaster and frit) are also found in sites throughout the region (Palumbo 1991: 117-8).¹³⁶

6.4 Byblos and northeast Mediterranean trade

Apart from the implications of the limited evidence for the importation of coniferous woods, there is a general cessation of contacts between Egypt and Byblos. However, this important port continued to thrive as a fortified city, as part of the cultural milieu of coastal and inland Syria (Saghieh 1983: 85, 122-5, 131-32; Mazzoni 1985; Van Loon 1992; Prag 1974: 107).¹³⁷ Its maritime interests clearly shifted, accordingly, to the northeastern Mediterranean, where evidence for trade is documented between the northern Levant, Cyprus, southern Anatolia, and the Aegean.¹³⁸ These relations, perhaps, are the context within which to place the few finds of Egyptian origin or inspiration (Ward 1971: 71-125; Warren 1995: 2), and several examples of south Levantine pottery, a late EB III or early IBA jar and two late IBA pithoi, which were found in tombs in northern Cyprus, at the site of Bellapais-Vounous (Ross 1994).¹³⁹

6.5 Dim trade in a Dark Age?

In recent years, most scholars have shied away from a direct causal relationship between the absence of central authority in FIP Egypt and the decline of urban culture in the IBA southern Levant (*cf.* Palumbo 1991: 5-22).¹⁴⁰ Instead, complex multi-causal explanations have been sought,

¹³⁶A necklace made of carnelian and “gadrooned” lapis lazuli beads is on display with IBA pottery in the Hecht Museum, University of Haifa, but the assemblage is without provenience.

¹³⁷A late Ur III economic text from Drehem, which mentions Byblos and its ruler, Ibdati, along with an Ur III tablet found in an IBA level at Byblos (Saghieh 1983: 64; Ward 1964: 129-30), are indicative of inland interaction as far as southern Mesopotamia. For the coastal region, see also the evidence for continued occupation at Tyre (Bikai 1978: 6, 70, pls. LIV-LVI); note the carnelian bead (LVI:21) and the CW jar (LVI:22). For the late appearance of this class in Syria, see Mazzoni (1987: 150-2).

¹³⁸Briefly, examples of this trade include a deposit of Cypriot pottery in a sacred context at Byblos (Negbi 1972; Saghieh 1983: 34-5, 38, table 3, fig. 11); a Cypriot amphora at Knossos (Catling & MacGillivray 1983); similarities in metal forms between the Aegean, Cyprus, and the Levant, and the continued supply of tin-bronze to Cyprus and the West (Balthazar 1990: 72-73; Philip 1991a; Knapp 1994: 280, fig. 9.4; Branigan 1974: 119-23; 1982); and other possible links in pottery and stone (Manning 1995: 90-91, 106-7). Note that during this period, masthead sea craft begin to appear in Aegean iconography (Agouridis 1997: 3).

¹³⁹The lack of precise parallels has left their origin somewhat equivocal (Amiran 1971; Richard 1980: 24; Ross 1994). Clearly, petrographic analysis is needed to resolve this question. Note the resolution to the misidentified Cypriot bowl from Jerusalem (Maier, Yellin & Goren 1992). An example of ivory is noted at Byblos (Saghieh 1983: 7), but its type and origin are unknown.

¹⁴⁰It should be noted that the FIP-IBA synchronism is quite unrefined as the few exchanged artifacts are not enough to provide anything but a broad correlation. Thus the temporal coincidence of

predicated on environmental instability and degradation, with the cessation of trade relations treated either as a symptom of, if not a contributor to, an already deteriorating situation (Dever 1989; Esse 1989a). Whatever the case may be, the absence of a strong Egyptian market underscores the trade roles that the southern Levant had previously enjoyed: as a terrestrial and maritime intermediary, and as a source of horticultural products and raw materials.

The role of intermediary was naturally contingent on exogenous developments, to which the southern Levant could offer little remedy. The absence of any significant longshore maritime and terrestrial movement during this period would have negatively impacted on those sites on the coastal plain, whose growth and prosperity until the EB III period may have been partially amplified by servicing or interfacing with this traffic, an impact reflected in the paucity of substantial remains along the shore and immediately inland (Prag 1974: 70; 1984: 66). Sites further inland, particularly those in the highlands, may have been negatively impacted by the decline in Egyptian demand for horticultural products. If the intensification of horticulture is seen as a positive stimulus in highland settlement growth, and in the economic integration that contributed to the urbanization process (Esse 1989a; Finkelstein & Gophna 1993), its decline may be seen as a negative stimulus (Dever 1989). Esse (1989a) argues that Egypt's demand for cash-crops was a catalyst for socio-political stratification, but sees "hyper-integration" into that economic system as ultimately resulting in a loss of resilience for a subsistence strategy that relied on risk-abatement (Joffe 1993: 24-9). The palynological record of the EBA indicates an intensification of cash-crops, particularly oleaculture, followed by a sudden decline (Baruch 1986; 1994b; Rosen 1989: fig. 2; Finkelstein & Gophna 1993: 13).¹⁴¹ Whether this decrease preceded or succeeded the deterioration of urban culture is so far unclear. Analysis of settlement patterns from highland surveys shows that during the IBA "the classic horticultural niches on the western slopes were not occupied . . . [and] the IB population subsisted by means of dry-farming/animal husbandry, with no large-scale orchard activity" (Finkelstein 1991: 43). The current difficulty in distinguishing between EB II and EB III ceramics in the highlands (Finkelstein & Gophna 1993: 2; Palumbo 1991: 42) precludes a refined diachronic study of rural sites, which might elucidate the trend leading to the IBA settlement pattern. However, some major changes in the socio-political organization, and a general impression of a decline in settlement number and density in the northern Central Highlands, occurred from the EB II to EB III periods (Finkelstein 1995b: 55-64; Palumbo

these two phenomena is based primarily on historical allusion and temporal bracketing between the preceding and succeeding periods.

¹⁴¹The wide standard deviations of the limited radiocarbon dates from the Kinneret (RT-552A+B: 5372±505 B.P.; RT-564A+B: 3550±215 B.P.) and the Hula (HV-1724: 4565±75) cores preclude any fine synchronization with archaeological periods, such as suggested by Stager (Rosen 1989: 250, fig. 2). However, the lowest terminus post quem for the first peak in olea and vitis frequency in both cores is 2900 (calibrated to 2σ). Thus the decline probably occurred sometime in the third millennium (Baruch 1986: 45; 1994b: 52), but this cannot be confirmed independent of the archaeological and historical evidence. Moreover, the catchment areas reflected in these cores is only a part of the southern Levantine environment. For the period in question, the Dead Sea cores do not provide enough detail or chronological refinement (Baruch 1994b).

1991: 44-5; Zertal 1993: 1312). If the gradual abandonment of horticultural lands was a feature of the second half of the third millennium, it may have been a result of the decline in oleaculture, as the southern Levant became a secondary supplier to Egypt's primary sources in the northern Levant. By the Intermediate Bronze Age, this role had disappeared entirely, and the agricultural specialization that may have fed into this demand collapsed, leading highland inhabitants to shift to more diverse subsistence level strategies, leaving oleaculture to supply only local demand. Regarding other natural resources, little is known of the utilization and trade in bitumen and Egyptian demand for copper during this period is unclear, although Haiman (1996) makes a strong circumstantial case for a link between arid zone settlement, metallurgy, and land-based trade with Egypt.

Thus trade, or rather its absence, was an important factor in shaping the IBA. Syria could not have “replaced Egypt as a trading partner” (Dever 1989: 233-4) as, unlike in the case of Egypt, there was little that Syria could obtain from its southern Levantine periphery that it could not acquire from more proximal and sophisticated economic networks. Without Egypt, the southern Levant became something of a backwater, or an end-of-the-line to the Syro-Mesopotamian economic complex that flourished during this period. It is probable that the scale and scope of these contacts, and particularly environmental constraints on agriculture, meant that relations with this cultural core, which is archaeologically visible in ceramic influences and some traded items, reflects primarily technological diffusion (Mazzoni 1985: 12-5), and did not act as a stimulus for more sophisticated socio-economic developments.

7. The Middle Kingdom and its foreign relations

Although signs of socio-political recovery were apparent during the Eleventh Dynasty, most scholars mark the beginning of the Twelfth as the inauguration of a reunified Egypt under a central authority that is known as the Middle Kingdom. For Egypt, this period was characterized by great political, economic, and literary achievements.¹⁴² In terms of social organization and policy, the Egyptian state resumed patterns familiar from the Old Kingdom (Hayes 1971: 468; Kemp 1983: 71). Political and military expansion was directed to the south, and economic relations with the Levant were re-established and strengthened. As in the Old Kingdom, these relations are based on a strong maritime link with Byblos, although less intensive terrestrial and maritime contacts with the southern Levant are also evident.¹⁴³ Egyptian attitudes towards the Levant and its diverse inhabitants varied from hostility to cordiality. On the one hand, the “smiting the Asiatic” theme was repeatedly declared, while on the

¹⁴²Numerous comprehensive surveys cover the political and social history of the period (Hayes 1971; 1973; Kemp 1983), its foreign relations (Posener 1971; Redford 1992: 71-97), and its literature (Hayes 1971: 523-531; Lichtheim 1973; Parkinson 1991).

¹⁴³Various interpretations of Egyptian-south Levantine relations have been suggested, from Albright's long untenable notion of a southwestern Asian empire (1928; 1941), to merely regular diplomatic and economic relations (Posener 1971: 547; Ward 1961), to a minimalist negation of any substantial contact (Weinstein 1974; 1975). This last position is no longer tenable (Marcus 1991; Weinstein 1992; Ilan 1995a: 308).

other Levantines were plainly involved in Egyptian activities in the Sinai. Additionally, their increasing presence as a community in Egypt proper, particularly in the Delta, as slaves, craftsmen, shipwrights, and merchants, culminated in a large expatriate Egyptianized Canaanite population. In political circumstances that are vague and poorly understood, this large and economically powerful population seized control over the Delta and lower Egypt during the Thirteenth Dynasty, establishing what is known historiographically as the Hyksos period.

The extensive epigraphic and archaeological evidence is anchored in an astronomically-based historical chronology, although even this is not without controversy (Table 2).¹⁴⁴ The extensive material relations between Egypt and other contemporary cultures provide important evidence for synchronizing the relative sequences of these cultures with absolute calendrical dates.

7.1 Pictorial depictions and textual references relating to Levantines and the Levant

Royal inscriptions and pictorial depictions relating to the Levant and other east Mediterranean lands are scarce during the Middle Kingdom, a period known for its unbalanced range and distribution of texts (Posener 1971: 547-548; Lichtheim 1973: 113; Parkinson 1991: 28-9). This scarcity is probably a result of the destruction wrought by long periods of violent struggle with the Asiatics (Hyksos) near the capital at Memphis. What remains are either fragmentary inscriptions, texts in private tombs that record royal activities (Parkinson 1991: 11, 17, 23-4), literary allusions, or texts found elsewhere, such as in Sinai.

7.1.1 Brief references

Many brief references and epithets preserve the seemingly contradictory relationship of animus and cordiality that the Egyptian's had with their northern neighbors. Early in the Twelfth Dynasty the northeastern frontier was secured with a series of border posts known as the "Wall of the Ruler", a system that did not prevent occasional foreign herdsman from grazing in the Delta (Hayes 1971: 497; Posener 1971: 537). In the twenty-fourth year of Amenemhet I's reign, Nesumontu was involved in attacks against peoples to the north and east (i.e. Asiatics), their fortresses, and "sand dwellers" (Breasted 1906: §470-§471; Ward 1961: 38; Redford 1992: 77). In Senusret I's reign, reference was made to "his numerous emissaries in every land and his couriers", while he himself is

¹⁴⁴For current views on MK chronology, see summaries by Ward (1992) and Kitchen (1987; 1989). The discrepancies among the so-called "High, Middle, and Low" chronologies derive from an inability to determine whether the heliacal rising of Sothis (Sirius) in the seventh year of Senusret III's reign was observed at Memphis, Thebes, or Elephantine (Luft 1992). Recent re-analysis of the synchronization of the Egyptian and Julian calendars have demonstrated some gross discrepancies between the calculated date for the beginning of the Sothic year and lunar observations (Rose 1994). For the consistency of the "wandering year" and the implication of possible corrections, see Depuydt (1995). A recently discovered inscription from Dahshur may again raise the possibility that the reign of Senusret III was thirty-nine years, following the Turin papyrus, rather than the corrected nineteen years (Arnold 1992). Until these discrepancies have been resolved, the chronological foundations of the eastern Mediterranean and Near East will undoubtedly be the subject of continued revision. In the following discussion, time is related to regnal years only.

“one who severs the neck of those who are among the Asiatic” (Posener 1971: 538, 540; Rowe 1939: 188-91). His vizier Mentuhotep was “one who pacifies the sand dwellers,” a written allusion, perhaps, to the vanquished Asiatic depicted on a block from this ruler's funerary temple (Posener 1971: 538). A similar theme was repeated during the reign of Amenemhet III on a pectoral from Dahshur that reads “smiting the Asiatic” (Posener 1971: 538). A hymn to Senusret III declares that “his speech confines the Asiatic” (Delia 1980: 122). Although best preserved in later versions, the Middle Kingdom “Satire of the Trades” mentions the dangers couriers faced from the Asiatic (Lichtheim 1973: 184, 188; Simpson 1973: 329, 333, n. 11; Wilson 1950c: 433).

Brief references to Asiatic products, such as cattle, are documented during the reign of Amenemhet II or III (Blackman 1915). In Senusret III's reign, a reference from the Medamoud temple mentions “Asia, their products are presented to the palace of the king” (Delia 1980: 121-2). Numerous temple donations mention products such as lapis lazuli, silver, and various woods whose origin lay to the north (e.g., Delia 1980: 124). Asiatic workers, craftsmen (e.g., weavers) and domestic servants (e.g., butlers) are documented, particularly in the Delta, such as at Kahun (Griffith 1890: 45; Fischer 1959: 264; Posener 1971: 542; Delia 1980: 109; David 1986: 189-94; 1991; Quirke 1990: 129, 148, 197, 205, n. 9). Apart from MK references to Byblos the city (Horn 1963: 53-5), a “Byblos-boat” is mentioned in the partially preserved late Twelfth Dynasty text in Papyrus Lythgoe from El-Lisht, perhaps part of a literary tale of an Egyptian who traveled to the Levant (Simpson 1960).

7.1.2 Beni Hasan

The paintings from Beni Hasan Tombs 2, 3, and 14 are the most well-known and oft-cited depictions relating to Asiatics and the Levant. In the absence of any other detailed contemporary or later MK depictions, which might have shown Asiatics in other less nomadic modes, it has made a lasting visual impression on scholars regarding the character of the Levantines of this period.

The tomb (no. 14) of Khnumhotep I, who was a contemporary of Amenemhet I, includes a martial scene that depicts different groups of foreigners, among them bearded Asiatics who brandish weapons, such as a socketed fenestrated axe and dagger (Newberry 1893: 84-85, pl. XLVII). An inscription from this tomb records a naval expedition to Upper Egypt involving twenty ships of cedar, and attacks against Asiatic groups (Newberry 1893: 84, pl. XLIV; Breasted 1906: §463-§465; Ward 1961: 38; Redford 1992: 74).

In the tomb of Amenemhat (No. 2), who was buried in the forty-third year of Senusert I, Asiatic soldiers also appear in a battle scene, which may or may not be part of scene depicting the siege of a fortified city (Newberry 1893: 24, 32-3, pls. XIV, XVI; Schulman 1982: 176-78). Here the Asiatics carry non-socketed fenestrated axes and javelins.

The tomb of Khnumhotep II (No. 3), which dates to the sixth year of Senusert II, has the famous scene of Abisha, prince of the *Amw* of *sw*, leading a donkey caravan of thirty-seven individuals

(Newberry 1893: 69, pl. XXVIII, XXX-XXXI; Fig. 3).¹⁴⁵ Among the realia depicted or mentioned in the accompanying text, some of which may have been brought as trade items or gifts, are textiles, kohl paint, antelope, and weapons, including spears, a duckbill axe. In another part of the tomb, Arnold et al. (1995: 18, 20; Newberry 1893: pl. XXIX, left, reg. 2) identify a Levantine dipper juglet among some of the ceramics depicted.¹⁴⁶ Nearby, among the shipwrights constructing a boat, is a figure who sports a beard, suggesting that he is an Asiatic (Newberry 1893: pl. XXIX, left, reg. 2; Fig. 4a-4b).

7.1.3 Sinai

Turquoise mining and, possibly, copper working was carried out by the Egyptians in Sinai (Wadi Maghara and Serabit el-Khadim). These activities are documented both in Egypt proper, in royal and other texts, and in inscriptions and archaeological evidence from the region itself.¹⁴⁷ Attested royal names range from the founder of the Twelfth Dynasty, Amenemhet I, through the penultimate ruler, Amenemhet IV. The peak of activity occurred during the reign of Amenemhet III, from which the greatest number of inscriptions are known and the largest expedition ever mounted was recorded (Hayes 1971: 498, 509-510; Posener 1971: 539; Kemp 1983: 141).¹⁴⁸ During this peak period Asiatics were well-represented in the mining activities. References are made to groups of “foreigners of *Retenw*,” a group of *`Amu* of Hami, a number of non-specific *`Amu*, some Semitic names, some domestic servants, a chief steward conceived of an Asiatic mother, and especially Khebde, “brother of the prince of *Retenw*”, whose name appeared perhaps as many as six times during the reign of Amenemhet III (Gardiner, Peet & Czerný 1955: 18-9, 103-4; Bietak 1996: 14-9, figs. 13-15).¹⁴⁹ In some instances, these references are accompanied by depictions of Asiatics, some carrying duckbill axes, as soldiers, donkey handlers, and honored guests or nobles, with the latter generally riding donkeys (Gardiner, Peet & Czerný 1952: pls. XXIV; 1955: 206, fig. 17; Bietak 1993-1994: fig. 1a-c; 1996: fig. 14).

Various inscriptions mention donkey caravans numbering as high as six hundred head (Gardiner, Peet & Czerný 1955: 11). However, the numerous naval titles suggest that shipment may

¹⁴⁵For a possible relationship between this group and the *su-tu* of the Excretion texts, see Worschech (1997: 229-30), who places their origin in Transjordan.

¹⁴⁶Arnold et al. (1995: n. 36) also identify a pair of two-handled globular amporiskoi of IBA type depicted in a mid-Twelfth Dynasty tomb at Meir (Blackman & Apted 1953: 15, pls. XVIII, XXX:2). While some superficial similarity exists with the IBA parallels they cite, the handles depicted are of a thin, open loop type, including one with a fluted rim, none of which are found among IBA forms. It is possible that these are metal vessels.

¹⁴⁷Note the epigraphic evidence for metallurgical tools (Colless 1990).

¹⁴⁸See also various primary sources and secondary works (Breasted 1906: §602, §606, §713-738, §750; Gardiner, Peet & Černý 1952; 1955; Wilson 1950a: 229-30; Givón 1977; 1983).

¹⁴⁹Another toponym in gentilic form may refer to an Arwadite (Colless 1990: 18-9).

have been partly done by sea or water (Gardiner, Peet & Czerný 1955: 11-3). Maritime transport may be reflected by the ship graffiti at Rôd el-`Air, including the depiction of an animal, possibly a donkey, being transported (Gardiner, Peet & Czerný 1952: pls. XCIII, XCV; 1955: 218-22; Wachsmann 1998: 32-7).¹⁵⁰ It is most likely that the eastern Delta sites along the Wadi Tumilat, where many Canaanites eventually settled, formed part of the logistical network that supported the Egyptian presence in Sinai (Bietak 1996: 14-9; Holladay 1997: 203-9).

The wider historical importance of this Egyptian-Canaanite relationship cannot be underestimated. Through the administration of this enterprise, which presumably involved the recording of all activities and the personnel involved, possibly in both Egyptian and Canaanite languages, the seeds for the Proto-Sinaitic alphabet were sown; at the very least, the Sinai mines have preserved the earliest documented evidence (Sass 1988; 1989; Colless 1990).

7.1.4 The Tale of Sinuhe

The *Tale of Sinuhe* recounts the sojourn of an Egyptian noble in the Levant during the reign of Senusret I, the second ruler of the Twelfth Dynasty.¹⁵¹ A MK classic of the narrative genre, the text was widely copied in the New Kingdom, but is best preserved in versions from the Twelfth to Thirteenth Dynasties (Simpson 1973: 57; Parkinson 1991: 36).¹⁵² Given the paucity of other evidence, this text is considered one of the most detailed contemporary descriptions of the Levant, although the equivocal characterization of the socio-political landscape has made it somewhat contentious. Redford (1992: 82-87; 1996) sees the events, and its terminology, as reflecting a completely “nomadic” way of life that indicates a continuation of IBA society in the early Twelfth Dynasty. In contrast, Rainey (1972; 1994) does not see anything in the text that is inconsistent with the complex, urban society of the MB IIa period. However, *Sinuhe* is a narrative work, whose construction and idiom may have more to do with storytelling and embellishing its subject, than the type of historical accuracy and extensive detail of other genres. In any event, much of the text is silent about the southern Levant. Apart from a brief episode in the eastern desert of Egypt or Sinai, all of the events took place either in Egypt or in regions described as east of Byblos (B 29-30), perhaps somewhere in

¹⁵⁰These schematic ship depictions do not have sails. Their location, at the mouth of a valley leading from the coast to Serabit el-Khadim (Gardiner, Peet & Černý 1955: 13), may provide a contextual parallel for the LBA ship graffiti found at the outlets of valleys into Mt. Carmel (Artzy 1994: 138-9). The use of Red Sea craft for travel to the Pharaoh's mines is reflected in the *Tale of the Shipwrecked Sailor* (Simpson 1973: 51, n. 3).

¹⁵¹A number of translations are available (Wilson 1950b: 18-22; Simpson 1973; Lichtheim 1973: 222-35; Breasted 1906: §486-§497). All textual references herein derive from the Lichtheim translation, which is a combination of two MK versions.

¹⁵²Numerous literary, historical, and geographical studies of this text have appeared with extensive bibliography (Rainey 1972; Baines 1982; Green 1983; Goedicke 1992; Redford 1992: 82-87; Tobin 1995). Although preserved as a literary text, it is reminiscent of a stela or tomb biography (Lichtheim 1973: 235, n. 26; Redford 1992: 85, n. 81).

the eastern Beqa' Valley, near the modern Syrian-Lebanese border (Green 1983; Goedicke 1992). The intervening region between Sinai and Lebanon is merely segued over with the phrase "land gave way to land" (B 28). Thus, the complete lack of any description of the southern Levant excludes this text from any discussion of its social, economic, or political character. What we do learn is that the rural inland regions of Lebanon were blessed with agricultural and horticultural wealth (B 80-92) and suffered periodic internecine warfare, in which personal combat was revered (B 96-146).¹⁵³ The foreign toponyms provide an insight into the geographical knowledge and familiarity of the Egyptians with the Lebanon. The presence of Egyptians in the region is represented by couriers and the fact that Egyptian is spoken (B 31-3, 94-5). Lastly, the role of gift giving in the text (B 174-7, 244-5) has been noted as one possible mechanism for the transmission of Egyptian objects and artistic styles (Teissier 1996: 7).

7.1.5 The Mit Rahina inscription

Given the scarcity of contemporary royal records of Egyptian involvement in the Levant, the Mit Rahina (Memphis) inscription is of singular importance.¹⁵⁴ This text is part of the court annals of Amenemhet II and, in chronological order, records numerous temple endowments and events including the bringing of tribute by Asiatics and others, an expedition to the Sinai, and two expeditions to the Levant for either military or commercial purposes. Large quantities of raw materials and finished products are listed among the donations, tribute, and goods, perhaps booty, brought back by Egyptian forces. The detailed entries illustrate the types of goods that the Egyptians valued, the scale of the shipments, and some indication of how they arrived.¹⁵⁵

Several entries record Egyptian foreign military or commercial initiatives. Of the two recorded expeditions to Lebanon, the first is merely recorded as fact (Altenmüller & Moussa 1991: 7, M 7). The second, some fourteen entries later (Altenmüller & Moussa 1991: 14-6, M 18-21; Redford

¹⁵³Redford's (1996: 79) insistence that the description of intensive orchard crops and viticulture could be indicative of a society practicing seasonal migration is not borne out by archaeological and ethnographic evidence, apart from rare exceptions, such as the Jebaliyeh Bedoin of Mt. Sinai, who maintain small-scale horticulture plots (Stager 1985: 177-8). The description of individual combat is consistent with the development of a warrior class during the late third and early second millennium (Philip 1995c).

¹⁵⁴Following an initial presentation (Farak 1980), a full publication of the epigraphic study by the Egyptian Exploration Society is expected (Malek & Quirke 1992: 13-4). In the interim, a number of articles have detailed the provenance and provided a collated facsimile copy of the original inscription (Malek 1992; Malek & Quirke 1992), while others have offered preliminary comments (Posener 1982; Goedicke 1991) and translations (Altenmüller & Moussa 1991; Redford 1992: 78-80). The discovery of the two text fragments on stone blocks that were reused in a Ramesside temple underscores the dire fate of many inscriptions of this period.

¹⁵⁵In some instances, the translators have had difficulty identifying specific items and suggested only general material, i.e., metal, stone, and wood. For the varieties of copper, see Giumlíá-Mair & Quirke (1997: 96-97). The weight of copper is expressed in a copper-*dbn* of 27.3 gm, and everything else in a standard-*dbn* 13.6 gm; volume is expressed in *ūq't* of 4.785 liters; a unit sack equals 10 *ūq't* (Altenmüller & Moussa 1991: 46-8).

1992: 79), details the return of two ships laden with 1675.5 *dbn* silver, X *dbn* of gold, 4882 *dbn* of bronze, 15,961 *dbn* of copper, 1410 *dbn* white of lead, 16 bronze, gold, and silver (perhaps inlaid) daggers; 21 bronze and ivory (perhaps pommeled) daggers; various stones, possibly including 13 pieces of marble, 16,588 *dbn* of emery, and 39,556 *dbn* of a so-called grinding stone sand; seals of stone, ivory, gold, and silver; aromatics, oils, and resins, such as X 5/8 $\dot{u}q't \text{ } \dot{s}$ and 66 3/8 $\dot{u}q't \text{ } sft$, 5 3/8 $\dot{u}q't$ moringa (sic, rather olive, *see supra*, p.), 271 sacks of *ti-šps*, perhaps a type of camphor or cinnamon (Manniche 1989: 88-89), 92 jars of *sntr*, which seems to be terebinth resin (Haldane 1993: 353); other plant and fruit products, including 55 3/4 $\dot{u}q't$ of coriander, and hundreds of other items in sacks; trees such as fig and sycamore; 65 Asiatic men and women; and 231 trunks of cedar.¹⁵⁶

Specifically military expeditions included an attack made by the commander of elite troops against the Asiatic *Stt* in a foreign land called *Iw's*, and the return of forces sent to attack the walled towns of *iw'i* and *iasy*, the latter of which may refer to Alashiya, i.e., Cyprus (Altenmüller & Moussa 1991: 7, 12, M 8, M 16-8; Redford 1992: 79, n. 47; Helck 1989). These forces returned with 1,554 Asiatic prisoners; over 300 assorted hafted copper and bronze weapons, tools and other objects (e.g., balance pans and wheels); 646 *dbn* of copper, perhaps scrap; 125 *dbn* of new copper; copper and silver jewelry (possibly inlaid); 58 *dbn* of amethyst, 1,734 *dbn* of malachite, and other semi-precious stones; 4 ivory furniture parts, perhaps inlay parts; 54 examples of Asiatic household goods, (possibly pottery), a box, 13 combs, and 375 *dbn* of lead.¹⁵⁷ A procurement expedition to Sinai brought back 14 13/32 $\dot{u}q't$ turquoise, 8,700 and 5,570 *dbn*, respectively, of two types of unknown minerals, 26 13/16 $\dot{u}q't$ of alum, 10 9/16 $\dot{u}q't$ natron, eight sea-stones, forty-one sacks of aromatics, 9 3/4 *dbn* silver, ten head of cattle, three young ibex, and a leopard skin (Altenmüller & Moussa 1991: 10-1, M 13-4; Redford 1992: 79).

Among the foreigners who arrive bearing tribute are the Asiatic *Stt*, who brought 220 *dbn* of silver, gold, 56 heads of domestic animals, 1002 *Amw* slaves, 6 *dbn* of lead, and 55 *dbn* of white lead (Altenmüller & Moussa 1991: 10, M 12-3; Redford 1992: 79). The *hrw* nomads from *Tmp'w* brought 238.25 *dbn* of lead (Altenmüller & Moussa 1991: 12, M 15; Redford 1992: 79, n. 47).

Many distributions and donations to temple cults and endowments are listed, which include materials of foreign origin. These include both individual finished products and quantities of finished products and raw materials. Examples of the finished products include various objects and vessels of silver, bronze, and copper, including combinations of metals, such as 920 *dbn* in the form of sickle blades, “Asiatic” copper, and cedar wood. Examples of the raw materials include 32 *dbn* of raw silver

¹⁵⁶Altenmüller and Moussa translate $\dot{s}$ as fir. Redford (1992: 79) claims ten ships were involved, a reading previously suggested with some dubiety (Farak 1980: 79, col. 2; Goedicke 1991: 90, n. 11). Examination of the entry (Malek & Quirke 1992: 15, M 18) shows Altenmüller & Moussa (1991: 14) to be correct. O'Connor (1996: 53) suggests that the two expeditions actually refer to two endowments.

¹⁵⁷Redford (1992: 79) identifies lapis lazuli among the minerals, but this term $\dot{e}sb\dot{d}$ (Faulkner 1962: 197) is not in the copy provided by Malek and Quirke (1992). Perhaps he is referring to the unidentified mineral $\dot{e}sw\dot{d}$ (Altenmüller & Moussa 1991: 13, M 18).

and 20 individual vessels, 25 *dbn* of copper in clumps, and 73 cedar logs from Lebanon (Altenmüller & Moussa 1991: 6, 8, 16-7, M 5-6, 9-10, 22-3; Giumlía-Mair & Quirke 1997: 96).

The goods listed are impressive in their variety and quantity, although admittedly there are no contemporary written parallels with which to compare such wealth. However, the imports from the northern Levant, particularly the silver, may provide a context for the contemporary Tòd treasure. In terms of the nature and means of contact with the Levant, the quantities are instructive. Both examples of the tribute brought by foreigners could have arrived by land, as the total weight of the goods only amounts to about 3.8 and 3.2 kg, respectively, and the remaining items are self-transporting (slaves and cattle). Although only the second expedition to the Lebanon is specifically stated to have occurred by ship, the first presumably may have been as well. The two ships of the second expedition to the Lebanon brought back raw materials weighing 80,073.5 *dbn* (1,308 kg), and whose goods measured 140 7/8 *ûq't* (674 liters). The following items of unknown measure were also brought back: 16 stones; 472 sacks (22,585 liters), 99 containers, 73 trees, 231 trunks/logs of cedar, and 65 passengers, not including crew. Similarly, if the toponymic identification of Alashiya is correct, then that expedition may also have been by sea. While the total measured weight of goods, 2,938 *dbn* (50.5 kg), is not nearly as great, the number and type of items, including 1,554 passengers, may suggest a sea voyage. The seventy-three logs of cedar included among the donations could have come from the aforementioned, or another, maritime expedition.¹⁵⁸

7.1.6 The Khusobek stela

Prior to the discovery of the Mit Rahina inscription, the only example of a MK military foray into the Levant was the stela of Khusobekh.¹⁵⁹ Khusobekh fought in the Egyptian army's rear guard under Senusret III, who led an attack against the *mntyw stt* Asiatics in the region of *škmm* or *škmkm*, i.e., Shechem, which fell along with “vile” *Retenw*, or they both “fell” upon the Egyptian army (Baines 1987: 51, ee).¹⁶⁰ A new reading suggests that Shechem withstood the attack, and the verb “fell” refers to the wish or prediction that “it and *Retenw* will fall” (Goedicke 1998). Numerous historical interpretations of this event have been suggested, such as an inconsequential raid (Hayes 1971: 508;

¹⁵⁸The quantities transported from Sinai, 14,280 *dbn* (194 kg), 57.78 *ûq't* (276.4 liters), and forty-one sacks (1998.8 liters), are consistent with the size and carrying capacity of donkey caravans.

¹⁵⁹A number of translations and discussions are available (Breasted 1906: §676-§687; Wilson 1950a: 230; Delia 1980: 115-20; Baines 1987).

¹⁶⁰The toponym *skmm* is generally associated with the *skmimi* of the Excretion texts, both of which are identified with Shechem (Posener 1971: 555; Hayes 1971: 508; Delia 1980: 117; Baines 1987: n. 10). In both instances the toponyms are accompanied by the term *sp't* “district” and the hill country, rather than the city determinative, is used (Delia 1980: 118). Helms' (1989: 159-60) rejection of the identification is substantiated. No year is indicated for the events in the Levant, although Senusret III's name is the only one mentioned. Sobekkh was born in the twenty-seventh year of Amenemhet II's reign and was between the ages of twenty-five and sixty during Senusret III's reign (Delia 1980: 116-7).

Ward 1961: 39-40), a punitive raid against attackers of caravans (Weinstein 1975: 11), an attempt to secure the main land route to Asia (Na'aman 1982: 143), the putting down of a revolt (Wilson 1950a: 230), or even political subdual (Goedicke 1969-1970: 11-2, n. 6). As this text is perhaps little more than a "brief diary entry of an NCO after the event" (Delia 1980: 120), and not a royal text, perhaps it is prudent to avoid any wild extrapolation of Senusret III's intentions.¹⁶¹ Together with the Mit Rahina inscription, it is clear that MK rulers were capable of applying force in the Levant, but, if Goedicke's reading (1998) is correct, success was not always a certainty.

7.1.7 The Excretion Texts

The three groups of inscriptions that comprise the Excretion texts contain the names of Semitic rulers, various social groups, towns, and cities written on ceramic bowls and figurines; they are known individually as the Berlin, Mirgissa, and Brussels groups (Sethe 1926; Posener 1940; 1966; Koenig 1990). As the richest source of onomastic and toponymic evidence for the Levant, they have been the focus of extended and heated debate in connection with the social, ethnic, and political make-up of the Levant during the Middle Kingdom (e.g., Redford 1992: 87-93; 1996; Rainey 1972; 1994).¹⁶²

The provenance and dating of these texts are among the chief obstacles to a full understanding of their significance. The Berlin and Brussels texts were acquired, respectively, in Thebes and Saqqara; only the context of the Mirgissa group, found during the excavation of a Nubian fortress, is known (Koenig 1990: 101-2).¹⁶³ Still, even the precise date of this group is unclear, and although a date in the first half of the Twelfth Dynasty is preferred based on orthographic terms (Posener 1966; Koenig 1990; Redford 1992: 88), the texts could have been deposited any time from the construction of the fortress, no earlier than the reign of Amenemhet II, until the Thirteenth Dynasty.¹⁶⁴ In relative terms, again based chiefly on orthography, the Mirgissa group is considered to have antedated the

¹⁶¹Note, however, the clear distinction made between the Shechem district and Retenw, the latter of which Goedicke (1969-1970: 11-2, n. 6) identifies with the Coastal Plain. His variant reading of the text as Shechem fell "to Retenw, which was miserable" evokes comparison with the Amarna correspondence of the Late Bronze Age, when the Shechem region posed a threat to caravans (Ahituv 1970: 322, n. 18).

¹⁶²A variety of interpretations have been offered for these formulaic incantations against various persons, groups, and cities in the Levant, Nubia, Libya, and Egypt, such as sympathetic magic associated with Egyptian rule (Albright 1928: 223; Givon 1984b: 8-9), the protection of commercial interests (Ward 1961: 142), or merely as a symbolic rite against perceived enemies (Na'aman 1982: 146; Redford 1992: 87). For the toponymic and onomastic readings, and extensive bibliography, see Wilson (1950e: 328-9), Ahituv (1984) and Teissier (1996: 3-4, n. 19).

¹⁶³For a possible Saqqara context for the Brussels group, see Sass (1989: n. 15).

¹⁶⁴Koenig (1990: 102) sees no reason why the group could not be contemporary with the construction of the fortress, but there is an impression that most of the principal monuments belong to the Thirteenth Dynasty (Kemp 1983: 160-1). In Redford's opinion (1992: 88, n. 98), the early years of Senusret III's reign are the *terminus ante quem* for this group.

Berlin group, which was then followed by the Brussels group. However, if the genealogy of the Nubian rulers in the Berlin and Brussels groups is properly understood, then they are probably separated by only a generation or two (Redford 1992: 88; Ward 1987: 528, n. 87; Koenig 1990: 102). Redford (1992: 88) dates the Berlin group to Senusret III - early Amenemhet III, which is consistent with the mid-Twelfth Dynasty form of the ceramic bowls on which they were written (D. Arnold cited by Rainey 1994: 83). The use of Senusret III's name as a component in some Egyptian basileophoric names provides a *terminus post quem* for the Brussels group (Sass 1989: 44). Given these wide ranges and other reservations, until new and sorely needed research provides some chronological resolution, it is prudent to treat these texts as belonging to the mid-Twelfth to Thirteenth Dynasties.¹⁶⁵

The geographical scope of the texts is wide and includes a good sample of identifiable toponyms from the southern Levant to coastal Syria (e.g., Akko, Ashkelon, Byblos, Ullaza, Arqata, Shechem, and Rehov), and possibly even the arid zones of Transjordan (Redford 1992: 90-2; Worschech 1997: 229-30). Still many toponyms defy identification or are otherwise undocumented. One particularly relevant prefix used is the morpheme *iye*, Semitic “island” or “coast” (Redford 1992: 91), which reflects a geographical distinction made by the Egyptians between coastal and inland areas. A similar distinction may be inferred by the term “tribes of Byblos” in contrast to the city of Byblos (Rainey 1972: 382; Redford 1992: 91). In general, there is a good representation of coastal towns and regions (Redford 1992: 90-91).¹⁶⁶ One possible social group from the littoral region, which is singled out among the general references to *`amw*, is called the *dmityw*, or “those of the harbor” (Rainey 1972: 387; Marcus 1991: 35-6).

Despite the chronological difficulties and dubious origin of the texts, attempts to reconstruct the socio-political landscape have been made based upon spurious inferences. The relative increase in the number of towns, and the numbers of rulers per town from the “earlier” to “later” texts, is considered to reflect a trend from semi-nomadism towards urban life (Redford 1992: 90-93).¹⁶⁷ The texts themselves provide no indication of whether they are meant to be a comprehensive gazeteer of all the towns, cities, and groups, or a subjective selection distorted by unknown criteria related to the act

¹⁶⁵Initially, based on grammatical grounds, Sethe (1926) argued for an Eleventh Dynasty date for the Berlin group, which led Rainey (1972: 382) to hypothesize an original more ancient source text. Stefan Wimmer (cited by Sass 1989: 45) suggests that the archaic grammar is an intentional characteristic of this genre and that all other attributes indicate a late Twelfth-early Thirteenth Dynasty date for all three groups.

¹⁶⁶Artzy (1995: n. 12) suggests associating the coastal toponym *mgr* “cave” with the Mt. Carmel Caves near Tel Nami. Based on the association of this toponym with cedars in a NK reference, it is more likely located in a more northern locale (Ahituv 1984: 133).

¹⁶⁷Redford is only the most recent in a long list of scholars, that have taken this view (Albright 1941; Posener 1971: 555-6).

of execration itself, or the fortunes of preservation.¹⁶⁸ The presence or absence of a particular town, region, or group may be the result of chance. Regarding the issue of multiple rulers for single toponyms as a reflection of socio-political developments, a number of alternate explanations may be offered. Multiple names might refer to several clans or generations, living and dead (Ward 1987: n. 88). Dual dating formulas, listing living kings, sons, and brothers in the same texts, or two kings in the same city, are documented in Old Babylonian oath formulas (Rainey 1994: 83). This type of dual rule accords well with the existence of three contemporaneous palaces at MBA Ebla, which may indicate that the city was divided into quarters, each with independent administrative systems (Arcari 1988; Bonfil 1997: 86). A similar southern Levant political organization might be inferred from the toponyms Kiriat Arba, or “City of Four”, one of the ancient names of Hebron (Ofer 1993: 606). Lastly, given the short period of time between the Berlin and Brussels groups, it is difficult to explain the extraordinary growth in sites, from ca. twenty to sixty toponyms, and the revolutionary change in social organization. Until additional evidence is found, e.g., from Egypt or a contemporary Levantine archive, the socio-political landscape of the Execration Texts will remain enigmatic.

7.1.8 The Admonitions of Ipuwer

The *Admonitions of Ipuwer* belongs to a didactic literary genre in which the speaker laments the social chaos or malaise that has befallen Egypt.¹⁶⁹ When initially published, the composition, which is preserved on a later copy, was considered to be describing FIP rather than the Second Intermediate Period (SIP) conditions (Gardiner 1909: 18). Since then some scholars have leaned towards a late MK or SIP background, based on terminology, orthography, and historical circumstances (Van Seters 1964; Lichtheim 1973: 149-50; Parkinson 1991: 60). If so, then the text offers, *inter alia*, a number of insights into MK Egypt's foreign relations, and its attitudes towards Levantines and, perhaps, the events surrounding the rise of the foreign “Hyksos” kingdom in the Delta. Phrases like “foreigners (*h'styw*) have become people (i.e., Egyptians) everywhere” (1:9), “the Delta cannot be seen” (4:6), “foreigners are skilled in the works of the Delta” (4:8), “the land is deprived of kingship by a few people who ignore custom” (7:2-4), and “what has come from it to let the Asiatic know the state of the land” (15:2-4), are just a few of many examples of conditions that seem to describe the takeover of the Delta and Lower Egypt by Egyptianized Canaanites (Van Seters 1964). Regarding the decline in formal trade, several passages decry the absence of particular goods brought from the desert and abroad. The most relevant passage 3:6-10 has been translated alternatively as:

“No one sails north to Byblos today. How shall we do for cedar (*`š*) trees
for our mummies, with the produce of which priests are buried and with

¹⁶⁸The question of the reliability and completeness of the sample is particularly significant as two of the groups were purchased.

¹⁶⁹Numerous full translations of this text are available (Gardiner 1909; Wilson 1950d: 441-4; Faulkner 1964; 1965; 1973a; Lichtheim 1973: 149-63).

the oil of which [chiefs] are embalmed as far away as Crete (*keftiw*)? They come no more. Gold is lacking” (Faulkner 1973a: 214).,

or

“None indeed sail north to Byblos today. What [is that] can we do concerning cedar-wood for our noble deceased; one used to bury the pure with its imports and one embalmed the appointees with its pitch in order to last. The Cretans, they come no more. Gold is lacking” (Goedicke 1967).¹⁷⁰

Although either version reflects maritime-based economic relations, Goedicke's translation resolves the odd reference to Cretan embalming, and emphasizes the breakdown of maritime trade (none sail to Byblos, none come from Crete). Both instances provide an illuminating perspective from Egyptians living under foreign hegemony (cf. O'Connor 1997).

7.1.9 The Kamose Stela

In general, the period of the Hyksos kingdom is not rich in texts (Redford 1997: 1), and the limited and fragmentary evidence is particularly silent regarding the Levant. However, a number of later SIP texts provide some insight into the attitude of the victorious Thebans towards the Hyksos (Redford 1997: 11-6). One singularly instructive passage comes from the Second Stela of Kamose, which details his military accomplishments against Avaris:

“I haven't left a plank of the hundreds of ships of fresh cedar which were filled with gold, lapis, silver, turquoise, bronze axes without number, over and above the moringa [sic, more likely olive] oil, incense, fat, honey, willow, bow-wood, sticks and their fine woods—all the fine products of *Retenw*—I have confiscated all of it (Redford 1997: 14; Habachi 1972: 37).”

The passage is quite clear in its description of the prosperity of the Hyksos capital and, by allusion, the source of this prosperity—maritime trade. The reference is clearly to the presumed harbor of Avaris crowded with cargo vessels, whose function was to bring the riches of Asia. The text actually reads “300 ships”, which has been translated to mean “hundreds” (Habachi 1972: 37, n. b), but the implication is clear. In the eyes of the Egyptians, the source of the Hyksos power, which Kamose sought to assume, lay in the geo-political role of Avaris as a maritime power that controlled the access of goods into and out of the Nile Valley. In addition, the goods described are very reminiscent of the range of commodities listed in the Mit Rahina inscription. Thus, these two rare references to Egypt's

¹⁷⁰Lichtheim's (1973: 152, n. 5) translation is similar to that of Faulkner, but she does note Goedicke's alternative.

economic or trade relations with the Levant are like bookends on both sides of the Middle Kingdom and the Second Intermediate Period.

7.2 Imports from the Levant

Excluding the Deltaic sites that had a demonstrable “Canaanite” presence, evidence of Levantine imports is limited, despite the textual references of their variety and extent. These include wood, copper, some ceramics, and other finished goods and raw materials, some of which are presumed to have been consumed in large quantities, but are rarely found, e.g., the bits of bitumen in T.756 at Lisht (Merrillees 1973: 55).

7.2.1 Wood and wood by-products

An inscription in the tomb of Khnumhotep I, during the reign of Amenemhat I, recounts a sea expedition in twenty ships made of cedar (Ward 1961: 38). Recent analyses (Davies 1995) confirm the impression given by Lucas & Harris (1962: 430) regarding the extent of cedar imports for the fashioning of coffins, axehafts, statues, and funerary items, such as models.¹⁷¹ Other imported woods included cyprus, box-wood, and one plum axehaft (Davies 1995: 149, table 1; Gale 1987).¹⁷² All four Dahsur boats were made of cedar timber (Haldane 1997: 176), as is a ship timber fragment from Wadi Gawasis (Sayed 1980: 156, fig. 3, pl. XXII:5; 1983: 36). Lastly, pine oil was found on two storage jar sherds from Dahshur (Arnold, Arnold & Allen 1995: 27).

7.2.3 Copper

Textual references and analysis of finds indicate a variety of MK copper alloys, with arsenical copper being gradually replaced by tin-bronze, leaded tin-bronze, and rare “shakudo” black-patinated copper (Davies 1987: 24, *passim*; Cowell 1987: 98-99, table 1b; Giumlíá-Mair & Quirke 1997; Garenne-Marot 1984: 112, 114-7). The Mit Rahina inscription suggests that, in addition to, perhaps, the Sinai and the eastern desert and Nubia (Garenne-Marot 1984: 99-100, 104-5, 113; Lucas & Harris 1962: 209), Egypt received copper via intermediaries in the northern Levant.

7.2.3 Ceramics

Although the heartland of MK Egypt has been generally devoid of MB IIA ceramic imports, increasing evidence for these imports is beginning to be found in Lower Egypt (Arnold, Arnold & Allen 1995: 13-4; Bourriau 1990: 19*). The earliest import found is the sherd of a bowl with a rope

¹⁷¹Davies (1995: 146-51, table 1) counts thirty-two examples of cedar.

¹⁷²The axe on this plumwood haft is considered to be a FIP-MK type (Davies 1987: 41). Recalibration of the radiocarbon determination, BM-1251 3550±60 (Burleigh 1987: 127), gives a date of 2040-1690 CAL BCE. Plum is native to Europe and western Asia (Lucas & Harris 1962: 439).

appliqué from Lisht, which is either contemporary with the building of the pyramid of Amenemhat I or deposited by a Thirteenth Dynasty robber's trench, but both the type and the context suggest the earlier date (Arnold, Arnold & Allen 1995: 16-7, figs. 6:1, 7). Subsequently, two Levantine Painted Ware (LPW) juglets were found in Lisht North Pyramid T.756, together with Egyptian pottery from the reigns of Amenemhat II to Senusret III (Arnold, Arnold & Allen 1995: 17-8, fig. 2; Merrillees 1973: 53-5, figs. 4-5). Examples of other Levantine pottery were found in late Twelfth Dynasty fills and dumps at the Dahshur complex (Arnold 1977: 24, Abb. 2; 1982: 41-2, Abb. 13), although some of the material is associated with Thirteenth Dynasty contexts. The bulk of the Levantine pottery at Lisht belongs to later Thirteen Dynasty contexts (Arnold, Arnold & Allen 1995: 27-30, figs. 3, 6), including Tell el-Yahudiyah Ware (TEY) juglets that appear to be typologically MB IIA or MB IIA-b forms (Merrillees 1974: 59-64, figs. 44, 48, 51). The famous MB IIA-b “dolphin vase” from Lisht, which is a composite LPW-TEY vessel, has now been demonstrated to be the product of a southern Canaanite production center (McGovern, et al. 1994). Mostly fragmentary LPW and TEY juglets were found in rubbish dumps at the Twelfth-Thirteenth Dynasty worker's town of Kahun (Petrie 1891: pl. 1:11, 16-22; Merrillees 1973: 51-3, figs. 1-3), and in tombs at nearby el-Haraga (Kemp & Merrillees 1980: 34-6, 39, figs. 15-16).

7.3 Imports from beyond the Levant

7.3.2 Cypriot and Anatolian imports

With the exception of a fragmentary WPPL jug from an unclear Twelfth-Thirteenth Dynasty context at Kahun, MC imports are unknown in secure MK Egyptian contexts (Merrillees 1968: 42-3, 145-7). When Cypriot copper began to arrive in Egypt has yet to be researched. A fragmentary spout from the MK fortress of Buhen, which Merrillees (1968: 141, 145, pl. I:1) suggests may be an unparalleled example of Black Slipped II ware, looks suspiciously like an “Anatolian” cut-away neck teapot (*see infra* Chapter Four). Silver, which appears extensively (Lucas & Harris 1962: 246-7), is imported from either Anatolia or the Aegean (Gale & Stos-Gale 1981; Moorey 1994: 235).

7.3.2 Aegean imports

Until the Middle Kingdom, no secure examples of Aegean imports are documented in Egypt. A Middle Minoan (MM) I vase from T.88 at Qubbet el-Hawa, near Aswan, is thought by some to be a late FIP import (Warren 1995: 2), but its context might be early Twelfth Dynasty and its origin is controversial (Edel 1980; Kemp & Merrillees 1980: 215-9; Manning 1995: 107-8). Numerous examples of MM pottery, both complete and fragmentary, in both secure and mixed contexts, are also known at Harageh, Abydos, Lisht, Tell el-Dab'a, and at Kahun, where a Minoan stone vase lid was also found (Kemp & Merrillees 1980; Warren 1995: 3; Lambrou-Phillipson 1990: 57). The appearance of Aegean imports is complimented by the reference to *keftiw* in the *Admonitions of Ipuwer*, and the *keftiw* bean in Papyrus Ebers, which may have sections of MK date (Strange 1980: 93).

7.3.3 The Tod Treasure

The Tod Treasure was found under the floor of a Twelfth Dynasty temple, which was dedicated by Senusret I to Montu, and consists of four copper chests containing an assemblage of imported raw materials and finished goods from a number of sources in the eastern Mediterranean and Ancient Near East (Bisson de la Roque 1937; 1950; Bisson de la Roque, Contenau & Chapouthier 1953). The deposit probably dates to the period of Amenemhet II, whose name appears on all four of the chests.¹⁷³ A dedicatory inscription to this temple, which mention offerings by foreigners (Posener 1971: 543), and the contemporary references in the Mit Rahina inscription to imported goods and temple endowments (including to Montu), provide a historical context for this unparalleled assemblage (Pierrat 1994: 23-4; Lilyquist 1993: 36).

A variety of raw material, including gold, silver, and lapis lazuli, occur in lumps and ingot form.¹⁷⁴ Finished, partially finished, and fragmentary objects include the four copper boxes, nails, and two shafts; ten gold ingots, a cup, and two fleurettes; numerous silver rings (an ingot form?), bracelets, a mirror, zoomorphic figures, pendants (one stamp seal), an electrum-fastened holster, and over 150 shallow bowls or cups, some crushed; lapis lazuli cylinder and stamp seals, a scarab, pendants, figurines, plaques, beads, part of bowl, etc.; carnelian beads, and fragments of quartz, amethyst, and obsidian. In terms of quantity, the treasure includes nearly 7 kg of gold, at least 9 kg of silver, and the copper boxes, which vary from 14 to nearly 40 kg.¹⁷⁵ Together with the raw and finished lapis lazuli, the totals are impressive and well within the quantities and range of goods described in the Mit Rahina inscription.

Regarding the sources of the materials and objects, regions near and far are represented. Material and stylistic analysis suggests that the raw silver and silver bowls may have been derived from the Aegean or Anatolia (Maxwell-Hyslop 1995; Pierrat 1994: 24-5; Walberg 1984; Menu 1994). The Aegean world may have been the inspiration for one of the silver pendants (Aruz 1995: 33-5). The raw lapis lazuli originated further east and arrived via Mesopotamia and Syria, which were the origin for the cylinder and stamp seals styles (Porada 1982). The semi-precious stones derive from more proximal

¹⁷³New architectural evidence, the stratigraphic context, the homogeneity of the assemblage, textual parallels, and a review of the foreign comparanda support this date (Pierrat 1994: 20-2; Lilyquist 1993: 35-6; Walberg 1984), rather than previous attempts to drastically lower the date to Thutmose III or even later (Kemp & Merrillees 1980: 290-6).

¹⁷⁴Gold: Cat. Nos. 70505-70507; silver: Cat. Nos. 70513-70516; lapis lazuli: Cat. Nos. 70640, and various fragments. For a possible significance of the ingot form, see Laffineur (1988).

¹⁷⁵These estimates are based on the formal publication of the treasure without any consideration for state of preservation and the possible decrease as a result of oxidation. Note that weights of only ninety-six cups are provided, and thus the total of silver may be double the amount tallied here. Reference is made in the catalogue to “meters” of beads of all different types (Cat. 70706-70708, 70710, 70712-70713), which do not appear to have been weighed, or discussed in any detail.

regions. Although many suggestions may be offered, this eclectic collection of valuable goods from Afghanistan, Syro-Mesopotamia, Anatolia, and, perhaps, the Aegean, could have been assembled in some Levantine coastal center and sent or brought to Egypt, where it was placed in the chests for deposit, under the royal auspices of Amenemhet II.

7.4 Byblos and the Lebanon

As during the Old Kingdom, MK relations between Egypt and Byblos were extensive, and stand out in comparison with other Levantine sites. Secure stratified contexts are rare, however, and limited to some architectural complexes dated by foundation deposits or caches (Tufnell & Ward 1966; Negbi & Moskowitz 1966; Porada 1966), and tombs (Tufnell 1969; Baramki 1973). The upper phases of the stratigraphic EBA-IBA sequence, as reconstructed by Saghieh (1983), provide a *terminus post quem* for some early MBA contexts and finds.¹⁷⁶ These and other finds, which may be dated by typology or the occurrence of a royal name, have been discussed by numerous scholars (Ward 1961: 129-34, 155; Lilyquist 1993: 38-44; Teissier 1996: 2-3, nn. 11-3; Ben-Tor 1998).¹⁷⁷ The range of finds either imported from, or inspired by, Egyptian material culture includes jewelry, stone vessels, scarabs, weapons, statues, figurines, of various raw materials of, e.g., stone, metal, and faience. Other cultural influences included religious architecture and religion, language, and the assumption of Egyptian titles (Redford 1992: 97; Flammini 1998). This influence extended to resident foreigners, such as the son of a Lycian who dedicated an obelisk to Abishemu, a prince of Byblos, with an Egyptian inscription (Albright 1959).

Outside of Byblos, few sites in Lebanon have produced MK Egyptian finds. A sphinx of Amenemhet IV was found in a modern foundation trench in Beirut (Dunand 1928; Teissier 1996: 3, n. 17).¹⁷⁸ Inland, at Kamid el-Loz, a stone vessel with an MK hieroglyphic inscription was found (Edel 1983; Goedicke 1991: 92), although Lilyquist (1993: 44) considers it of local production. At Tell Hizin, near Baalbeck, a sphinx of Sobekhotep IV and a statue of a Twelfth Dynasty nomarch were found (Montet 1954: 76).

¹⁷⁶For the Obelisk Temple and its jar deposits, see Saghieh (1983: 18-20, 24, fig. 7-7b, pl. XLI:15979). For the *Champ des Offrandes* temple and Enceinte Sacrée MBA jar deposits, see Saghieh (1983: 31, 35, 38-9, figs. 9, 11, 12b, pl. XLI:10585). For the *Temple Syrien* (or *Batiment II*) and its jar deposits, including the Montet Jar, see Saghieh (1983: 50-1, 57-8, fig. 13). These are assigned to her Period H, along with other MB IIA finds, including a LPW dipper juglets and an isolated jar deposit (Saghieh 1983: 5, figs. 1:12472, 4:10882, pl. XLI:18903). Although difficult to substantiate stratigraphically, it appears from various plans and sections that the site was still fortified during this period (Saghieh 1983: figs. 21, 21b, 23-24).

¹⁷⁷Royal names are attested at Byblos beginning with Senusret I and ending with one of the early rulers of the Thirteenth Dynasty (Ward 1961: 129-33; 1971: 67-8, n. 272; Teissier 1996: 3, nn. 14-5).

¹⁷⁸An amethyst bead and MK scarabs from a multiple period tomb from Beirut (Saidah 1993-1994: pl. 30:2b) might have belonged to the MB IIA phase (Ward 1993-1994: 215-6).

7.5 Egyptian Exports to Syria, Cyprus, Anatolia, and the Aegean

Egyptian exports were fairly limited beyond Byblos, and in many cases were not found in secure contexts. Presumably, a portion of the gold found in these regions, such as the jewelry found at Ebla (Matthiae 1982; 1997: 407-9; Lilyquist 1993: 44-7), originated in Egypt. Among the few secure contexts are a number of Egyptian and Egyptianizing objects in the “Tomb of the Lord of the Goats” and in a temple at MB II Ebla, including jewelry, ivories, amethyst beads, stone vases, and a mace handle with the name of the early Thirteenth Dynasty ruler Hotepibra (Scandone-Matthiae 1987; 1997). Otherwise, the finds spots are often vague, such as the MK scarabs and stone vessels from Ugarit (Teissier 1996: n. 2; Caubet 1991: 208-9, pls. I:3-10, VIII:1-10), although some of the MK statuary was found there in contemporary contexts (Ward 1979). These might suggest that other examples of MK statuary found in later contexts at Qatna (du Mesnil du Buisson 1928: 10-1, pl. XII), at Kürigen Kaleh and at Adana in Anatolia (Von der Osten 1927: 293-4, figs. 11-13; Allen 1927; 1929), and Knossos, originated in contemporary exchange. However, as with other MK finds in later or dubious contexts, e.g., scarabs at Terqa, an alabaster jar fragment from Tell Leilan, and a sphinx from Neirab (Teissier 1996: 1-2), their MK export is speculative (e.g., Ward 1979; Uphill 1984; Warren 1995: 3). As yet no MK finds are documented on Cyprus (Knapp 1994: fig. 9.4). In the Aegean, the only certain MK finds were found on Crete, and include scarabs, stone vessels, the famous User statue from Knossos, and, possibly, faience necklaces, but, except for some scarabs, which were also imitated locally, most have either broad date ranges or are from dubious contexts (Walberg 1987; Wotzka 1990; Lambrou-Phillipson 1990: 53-5; Warren 1995: 2-3; Yule 1987). However, a compelling argument has been made for the transference of various artistic motifs and the possible importation of gold (Weingarten 1991; Crowley 1989: 294-8; Warren 1995: 2-3; Wedde 1997).

7.6 Tell el-Dab`a and the rise of the Asiatic “Hyksos” kingdom in the eastern Delta

No other excavated site has contributed more to understanding of MBA Egyptian-Levantine relations than Tell el-Dab`a in the Nile Delta. This site is identified with Avaris, the ancient capital of the historically and historiographically maligned Hyksos—so-called “chariot-driving marauders”, who usurped control from the Egyptian rulers of the Middle Kingdom. Over three decades of investigation has demonstrated, based on the analysis of the finds and the historical record (albeit meager), that the origin of the “Hyksos” should be sought among the Canaanites of the MB IIa Levantine coast, who settled in the Delta during the Twelfth Dynasty (Bietak 1996; 1997; and bibliography). Apart from imported small finds that emphasize the close commercial and cultural relationship that was maintained with their “homeland”, the ethno-geographic derivation of these heretofore enigmatic people is supported by analysis of the onomastica (Redford 1997: 20-1), burial practices (Van Den Brink 1982; Bietak 1989b), domestic and temple architecture (Eigner 1985; Bietak 1991a: 32, 39; 1996: 10; 1997: 97-98), rituals, such as equid sacrifice and burial (Wapnish 1997), and various crafts, such as cylinder seal production (Porada 1984), metalworking (Philip 1995b), and ceramic production (Bietak 1991a: 31, 33, 38-40, n. 9; McGovern & Harbottle 1997: 150-3). The Egyptianized character

of this population, however, cannot be understated, and it is in the context of contacts between the Nile Valley and the Levant that these social and economic phenomena should be understood.¹⁷⁹

7.6.1 Environment and economy

The site was established upon a sandy “turtleback” east of the Pelusiac branch of the Nile (Bietak 1991a: 28). This location afforded the inhabitants security, control of riverine communication, and proximity to lush farmland and pasture that could support an agro-pastoral subsistence economy that was augmented by fishing, hunting, and fowling. Besides the importance of riverine transport, such sites may have also benefited from a role as ferry or fording points for latitudinal land-based movement, or as starting points for caravans (Van Den Brink 1993: 297). Detailed surface survey and geomorphological investigations in the area of Tell el-Dab’a indicate that the site was at a split in the Pelusiac branch of the Nile (Bietak 1991a: 28). It was thus partially surrounded by water and internally divided by channels and lakes, making it something of a MBA Venice. Early in this century, a 50 ha natural lake basin existed just north of the mound, hence its previous name Tell el-Birka, “the mound of the lake”, a lake that connected to the Pelusiac branch by a still identifiable channel (Bietak 1986: 227-8). Such a paleotopography offered excellent harbor facilities, a feature alluded to by the Kamose stela. By the Twelfth Dynasty, the geography bestowed upon the site its toponymic epithet: “mouth of the two ways” (Bietak 1991a: 28-9). The site's maritime access to the Mediterranean and its proximity to the beginning of the “Way of Horus” made it a prime “gateway” community.

7.6.2 MB IIa Settlement

Although initially only a modest Twelfth Dynasty Egyptian settlement, the site expanded to an area of 1.5 km² in the 13th Dynasty and nearly doubled in size during the “Hyksos” period (Bietak 1997: 97). Four principal strata (H, G/4, G/1-3, and F) with MB IIa Levantine material culture have been published, in varying degrees of detail, from Areas F/I and A/II (Bietak 1991a: 31, fig. 3; Table 3). However, recent reports from excavations at Ezbet Rushdi indicate additional Twelfth Dynasty strata (N-I), some with MB IIa Levantine and MM Aegean imports, which confirm the re-dating of the Amenemhet I temple to the reign of Senusret III (Bietak 1997: 127-8). All of this new data will require some re-ordering of the intra-site and relative chronological sequence.¹⁸⁰

¹⁷⁹It must be emphasized that Tell el-Dab’a was the preeminent site of Canaanite settlement in the Delta, which later coalesced into the Hyksos kingdom. These include Tell el-Mashkuta on the Wadi Tumilat (Holladay 1982: 44-7; 1997; Redmount 1995), and other sites (Bietak 1991a: 28, fig. 1), but as these provide evidence primarily from the MB IIb period, they are not discussed here.

¹⁸⁰Bietak also reported these findings in a lecture at Tel Aviv University on 24 February 1997. Regarding the intra-site sequence, note that the six newly discovered strata have ceramics that reportedly “seem younger” than material from the incipient strata in Area F/I, which was previously claimed to be more similar to FIP than Twelfth Dynasty pottery, although a *terminus ad quem* of Senusret II had been noted for the comparanda (Bietak 1991a: 31).

The Senusret III temple and associated habitation levels were the core of the initial settlement. Although completely Egyptian in character, the marginal presence of Levantines, perhaps pastoral groups, are indicated by locally-made MB IIa cooking pots found in Stratum I (Bietak 1991a: 31; 1997: 97). Following a hiatus, fairly Egyptianized Levantines, with a typically sedentary lifestyle, settled in Area F/I, Stratum H. This material culture was characterized by Levantine-type houses, burial traditions (i.e., intramural locale, position, grave goods, etc.), albeit in tombs constructed in Egyptian fashion, and donkey sacrifices (Van Den Brink 1982; Bietak 1991a: 32; 1997: 97-100). In Area A/II, open compounds, perhaps animal pens, may indicate a community of herdsmen. Late-Twelfth Dynasty Egyptian pottery was found alongside MB IIa Levantine pottery, which comprises eighteen to twenty percent of the assemblage, of which only the handmade and wheel-made cooking pots were locally produced.

The emergence of an Egyptian-style palatial complex in Stratum G/4 of Area F/I (with an elaborate garden cemetery), which maintained the previous Canaanite mortuary tradition, marks a major change at the site, which continued its Egypto-Levantine character (Bietak 1991a: 34; 1997: 100-3). A robber's trench in the chapel of the largest tomb contained fragments of an intentionally smashed, monumental limestone statue of a smiting Asiatic dignitary, perhaps an inhabitant of the palace (Bietak 1991a: 34, 49-50). In contrast, the open compound and animal pens of Area A/II are supplanted by simple rectangular buildings or huts. The Twelfth and early Thirteenth Dynasty Egyptian pottery was found alongside a late-MB IIa component, which is still less than twenty percent of the assemblage.

A considerable change appears to have occurred in both areas during the period of Stratum G/1-3. A settlement of "egalitarian pattern", which consisted of two-room "snail houses" surrounded by thin brick enclosure walls, was the norm in both areas (Bietak 1991a: 36-7). The prototype of the villa house, a common feature of succeeding strata, first appeared during this phase. Graves are found within the houses, courtyards, and in adjoining rectangular brick structures. A phenomenon of numerous shallow pits containing haphazardly placed bodies, which are occasionally in multiple interments and rarely with any grave goods, may be the result of an epidemic that ravaged the population (Bietak 1997: 105). Alongside Egyptian Thirteenth Dynasty pottery is an MB IIa Levantine component that increases from approximately twenty to forty percent, in part locally produced (Bietak 1991a: 36-8).

Despite the shocking end to the previous phase, continuity of settlement is evident in Stratum F, especially in the Area F/I, where the villa house, an Egyptian-derived form, dominates the architectural plan (Bietak 1991a: 38-9; 1997: 105-9). The large courtyards contain domestic installations as well as single and family graves, some with vaulted roofs. In contrast, the eastern suburb was abandoned following the epidemic and a large MBA Levantine temple was established in its place. This religious complex may be associated with the rule of king Nehesy, as two door jambs with his name were found in the area, albeit in nearby later contexts (Bietak 1991a: 39). Affluent cemeteries surround the complex, often with well-preserved remains, including warrior and donkey

burials. Egyptian Thirteenth Dynasty pottery appears with a Canaanite component of forty percent, including MB IIa and some MB IIb types.

7.6.3 Levantine Ceramic Imports

Although the influx of Canaanites into the Delta eventually led to the local production of much of their ceramic repertoire, imports continued to arrive from the Levant, particularly, but not exclusively, prestige items and containers. Some of these finds, such as LPW and TEY types and Canaanite jars, have been the subject of extensive INAA studies (Artzy & Asaro 1979; Kaplan 1980; Kaplan, Harbottle & Sayre 1982; Bagh 1988: appendix A/2; McGovern & Harbottle 1997). Although not all of the finds and their analyses have been published, some preliminary observations may be made.

The earliest example of LPW is unpublished, but is reported to have come from just below the Senusret III temple in the newly identified Stratum K. By far the most common occurrence is in Stratum H, when numerous fragmentary sherds of jugs, juglets, and jars are documented, although equal amounts of sherds can be found in Strata G/1-3, and scattered sherds can be found throughout the MBA sequence (Bagh 1988: figs. 1-31).¹⁸¹

The earliest examples of TEY juglets are of the ovoid type, which appear in Stratum G/4 (Bietak 1996: 55; 1997: 91-94).¹⁸² In the following phase (Stratum G/1-3), ovoid and piriform juglets were imported from both the southern and northern Levant, and globular hand-made examples were locally-made with Cypriot production techniques; this pattern continues into Stratum F, when locally-made piriform vessels are added to the repertoire (Bietak 1996: 59; 1997: 91-94).

The most plentiful MBA ceramic type represented at Tell el-Dab'a is the Canaanite jar, whose total number is estimated at approximately two million vessels (McGovern & Harbottle 1997: 145). The results of INAA analysis indicate that as many as eighty-one percent of the MB IIa and MB IIa-b examples came from the southern Levant, with a few examples from coastal and inland Lebanon and the remainder of questionable provenience (McGovern & Harbottle 1997: 150-1). Other imported jugs and juglets, which were analyzed or classified by fabrics that have been correlated with INAA results, originated in the southern Levant or unknown regions.¹⁸³ Among these are some "Anatolian" cut-away

¹⁸¹Seven of the examples from Stratum H come from a single pit (Bagh 1988: figs. 1-3a, 7a, 14). To illustrate the scattered nature of these LPW remains, parts of one of the only widely published examples, which is assigned to Stratum H, may have come from Strata G/4 and D/3 (Bagh 1988: figs. 8-8a; Bietak 1991a: fig. 4; 1996: fig. 29:4284). The earliest complete examples are jugs from Strata F to E/3 (Bagh 1988: figs. 11, 26).

¹⁸²Previously an ovoid juglet sherd was reported in Stratum H (Bietak 1991a: 33), but the excavator changed his attribution without explanation.

¹⁸³This refers to grave goods from Area A/II Strata G to F (Bietak 1991b: 42-4, 46, 49, 57-8, 68, 70-1, 317-33, figs. 18, 19:4-7, 10-1, 20:18, 21:2, 26:7, 29:30-31, 34:8, 35:29, 37:2; McGovern & Harbottle 1997: 151-3).

neck vessels and a spouted teapot from Stratum H to F (Bietak 1991b: 37, fig. 13; 1996: 31, fig. 29: top, lower center).¹⁸⁴

7.6.4 Cypriot Imports

Outside of Cyprus, Tell el-Dab'a has the largest assemblage of MC pottery (Maguire 1990; 1995: 54). By far the largest quantity and range of MC types belong to SIP/MB IIB contexts; however, examples of MCCL and MCPL wares were found in Stratum G and F (Maguire 1992: fig. 2). In addition, the Cypriot "thrust-through" handle attachment was employed in the manufacture of TEY juglets from Stratum G, which may suggest the presence of Cypriot potters (Maguire 1995: 55, fig. 11; Bietak 1997: 94, 99). Copper tweezers from Stratum F may be a Cypriot or an Aegean import (Philip 1995b: 73).

7.6.5 Aegean Imports

Sherds of a Middle Minoan (MM) IIB Kamares Ware cup, probably from north central Crete, were found in the palace gardens in Area F/I in an early phase of Stratum d/1 (Bietak 1991a: 36; MacGillivray 1995 *pace* Walberg 1991: 117). An unpublished MM Ib amphora was reportedly found in an early phase of Stratum M. A MM golden pendant was found in one of the palace tombs (Bietak 1991a: 36; Walberg 1991), although the Minoan attribution is not universally accepted (Aruz 1995: 44-6). Lastly, Bietak (1995: 20, pl. 14:2) suggests that a veined dagger with interlocking spirals is a syncretism of Levantine and Minoan features.

7.6.6 Metal Finds and Evidence for Production

The preliminary publications indicate that copper-based weapons of Levantine types were found in abundance, particularly as grave goods that equipped so-called "warrior burials" (Philip 1995a; 1995c; Bietak 1996: 13-4, 26, figs. 22). Molds, crucibles, and a tuyère from Stratum G indicate that weapons and tools, of both Levantine and Egyptian type, were produced locally (Philip 1995b: 71; Bietak 1996: 31, fig. 28). Metallurgical analysis shows that a range of unalloyed copper, low arsenic alloys, and tin-bronze (some leaded) were in use (Philip 1995a; 1995b: 74). The inverse relationship between relative arsenic and tin content suggests that either two different copper sources were used, or that the varying arsenical content is the result of the degree of repeated recycling (Philip 1995a: 525-7; 1995b: 74-5). Strata H-F daggers and axes are uniformly composed of tin-bronze, while later examples show limited amounts of tin, a pattern that may suggest a less functional and more symbolic role for these particular objects (Philip 1995b: 77). Lastly, apart from a rare occurrence of two spearheads, silver is limited to rings and occasional fastenings for scarabs and weapons (Bietak 1991a: 36; 1991b: 59-60, fig. 29; Philip 1995b: 71-3).

¹⁸⁴Many of the imported examples of this class, and other related forms, have three incised lines at the base of the neck (Bietak 1991b: figs. 13, 18:2, 19:6), which are similar to examples at Kabri, *see infra* Chapter Four.

8. Northeastern Mediterranean Trade

Textual and archaeological evidence indicates that extensive trade took place among Mesopotamia, coastal Syria, Anatolia, Cyprus, and the Aegean Sea.¹⁸⁵ This trade was carried out on land and at sea, and involved the long distance transport of raw materials, finished goods, and people—all in sophisticated, but highly particular and, seemingly, restrictive, commercial relationships. These networks of exchange complement the evidence from the southeastern Mediterranean, in terms of the commodities and regions involved, in illustrating the varied modes of exchange (i.e., entrepreneurial, royal, or temple-based), and in the material overlap, such as the distribution of LPW vessels (Thrane 1978: figs. 79, 82, 85, 88, 91-92; Gerstenblith 1983: 64-70; Tubb 1983; Bagh 1988; Saidah 1993-1994: pls. 5-6, 9:2, 10:1b, 11:1-2, 12:1, 16:1-2).

More than any other phenomenon, the Old Assyrian (OA) caravan trade (ca. 1950-1755), which is detailed from the archives at the *karum*-Kanish at Kültepe, demonstrates the complex commercial apparatus that was implemented in order to transport goods, principally textiles, tin, copper, silver, and gold, between Anatolia and Mesopotamia (Veenhof 1972; Larsen 1977; 1987; Gerstenblith 1983: 7-9; Dercksen 1996). Although solely a land-based network, the establishment of an Assyrian commercial colony, which has left little if any evidence of Assyrian material culture (Larsen 1987: 55; Postgate 1992: 215), is an important caveat for those seeking to identify ethnic or cultural origin of expatriate groups in the archaeological record. Although the published texts show no indication of any contact between these merchants and any sea-based networks, the discovery of a MC WPPL juglet at the site (Åström 1987: 62; 1989) suggests that there exists, somewhere on the shores of Cilicia, an MBA precursor of Ura, the LBA Anatolian gateway to the Mediterranean (Beal 1992; Blue 1997: 38-41).

The Old Babylonian (OB) texts from Mari are the only source of information, albeit indirect, of MBA maritime trade in the northeastern Mediterranean.¹⁸⁶ Numerous studies have considered Mari's relations with the Upper Jordan Valley (i.e., Hazor and, possibly, Laish/Dan), the northern Levantine coast, Cyprus, and Crete (Malamat 1970; 1998g; Dalley 1984: 1-7, 51-65; Limet 1985; Larsen 1987; Heltzer 1989).¹⁸⁷ Mari appears to have been an important transshipment point for tin,

¹⁸⁵Whether these networks represent a continuation of the IBA trade has not been researched sufficiently, but note the evidence for IBA-MBA cultural continuity in Syria, or the lack thereof at, e.g., Ugarit (Van Loon 1992).

¹⁸⁶The date of the Mari texts depends on the chronology of Hammurabi's reign, which is variously dated to 1848-1806^{high}, 1792-1750^{middle}, or 1728-1686^{low}, and even lower, although increasing evidence supports the middle or high chronology (Huber, et al. 1982; Huber 1987; Manning 1995: 23-4, 111-2). In any case, the present work employs the evidence from Mari as representing an MBA "phenomenon" and not specific historical "events".

¹⁸⁷For a dissenting opinion regarding the identification of Galilean Hazor in the Mari texts, see Astour (1991) and Malamat's responses (1998c: 5). The identification of Laish/Dan is also questionable, but still possible (Malamat 1984: 58; 1998b: n. 2).

which arrived from the East via Susa (Heltzer 1989: 15-23). The southernmost identifiable recipient of this tin was Hazor, whose ruler apparently had a close relationship with his counterpart at Mari (Bonechi 1992; Malamat 1971). Various texts from Mari recount how the ruler of Hazor sent wine, gold and silver vessels, and gold jewelry to Zimri-Lim, the king of Mari, who, for his part, sent textiles, cattle, and mules, or dispatched an official to Hazor in order to obtain silver, gold, and precious stone (Malamat 1998b; 1998e).¹⁸⁸ An unpublished OB text recently found at Hazor reportedly details commodities and sacrificial animals that were sent to Mari (Horowitz 1996). A reference to a gold vase sent to the king of Mari by Yantin-`Ammu, ruler of Byblos, is the southernmost identifiable contact along the coast (Albright 1940: 27; 1964; Kitchen 1967). In other texts, Byblian-style robes are mentioned (Bonechi 1992: 11-3; Malamat 1998f: 37).

Another important recipient of tin from Mari was the port of Ugarit, which appears to have been a major transshipment point for tin going overseas and for Alashiyan (Cypriot) copper going east (Heltzer 1989). This city's importance for Mari is underscored by references to the transfer of gold jewelry, lapis lazuli, and silver vessels to Ugarit, perhaps partly on the occasion of Zimri-Lim's visit, who had previously received an envoy of Ugarit (Sasson 1984; Limet 1985: 16-7; Villard 1986; Malamat 1998b: 43). This port also served as the domicile of a Kaptaran (Cretan) merchant delegation, which was led by a head merchant and aided by a translator, all of whom received tin from Mari (Heltzer 1989: 12-3; Malamat 1998f: 34-6). Various references to Cretan, or Cretan-style goods, include weapons, such as a lance, a gilded mace inlaid with lapis lazuli, sandals, textiles, precious metal, pottery vases (perhaps Kamares Ware), other unidentified objects of leather and bronze, and a wooden boat (^{giš} *má tur kaptaritum*), perhaps a model, decorated with lapis-like stones (Heltzer 1989: 13-4; Guichard 1993; Porada 1995; Malamat 1998f: 37-8).

Despite no specific reference to the import of Dilmun copper, the Mari texts allude to contact with this Persian Gulf locale, which was one of the main suppliers of this metal to Mesopotamia during the third millennium, hence the use of the terms “Dilmun copper” and “Dilmun shekel” (Potts 1986: 391-6; 1990: 85-92, 226-31; Eidem & Højlund 1993). The Mari texts, however, are replete with references to the Alašīyan copper mines, its “copper mountain”, copper refinement, and even Alašīyan bronze (Heltzer 1989: 8). Moreover, a rare mention of *uru^{ki} a-la-ši-ia* “the city (lands) Alašīya” (Charpin 1990), indicates that the Marian scribes knew of a city with this name that was also applied to an entire land, which is a common phenomenon among islands (e.g., Rhodes or Samos). Thus, even if the supply from Dilmun to the north continued into the early second millennium, this network was apparently eclipsed by a new source, a change that is reflected in an OB text of unknown provenance that records the latest attestation of Dilmun copper, coincidentally with the earliest references to Alashiyan copper outside of Mari (Millard 1973; Potts 1990: 226).

Although the Mari texts provide only indirect evidence of maritime trade, the 500 km distance that separates Mari from Ugarit must be factored into the importance ascribed to these references.

¹⁸⁸Zimri-Lim may have married a princess from Hazor (Malamat 1998a: 14).

Presumably, only a small and selected portion of the sum total of goods and information from the coast passed through this geographical filter. Based on this supposition, a contemporary archive from Ugarit, or another port, should provide more voluminous and detailed data on maritime activity and trade.

Cretan and Cypriot ceramic imports from both coastal and inland sites provide the only unequivocal archaeological evidence for maritime trade from the northern Levant. Cretan MM Ib-MM II imports of Kamares Ware include one intact and two fragmentary cups from tombs at Ugarit (Schaeffer 1949: figs. 109-109A; Saltz 1977: 53-5), a cup sherd from a debris fill at Qatna (Smith 1965: 14, fig. 20c), one intact and one restored bridge-spouted jar and a cup sherd at Byblos (Dunand 1937: pls. CLXIV:4170, CLXXVII:2986; 1939: 191, 311-312; Smith 1965: 13, figs. 19, 20d; Baramki 1973: 30, fig. 4:2, pl. IV:1), and two intact cups from a tomb at Beirut (Saidah 1993-1994: 206, pls. 17-18). However, only the examples from Beirut, the intact example from a rock-cut tomb at Byblos (Baramki 1973: 27), and one example from Ugarit (Saltz 1977: 55) have relatively secure attributions.¹⁸⁹ The distribution of MC imports in the northern Levant has been discussed by numerous scholars (Åström 1972: 206-33; Dever 1976: n. 104; Åström 1987: 59; Maguire 1990). In addition to dubious and clearly later contexts along the Syrian coast, MC WPPL and WPCL jugs and juglets, and Red Polished sherds were found in various *Ugarit Moyen (UM) 2* (i.e., MB IIa), and end-of-*UM 2*/debut of *UM 3* (i.e., MB IIb) contexts and tombs at Ugarit (e.g., Schaeffer 1949: figs. 102:15-16, 131; Åström 1972: 214-5, 218; Gerstenblith 1983: 71). At Tell Sukas WPPL vessels are found in an MB IIa-MB IIb multiple tomb (Thrane 1978: figs. 43-44, 55-56, 62). South of this region, and along the Lebanese coast (including Byblos) there is an absence (Maguire 1990: figs. 17, 25, 26); the only remotely possible contemporary MC imports in Lebanon are two WPPL jugs in mixed MB IIa-MB IIb (and LBA) tombs at Qraye and Majdalouna, near Sidon (Guigès 1939: pl. XIIb; Chéhab 1940: fig. 3e).

Imports to Cyprus include both Cretan and Levantine ceramics and metals.¹⁹⁰ Cretan ceramics from secure contexts include an EM III/MM Ia bridge-spouted jar from Lapithos-Vrysi *tou Barba* and an MM II Kamares Ware cup from Karmi-*Palealona*, both typologically earlier than examples from the Levant (Grace 1940; Stewart 1962; Walberg 1992). Although these examples are limited to the northern coast of the island, a Kamares sherd was found out of context at Kourion in the south (Knapp 1994: fig. 9.4). Levantine ceramics include a juglet from Larnaca-*Ayios Prodromos*, and a Syro-Cilician jug from Nicosia-*Ayia Paraskevi* (Merrillees & Tubb 1979; Herscher 1988: 153,

¹⁸⁹A number of silver vessels from Byblos have been considered to be Aegean in origin or inspiration (Kantor 1947: 20; Jidejian 1971: 27, figs. 40-41; Cadogan 1983: 514), but may, like the silver vessels from the Tòd Treasure be of Anatolian origin.

¹⁹⁰Foreign influences on the Cypriot ceramic repertoire are not considered here (Herscher 1975: 53-6; 1979; Merrillees 1979).

fig. 3:12).¹⁹¹ Typological and metallurgical analysis of metals (e.g., weapons, tools, and jewelry) show a very selective import and adoption of Levantine and other forms, which may have partially influenced the haphazard implementation of imported tin-bronze and its technology (Gale & Stos-Gale 1989; Balthazar 1990; Philip 1991a).

Imports of Near Eastern cylinder seals and Cypriot pottery in the Aegean were limited to Crete, but most are from later or dubious contexts (Cadogan 1983: 516-7; Lambrou-Phillipson 1990: 62-3, 68-9, 85; Phillips 1991). The few exceptions are some cylinder seals from MM tombs at Arkhanes and some WP sherds from MM Ib levels at Kommos (Watrous 1992: 172). In addition, North Syrian, i.e., Levantine, amphora sherds were reported from a MM IIB context at Knossos, but are still unpublished (MacGillivray 1995: 82). Branigan (1966; 1967) identified a number of imported Levantine daggers, although some of his specific parallels have been questioned (Philip 1991a: 85). While lead-isotope analysis indicates only a limited import of Cypriot copper (Stos-Gale & Macdonald 1991: 265-7), extensive use of tin-bronze in the Aegean (Branigan 1974: 73-6; 1982; 1989: 66-7) is a firm archaeological correlate for the Kapataran merchant activities at Mari. Raw materials for inlays and seals, such as hippopotamus ivory, and semi-precious stones, including agate, carnelian, and lapis lazuli, were also imported (Krzyszkowska 1984; 1988: 217, 228; Yule 1987: 171-5; Younger 1989: 53-4). Less tangible, but more meaningful imports may have been faience technology (Foster 1979: 58-60), the Minoan sealing system, which Weingarten (1990) has argued is Near Eastern in derivation, and some artistic transferences (Crowley 1989).

9. Summary

As this *longue durée* approach has demonstrated, Egypt's external relations were molded fairly early in the formation of its society and state, whose growth and size necessitated a maritime connection to the outside world. This maritime commercial activity brought about indirect contacts with other maritime and land-based networks, and increased the geographical scope of cross-cultural interaction. These connections are clearly supported by the textual, pictorial, and archaeological evidence, both in Egypt and abroad. While the social and cultural impact of this phenomenon on the northern Levant,

¹⁹¹In addition to parallels cited, examples of this ceramic family are known from Tell Judeidah, Ugarit, and Ebla (Schaeffer 1978: 208-9, figs. 4:4, 4a; Tubb 1983: fig. 1:1-2; Matthiae 1989). Another Syro-Cilician jug is reported from Lapithos-Vrysi *tou Barba* (Knapp 1994: fig. 9.4), but an illustration was unavailable at the time of this writing. Other possible Levantine forms have been illustrated, but they have not been properly examined by specialists in years. These include vessels from Kalopsidha T.11, such as a carinated bowl and platter, both wheel-made and with a loop handle, which were found with what appears to be an MB IIB TEY juglet (Åström 1966: 19, figs. 10: row 2:1-2, 51: row 1:4; 1972: 129-31, 232, fig. XXX:21); two black burnished piriform juglets, one from Milia and the other unprovenienced (Åström 1972: 133, 240, fig. XXX:19-20); and a wheel-made handleless jar (Åström 1972: 129, fig. XL:8). A wheel-made handleless painted jar, with a crude pendant decoration around its neck and two rows of net-pattern-filled triangles (Åström 1972: 129, 232-3, fig. XL:9), shows a strong affinity to LPW examples from the mainland. Numerous other suspiciously Levantine sherds can be seen on the plates from Kalopsidha and Ayios Iakovos (Åström 1966).

particularly Byblos, is clear, its impact on the southern Levant requires a more sophisticated approach that considers its role as an ancillary trade partner and a maritime intermediary for Egypt. The mechanics of the latter are the subject of the following chapter.

Chapter 3

By Land or by Sea in the Southeastern Mediterranean

The previous chapter surveyed the contacts between Egypt, the southern Levant, and beyond, and examined the changing role of the southern Levant from primary to secondary supplier of raw materials. Implicit to this survey was the notion that when required, the southern Levant functioned as a required nexus for all Egypt's contacts whether terrestrial or maritime. This chapter considers this role in depth and, in particular, identifies the mechanism of these contacts. While it is obvious that no land-based movement between Egypt and the Near East can avoid the southern Levant, to date no detailed discussion has considered the role of the southern Levant as a maritime nexus, or the long term evidence for maritime activity in this littoral zone. In order to elucidate these features, the following section considers the relationship between physical geography and technology, first by land and then by sea.

Geography, whether terrestrial or maritime, imparts character to the nature of all communication, determining possible and probable axes of movement, and setting a rhythm to that movement. While physiographic factors are paramount, human agency may overcome obstacles, ignore rationale and, in the seeming “Brownian movement” of human interaction (Bloch 1962: 64),¹⁹² cause what would otherwise be an unnoticed geographical nexus to emerge as a focus of activity. It is the contention here that increasingly sophisticated maritime technology enabled the coastal inhabitants of the southern Levant to become part of much larger world.

1. Terrestrial movement and transportation

Humans themselves are the most ancient beasts of burden. A healthy individual can travel an average of 30 km per day, a figure that depends on the terrain, the climate, the load borne, and other factors (Dorsey 1988: 895; Murnane 1990: 95). Regarding load, Broodbank (1995: 54) suggests that 20-30 kg is a reasonable burden for any extended journey; any load beyond this weight limit required animal drawn vehicles (Table 4).¹⁹³ Even when that cargo threshold was surpassed, speed was not necessarily increased, as the animals may have been led by people walking beside them.

The physical landscape imparts character to the nature of terrestrial communications, as the movement of people, animals, and thus commodities is dependent on the ease of the traverse. Geographically amenable conditions lead to an increased frequency of movement along regular axes, and ultimately to the establishment of a road network. Amenability was naturally dependent on the

¹⁹²I owe this reference to a stimulating series of lectures on island history given by Nicholas Purcell at St. John's College, during Trinity term, 1993.

¹⁹³Note that Haiman (1996: n. 13) confuses Russell's figures (1988: 120, table 24) for draught (i.e., pulling or traction) potential and load carrying capacity, and thus underestimates of the potential cargo weight for donkeys by at least twenty percent.

gradient, the obstacles, available drinking water, grazing land for animals, and security. Unlike the broad alluvial plains of other regions, the fragmented geography of the southern Levant focused movement within fairly rigid constraints. While analysis of these networks requires a broad historical, geographical, and archaeological approach, it bears the risk of being tainted by anachronism. Not all roads known in later periods were traversed or frequented in earlier ones. Moreover, delineating a road is not merely a process of connecting the dots, i.e., sites, on a map; physical geographic factors might not always outweigh political or economic ones that favored one road over another.

Given these parameters, logistics are therefore an important aspect to be considered. If unavailable along part or all of the journey, water, food, and other supplies had to be carried, increasing the requisite load to be transported.¹⁹⁴ Security during the journey may have depended on local authority, from whom safe passage might be solicited through gifts or tolls, or the strength in numbers (i.e., a caravan), an armed escort, or simply the deterrent threat of one's powerful patron. Where protection waned, travellers would be at the mercy of brigands. For this reason, it is assumed that travel was carried out during the daylight hours, and individuals, caravans, and even armies bivouacked at night, preferably in or near a settlement.

In the study of the historical geography of the ancient Near East, it is almost axiomatic that a combination of water, arable land, topography, and access to roads were the four main factors contributing to the establishment of a permanent settlement at a given site, and the geographical reason for the formation of the Near Eastern tell (Aharoni 1979: 106-7). However, is this a “chicken and egg” scenario where it is not clear whether all roads led to (the creation of) Rome, or whether Rome lead (to the creation) of the roads? Each case must be considered individually, but it is clear that the survival and the prosperity of a given locale depended on a means of communication with the external world. Few sites could survive solely on the existence of a road, but surely there were some sites whose genesis resulted from a well-travelled highway. Given the carrying capacity, daily distance covered, and logistics described above, it may be assumed that a particular road was preferable if it has an amenable topography, and if it had a settlement, on average, every 30 km. This assumption should not be construed as a negation of the existence of a road along a potential geographic route that does not have sites at this regular interval; such a case, however, requires further elaboration and substantiation.

Apart from Dorsey's study (1991), which presents the Iron Age culmination of millennia of movement and communication in the southern Levant, no major work has considered the question of earlier routes in any detail. The following discussion considers the evidence for the use of pack animals and focuses on terrestrial communication networks in the coastal area, with the regions further inland considered only inasmuch as they shed light on exchange with the coast.

¹⁹⁴There are numerous examples of the provisioning of the Egyptian army during long journeys. An FIP text refers to three thousand men each receiving two jars of water and twenty loaves of bread every day (Breasted 1906: 209).

1.1. Chalcolithic-EB I network

Nearly all excavated Chalcolithic and EBA sites have produced faunal remains of equids, although usually in small numbers (Grigson 1993: 645-6; 1995: 258; Horwitz & Tchernov 1989: 290, fig. 2). Domesticated horse has also been found in the Negev area, but its use as a draft animal is not clear (Grigson 1993). Cattle may have been used for pulling heavy loads, possibly even wheeled vehicles, whose use may have been more widespread than generally thought (Grigson 1995: 258, 267-8). Ceramic figurines commonly depict donkeys, cattle, and other animals bearing storage jars and other vessels (Epstein 1985; Grigson 1987: 229-30).

Chalcolithic sites in the Coastal Plain are fairly evenly dispersed, providing coverage of nearly the entire region (Gophna & Portugali 1988: 12-3, fig. 1). A longitudinal route running along the inland corridor is clearly apparent, as well as occasional latitudinal routes that follow the main drainage systems. The shoreline is poorly represented except on the Carmel coast, near Dor, and at the Yarkon river outlet. This suggests less frequent terrestrial travel along the shoreline; however, submerged or eroded sites may have skewed the sample. A concentration of sites is found near the northern Negev coast, which is related to the Beersheva culture core. This inland region is linked to the shore by the Gerar and Besor river system, and from there to the northern Sinai coast. Another important concentration is at the exit from Wadi Milik, which may be related to settlement in the inland valleys. In general appearance, this system seems to be a harbinger of the dendritic networks of the Early Bronze Age that “drained” the coastal catchment systems towards the coastal road.

The early part of the EB I period saw a reduction in settlement along the Coastal Plain, making any reconstruction of the road system difficult. The only significant concentration of sites is located in the northern Sharon and Carmel Coastal Plains, both near mountain passes leading to the inland valleys. An important development were the small sites along the southern shoreline, near Ashkelon, and the Nahal Besor sites, which herald the road system in use during the Egyptian colonial period. This network of sites was fundamentally shaped by the Egyptian colonial apparatus, whose presence is documented at sites in the inner Coastal Plain and Shephelah, e.g., Tel `Erani, Tel Halif terrace, and `En Besor, and which was linked in a dendritic network leading towards the coastal road to Egypt (Harrison 1993).

1.2. EB II-III network

Faunal remains attest to the continued use of equids (Horwitz & Tchernov 1989). In addition, pottery figurines depicting laden pack animals (cattle and equids) continue to appear in EB II and EB III contexts (Greenberg 1996a: 139-42). During the EB II period large settlements are located solely on the inner corridor of the Coastal Plain, which declined in number during the EB III. This inland artery seems to be the sole longitudinal land route, as a near absence of sites along the shoreline precludes the reconstruction of an additional one. Latitudinal links may be suggested with Ashkelon, Tel Poran, Tel Gerisa, and Khirbet Kurdaneh, the latter two on possible inland waterways. Fargo (1979) describes this as a dendritic network leading to the coastal road and, by extension, to the few potential ports.

1.3. IBA “Vectors”

Faunal remains of equids are known, but are generally rare during this period (Horwitz 1989a: 46, fig. 2; 1989b). However, this may be a result of the limited number of excavated settlement sites.

This non-urban interlude is characterized by an evenly distributed, but sparse pattern of squatters on former cities, small settlements, and cemeteries, both along the shore and the inner Coastal Plain. Haiman (1996) interprets the arid zone settlement pattern as reflecting a pair of “vectors” connecting groups involved in copper specialization with the routes across Sinai. The extensive IBA metal remains from Tell el-`Ajjul (Tufnell 1993: 49) might be a reflection of this network.

1.4. MBA Network

Equid remains are generally found in most faunal assemblages that have been studied (Horwitz 1989a; Weinstein & Helving 1988). The role of the donkey as an essential pack animal may also be construed from its extensive appearance at the Sinai mines and at Beni Hassan. Donkeys also take on an increased role as a symbol of status and as part of ritual activities, such as the practice of donkey sacrifice and burial (Ziffer 1990: 64*-65*, 79-85; Bietak 1996: 25; Wapnish 1997).

The extensive rural and urban settlement along the Coastal Plain has been well-documented (Gophna & Beck 1981; 1988). Apart from the clear contrast to the preceding periods, the urban settlement array is characterized by a phenomenon of “twinning”, with a coastal site at an anchorage and an inland site within the fertile inner plain (Raban 1985; Marcus 1991). With the exception of the sparsely settled inland Sharon Plain, longitudinal routes, both along the shoreline and the inland corridor, may be reconstructed, which linked up with “Way of Horus”, a series of northern Sinai coastal sites, which possessed a mixed assemblage of Egyptian, Canaanite, and local material culture (Oren 1987a; 1993: 1388). Latitudinal links along the coastal river systems may be posited, which link up with the inland valleys and transmontane routes. Initially, the Jezreel or Beit Netofa valleys served this function. Later in this period, the Wadi Fara-Shechem and Jericho-Jerusalem corridors became additional latitudinal routes across the Central Hills. Only in the MB IIB period was a transmontane Hebron route added. These latitudinal routes are most likely related to Highland developments, an increase in settlement in southern Transjordan, and, perhaps, the apparent settlement shift towards the southern Coastal Plain and Shephelah during the MB IIB period (Gophna & Portugali 1988).

2. Seafaring and seamanship

With winds varying in both direction and intensity, the “wine-dark sea” is a challenge to the modern mariner just as it was to his ancient counterpart. Weather systems originating over Europe, Red Sea jet streams, low pressure systems hovering over the Persian plateau and, indirectly, the effects of the Indian Ocean Monsoons meet over the potential sea routes of the eastern Mediterranean and cause challenging havoc (*Mediterranean Pilot* 1976: 17-9, 36-7). Presumably, these risks were faced by all ancient seafarers, from the earliest hunter-gatherers to venture from the shore to the merchant seafarers of the Bronze Age and later. In order to minimize potential disaster, and to enable travel to desired destinations, the mariner's art relied on an intimate knowledge of the environment and cumulative experience based on trial and error. Success was passed on from generation to generation,

with esoteric knowledge codified in ritual, song, and symbolic behaviour. Failure, however, found its way to the bottom of the sea, in some instances reported by fortunate survivors. In this maritime process of “natural selection,” the pressures of time were not necessarily a critical consideration, as the lack of urgent schedules meant that all navigators, whether paddling, rowing, or sailing, could wait for advantageous sea conditions. Even so, cargo-bearing ships were far from infallible, as is demonstrated by the serendipitous nautical failures that underwater archaeology continues to uncover.

Limited direct evidence exists for the art of seafaring and navigation during the periods presently under consideration. The sailor's craft has remained fairly obscure because, unlike those from later periods, no pilot books or *periploi* have survived from the Bronze or even Iron Age textual record. Presumably, a cumulative body of experience and knowledge existed, but was transmitted primarily through an oral tradition. Considering the literacy of many of the various BA cultures, it seems unlikely that they were incapable of committing this oral tradition to writing had they chosen to do so. Either such direct evidence exists, but has eluded modern investigation, or the knowledge was so confidentially guarded that all that will ever be known about the art of BA seafaring and navigation will depend on indirect contemporary evidence, later sources, ethnographic parallels, and analysis of modern sea conditions (cf. Pryor 1988: 12-24).

2.1. Physiographic factors

Sea conditions are the complex result of the behavior of two dynamic factors, the current and wind, and one relatively static factor, the land.¹⁹⁵ The interaction of these factors is governed by global and regional environmental phenomena of both a perennial and a seasonal nature, which are well enough understood to be applied to modern seafaring and navigation (*Mediterranean Pilot* 1976). In order to apply these factors to the issues of ancient seafaring, a correlation must be found between over a hundred years of recorded observation and the conditions in antiquity. For the winds of the eastern Mediterranean, and by inference those currents they produce, detailed analysis of the two Classical meteorological discourses of Aristotle and Theophrastus shows that the wind conditions in this region have not changed significantly since the fourth century (Murray 1987; 1995). No earlier descriptions are available, but as no major long term changes have occurred in the climate during the last 7,000 years (Horowitz 1979: 343-344; Baruch 1986; 1994a; Bar-Matthews, Ayalon & Kaufman 1997: 166), the same physical phenomena that existed in the fourth century presumably were prevalent during the periods presently under consideration, perhaps with some minor short-term variations, that might have affected the relative frequency and timing of storms, and the intensity and shifting of winds.

¹⁹⁵While diachronic changes in the Holocene land-sea relationship certainly re-configured the seascape, the impact on currents and winds has not been explored. In island-studded regions, such as the Aegean Sea, the impact would have been considerable. In the region under consideration, it is assumed that changes in the land-sea relationship would have caused a lateral shift in the existing conditions.

2.1.1 Currents

Two principal factors govern the prevailing currents along the Levantine coast: the Coriolis effect and the orientation of the coastline vis à vis the wavefronts. In addition, bathymetry and intermittent winds create additional vectors that must be accounted for on a local scale (Nir 1988). The Coriolis effect explains the counterclockwise movement of fluids in the Earth's northern hemisphere, creating the longshore current in the Mediterranean. During both summer and winter, this current varies from one-quarter to one and one-quarter knots (1.9 to 2.3 km/hr) in intensity and is generally over one knot thirty percent of the time (*Mediterranean Pilot* 1976: diagrams 1.132.1-2). Nearshore currents are caused by wavefronts that strike the shore at an oblique angle creating a net discharge of water northward (Carmel, Inman & Golik 1985). As such currents are nearshore, they are only of significance to ships seeking haven or setting out to sea. The intensity of the wavefront is dependent on the fetch, which is the result of the intensity of the wind, the length of time that the wind blows over a body of water, and the total surface area of that body that the wind blows in the same direction. In the case of the southern Levantine coast, the western wind that comes with storm depressions can cross a few thousand km and result in powerful winter storms (Flemming 1983: 146-50, figs. 4-6).

2.1.2 Winds

The variability of the winds in the eastern Mediterranean is typical of all seasons. However, in open sea, the winter and spring winds are most variable, and in the summer, southwestern and northwestern winds, the latter known as the Etesians or Meltemi, dominate conditions (*Mediterranean Pilot* 1976: 17). Along the Levantine coast, when winter winds come from the southwest or northwest, they can occasionally reach near gale force of thirty-three knots (*Mediterranean Pilot* 1976: 18). During certain periods of the year, such as the transitional seasonal months of September and April, strong, dry, dust-raising eastern desert winds, called locally *Æamsin*, can last for several days (*Mediterranean Pilot* 1976: 18). The resulting offshore wind makes it difficult for any non-motorized vessel to reach the shore and causes decreased visibility. But these episodes tend to be short-lived and would not usually have placed a ship in the face of any immediate obstacle, apart from Cyprus.¹⁹⁶

The most important regular phenomenon along the shore is the diurnal variation of the land-sea breeze, which becomes increasingly pronounced from spring to autumn. This phenomenon, caused by the greater terrestrial temperature differential, is characterized by a shift in the wind from east to west around midday, as the higher intensity Mediterranean wind pattern prevails. The morning offshore breeze is crucial for enabling ships to leave shore in order to catch the open sea winds, and to avoid being thrown against a lee shore. This danger is particularly prevalent along the northern Sinai coast, where limited meteorological observations, ca. 6,966 measurements over thirty months at El Arish, show that offshore winds occur only seven percent of the time (Klein 1987: 263, table 1, fig. 2).

¹⁹⁶This, apparently, was the sad fate of Wenamon's penultimate voyage (Lichtheim 1976: 229; Wente 1973: 154; Wachsmann 1998: 300-1), which occurred during the month of April (Egberts 1991: 67).

Long-term observations from stations at Port Said, Tel Aviv, and Beirut present significantly more amenable conditions, but show how the offshore winds vary by location, season and hour (table 5).¹⁹⁷ These figures indicate that, in general, the morning is the most opportune time to set out to sea. Moreover, during certain seasons, vessels might have to spend considerable periods in port waiting for an easterly wind.

2.2 Ancient Navigation

Nothing supersedes a sailor's lifetime of experience, based on the observation of currents, winds, and weather patterns through their daily, monthly, and annual changes. In antiquity, the results of these observations, albeit cloaked in religious beliefs or superstition, served as a reservoir of information which could be drawn upon for long-term planning and for extricating a vessel from danger. A corollary of these observations would be an ability to discern position and direction based on familiar landmarks: terrestrial features, winds, currents, and celestial bodies.¹⁹⁸ These are considered presently within the traditional nautical division between coastal, and what McGrail (1991: 86) has called "environmental" navigation. Visibility is critical in both instances, as without a point of reference it is impossible to navigate. For this reason, more so than the inhospitable sea conditions, winter sailing was generally avoided in antiquity, since during this season the days are shorter and the skies are more likely to be overcast (Casson 1971: 270-3; Tammuz 1985: 41-53).¹⁹⁹ Even in optimum conditions, maximum range of visibility at sea is limited along the coast of the eastern Delta and Sinai, but increases along the Levantine coast because of the mountain range which first reaches the shore at the cape of Mount Carmel.²⁰⁰

¹⁹⁷In table 5, any offshore wind is included, e.g., southeast to northeast from Tel Aviv and Beirut, or southwest to southeast from Port Said.

¹⁹⁸Numerous traditional navigational techniques are known from the study of maritime cultures around the world (Terrell 1986: 68-74; Irwin 1989: 171-173; 1992: 42-53; McGrail 1991: 86-87; Wachsmann 1998: 299-301). These examples clearly illustrate possible means by which Mediterranean sailors may have navigated, but they are difficult to substantiate.

¹⁹⁹This preference did not absolutely preclude winter sailing in antiquity, as the occasional exception demonstrates, e.g., Wenamun (Egberts 1991: 60). However, Classical, Talmudic, and other sources attest to the existence of a 'sailing season' and the aversion towards sailing out of season, because of its difficulty, and of its cost in money and lives (Casson 1971: 270-2; Sperber 1986: 99-101; Wachsmann 1998: 300-1, n. 1). Although later codified in calendrical or festival terms, in prehistoric times the beginning and end of the sailing season may have been marked by the appearance of migratory birds.

²⁰⁰For the application of nautical tables to the question of visibility in ancient coastal navigation, see Chapman (1990: fig. 59) and McGrail (1991: 86, table 1).

2.2.1 Coastal navigation

Coastal navigation refers to sailing within sight of land, often called piloting or cabotage, and relies on terrestrial landmarks as a means of judging position and for fixing a course heading. Currents, surf, and observation of nearshore terrestrial features are important; even from a great distance the trained eye can distinguish a rocky from sandy shore, or a cliff from a rivermouth. Far more important for advanced maritime activity is the ability to determine one's position relative to the terrestrial geography and the means by which one might navigate to a chosen destination. This is accomplished by familiarity with landmarks, such as mountains, islands, promontories, distinctive countryside, vegetation, fauna, and even odors. The use of prominent terrestrial features by seafarers is fundamental to this day, and even in the Bronze Age is reflected in celebrated toponyms, such as the Sixth Dynasty Egyptian reference to the “nose of the Gazelle's head”, perhaps Mt. Carmel, or the later *Baal êafon* (Redford 1992: 117). The navigational need for mountain landmarks, which are visible at sea for great distances, may be a basis behind the association between sailors and mountain-associated deities. A symbolic reflection of this association may perhaps be sought in a scene on a MBA cylinder seal from Tel ed-Dab`a, in which a boat and a weapon-wielding god standing bestride two mountains are juxtaposed (Fig. 5). While the main deity is identified with *Baal êafon*, a well-known, mountain-dwelling, patron of mariners (Porada 1984; Dijkstra 1991), Brody (1996: 21-30, 42-6) has pointed out that the accompanying snake and lion are symbols of Asherah, another protector of navigation. As the association of mountain, deity, and ship is clearly a central feature of this scene, an additional significance may be adduced from the position of the boat below and ahead of the two mountains, and the god astride two peaks; whether *Baal êafon* is to be identified with a particular mountain or not, this scene may reflect the use of mountains in navigation.²⁰¹

Relative position and progress of a vessel can be assessed by the use of naked-eye transit bearings. This method employs the visual intersection of two fixed objects on the shore line (e.g., a mountain peak and a promontory) to create a transit bearing for a vessel. Coastal settlements, sanctuaries, and monuments may have served such a purpose in places where natural transit bearings were insufficient, or to guide a vessel on the best course into an anchorage or harbor.²⁰² Moreover, properly maintained signal fires could have served such a purpose at dusk or even at night, times when ships might have been on their last tack to shore.

²⁰¹Although *Safon* derives from the name of the mountain abode of this patron god of mariners, it means north in both Phoenician and Hebrew (Albright 1950), appropriately the direction most easily determined by sailors at night. See Har-el (1981) for Biblical associations between mountains and directions.

²⁰²See, e.g., M. Yon's ideas regarding the relationship between Ugarit's temple towers and its twin ports of Ras ibn-Hani and Minet el-Beida (1992: 116, fig. 14.2). For the Classical period, see Semple (1931: 613-37). An example of this phenomenon was recently noted by the author at Foça, Turkey, the traditional home of the Phocéans, where, of the three prominent hills behind the harbor, the ancient inhabitants established their cultic high place on the central peak that marks the safest, and still recommended, transit bearing for entering the harbor.

2.2.2 Celestial and “Environmental” Navigation

When great distance and poor visibility deny a view of the land, sailors are left without any terrestrial reference point. Instead, dynamic environmental phenomena and celestial objects are the only means of reference at a navigator's disposal. Possible terrestrial environmental phenomena that may have been employed include: orographic clouds; the character and direction of known winds and currents; the swell, which undulates parallel to land; the color of the sea; the appearance of particular birds, both migrating and local species; and the occurrence of certain species of fish (McGrail 1991: 87; Georgiou 1997: 118-9; Wachsmann 1998: 299-301).²⁰³

Traditional celestial navigation relies on the position of the sun, the polar star, and the circumpolar stars for establishing direction. Although observation of the heavens existed long before recorded time, with the advent of writing a small part of the ancient pedantry for noting the movements of the sun, moon, and various stars has survived (Depuydt 1998). The ancients saw these celestial objects as reflections of the supernatural world and sought to record, with great accuracy, the conjunction of events in the heavens with events on Earth. In addition, for both practical and spiritual reasons, public and even private dwellings were oriented towards the compass points (Bar-Yosef, et al. 1983). Despite this apparent cognizance of celestial mechanics and bearings, no direct evidence exists for the conversion of this sacerdotal knowledge into a secular navigational method prior to the end of the Bronze Age.

Circumstantial evidence, however, in the form of traffic between points requiring an overnight sail, suggests that celestial navigation may have been practiced even earlier. The most obvious example is archaeological evidence from Marsa Matruh (White 1986; White & White 1996), which might suggest that the sea route from Crete to North Africa was in use during the fourteenth century (Lambrou-Phillipson 1991).²⁰⁴ This voyage, which according to Strabo (10.475) lasted three to four days and nights (Casson 1971: 287, n. 75; Lambrou-Phillipson 1991: 12), is immortalized in the *Odyssey* (XIV: 252-9). Elsewhere, Odysseus notes how he “watched the Pleides and late setting Bootes, and the Bear, which men also call the Wain, which ever circles where it is and watches Orion” (V: 270-5).

²⁰³Note the knowledge of the behavior of migratory birds reflected in the Report of Wenamun (Egberts 1991).

²⁰⁴Wachsmann (1998: 297-299) suggests this open water route was in use as early as the Middle Kingdom, as, otherwise, references to wood imports from the western Delta mentioned in the Instructions for Merikare do not make any sense. Moreover, the Keftiu and their land are always vaguely indicated as being in the west (Lambrou-Phillipson 1991: 12). Similarly, Mark (1997: 128-129) suggests, based on the finds of Uruk material culture at Tell el-Fara'in (Buto) in the western Delta, that the route from Anatolia to Egypt was being utilized. While there is no reason to preclude a voyage from the northeastern Mediterranean to North Africa or Egypt—in fact, it is one of the easiest Mediterranean voyages to carry out for the experienced sailor—both of these arguments are, unfortunately, not very convincing. The fact that Egyptian cognitive geography places Keftiu in the west does not have to mean that they always came from that direction.

Earlier textual references may also hint at the use of celestial navigation. The crew manning the vessel in the MK *Tale of the Shipwrecked Sailor* is reported to be “the pick of Egypt. Looked they at the sky, looked they at the land . . . they could foretell a storm before it came, a tempest before it broke” (Lichtheim 1973: 212). Similarly, ca. 1100, Wenamon reported that he avoided Tyre “by taking the light [of the stars as the only guidance]” (Goedicke 1975: 45-6, nn. 57). A number of spells in the MK Egyptian Coffin Texts make reference to navigational directions and celestial bodies (Faulkner 1973).²⁰⁵ Lastly, there appears to be a symbolic juxtaposition of, or association between, the boat and the stars. The celestial barque in Egypt was seen as carrying the sun disk in its nocturnal journey among the stars. In the Aegean, the longboat and the sun, or star, have some degree of iconographic equivalency on Early Cycladic frying pans, a juxtaposition that reappears in the mid-second millennium miniature frescoes at Akrotiri, Thera (Broodbank 1989: 335; 1993: 327). In any event, temporal chauvinism should not exclude us from considering some degree of nocturnal, open water sailing in ancient times, however exceptional it may have been, or how difficult it is to prove.

2.2.3 Depth

Changes in depth must have been known to early fishermen, who operated both from the surface and underwater. Surface fishing, whether with a line and hook or by net, would have exposed mariners to the changes in depth associated with the distance from the shore. Free diving, in order to collect sponges, release nets, and other activities, would have reinforced this association and contributed to their knowledge by exposing them to a variety of sea bottom types.²⁰⁶ Such familiarity with sea bottom types would have gone far towards explaining the varying dark shades (subaquatic features) visible on the surface of the water. It must be assumed that a relationship between the breaking of waves and the distance to the shore was also noted. Approaching the shore in limited visibility would have been mitigated by knowledge of the depth and type of sea bottom.

In addition to observations with the unaided eye, simple equipment, such as a long pole or a weight on a rope, was developed to permit a reasonable measurement of depth. One of the earliest references to such a device comes from the MK Coffin Texts: “I cause you to act as pilot with a sounding-pole of forty cubits, of planted cedar of Byblos” (Faulkner 1973: 58). Such a device is

²⁰⁵E.g., Spell 227: “I am Orion . . . who navigates in front of the stars of the sky” (Faulkner 1973: 180); Spell 482: “it is the Great Bear which has made a path for me to the western horizon (Faulkner 1977: 127); Spell 571: “it is the Donkey-face who is upon the polar sky who brings ships to this mansion of mine” (Faulkner 1977: 173); and Spell 1030: “I will navigate in her in company with Re`, I will navigate in her with Mgf-ib, I will act as pilot in her to the polar region of the sky” (Faulkner 1978: 128). Georgiou (1997: 120) suggests that the Homeric “night watch”, a necessity for nocturnal navigation, derives from a stellar clock system that is documented as early as the Middle Kingdom.

²⁰⁶Evidence for early subaquatic activity is limited. The Epic of Gilgamesh provides one textual reference for diving, and osteological remains from the submerged Neolithic site of Athlit-Yam suggest that some individuals spent long periods of time underwater (Galili, et al. 1993: 152-3).

clearly used by a sailor depicted on the prow of a ship in the Tomb of Kenamun (Davies & Faulkner 1947: pl. VIII; Fig. 6). In addition to the use of the pole note the position of the crew member: high on the bowpost of the ship, perfectly situated to note visually any potential shoals ahead.

While no sounding weights have yet been identified, it is difficult to imagine that such a device did not exist during periods when stone anchors were in use. Perhaps small stone weights often identified as net weights served this purpose (Frost 1985).

2.3 Ancient seafaring in the eastern Mediterranean: a theoretical model

In light of the physiographic and navigational parameters discussed above, it is nearly possible to suggest some working theoretical model for the nature of seafaring in the eastern Mediterranean during the periods under consideration. The only missing component is the performance capability of the contemporary seagoing craft. For the Classical period and onwards, written records provide us with a fairly clear indication of the capabilities and the operation of seagoing ships, and the routes they travelled (Casson 1971: 270-99; Pryor 1988: 32-9, 51-7). During earlier periods, however, such detail is lacking. Instead, later historical and ethnographic examples, and experimental archaeology, which employs replica craft, provide the means for investigating the potential of more ancient vessels.

2.3.1 Paddled craft

The earliest type of craft, whether made of wood, reeds, or skins, presumably relied on human brawn for propulsion. Paddling and rowing depended on the strength and endurance of crews, whose size might increase the range, but also limit the cargo capacity of a vessel. The earliest depicted examples of human-propelled seagoing craft in the eastern Mediterranean are the Aegean island longboats and canoes of the third millennium (Broodbank 1989; 1995: 56-9; Agouridis 1997: 3, fig. 4a-e). Using a variety of archaeological and ethnographic comparanda, supported by the results of experimental replicas voyaging, Broodbank (1995: 59-61, table 1) infers the following performance capability for these craft: a one to four person canoe was capable of attaining a maximum speed of 5 km per hour, for a sustained daily range of 20 km, and a cargo capacity of 50-150 kg; a longboat, with a crew perhaps greater than twenty-five, was capable of attaining a maximum speed of 10 km per hour, for a sustained daily range of 40-50 km, but had a minimal cargo capacity when fully manned. Slightly greater speeds and daily ranges are attested in the literature (Broodbank 1995: 60-1), but as a working hypothesis, these figures provide a reasonable upper and lower estimate (cf. McGrail 1988; 1990).

In the southeastern Mediterranean, the currents place very definite limits on the capabilities of paddled craft. As the longshore current has a net counterclockwise flow, there is a clear advantage for sustained paddling in that direction. The maximum vector of two knots (3.7 km/hr) could increase or decrease the daily progress of a vessel by as much 15 km. Without any current, the voyage from the ancient mouth of the Pelusiac branch of the Nile to the Carmel Cape (ca. 360 km) would take eighteen days for a canoe and seven days for a longboat. Paddling with the maximum current, this voyage would take ten days for a canoe and five days for a longboat. Paddling against the current could take a maximum seventy-two days for a canoe, but only ten days for a longboat. The actual voyages were probably somewhere in between these figures, as crews presumably waited for the most opportune

conditions, which might require long waits on shore. Given the limitations of cargo and rate of progress, paddled craft may not have been an effective means of long distance transportation, but were probably used for short range cabotage, fishing, hunting, and foraging.²⁰⁷ Unlike the archipelagoes of the Aegean Sea, where maritime movement was a necessity, the potential demands on southeastern Mediterranean longshore traffic could have been accomplished by land. However, this presumed lack of advantage should not exclude the theoretical possibility that paddled craft were used for extended longshore voyages, bearing low-bulk prestige items.

2.3.2 Sail boats

By the mid-fourth millennium, pictorial and clay representations indicate that humans had learned to harness the power of the wind (Casson 1971: 12, 22, n. 6; Bass 1972: 12-3; Vinson 1994: 16). With this technological achievement, a seemingly endless supply of energy enabled increasingly larger ships, and their cargoes, to ply the seas. However, as indicated by pictorial representations of oars on seagoing sail-powered vessels, human brawn was still called upon for maneuvering and rowing out to sea in light winds, but probably not for sustained propulsion, which was limited by the wind's velocity and direction.

Until the mid-second millennium ships utilized a double-boomed square sail.²⁰⁸ This type of rigging enabled a vessel to sail with a side or following wind, but not to sail close-hauled, i.e., upwind from mid-beam (Casson 1971: 273; Cotterell & Kamminga 1990: 250-1; Roberts 1991: 55-6; 1995: 308-10). Ships probably did not sail with the wind dead-astern, because the shallow, keel-less hulls would have a tendency to roll, perhaps violently, with the danger that the lower yard might catch a wave (Roberts 1995: 56). This inability to sail to windward meant that the wind direction permitted a finite range of effective courses for BA vessels.²⁰⁹ Only in the latter half of the second millennium, with the introduction of the loose-footed square sail with brails could the sail be reduced and reefed

²⁰⁷The use of paddle craft in this region may be inferred by two clay models, of unknown date, found in northern Sinai and Gaza (*see infra* p.118).

²⁰⁸The only exception is the one-off occurrence of a triangular sail on a raft, carrying Puntites arriving at the Red Sea during the Eighteenth Dynasty (Säve-Söderbergh 1946: 22-4, fig. 6).

²⁰⁹Two hypothetical double-boomed square-sail rigs are suggested to have been employed for windward sailing. The first involves tilting the sail so it behaves like a lateen (triangular) sheet (Gifford & Gifford 1997), but requires a means of trimming the luff (forward edge of the sail) in order to be effective. The suggested representation of this rig in MM ship depictions (Gifford, et al. 1997: 201-3, fig. 6:c-d) is not convincing, as the booms are presented perpendicularly. This rig is more like the ethnographic parallels brought by Basch (1987: 108-10), which appear to use a following or side wind. The second suggestion involves bringing one side of the two yards together, to create a triangular sail (Georgiou 1991; 1997: 119), but this type of rig is not documented, nor has it been tested. Both hypotheses present stimulating and innovative ideas, but require a deep-shape hull to limit leeway. For a consideration of leeway when sailing with a side wind, see Roberts (1995).

for windward sailing (Casson 1971: 37-9, 273-7, nn. 19; Millet 1987; Roberts 1991; Vinson 1993).²¹⁰ Nevertheless, unless windward sailing was absolutely necessary, e.g., to avoid a lee shore, it may have been more effective to simply wait for an advantageous wind shift (Roberts 1995: 313).

While the course that vessels could take vis à vis the wind can be reasonably established, determining their speed is another matter. Relying on the writings of Pliny, Casson (1971: 282-91) infers that vessels could sail between four and six knots with favorable winds, but could not hope for more than two and one-half knots in unfavorable winds. No such detail exists for the Bronze Age.²¹¹ The experimental sailing of the *Kyrenia II* replica demonstrates that Casson's estimates are well within reason. During her sea trials, *Kyrenia II* averaged 2.95 knots over 414 nm between Piraeus and Paphos, and 2.85 knots over 482.3 nm on the return voyage (Katzev 1990: 250, 255; Cariolou 1997). On various legs, she averaged up to 4.6 knots in four to sixteen knot winds, could reach a safe cruising speed of six knots in seventeen to twenty-seven knot winds, and once sailed safely at twelve knots in winds up to twenty-five knots (Katzev 1990: 248, 252; Cariolou 1997: 94).

With the physiographic conditions and sailing capabilities thus outlined, the following theoretical model is suggested for seafaring in the southeastern Mediterranean through the Middle Bronze Age. This model incorporates maximum progress in ideal conditions, and is divided into four major legs: Delta to the Gaza region, Gaza to the Carmel cape, the Carmel cape to Byblos, and alternate return voyages to Egypt.²¹² This model does not detail an actual, specific course, but, rather, to illustrate the character of seafaring.

Ships sailing from the mouth of the Pelusiac branch of the Nile could sail eastwards with a southwestern to a northwestern wind, enjoying the benefit of the longshore current. Given the general preponderance of winds from the northwest to northeast, and the scarcity of offshore breezes in northern Sinai, it would have been prudent to maintain a safe distance from the coast, in order to avoid

²¹⁰The ability to sail to windward is supported by experimental voyaging with replica ships. The *Kyrenia II*, a reconstruction of a late fourth century merchant ship, which was rigged with a loose-footed brailed sail, was able to sail close-hauled, 50-60° off a light breeze (four to six knots) and safely reached a speed of over two knots (Katzev 1990: 254). Note that there is no indication whether this was a measurement of the true or the apparent wind. In stormy conditions, with gusts upwards of forty knots, the *Kyrenia II* averaged seven knots over a three hour period on a close-hauled tack (degrees off the wind not mentioned), reaching speeds of ten to twelve knots. This resulted in the breaking of her tiller and eventually the ripping of her brails; she was taken under tow to safe haven by her accompanying tugboat (Katzev 1990: 253). For the results of the Sutton Hoo and Graveney half-scale trials, and the problem of leeway, see Gifford & Gifford (1996: 140-1, 149-50).

²¹¹Only a vague reference to the time required for sea voyages may be derived from two passages in the Report of Wenamun (Egberts 1991: 60-1). Wenamun traveled from Tanis to Byblos in four months, which also includes a delay in Dor, and possibly visits to Tyre and Sidon. The journey of a messenger from Byblos to Tanis and back may have taken as much as three to four months, but may have involved unknown delays and ports-of-call.

²¹²For the routes between Cyprus and the Aegean, see Mantzourani & Theodorou (1989). While east-to-west voyages are generally considered the norm, an Ugaritic text refers to a ship returning from Crete (Hoftijzer & Van Soldt 1998: 340), although there is no indication if it was a direct voyage.

being pushed towards a lee shore, which lacks any natural protection, apart from the treacherous Bardawil Lagoon.

Whether or not ports-of-call along the southern Levantine coast were made, the voyage northwards would utilize the diurnal variation in the land-sea breeze. This leg of the voyage is governed by the offshore breeze, without which a ship could not leave port or might be pushed towards the shore (cf. Pryor 1988: 1-7, table 1). This wind enabled a vessel to sail out to open sea, where the dominant sea breezes could be engaged. The higher velocity southwestern to northwestern winds enabled the ship to make significantly greater progress. In instances where winds were unfavorable, ships could lower their sail and wait, which would have been an anathema to the crew.²¹³ In this model, a vessel is envisioned as tacking, or zig-zagging, its way up or down the coast, although the latter involves going against the predominant current.

In order to return to Egypt, a vessel would most likely sail westwards, as far out as possible, in order to catch the northwestern to northeastern winds. The northeast African coast could be reached using a route via the seas south of Cyprus or via the southern Levant. However, the latter route demanded that a ship sail sufficiently out to sea to avoid being thrown against the northern Sinai coast. The difficulty in sailing against the predominant winds and current in the region immediately east of the Delta made Cyprus, and later Crete, crucial points for embarking on a voyage to the Delta, and partly explains the role of the western Delta in maritime connections between Egypt and the eastern Mediterranean.

2.4 Seafaring and maritime activity along the Levantine coast from Prehistoric times through the Middle Bronze Age

Evidence for pre-LBA seafaring is meager at best, which is one reason why no attempt has been made, even among maritime-oriented scholars, to fully utilize and synthesize the available data. In addition, the temporal chauvinism, geographical separatism, and other myopic perceptions among the general scholarship required no search for, or consideration of, new or existing evidence of maritime activity. The overwhelming LBA evidence for extensive long distance cross-cultural relations has led to what some have called a Mediterranean cultural *koine*, a phenomenon predicated on a degree of communication that only developed and sophisticated seafaring could sustain. Thus, research on that period has pieced together a complex and distinctly maritime mosaic, consisting of, *inter alia*, scattered cargoes and shipwrecks, the Ugaritic, el-Amarna, and other archives, Egyptian and other pictorial representations, and widespread foreign terrestrial finds, whose pattern is rich in detail and vibrant in its extent and intensity (e.g., Lambrou-Phillipson 1990; Cline 1994; Wachsmann 1998). While it is true that no pre-LBA Cape Gelidonya-like or Uluburun-like shipwreck has yet been found, scattered wreck sites and jetsam have. Similarly, although nothing akin to the “maritime” texts of Ugarit or el-Amarna, with detailed direct evidence of Levantine seafaring, has yet come to light, some

²¹³It is not known whether the floating sea-anchor, which creates resistance to a ship's movement, was in use during pre-Classical times (Kirtland 1985).

indirect textual references do provide some insight. Moreover, surely LBA seafaring and maritime acumen owes something to its EBA and MBA antecedents, although it would be methodologically flawed to simply project backwards our well-founded understanding of LBA seafaring into earlier contexts. It would be equally flawed, given the long-distance cross-cultural relations in early periods, to conservatively limit our explanations of interaction to terrestrial communication without considering the evidence for early seafaring. The reality inferred should be posited somewhere between these two extremes, and supported by a thorough consideration of the evidence. Only then can the myopia be overcome and clarity brought to a long-term maritime mosaic that has hitherto been seemingly unimaginable for want of requisite tesserae.

Lastly, regarding evidence from underwater surveys, a number of aspects must be considered in order to evaluate the significance of the submerged archaeological record.²¹⁴ Relative to its terrestrial counterpart marine archaeology is a fairly young discipline and has only been active in the southern Levant since the early 1960s.²¹⁵ As the pioneers of this field, the Underwater Exploration Society of Israel, and its later professional practitioners, the Israel Department of Antiquities/Israel Antiquities Authority and the Center for Maritime Studies at the University of Haifa, were based on the Carmel Coast, a still unassessed statistical bias may exist in that the most extensive surveying and the greatest site numbers are located in this region.²¹⁶ For the periods under consideration, sites consist of a few submerged settlements and some one dozen scattered wrecks, whose survivability and detection are largely dependent on natural processes, with which modern development has interfered (Raban 1973; Raban & Galili 1985a: 321; Galili 1985a). As there are few offshore obstacles, such as islands or reefs, most ships sank near the shore as a result of foundering in the breaker zone. While the more buoyant artifacts, including the hull, floated away, the heavy and durable remains of metal and stone were scattered on the sea bed to be covered by sand until modern times. The combined impact of the building of the Aswan High Dam, which halted the supply of sand to the Delta and to the Nile littoral sand transport cell, unrestricted sand quarrying, and the construction of marine installations, such as harbors and breakwaters, significantly depleted the sand reserves of the southern Levantine beaches and nearshore (Inman 1978; Nir 1982; 1986-1987; 1988). Already with the advent of scuba diving, previously hidden archaeological remains began to be randomly exposed, specifically in the breaker zone after sea storms. These random exposures, which are limited to a 200 to 300 m

²¹⁴For a multi-period, pan-Mediterranean survey of wreck sites, see Parker (1992: 1-9, figs. 1-4, 7).

²¹⁵Apart from Frost's work (1995) on BA harbors, and initial surveys in Syria (Haldane 1993), the submerged heritage of the northern Levant remains unexplored.

²¹⁶A critical history of maritime archaeology in Israel is still unwritten (cf. Linder & Raban 1975), but details on early and current archaeological research can be found in the Center for Maritime Studies Newsletter, and various reports of underwater surveys and excavation (Raban 1981a; 1983a; Wachsmann & Raveh 1984; Raban & Galili 1985; Galili, Dahari & Sharvit 1993; Galili & Sharvit 1997).

wide strip along the southern Levantine coast, represent a randomly-sampled ever-increasing accumulation of data, which continues to offer profound insight into the maritime heritage of the southern Levant.

2.4.1 Prehistoric Mediterranean voyaging and Levantine Neolithic coastal settlement

Bass' (1972: 9) oft-repeated statement that "before there were either farmers or shepherds there were sailors" is more of a truism today than it was over a quarter century ago. Better use of radiometric dating methods, comparative maritime ethnography, and consideration of navigational parameters permit us to identify the "overseas" presence of humans—or even their hominid predecessors (Bednarik 1997; Gibbons 1998)—and to extrapolate technological uses for the prehistoric toolkit beyond those normally attributed to hunter-gatherers (McGrail 1991). With the demonstrable antiquity and élan of early voyagers and sea-borne migrations in the Pacific Ocean (Irwin 1992), it is not surprising that equally early crossings might have occurred during the long prehistory of the Mediterranean basin and Near East. Similarities among lithic finds in Spain and Morocco may suggest evidence for the crossing of the 10 km wide Straits of Gibraltar between 500,000 and 300,000 years ago (McGrail 1991: 85, 93; Dennell & Roebroeks 1996). Aurignacian finds at Fontana Nuova di Ragusa in Sicily certainly demonstrate that as early as 30,000 years ago the ca. 12 km wide Straits of Messina was traversed (Chilardi, et al. 1996).²¹⁷ No evidence of equal antiquity has been found in the Levant, but recalling Trump's (1980: 21) observation, future discoveries of the bones of deep-sea fish found in rubbish deposits may yet indicate some sort of venturing from the shore.²¹⁸

Regular water crossings are unknown prior to the appearance of Melian obsidian in Mesolithic levels (ca. 13,000 BP) of the Pelloponesian Frankthi Cave (Cherry 1985: 14-16, 21-22; Torrence 1986; Williams-Thorpe 1995). The continuous exploitation of this source throughout the Neolithic period required island hops of at least 20 km, a distance that increased with the changing

²¹⁷Other early examples include a Middle Paleolithic crossing of 6 km to the Greek island of Kefallinia is also suggested (Bednarik 1997: 183) and, possibly, an early Pleistocene crossing of the Bab el-Mandab (Whalen & Schatte 1997).

²¹⁸Marine shells appear in varying degrees throughout the southern Levantine Upper Paleolithic, Epi-paleolithic, and early Neolithic sequence (Bar-Yosef & Belfer-Cohen 1989; Gilead 1995: 135; Goring-Morris 1995: 151, 153, 155, 161-162, 164; Valla 1995: 170-172, 177, pl. 1; Goring-Morris, et al. 1995: 54-55), which indicates some littoral foraging, but the role of fish in subsistence is unclear. The possibility of paleolithic coastal sites now submerged as deep as -100 m MSL (the minimum sea level during Pleistocene glacial maximum) is worthy of consideration (Bar-Yosef & Belfer-Cohen 1989: 457), although their detectability and survivability are unknown. The most ancient submerged site found thus far in the eastern Mediterranean is the late Pre-Pottery Neolithic B (PPNB) village of Atlit-Yam. Among the reported lithic finds are some Middle Paleolithic tools (Galili, et al. 1993: 140), but no indication is made of their precise provenience or condition. Other Paleolithic tools have been reported at shallower depths, where they are assumed to be the result of erosion of sites sandwiched within the coastal sandstone ridges (Raban 1983b: 221) or in re-use by the later Neolithic or Chalcolithic inhabitants of these areas (Galili & Weinstein-Evron 1985: 40).

seascape shaped by the Holocene rise in sea level (Van Andel & Schackleton 1982; Lambeck 1996; Agouridis 1997). At around the same time, in radiocarbon terms, the first humans reached Akrotiri-*Aetokremnos* in Cyprus where they occupied a cave or overhang and hunted the local fauna (Simmons 1996; Simmons & Wigand 1994; Manning 1991). Although the origin of this group (e.g., coastal Anatolia or the northern Levant), their intention (e.g., one-time sojourn, seasonal exploitation, or colonization), and their final disposition (e.g., extinction, intra-island migration, or abandonment of the island) are all debatable, the implications of this evidence for early seafaring acumen are quite clear. Even at the maximum sea level drop of -120 m msl, ca. 18,000 BP, no landbridge connected Cyprus to southwestern Asia, and the minimum water gap between the Cilician paleo-shoreline and a now submerged island stop northeast of Cape Andreas, would have been 30-40 km (Swiny 1988: 1-3, fig. 1; Held 1992: 109-10, fig. 3). When these hunter-gatherers first arrived at the Akrotiri peninsula, the sea-level and paleogeography indicate that the minimum water gap from the north would have increased to nearly 69 km (Held 1993: 26; Gomez & Pease 1992). Thus, according to Held (1992; 1993: 26-7), with the requisite navigational experience, paddling at an average speed of 2.7 knots, the crossing required nearly 30 hours at sea, although this may not be the best case scenario. The physical size of the site suggests a group of no more than fifteen to twenty individuals with a distinctly portable tool-kit (Held 1992: 120). Thus, the distribution of Melian obsidian and, for the Levantine maritime sphere, the evidence from Akrotiri-*Aetokremnos*, increases the likelihood that some Levantine hunter-gatherers had included seafaring among their repertoire of activities. The warm Mediterranean waters, the limited cargo demands (e.g., individuals, tools, fish, obsidian cores, etc.), and the technological level would have permitted a variety of small, simple, water-through, paddle-driven sea craft (McGrail 1991).

By the end of the seventh millennium, with the requisite package of floral and faunal domesticates in hand, Pre-pottery (or Aceramic) Neolithic groups first began colonizing the east Mediterranean islands of Crete (Cherry 1990: 158-63; Broodbank & Strasser 1991; Evans 1994: 1-4) and Cyprus (Stanley Price 1977; 1977; Todd 1986; Le Brun 1989; Cherry 1990: 154-7). The two to three millennia gap between the initial maritime exploration of the Mediterranean islands and these first colonizations probably derives from a combination of the general inhospitality of the island environment, which appears to have precluded successful hunter-gatherer migration, the inability to organize and transport a successful founder population, and the absence of a need or desire to risk an overseas migration to a less-than-suitable environment. These actual and perceived limitations were apparently overcome following the advent of agriculture and animal domestication, when the maritime migration of farmers may have outpaced even that of their terrestrial counterparts (Van Andel & Runnels 1995; Bogucki 1996: 244-5). The scenario for the initial colonization of Crete envisioned by Broodbank & Strasser (1991) underscores the logistical complexity of such an enterprise and the type of boats and cargo requirements, i.e., ten to fifteen vessels carrying a ton or two of cargo. Presumably, similar logistical complexities faced the initial colonists to Cyprus, wherever they originated along the mainland. The numerical success of the colonization process (Cherry 1990: 154-5, table 2) suggests that boats capable of carrying a significant cargo were not an exception along the northern Levantine

coast.²¹⁹ With this demonstrable transportation capability, it is perhaps surprising that some view the occurrence of Anatolian obsidian and carnelian, with the latter solely at Khirokitia, as merely part of the initial material cultural transfer to the island (Todd 1986: 15-6; Karageorghis 1982: 25; Ronen 1995: 189).

Although Held (1993: 27) bemoans the dearth of coastal culture along the surrounding mainland north of Lebanon, from which the first Cypriots and the seafaring expertise that transported them could derive, the evidence from the southern Levant suggests that the maritime cultures he seeks may now be underwater.²²⁰ Atlit Yam, the oldest and deepest (-12 m msl) submerged Mediterranean site, which dates to the PPNB period (ca. 7500-6200 CAL BCE), has produced evidence for extensive fishing in addition to the usual contemporary terrestrial activities (Galili, Kaufman & Weinstein-Evron 1988; Galili, et al. 1993). The Atlit-Yam fishermen exploited the gray triggerfish, which inhabits the sea bottom at depths of 25-80 m (Galili, et al. 1993: 149-150; Zohar, et al. 1994). Over ninety-five percent of the bones belong to this species (N=6000, MNI=83), and the treatment of the yield, particularly its limited spatial distribution, suggests specialized slaughter and, perhaps, preservation practices (Zohar 1994; Zohar, et al. 1994). A paleogeographical reconstruction of the shoreline suggests that the choice of site location may have been motivated to some degree by a nearby protected lagoon (Galili, et al. 1993: 152, fig. 6). Some of the lithic artifacts may have served as weights and spearpoints, perhaps tipped by a poison derived from the seeds of *styrax officinalis*, remains of which were identified (Galili, et al. 1993: 152). Human skeletal remains bear signs of maritime pursuits: auditory exostosis of the temporal bones suggests that some of individuals spent time in cold water; dental attrition might be the result of holding nets and straps in their mouths; and abrasions of the elbow, together with muscle markings typical of rowers, may hint at the use of boats. Given the habitat of the gray triggerfish, fishing was clearly carried out on some sort of craft, perhaps year-round, at some distance from the shore.²²¹ Galili et al. (1993: 153) are correct in suggesting that

²¹⁹Note the possible stone anchors from Khirokitia (Wachsmann 1998: fig. 12.34).

²²⁰Note that a 10-15 km wide strip of land was lost along the southern Levant from glacial maximum to 8,000 years BP, the impact of which is not fully appreciated by Bar-Yosef & Belfer-Cohen (1989: 454).

²²¹Whether Atlit Yam is representative of a much greater Levantine PPNB maritime phenomenon is unknown. Hypothesizing the Levantine counterpart of Irwin's (1992) Pacific Ocean "voyaging nursery" may not be unwarranted, as Held (1993: 27) cautions. Chains of small offshore islands exist both in the southern and northern Levant. Some, like Tyre and Arwad, were large enough to eventually be settled. Smaller islands were, as today, breeding grounds for birds, which certainly would have attracted the attention of hunters. Other nearshore islands may have had freshwater springs like the examples at Dor and Jaffa (Wachsmann & Raveh 1984: 232, n. 8). The rocky sea bottom around these islands would also have provided shelter for fish, which would not have escaped the notice of prehistoric fisherman. Regarding the low biomass of the Mediterranean, it is interesting to note that the gray triggerfish is not nearly as represented in the modern marine fauna as it was when the fisherman of Atlit Yam were exploiting it (Zohar 1994), which along with other evidence may indicate oceanographic changes in the eastern Mediterranean during the Holocene (Stanley & Galili 1996).

Atlit-Yam may contribute to our understanding of island colonization, especially as the site was inhabited just before or during the initial colonization of Cyprus.²²² Coastal sites of the following Pottery Neolithic period have yet to provide the same extensive evidence of maritime culture (Raban 1983b; Galili & Weinstein-Evron 1985).²²³

2.4.2 Fishing and Sea Craft of the Chalcolithic Period

Some continuation of maritime culture into the Chalcolithic period is supported by increasing evidence for the exploitation of marine resources, including an ichthyomorphic figurine, fish hooks, and bones (Gilead 1988: 420).²²⁴ While pictorial and model representations of boats are certainly attested by this time in Egypt (Hassan 1988: 157), no definite Levantine boat depictions have been found. However, Baumgarten (1993) suggests that a high-ended vessel, similar to types appearing in Predynastic Egyptian art, is painted on a Chalcolithic ossuary from Azor (Perrot 1961: fig. 23:3, pl. IV). While examination of the original line drawing supports his identification, the photographic plate suggests that the roof of the ossuary is partially reconstructed with plaster, indicating that the boat was created by the erasure of a structure, perhaps a building. However, it is instructive to note that this ossuary's cover is decorated by a star or sun (Perrot 1961: fig. 34:1), which is a motif known from the contemporary iconographic repertoire (Elliot 1977: 11-2), but often occurs among seafaring cultures in juxtaposition with maritime motifs. Apart from this possible depiction, and the evidence for fishing, Chalcolithic maritime activity remains largely unexplored, which is a possible consequence of the rarity of excavated habitation sites in the Coastal Plain (Gilead 1988: 412; Gophna & Portugali 1988), or that the relevant sites are submerged (Raban 1983b; Galili & Weinstein-Evron 1985; Raban & Galili 1985).

²²²A large quantity of triggerfish was also exploited at Aceramic Cape Andreas, Cyprus (Zohar 1994: 96), which suggests a priori that other east Mediterranean maritime groups were using similar subsistence strategies. It is these types of groups that may have enabled the successful transfer of a founder population to Cyprus.

²²³A hint at what may yet be found is underwater at Neve Yam, south of Atlit, where a PN (Jericho IX phase) and Wadi Raba culture site has produced fish bones, net sinkers, and a pottery sherd incised with fish decorations (Galili, Sharvit & Nagar 1996: 56, fig. 73; Wreschner 1977: 271"). This site and others along the coast have yielded obsidian blades (Raban 1983b: 226-8; Wreschner 1977: 270"; Goring-Morris 1984: 81; Braun & Gophna 1996: 98), presumably from Anatolia (Perlman & Yellin 1980; Yellin & Perlman 1984; Williams-Thorpe 1995: 232-4), but whether they were transported by land or sea is unknown (Mellink 1993: 497; Yellin, Levy & Rowan 1996: 366). Regarding the trade in obsidian, it is interesting to note the absence of this material at Atlit-Yam, although it appears less than one kilometer away at the inland PPNB site of Nahal Oren (Noy 1993: 1169).

²²⁴A pottery fish head was found at Besor Site E. Copper fish hooks were found at Tuleilat el-Ghassul and Bene Berak. Marine faunal remains include: a quantity of bones (e.g., shark, dolphin, and rays, etc.) from Qatif Y-2; a single vertebra of a Mediterranean fish at Gerar 100 (Gilead 1986: 82); six bones from the Nahal Qanah cave (Lernau 1996); and some bones from Shiqmim, although this site is 40 km from the sea, and the species identification could not exclude an inland freshwater source (Rosen 1986: 106, 114; Grigson 1987: 221).

2.4.3 Boat representations and longshore traffic during the EB I Period

Despite the evidence for long distance interaction during the EB I period, including theorized seaborne contacts between the Northern Levant and the Delta, whatever maritime activity occurred along the southern Levantine coast has left few remains, although some boat representations and underwater finds may lend support to this suggestion.

In her discussion of EBA art, Beck (1995: 11-2, fig. 7b) identified a number of possible EB I boat representations from among the incised sherds of the “Stages” V area of Megiddo, including the prow of a vessel (Engberg & Shipton 1934: 30, fig. 10H; Kempinski 1989a: 24). Her identification is much more convincing than the “scorpion or crab tail, or elephant tusk”, which is suggested by the excavators (Engberg & Shipton 1934: 30). The “tail” appears very similar to the termination of a reed boat, with the lines crossing the width of the “tail” being the ropes that tie the reed bundles together. Two possible reconstructions are offered here (Fig. 7a). One relies on the top of the bundle being the gunwale and thus the lone skewed line might represent some sort of mast stay; it seems premature to see this line as some sort of hogging truss for longitudinal support. The alternate reconstruction sees this lone line as the gunwale, with a significant change in the sheer of the hull. Either reconstruction is supported by parallels (Basch 1987: figs. 101, 105; Berger 1992: *passim*; Vinson 1994: fig. 3).

An additional boat from the same published plate (Engberg & Shipton 1934: 30, fig. 10G), to date unnoticed, is herewith presented with a partial reconstruction (Fig. 7c). This incised decoration recalls the stern end of a riverine boat, complete with a steering oar supported by a stanchion, a possible tiller, and part of what is termed, in Egyptian boat depictions, a cabin or kiosk.²²⁵ There are no clear criteria for determining whether this is a papyrus or wooden vessel, but a wood vessel seems more likely as the hull does not get thinner towards the stern. The height of the steering oar above the bottom of the hull indicates a vessel with a deeper draught. Another maritime motif that is depicted among these sherds is the middle part of a fish, complete with dorsal fin (Engberg & Shipton 1934: 30, fig. 10F).

Beck (1995: 11, fig. 7a) also identifies two more boats from the incised stone pavement (L.4008) of the Stratum XIX temple.²²⁶ Her interpretation, however, is far from convincing, even alongside the parallels she reproduces. Apart from the upper arc, which, presumably, she interprets as the gunwale, there is nothing to mark these objects as boats. The ends do not conform to any bow or

²²⁵In September of 1991, the late Doug Esse of the Oriental Institute in Chicago showed the author a line drawing of a flint fragment, apparently a tabular scraper, from the excavations of Beit Yerah, which had an incised depiction of the stern part of a boat with a steering oar. In the wake of Doug's premature passing this artifact remains unpublished.

²²⁶The renewed excavations at Megiddo indicate that both temple phases date to the EB I period (Finkelstein 1997), a point reported by D. Ussishkin at the HUC conference (*see supra* n. 4)

stem from Predynastic Egypt or later.²²⁷ The oars are similarly unconvincing in that they share none of the traits generally associated with paddles or oars.²²⁸

Lastly, a miniature clay model boat was found at Tel Erani. The lack of any apparent structural details in the representation precludes any determination of the material from which it was made, although the object requires further study.²²⁹

These representations suggest that the inhabitants of the southern Levant may have been familiar with at least two different types of boats: a papyrus or reed craft and a somewhat larger, probably wooden, vessel with a greater draught. However, it is impossible at this stage of the research to determine whether these depictions were inspired by Egyptian Nilotic or local craft. Beck suggests that the depictions reflect the activities of local people, although, as Amiran (1992) suggests for the incised pavement stones, they could be the work of Egyptian artists as well. Local inhabitants could have copied depictions of Egyptian boats, which may have arrived on imported pottery, such as the lone example of “D-ware” from Taur Ikhbeineh (Oren & Yekutieli 1992: 369, fig. 8:12, pl. 8). If these depictions represent local sea craft, little is known about the coastal inhabitants that produced them and even less about their construction. While it is assumed that wood is the a natural choice of construction material in the timber-rich regions of the Levant, the possibility of reed-built boats should also be considered, perhaps alongside other reed-built structures.²³⁰

²²⁷There are many boat depictions with asymmetrical hulls in the Predynastic repertoire, some with similarly thickened ends (Basch 1987: 58, fig. 97), but the opposing prows are quite different.

²²⁸See Basch (1987: 52, fig. 86) for a somewhat similar internal design, but note the total difference in the shape of the steering oar. Kempinski (1989a: 173) interprets these incised decorations as logograms of “obscure objects with two legs”. This identification is not without merit, as there are certain similarities to various Sumerian signs, e.g., the similarity between the end of the axe and the sig7 sign and the extensions or “legs” to the si/sè sign (Labat 1963: 106-7, 160-1).

²²⁹This object was identified and redrawn by B. Brandl, who presented it at the HUC conference (see *supra*, n. 4). Given the role he ascribes to these miniature objects, the presence of a boat might reflect a means of transportation or a maritime shipment.

²³⁰The numerous Chalcolithic cemeteries in the Coastal Plain that contain ceramic ossuaries occur often with no nearby evidence for habitation. Although some objection has been raised to the notion that these burial containers are models of the typical Chalcolithic house (Porath 1992: 46-8), there is no reason not to view the shape as one type of house. Much as it is supposed that many bone piles represent decomposed ossuaries made of wood and other organic material (Porath 1992: 46), some of the “houses” that they are meant to evoke may have been constructed of perishable material, including reeds. A working hypothesis, which must still be researched and tested, is that reed construction techniques for domestic architecture were transferred to nautical construction. An ethnographic study of reed construction techniques has been carried out in southern Iraq (Ochsenschlager 1992), where both reed boats and buildings are known to have been used for millennia, and are even in use today (Roaf 1990: 51, 122-123). For reed structures observed along the Lebanese coast north of Byblos, see Dunand (1973: pls. III:2, IV:1-3). Reed boats were used on Lake Hula in the early part of this century (Karmon 1990: 38, 50-3).

Although no remains of EB I seafaring have yet been found in nearshore underwater surveys (Galili & Weinstein-Evron 1985), two rare deep water finds suggest that ships were plying the shores during this period. The first is an EB I cup, which is now in a collection at Kibbutz Sdot Yam (Barag 1963: 1). The second is an Egyptian drop-shaped vessel that is reported to have been found off the coast of Gaza and is now in a collection at Kibbutz Saar.²³¹ Both were found in the nets of trawlers that typically work in depths greater than 20 m. Although the context of these finds is unknown, the fact that both Egyptian and Canaanite ceramics were found in deep waters, far from any terrestrial context along the shore, suggests that ships were one of the means of transport for the pottery trade in both directions during the Egyptian colonial period. Given the quantities of imported Canaanite storage jars in Egypt, the possibility that they were transported by sea should not be excluded. Nothing is known of the type and size of such ships, but they were probably propelled by the sail, which was certainly in use by this time.

The involvement of the southern Coastal Plain in the contemporary longshore traffic is only beginning to attract attention (Brandl 1992: 448; Gophna & Lipschitz 1996).²³² While the main demographic centers were located along the inner trough of the Coastal Plain, terrestrial and underwater surveys demonstrate the existence of sites in the shallow waters of the modern shoreline and further inshore, particularly along coastal troughs and river basins, where they may have been involved in maritime pursuits (Gophna 1974: 22-3, 70, pls. 24-25; 1997; Ronen & Olami 1978: 2-4, 1*; Gophna & Portugali 1988: 13-5, figs. 2-3; Gophna & Lipschitz 1996).²³³ The location of sites at or near modern sea level suggests that the sea did not inundate the Coastal Plain during this period. The lack of any detailed geomorphological study renders any attempt to reconstruct the EB I paleogeography premature, but, most likely, small bays, lagoons, and river mouths served as havens.

2.4.4 Seagoing sailing ships and the ports of the “Byblos run”

The increasing Egyptian dependence on maritime transport, which culminated in claims of state-sponsored ventures to Levant, and intimate relations with Byblos, is reflected in increasingly substantial archaeological, textual, and pictorial evidence for the technology and size of seagoing vessels. In particular, the use of mortise-and-tenon joined planks, provides the earliest evidence for this nautical construction technique (Steffy 1994: 27-8). The increased role of seafaring in long distance contacts, which led to the abandonment of the northern Sinai overland route, may have partly affected the settlement pattern of the southern Levantine Coastal Plain, and led to the establishment of ports at the gateways of a dendritic land route.

²³¹This find was reported by R. Gophna at the HUC conference (see supra n. 4).

²³²In respective papers at the HUC conference (see supra n. 4), both R. Gophna and Ornit Ilan emphasized the specialized role of EB I coastal sites in longshore traffic.

²³³However, such activity is still undocumented, apart from some marine shells at the Halif terrace (Alon & Yekutieli 1995: 181, fig. 1:1).

2.4.4.1 Textual references

The earliest textual reference to seagoing ships is the claim of the first ruler of the Fourth Dynasty, Sneferu, to having brought forty ships filled with cedar wood. Weni's Sixth Dynasty seaborne raid to the southern Levant, relied on seagoing ships capable of carrying soldiers. In addition, among his many diverse royal projects, Weni was also put in charge of the construction of river boats, which were made of acacia wood cut by foreign chiefs, a term often used to describe Asiatics (Lichtheim 1973: 22-3; Breasted 1906: §324), which may hint at foreign shipwrights active in Egypt. Lastly, Pepinakht, who lived during the reign of Pepi II, mentions going to the land of the Asiatics, perhaps the Red Sea, where a boat was being built for a journey to Punt (Breasted 1906: §360; Säve-Söderbergh 1946: 48).

2.4.4.2 Pictorial depictions

With all the limitations of the artistic medium, pictorial representations provide the only details for seagoing ships of this period. The two most notable examples are depicted at the temple of Sahure at Abusir and the causeway of Unas at Saqqara, both of the Fifth Dynasty. The Sahure relief is a narrative scene showing parts of four departing and eight returning ships, the latter depicting Asiatics and their children (Gaballa 1976: 24). The structural details depicted on the vessels include a partly sewn planked structure, a bipodal mast that is located forward of midship, oars for propulsion and steering, and, most importantly, a hogging truss to give the vessel longitudinal strength for sea voyages (Casson 1971: 20-1; Wachsmann 1998: 12-5). Although the sail and yards are not depicted, and the mast is lowered, it seems likely that this vessel could sail in a side and following wind. The complement of at least seven oars to a side suggests a large crew, which would have taken up space otherwise allocated to cargo. Estimating size based on artistic depictions is difficult, but it seems likely that these were vessels of significant size. The Unas relief contains another pair of similar ships with Asiatics aboard, although here the mast is tripodal, and a ladder is depicted (Wachsmann 1998: 15-8; Hassan 1955), which may suggest that handling the rigging may have been quite difficult.²³⁴

2.4.4.3 Archaeological evidence

No remains of seagoing craft have yet been found from this period, but the size and construction techniques of riverine craft illustrate the capabilities and technologies that were probably employed in their maritime counterparts. The earliest evidence for large (ca. 18 m long) plank-built vessels are the twelve First Dynasty boats buried in pits at Abydos (O'Connor 1991; 1992; Haldane 1992a; Vinson 1994: 17-8). As these are still unexcavated, nothing can be said about the method of construction or the origin of the wood, but they will undoubtedly fill the gap left by the poor hull

²³⁴Although Peltenburg (1995: n. 38) warns against applying the term “Byblos ship” to these depictions, it seems reasonable to assume that the role of this ship type and its capabilities were not unlike the theoretical capabilities of the depicted vessels.

remains from the complementary boat pits at Saqqara and Helwan (Vinson 1994: 18)—all of which attest to the availability of long woods and shipbuilding technology. A number of graves from Tarkhan appear to contain re-used mortised boat planks (Vinson 1994: 18; Clarke & Engelbach 1930: 213-4, fig. 262), but their identification is not universally accepted (Wachsmann 1998: 218-9). The best preserved and oldest excavated boat is the Fourth Dynasty royal funeral barge of Cheops, which is nearly 44 m in length (Jenkins 1980; Steffy 1994: 23-9). This luxurious riverine vessel was built principally of imported wood, by rope-lashed, unpegged, mortise-and-tenon joinery, but lacks a keel or any other sufficient form of longitudinal support to make it suitable for sea travel (Steffy 1994: 25-9). Nonetheless, this vessel and its unexcavated sister ship (El-Baz, Moores & Petrone 1989) presuppose beamier, deeper, and structurally stronger seagoing ships capable of transporting at least 50 tons of timber per vessel, from which planks as long as 23 m were fashioned (Lipke 1984: 30; Steffy 1994: 25-28).

2.4.4.4 EBA Anchors and *Shfifons*

An important archaeological indicator of maritime activity, which makes its appearance during this period, is the hewn stone anchor, both in pictorial representations and in specialized terrestrial contexts.²³⁵ Pictorial depictions are found on both the Sahure and Unas reliefs (Frost 1979: 139, pl. 1; Basch 1985: 454-5, figs. 1-2; Wachsmann 1998: 256-7). The earliest example of a stone anchor in Egypt is apparently the symbolic boulder at the prow of the interred First Dynasty Abydos boats (O'Connor 1991: 11-2, fig. 13). Triangular stone anchors were used in the construction of a Fifth Dynasty tomb at Abusir and implanted in the floor of a Sixth Dynasty tomb at Saqqara, where other possible fragmentary anchors were found (Frost 1979: 141-4, 146-7; Wachsmann 1998: 258-9; Fig. 8a). A group of six chalk anchor replicas of non-uniform shape and size were used in the construction of a step leading up to the EBA Tower Temple at Byblos (Frost 1969: 429-30, figs. 23-28, pl. III; 1970: 384-5, pl. 2A). Apart from these few dated examples, no other anchors are included in this brief survey. The small sample and the heterogeneous morphological characteristics of the anchors of this period render any typological attributions of other anchors suspect.

Although found inland at sites along the southern shores of Lake Kinneret, anchor-like objects, called locally *shfifon* (pl. *shfifonim*), are an enigmatic artifact that has received only limited attention (Wachsmann 1985; 1998: 262-5). Much as their contemporary Mediterranean counterparts, the *shfifonim* have a very heterogeneous morphology, which hampers reliable dating. One example, found outside an EB II gate at Beth Yerah, shows some similarity to other examples from the Kinneret

²³⁵For a summary of the criteria used in identifying stone anchors, and their various utilitarian, symbolic, and cultic roles, see Frost (1969: 437; 1991), Brody (1996), and Wachsmann (1998: 255). In this study, attempts at ethnic attributions are eschewed, as are estimations of ship size, although it is recognized that the large LBA anchors (over 200 kg) suggest ships of relatively greater dimensions than those using smaller anchors (Frost 1991: 369-371), and crews capable of handling such weights, perhaps with the aid of halyards. Rather, the anchors found on land are seen as a reflection of a particular culture's orientation towards the sea, while those found underwater indicate sea traffic in those waters during the period to which they are assigned.

region and even the later BA Mediterranean (Wachsmann 1985: 395-6, figs. 3-5; 1998: 262). Unfortunately, most of the other *shifonim* were found outside any stratigraphic context, and none were found underwater, a lack ascribed to the absence of sport diving in this lake (Wachsmann 1985: 399).²³⁶ Although the symbolic use of these objects is clearly established, some utilitarian role should be explored.

In functional terms, it is not immediately clear why lake boats would carry such large anchors, although stone anchors weighing over 100 kg were used in the Dead Sea during the Hellenistic period (Hadas 1992; 1993).²³⁷ Perhaps the occasionally powerful winds demanded large anchors, or the *shifonim* were used as mooring stones that were buried in the muddy shore, which would explain their unfinished lower halves. In either case, the use of boats would have been essential at Beth Yerah, a site that may have been nearly an island during the Early Bronze Age (Esse 1991: 36-7). Thus, boats may have been used for fishing, for transportation in an inhospitable fording zone, and, perhaps, for shipping goods in a bi-polar lacustrine transportation network between the port of Beth Yerah and other contemporary sites, such as Tel Kinnerot or et-Tell (Bethsaida).²³⁸

2.4.4.5 Nilotic anchorages and the first ports of the Levant

Just as riverine traffic along the storm-less Nile brought about the need for more sophisticated riverine ports and anchorages, such as the OK basins at Giza and Saqqara (Hassan 1997: 63; Goyon 1971: figs. 2-5), presumably contemporary seafaring involved Levantine havens and port facilities. Given the geographical conditions in the eastern Mediterranean, a number of potential types of natural anchorages may be suggested including rivermouths, offshore islands, embayments, peninsulas, or deltaic lagoons (Flemming 1980; Blue 1997). Unfortunately, geomorphological changes in the coastline, such as erosion, siltation, and lithification of sediments, may have obscured the paleogeography to an extent that impairs any attempt at reconstruction. For example, the anchorage of Byblos, the principal partner port of Egypt, presents little more than a small fishing anchorage (Jidejian 1971: 1, fig. opp., pls. 1, 25, & 131).²³⁹ In contrast, the island of Arwad, or the paleo-islands of Tyre and Akko (Frost 1995; Sivan 1981), would have made superb natural havens, although only Tyre has archaeological remains from this period. Indeed, remains contemporary with the

²³⁶Another explanation for this absence may be the sediment coverage of the EBA lake bottom.

²³⁷Heavier weight anchors would be required in the Dead Sea because of the higher salinity and greater wind fetch. S. Breitstein, of the Center for Maritime Studies in Haifa, kindly pointed out the latter factor to me.

²³⁸While Tel Kinnerot is still on the shore, the current excavations at Bethsaida, suggest that this landlocked site was on an open bay in the Hellenistic and Roman periods (Arav 1990: 178), which is a reasonable hypothesis, but still lacks geomorphological substantiation.

²³⁹The indented sandy beach to the south of the tell may have been a much larger and deeper bay, but this has not been investigated.

“Byblos run” are so rare that a total abandonment of the coast has been suggested (Raban 1985: 14). To date, only Ashkelon has produced EB II-III ceramics (Stager 1993), although there is as yet no indication of any architecture, or any evidence for the character of the anchorage during this, or any other, period. In lieu of a proper haven, it is possible that the shore of this site functioned only in fair weather, using small boats, called lighters, which transferred goods to and from ships anchored in open waters. However, two other contemporary sites, Tell Gerisa and Khirbet Kurdaneh, on the Yarkon and Na`aman rivers, respectively, may have served as inland ports on navigable waterways. In the case of Tel Gerisa, the area served as an anchorage for boats as late as 1917 CE (Khalidi 1992: 246, photo; Herzog 1993: 480). Apart from surveys and salvage excavations (Esse 1991: 181, site 87; Maisler 1939), landlocked Khirbet Kurdane is still unexplored. However, given the distribution of Metallic Ware as far west as nearby Qiryat Ata, perhaps Khirbet Kurdane, along with Tyre, served as a gateway for the export of this ceramic class.²⁴⁰ Although nothing is known about the maritime activities of these coastal sites, it seems that a spatial relationship exists between these suggested ports and Fargo's (1979) dendritic network of sites.²⁴¹

The limited number of EB II-III ports should not lead to a disregard of the southern Levant's role in the “Byblos run”. In this regard, Stager's (1990) evocation of the concept of EBA “port power” is an important step forward in understanding the interface between latitudinal routes and maritime networks. A safe haven or port to serve ships engaged in the longshore traffic between Egypt and Byblos was always preferred, if not essential. This is best illustrated by way of analogy with the Roman period, when ships relied on small lighterage ports, apart from the deeper harbors at Caesarea and Akko. If during the centuries of Pax Romana, when maritime trade flourished and the scope of traffic required no more than three ports along the southern Levant, then, *a minori ad majus*, such could be the case during the OK period, when traffic was certainly lesser in scope. Thus, the fact that no more than three possible ports-of-call may have been identified is in no way a reflection of the scope of longshore traffic. Rather, it is a reflection of the socio-economic organization and orientation of the inhabitants of the southern Levant, who relied on a limited number of specific ports. In terms of modeling such traffic, a variety possible courses could have been used. Long tacks out to sea and back would naturally increase the distance and time, but may have been a necessity.

2.4.5 Intermediate Bronze Age

The decline in long distance interaction during this period is reflected in the paucity of

²⁴⁰In general, the paleogeography of the southern Levant and the location of the shoreline during this period is unclear. The possibility of a eustatic (global) sea level rise on the order of 2.5 msl (Lambeck 1996: 49) may radically alter our view of the geographical history of the Coastal Plain, in that other seemingly inland sites may be more “maritime” than previously supposed.

²⁴¹Among the limited evidence for maritime subsistence is a possible marine fish bone from Tel Dalit (Horwitz, Hellwing & Tchernov 1996: 197, 204-6), and the bone of a dolphin found at `Ai (Wapnish 1995: 264), although the precise EB phase is not indicated.

evidence for seafaring or ships in Egypt or the southern Levant.²⁴² However, some continuity is reflected in the use of a “Byblos-ship” for a Red Sea voyage. Two *shfifonim* were used in the construction of an IBA tomb at Degania “A” (Kochavi 1973: 51, 53, fig; Wachsmann 1985: 399, figs. 8-9; 1998: 265).²⁴³ A limestone model boat with a hole drilled in its center, perhaps for a mast, was found at Byblos (Saghieh 1983: 34, fig. 10: no. 15594). Sparse, scattered IBA settlements exist along the Coastal Plain, but apparently not in any particular maritime orientation (Prag 1974: 70; 1986b: 66; Gophna & Portugali 1988: 16, fig. 6).

2.4.6 The Middle Bronze Age

Following a nearly two hundred year gap, maritime activity between Egypt and the Levant resumed. However, the lack of any Egyptian depictions of seagoing ships spanning the more than seven hundred year period between the OK and NK representations of, respectively, Sahure/Unas and Kenamon/Hatshepsut ships, leaves an unfortunate gap that other sources of evidence must attempt to fill. Unfortunately, for reasons mentioned, our normally rich Egyptian pictorial well spring dries up at a crucial period, which is preceded by a few, and followed by a plethora of, unequivocally maritime depictions. Which seagoing vessels bridged the conceptual and technological chasm between the OK seafaring craft of Sakkara and those of Hatshepsut's Punt-bound fleet, or the Levantine floating bazaars depicted in Kenamon's tomb, is unknown.

The study of ancient shipwrecks has revealed a fundamental conservatism in the evolution of ship forms and a fairly slow-paced development in nautical construction technology (Steffy 1994: 24-78). With this perception in mind, sufficient leeway may be allowed for a hypothetical MK/MBA “missing link”, based on a comparison of the aforementioned depictions and archaeological evidence, which bridges the seven hundred year lacuna in evidence. Presumably this hypothetical vessel was constructed of some mixture of sewn plank and mortise-and-tenon plank technology. By this time, a single-poled mast was used, and was shifted toward mid-ship, which would allow better utilization of side winds by the double-boomed square-rigged sail. Although oars were used for propulsion on Hatshepsut's Red Sea ships, they do not appear on the Kenamon ships. Whether oars were used for propulsion on the Mediterranean Sea is unknown, but thin-bladed sweeps for maneuvering were found on the Uluburun wreck (Pulak 1994: 11). Regarding the existence of a keel, hugging truss, or other longitudinal and transverse support, the evidence is equivocal. All of these components may have been used, either individually or in concert. Evidence for the development of the keel from a thickened keel-like central strake has now been discerned on the fourteenth century Uluburun ship

²⁴²The maritime activity in the northeastern Mediterranean and Aegean regions is not considered here. Note, however, that this period marks the earliest demonstrable depiction of the sail in the Aegean (Agouridis 1997: 3).

²⁴³It is not clear whether the anchors had a symbolic or utilitarian significance in this period. However, as a *shfifon* was found at the foot of the apse of a Byzantine church, high above Lake Kinneret (Hirschfeld 1994), some local continuity is suggested.

(Steffy 1994: 36-37, fig. 3-15; Pulak 1993: 7-8; 1994: 12; 1997: 248-9), although an earlier appearance is possible. The crow's nest may have appeared during this period, but its viability depends on the size of the mast, and the strength of the mast step, which is generally mortised into a floor timber or keelson (Steffy 1994: 275, fig. G-15). A crow's nest afforded greater visibility: a 7.6 m mast may increase visibility by 5.7 nm (McGrail 1991: 86, table 1).

2.4.7 Textual references

Specific textual references to ships and their capabilities are rare during this period, but a number of literary and royal texts provide some insight into their size, the routes taken, and the ethnic groups involved. The *Admonitions of Ipuwer* contains a reference to what may have been the traditional counterclockwise eastern Mediterranean route expressed as “none sail north to Byblos” followed by “the *keftiw*, they come no more”, a literary parallelism noted by Goedicke (1967: 95), who suggests that the variant spelling used for *keftiw* indicates the boats rather than the people. In the *Story of the Shipwrecked Sailor*, a ship of one hundred and twenty by forty cubits, with a complement of one hundred and twenty sailors, was used (Simpson 1973b: 51, 53; Lichtheim 1973: 212-3). Using the unit measure for the standard cubit, this vessel measured 54 m by 18 m, or 63 m by 21 m using the royal cubit, which in any event is a fairly long vessel of a 3:1 length-to-breadth ratio (Wachsmann 1998: 10, n. 16). The most detailed source of ship capacity is the Mit Rahina inscription, which essentially lists the manifest of two ship returning from the Lebanon with an impressive quantity of bulk cargo. The cargo included at least 1,308 kg of raw materials, a total passenger weight of ca. 5,000 kg, and a volume of 23,259 liters, in addition to ninety-nine containers, seventy-seven trees, and two hundred and thirty-one trunks or logs of cedar.²⁴⁴ Not including the timber, whose size and mode of conveyance are unknown, these ships carried at least fifteen tons of cargo.²⁴⁵

As to the parties involved, the *Excretion Texts* mention the Asiatics of the *dmityw*, or “those of the harbors”. In terms of ship construction, the Coffin Texts credited Hathor, “mistress of Byblos”, with skill in manufacturing steering oars (Redford 1992: 40; Faulkner 1973: 56), which experimental replica voyaging has shown must be strong enough to withstand considerable forces (Cariolou 1997: 94). However, despite the possible depiction of an Asiatic overseeing the building of a boat, no Asiatic names appear in the dockyard records of Papyrus Reisner (Simpson 1963: 86; 1965: 19). Presumably, Aegean vessels may have brought the Kaptarans, their cargoes, and their model boat to

²⁴⁴Note that the goods brought back from Iasy total only 50.5 kg, but the weight of 1,554 passengers could be as much as 100,000 kg.

²⁴⁵Assuming a maximum length of 23 m, based on the longest cedar timber known (from the Cheops ship), and a diameter of one meter (Lev-Yadun 1992: 201), an extreme maximum volume per trunk of 18.1 m³ may be suggested. Using a weight per volume of 560 kg/m³ for cedar (Steffy 1994: 256), each trunk would weigh 10,136 kg. Thus, the two hundred and thirty-one trunks could add another 2,341,416 kg or 2,341 tons to the total cargo.

OB Ugarit. Unfortunately, if there is evidence of Aegean boats having visited the Levant (i.e., anchors), it has gone unrecognized.²⁴⁶

As to the potential size of the Asiatic merchant fleet at its peak, the Kamose stela refers to hundreds of ships bearing cargo. The type of boat mentioned is the *b'w* boat, which may also be mentioned in Papyrus Reisner, both possibly corruptions of the Levantine *br* boat (Vinson 1990: 147, n. 70). The number of ships recorded may not be hyperbole on the part of the Egyptians, but rather a very realistic indication of the scope of trade, as reflected by the archaeological record. For example, an estimated two million Canaanite jars were imported to Tell el-Dab`a over two hundred and fifty years, an average rate of eight thousand per year (McGovern & Harbottle 1997: 145). Assuming that cargoes were mixed, as suggested by both the Mit Rahina inscription and the Uluburun wreck, it is illustrative to compare the quantities of storage jars transported by ancient ships to this estimated rate of import. Three examples will suffice to illustrate this point: the two ships mentioned in the Mit Rahina inscription, which carried ninety-nine containers; the Uluburun ship, which carried approximately one hundred and fifty Canaanite jars (Peachey 1997: 14; Pulak 1997: 240); and the Kyrenia ship, which carried more than four hundred amphorae (Steffy 1994: 42). At a rate of fifty jars per ship, one hundred and sixty shiploads would be required per year; at a rate of one hundred and fifty jars per ship, only fifty-three shiploads would be needed per year; and, finally, a jar-burdened cargo of four hundred jars per ship would require a mere twenty vessels per year. Thus, unless there was a preponderance of amphorae-exclusive cargoes, which is unlikely given the scope of trade in other materials, the evidence from Tell el-Dab`a suggests that the numbers quoted in the Kamose stela are not necessarily an exaggeration.

2.5 Boat representations

Although no detailed MK depictions of seagoing ships have been found (Wachsmann 1998: 18), a locally made, Syrian-style cylinder seal with a boat was found at Tell el-Dab`a. Although no sail is depicted, the ship has a mast, fore and aft stays, and two oars. The incised boats at at Rôd el-Air, Sinai provide no indication if they were seagoing (Wachsmann 1998: 32-7).²⁴⁷

The bronze boat models from the foundation deposits at Byblos are similar in form to MK Egyptian riverine ships (Dunand 1950: pls. LX:8816, LXIX:10089, LXXIV:10642-10643; 1954: 219 [8816], 337-338 [10089-92], 738 [10086-87], fig. 874; Brody 1996: 74-5; Wachsmann 1998: 54).²⁴⁸

²⁴⁶To date, the lack of underwater surveys in the Aegean have prevented the identification of a particular anchor type to this region.

²⁴⁷Two stern-to-stern boats with steering oars appear on a cylinder seal now in the Louvre (Teissier 1996: 102, fig. 206; Porada 1983: pl. XXXVa). Although these are not specifically seagoing vessels, the presence of Hathor over the steering oars is indicative of her patronage of sailors (Brody forthcoming).

²⁴⁸Although some suggest that two other clay model boats are MK vessels (Dunand 1937: pl. CXL:3306, 6681; 1939: 223-224, 434; Wachsmann 1998: 54), the lack of a secure context

Despite the presence of a hole near the centerline at the mid-ship of some examples (e.g., Dunand 1950: LXXIV:10642),²⁴⁹ which is perhaps for a mast, these are unlikely to be representations of seagoing vessels. Rather, these are symbolic or ritual reflections of maritime activity. Models are common throughout the ancient world (Göttlicher 1978), but rarely is there an indication of their function. Texts from twenty-fourth century Lagash relate two instances where bronze models of Dilmun ships were dedicated to the goddess Nanshe in commemoration of the safe return of travellers from journeys (Potts 1990: 182-183).²⁵⁰ The purpose of the Cretan-style, stone-inlaid, wooden model boat mentioned at Mari is unknown, although the fact that it is made of perishable material suggests that these objects may be under-represented in the archaeological record. A symbolic offering of a boat, decorated with inlay, may be what is depicted on the Hagia Triada sarcophagus (Warren 1989: 106; Wachsmann 1998: 104). At Kultepe, a model clay riverboat depicts the transport of a goddess (Özguç 1994). Models were often taken to sea, as is indicated by the clay boat netted by fisherman in the Bardawil lagoon (Basch 1976; Oren 1987b: n. 8), or as depicted on an incised stone graffito found near the Dakhleh oasis in Egypt, where men carry smaller versions of the very same ship type they are sailing (Basch 1994; 1997; Wachsmann 1998: 203-4). Thus, although the Byblian boats are not seagoing vessels, and their function is uncertain, their occurrence, along with the *ex voto* stone anchors, is suggestive of a common maritime ritual.

2.6 Archaeological evidence for ships

As in the OK period, riverine ships are the only source of evidence for ship form and construction. Nevertheless, an indication of the building technology and the strength of river vessels, as provided by the timber remains from el-Lisht and the ceremonial Dashur boats, give some indirect evidence of the potentials of their seagoing counterparts (Haldane 1984; 1992b; Patch & Haldane 1990; Wachsmann 1998: 220-1). The only probable seagoing ship plank is a mortised cedar timber found near a MK anchor shrine at Wadi Gawasis on the Red Sea (Sayed 1980: 156, fig. 3, pl. XXII:5; 1983: 36).²⁵¹ Other evidence, albeit indirect, for mortise-and-tenon joinery comes from the furniture remains found in the MB IIB tombs at Jericho (Wachsmann 1998: 240-1).

precludes their consideration. For a depiction of the manufacture of a gold papyriform boat, see Pritchard (1954: 265, fig. 133).

²⁴⁹I thank Dr. A. Brody for pointing this out to me.

²⁵⁰B. Foster noted, without any reference, OB texts that mention merchants dedicating gold and silver ships to a local temple (see discussion after Wiener 1987: 267).

²⁵¹This 12 cm thick plank is comparable to the heavy timbers from riverine ship remains at el-Lisht, although the mortises are narrower and shallower (Haldane 1992b: 104). In the absence of any evidence of pegs, Wachsmann (1998: 215-6) suggests that lashed construction was employed. However, the mortises and their dimensions may be misleading, as this timber may be from a section of unfinished planking, as seems likely from examination of the published photograph, in which only one side is planed (Sayed 1980: pl. XXII:5). For the relationship between plank thickness and vessel

Two possible mast poles made of bronze, which bear MK dedicatory inscriptions, are currently in the National Museum in Athens (von Bissing 1905).²⁵² Although their origin is unknown, if they are the typical equipment of MK ships, and not simply standard poles, then the use of only four halyard guide holes suggests a less sophisticated type of rigging than that depicted in early NK vessels.

2.7 Anchors

In contrast to the preceding periods, an abundance of datable anchors have been found from this period, distributed between Egypt and the Levant (Fig. 8b). The dating is made possible by the increased use of anchors in terrestrial contexts, primarily in symbolic or ritual contexts. Although appellation, such as “Byblian” or “Egyptian” are used to describe different types, no ethnic attribution should be assumed for these objects.

2.7.1 Egypt

Two Twelfth Dynasty contexts have “Egyptian” type anchors: an anchor shrine at the Red Sea port of Wadi Gawasis (Sayed 1977; 1978; 1980; 1983) and anchors in secondary use at the Upper Egyptian fort of Mirgissa (Nibbi 1992). Both are securely dated by inscribed material.

2.7.2 Byblos and Ugarit

As in the Early Bronze Age, anchors continued to be used in temple construction, apparently as offerings (Frost 1969). At least two examples of “Byblian” anchors, and one “Egyptian” anchor were found. At Ugarit, one MK “Egyptian” type anchor was found in a possible MBA context (Frost 1969; 1991; Wachsmann 1998: 273).

2.7.3 Southern Levant

Ironically, the largest number of anchors of the “Byblian” type is found along the shores of the southern Levant, alongside examples of the “Egyptian” type (Galili, Sharvit & Artzy 1994). Underwater surveys have located numerous stone anchors, particularly along the Carmel Coast, at the anchorages of Dor and Atlit. Apart from one instance alongside an MBA storage jar, all the other anchors, including the Neve Yam group (Galili 1985b), must be dated by the terrestrial examples cited above. As no examples of these anchor types has been found in any securely-dated context earlier or

length among Greek and Roman merchantman, see Fitzgerald (1994: table VI.3). Y. Kahanov kindly referred me to this table.

²⁵²J. Malek kindly confirmed their MK date.

later than the Middle Bronze IIa period, a general MBA date for these underwater artifacts and the seafaring they represent is reasonable.²⁵³

2.8 Anchorages and harbors

Although the specific character and dimensions of the anchorage of each MB IIa port city are considered in Chapter 4, some general points are outlined here. As during the Old Kingdom, MK riverine harbor technology continued to develop along the Nile (Hughes 1963: 124-5; Knudstad 1966: 176-7, fig. 2, pl. XXI). Along the Mediterranean littoral, the local and longshore traffic continued to have a need for safe havens, although not every anchorage was physically amenable to every ship. In the absence of artificial harbor technology, natural anchorages were utilized, although some physical augmentation may have been carried out. Based on the choice of settlement locales, the anchorage types used during this period along the Levantine coast relied on the following configurations: fairweather open shores; rivermouths with navigable rivers; lagoons on the lee side of elongated ridges, reefs or nearshore islands; and, possibly, coastal lagoonal swamps or basins (Blackman 1982; Raban 1985; 1987; 1991a; 1995b; Frost 1991; 1995). It must be remembered that the depths of such havens were much more modest than might otherwise be thought. For example, the fourth century 14 m long merchant ship that sank in the seas north of Kyrenia, Cyprus, had a draft of perhaps no more than 1.5 m (Steffy 1994: 42-59).²⁵⁴ Although no harborworks have been found from this period, it is possible that the actual harborfront utilized wooden wharves, built on pilings, such as those depicted in el-Amarna during the New Kingdom (Davies 1908: pl. V).

Although some debate continues regarding the viability of some of the paleogeographical reconstructions of anchorages, particularly based on rivermouths (Galili 1986: 71-3), enough circumstantial evidence from later periods has accumulated to suggest that amenable conditions existed earlier, when less sand had accumulated along the shore and more riverflow reached the sea, such as at Tel Gerisa.²⁵⁵ Recently, an installation constructed of hydraulic *pozzolana* cement was discovered at the bottom of Nahal Hadera some 900 m from the sea (Sharvit & Galili 1998). Based on technological and architectural parallels from the Herodian harbor at Caesarea, and the presence of

²⁵³Note the absence of this type on the Uluburun shipwreck, where twenty-four anchors were found, ranging in weight from 121 to 207.9 kg, and totalling four tons (Pulak 1992: 8; Wachsmann 1998: 281-3).

²⁵⁴This estimate is based on the midship height of the hull's upper wale above the keel, where the full-load waterline is presumed to have been (Steffy 1994: 50, fig. 3-31).

²⁵⁵Shepstone (1937: 266) reports that the mouth of the Yarkon river was an unsatisfactory shelter for the Jaffa port lighters during storms, although he doesn't elaborate on the reasons for this inadequacy.

marine concretion on the concrete blocks, the excavators conclude that it was a quay for small vessels.²⁵⁶

2.9 Ethnographic aspects of east Mediterranean maritime activity

In seeking to utilize pre-modern maritime activity and trade as a means of elucidating ancient patterns of behavior, current scholarship is at a distinct disadvantage. As yet, no synthetic ethnographic research has dealt with the subject, although some occasional references and observations do crop up. The possibility of reed craft has already been mentioned in connection with possible prehistoric shipbuilding. European traveler accounts from the last few centuries, which mention shipping, shipwrecks, and lost cargoes (Wachsmann & Raveh 1984: 235-6), only serve to illustrate the type of cabotage that probably occurred throughout the long maritime history of the Levant.

As much of the remains of ancient maritime trade consists of pottery, both of the utilitarian and seemingly high-profile type, different interpretations of their presence aboard ships or at overseas destinations have been suggested, including piggy-back or sailor's trade alongside more valuable commodities (Artzy 1985a: 140; 1985b: 99), filler within light bulk cargoes (Gill 1988: 2), or as ballast (McGrail 1989). One particularly instructive and humbling ethnographic account concerns the trade in amphorae observed by Mallowan (1939) at el-Boss, south of Banias on the Syrian coast. On this open shore, while Arwadian ships waited at anchor, hundreds of amphorae were laid out on the beach to be traded for donkey loads of sheep dung brought from the hills. The dung was then traded along the coast, particularly at Tripoli, where it was used as fertilizer; occasionally, these ships sailed as far south as Mandatory Palestine. Depending on the class of ship, cargoes of from 200 to 400 or from 1,000 to 1,500 jars were carried, two of which were exchanged for a single sack of dung. To organize this trade, the shippers maintained an agent, who operated a seaside tavern and would inform the herdsman to prepare the dung for the approaching ships. Thus, the distribution of these particular amphorae had nothing to do with their contents, a point that would have been missed in the absence of residue analysis.²⁵⁷ Similar explanations, however malodorous, should be borne in mind when considering ancient pottery distributions.²⁵⁸

Descriptions of early twentieth century lighterage ports, such as those at Haifa and Jaffa (Shepstone 1937), provide an illustration of how fairweather open-shore ports may have functioned in antiquity. Oceangoing ships arriving at these ports would anchor at sea and lighters would transport

²⁵⁶There is extensive literature on the Roman harbor at Caesarea and its construction (e.g., Raban 1993c; 1995b).

²⁵⁷One may wonder what interpretation might have been offered had one of these ships sank along with its cargo of pottery and dung sacks.

²⁵⁸For an instructive account of early twentieth century, CE Aegean pottery trade, see Casson (1938; 1951).

goods to the shore. However, the lack of sufficient shelter for the lighters prompted the construction of the Tel Aviv harbor near the mouth of the Yarkon river. The Egyptian Labor Corps of the British Expeditionary Forces during World War I employed this labor intensive means of transshipment at numerous inhospitable Levantine “ports” ([Lawrence] 1919: 109-110, pls. 44, 52).²⁵⁹

3. By land or by sea?

As the preceding review demonstrates, maritime activity and seaborne communication were a feature of the southern Levantine coast from prehistoric times onwards. Small fishing communities appear to have dot the coastline during the Neolithic and Chalcolithic periods, but only in the Early Bronze Age is there any evidence for cabotage along the southern Levant. By then the speed, cargo potential, and other advantages were realized enough to be fostered and utilized by Egypt. Evidence for the involvement of the southern Levant is indirect, and will require further research and substantiation. Following a hiatus along the southern Levant during the First Intermediate Period/Intermediate Bronze Age, seafaring resumed in earnest, involving Egypt, the northern Levant, and the Aegean, with the southern Levantine shores extensively trafficked. The extent of the impact of this traffic, i.e. the floruit of ports, traded items, and ultimately the settlement landscape itself, are considered next.

²⁵⁹In colorful fashion, Lawrence described the scene as follows: “No less striking was it to watch the line of laden boats leaving the storeships off the coast and making their way through the surf to the beach, there to be hauled high up by teams of cheerful Egyptians working to whistle signal under their own officers.” Note authors placed in “[]” are for works whose authorship is known, but not specifically written.

Chapter 4

The Material Cultural Landscape of the MB IIA Southern Levant

The preceding chapters considered the nature of the long-term relations between Egypt, the Levant, and beyond, detailing the evidence for the terrestrial and maritime means of interaction up to and including the MB IIA period. The discussion now turns to the archaeological record of the MB IIA southern Levant in order to examine the evidence for trade, material prosperity, urbanization, city planning, craft specialization, as reflections of polity, economy, and society. As the material culture of the MB IIA has not been subject to a synthetic treatment since Gerstenblith (1983), the following is partly a review of the evidence placed in its proper geographical and relative chronological framework. Considerable evidence has accumulated in the intervening years, and although much has not reached the final publication stage, it may contribute to elucidating the issues at hand.

The presentation follows the physical geographical subdivision outlined in Table 6. The relative chronology, i.e., the ceramic synchronisation follows the sequence from Tel Aphek (Beck 1975; 1985).²⁶⁰ As this work focuses on the evidence for long-distance exchange, only those pertinent ceramic classes (Levantine Painted Ware, Tell el- Yahudiyah Ware, Middle Cypriot Wares, etc.) are dealt with in detail.

Archaeological epistemology, both in regional and intra-site terms, is a difficulty facing all synthetic studies. Excavations are as much a reflection of the excavator as they are a reflection of the partial record of human habitation. Different historical and archaeological periods attract varied research designs, excavation methods, and sampling strategies; as such the archaeological data set is both incomplete and inherently biased. The southern Levant has been the subject of extensive investigation over the last century. The excavation results are affected by later accumulation, which both destroys and prohibits access to these remains. As major urban sites, such as Tel Mique, appear to conceal extensive MB IIA remains, and in some lowland areas, several meters of alluviation can cover smaller sites (Orni & Efrat 1971: 86; Gophna & Beck 1981: 52; 1988: 79; Gal 1991b), regional and intra-site assessments should always be considered an underestimate.

Regarding surface survey, which in recent decades has become both a common research tool and a means of cultural resource management, the lack of standardization imposes great limits on the synthesis of survey data, each of which demands critical assessment on a general level (Palumbo 1991: 41-43; Joffe 1993: 5-16; Esse 1991: 128-129), and on a sub-regional scale (Greenberg 1996b: 113-116, fig. 42; Maeir 1997: 3-5, 52-55). For example, the Archaeological Survey of Israel (ASI) has sought to offer a complete coverage of the region west of the Jordan River by parceling the country into individual “maps” of equal size, but with little geographical or archaeological logic to the division.

²⁶⁰Note the differences of opinion regarding the transitional MB IIA-b or MB IIA/4 (Ward & Dever 1994) and the response by Beck and Zevulun (1996). Note the use of the designation MB IIA-b refers to contexts which either show mixed types, or depart significantly from the criteria for MB IIA/4 as defined by the Aphek sequence. As this period marks the lower temporal bound of this work, the precise assignment is not critical for the present discussion.

These are intended to be pedestrian surveys, but vary according to the approach of each surveyor. When part of a larger research design, some have gone as far as performing shallow probes in individual sites in order to better assess the significance of surface remains (Portugali 1982). In addition, continuous inspection by the Israel Antiquities Authority, formerly the Israel Department of Antiquities and Museums, has documented thousands of serendipitous site discoveries, which are archived, reported in preliminary form in *Hadashot Arkheologiyot* and *Excavations and Surveys in Israel*, and which have been collated in the ASI Maps, or in various gazetteers (e.g., Thompson 1979) and synthetic works (e.g., Esse 1991). Survey and site data from Jordan has been collated in a number of gazetteers (Homès-Fredericq & Hennessy 1989) and synthetic works (e.g., Palumbo 1991; Najjar 1992).²⁶¹

1. Northern Coastal Plain

The northern Coastal Plain is bounded in the north and south, respectively, by the Ladder of Tyre ridge (Rosh HaNiqra) and Mount Carmel, the only southern Levantine mountains that reach the sea. This plain is divided by the Hilazon faultline into the Galilee Coastal and Akko Plains. Each half is bounded in the east by the Highlands, respectively, the Upper and Lower Galilee, although the latter is offset to the east, along the faultline, making the Akko Plain the broader of the two. Aeolianite sandstone (called *kurkar*) ridges and sand dunes characterize the western coastal area of both units, while rich alluvial soils comprise the eastern valley. The former acts as an impediment to lateral movement and to the drainage of the moderately sloped plain. The coastal ridge is not entirely contiguous and has suffered erosion, resulting in alternating rocky and sandy shores, the latter of which often cover ancient water gaps. The formation of beachrock and young *kurkar* in consolidated sandy beaches and dunes makes their investigation and paleogeographic reconstruction difficult. With properly maintained drainage the eastern valley served as an excellent agricultural base for field and other crops.

The hills surrounding the Coastal Plain were sources of building stone, wood, intermontane valley agriculture, and a preferred location for orchards, olive groves, and vineyards. Water was available from both perennial and annual rivers, springs, the high coastal aquifer, and precipitation (600 mm near the shore and 750 mm in the nearby hills). The western Galilee coast is segmented by numerous rivers that reach the sea independently, while only two rivers, the Na`aman and Kishon, drain the tributaries of the the broader Akko bay.²⁶²

Prior to the MB IIa period, BA settlements were located primarily on the inner portion of the Coastal Plain. Some IBA remains were found at MB IIa sites and along the margin and in the

²⁶¹Apart from specific references this section relies a number of general works (Orni & Efrat 1971; Karmon 1971; Aharoni 1979). All altitudes are assumed to be above mean sea level (msl), unless otherwise indicated.

²⁶²This description is derived from a number of sources (Esse 1991: 1-14; Frankel & Getzov 1997: 9*-11*).

highlands of the Galilee. MB IIA sites were established on topographical rises both on the coastal and inland *kurkar* ridges and amidst the inland alluvial plains (Table 6.1).

1.1 Akhziv

The site is located on the western coastal *kurkar* ridge near what may have been the largest bay north of Akko. This bay, perhaps more than any other reason, accounts for the importance of Akhziv from the MB IIA period onwards (Prausnitz 1993; Raban 1985: 18-9; 1986). Unfortunately, excavations and surface investigations only permit a general assessment of Akhziv's role as a port.

1.1.1 The Settlement and fortifications

What little is known of MB IIA Akhziv is limited to its fortifications and a number of unpublished tombs (Prausnitz 1975; Mazar 1993). The fortifications are typical MBA sloping ramparts that enclose an area of ca. 7 ha. As no investigations were conducted on the sea side, it is not certain whether it was similarly fortified. According to the excavator, a fosse was excavated on the eastern side to connect Nahals Keziv and Sha'al, which enter the sea to the north and south of the site, respectively, thus creating a city that was completely surrounded by water (Prausnitz 1975: 205).²⁶³

Based on the latest ceramic material in the rampart, Oren (1975) dated its completion to the MB IIA-b period, but did not clarify whether he is referring to the transitional period or to a time spanning both phases. Although there is no disputing the MB IIB date of many of the component layers, including much of the rampart and revetment, there are two reasons for suggesting that the initial fortification of the site may have been earlier. First, there are the MB IIA ceramic forms, which establish that the site was inhabited during this period. These forms are represented, particularly, in the assemblage associated with the rampart's brick core (Oren 1975; Prausnitz 1975: fig. 3). While it is true that many of the forms continued to be used during the MB IIB period, only one example, a flaring carinated bowl, is exclusive to the latter phase (Oren 1975: fig. 2:27). Second, the preliminary report shows clearly that the excavator, following a commonly held opinion, perceived the entire construction as a single organic entity and, in light of the ceramic analysis, did not even consider that the various components could belong to separate chronological phases (Prausnitz 1975: 209). Examination of the published section of the brick core suggests two separate construction phases, built using two different brick types. Unfortunately, the ceramic finds from these two phases are not presented separately. As to its function, no explanation is given why a 6 m wide core is "too wide" to have been a wall, or why its foundations are too low to support a wall that crowns the rampart (Prausnitz 1975: 208). In this limited excavation, subsequent erosion and construction have clearly obscured the area above the brick core and the rampart layers are nowhere shown to go over the core. Rather, the "core" appears more likely to have been a free-standing wall whose foundation is lower than the rampart because the core preceded, and was independent of its sloping layers. From the limited information it is not at all clear

²⁶³The existence of this water filled fosse may have been the impetus for the construction of a stone revetment at the base of the rampart (Prausnitz 1975: 207-8, fig. 3).

that the excavators reached the base of the brick core, or the earliest layers of the rampart. That the core, or its earlier phase, served as a wall might be inferred from the Prausnitz's remark (1975: 207-8, fig. 3) that the decomposed edges of the bricks were to be attributed to water erosion. If his observations are correct, they strengthen the notion that at some point the wall was free standing, as it is difficult to imagine such erosion occurring on a buried surface.²⁶⁴ Until further excavations are carried out, these issues will remain unresolved, but the evidence strongly suggests an earlier date for the initial fortification.

1.1.2 Akhziv's anchorages

Raban's (1986) study of the maritime installations in the area of Akhziv reveals a complex and long history of activity, part of which may be associated with the Middle Bronze Age. Of particular interest are the rock-cut features that provide artifactual evidence for maritime activity and sea level changes. The most important of these features is the artificial outlet of Nahal Keziv, north of the tell. At first glance this channel seems to be a natural outlet, as Prausnitz (1975) assumed. Geomorphological investigations demonstrate that the present outlet of Nahal Keziv, which drains much of the western Galilee, is a relatively recent phenomenon (Bowman 1972: 25-6, fig. 9; Raban 1985: n. 49). The original outlet is to the south of the tell, where the river meets the lesser Nahal Sha'al and forms a 330 m gap in this *kurkar* ridge. This considerable water gap was formed by Pleistocene riverflow that prevented the consolidation of the ridge. In contrast, the present day outlet has no such gap, and the channel—a mere 25 m across—is only a low saddle in the ridge. In addition, the relatively limited amount of sediment at the modern river outlet is considerably less than would be expected for a rivercourse in use since the Pleistocene period. The river course was apparently artificially diverted at some time during the Holocene period.

Raban (1985: 18-9) has extrapolated on this interpretation and suggests that as sea level rose, the southern gap served as a natural river mouth bay. He associates the diversion of the river with the MBA fortification of the site. During this period, the deserted course to the east and south was deepened (Prausnitz 1975), providing material for the rampart, and serving as an inner anchorage for ships entering the bay. The hewing of the channel through the ridge to the north completed the fosse component of the fortification system and diverted a potential siltation agent away from the inner anchorage and the bay. Nahal Sha'al, which has a much lower gradient and carries less sediment, continued to flow unimpeded into the sea via the bay. Evidence that an open bay existed can be found in the presence of stone bollards for mooring ships on the northern edge of Minet ez-Zib, where an MBA cemetery existed alongside other rock-cut installations (Raban 1986: 233; Mazar 1993). Other eroded bollards are found on the rocks to the west of the tell. With the stabilization of sea level, natural longshore transport began to form a sand bar at the mouth of the bay and silt it up. When the natural or diverted riverflow, and possible dredging, eventually failed to prevent the blocking of the bay,

²⁶⁴Evidence from other sites, such as Akko and Dan, suggests that these massive and complex constructions evolved in stages, some over cores that may have been free-standing walls.

according to Raban, a rock-cut channel was hewn on the southwestern side of the tell to allow access to what remained of the anchorage. Dating this sequence of development is not yet possible, but clearly the northern channel, and hence the diversion of the river, was constructed with the MBA fortifications in mind. If the reconstruction is correct, then apart from the ca. 400 m seafront at the western foot of the tell for use during calm seas (Prausnitz 1975: 203, fig. 2), a bay of ca. 9.9 ha would have existed.²⁶⁵ Further excavation and geomorphological investigation, particularly in the southern bay, are needed to elucidate the history of this port.²⁶⁶

1.2 Kabri

Investigations at Tell Kabri have attracted wide interest in particular as a result of the discovery of a MB IIB period palace with a decorated floor and fragments of a miniature wall painting, both inspired and executed in *buon fresco* by Aegean artists (Niemeier, et al. 1991; Niemeier & Niemeier 1992 and biblio.). The importance of Kabri during this period cannot be understated. With a rampart-encircled area of approximately 32 ha, a palatial complex covering an area at least four thousand square meters, and foreign connections with nearly the entire eastern Mediterranean (e.g. Lebanon, the Aegean, Egypt and Cyprus), this clearly is one of the most prominent sites of the Coastal Plain excavated to date (Kempinski 1993b). Its zenith in the MB IIB period, however, should not obscure its importance during the MB IIA period.

1.2.1 Environment and economy

Numerous physiographic factors affected the economy and history of Kabri including lush water sources, a catchment area near a highland-lowland border, its location astride a major land route, and its proximity to two ports: Nahariya and Akhziv. The preliminary reports of the Kabri expedition permit some observations to be made of the economy and paleoenvironment.

1.2.1.1 Water sources

Four major springs exist in the immediate vicinity of the site, and the importance of each one in different time periods is suggested by their spatial relationship to the site (Tsuk 1990). The temporally specific utilization of these aquifer-supplied springs could be the result of changes in the amount of water flow resulting from climactic shifts or local tectonic activity (Horowitz 1987; Tsuk 1990). An important change in water use occurred at the end of the MB IIA period, when the site underwent an urban reorganization. With this reorganization, 'Ein Shef'a, which today supplies more than half the of the available water in the region, was included within the confines of the city (Tsuk

²⁶⁵This calculation is based on the length of the bay (N-S) being the distance between Akhziv and Minet ez-Zib, 330 m, and the width being that of the site ca. 300 m.

²⁶⁶Other than pottery, no other artifacts are published from Akhziv. Among these are MC imports, albeit of MB IIB attribution (Prausnitz 1975: 210; Oren 1975: 221). Maguire (1990: fig. 17) reports the presence of MC WPPL style ware.

1990: 5-7, table 1, fig. 2; Kempinski 1992a). According to calculations made by Tsuk (1990: 6), this spring would have supplied 18 times the requisite water for the estimated number of inhabitants and their livestock. This water was an enormous advantage during times of siege, and normally the excess may have been drained via channels, or perhaps sewers, into the fields to the west of the city (Tsuk 1990: 6). `Ein Giaʿ, which was intentionally excluded from the city by a break in the symmetry of the urban plan, could have been utilized for the irrigation of the eastern fields (Tsuk 1990: 6). These springs were critical as the nearby rivers are mostly seasonal (Horowitz 1987).

1.2.1.2 Agriculture, horticulture and herding

Kabri is situated on an extension of Cenomanian dolomite that is surrounded by rich alluvial soil, near the border of two phytogeographical zones characterized by Mediterranean Hill and Lowland vegetation. The former rises gradually to the east on the chalk and limestone hills of the Western Galilee and offered the inhabitants a source of wood (Lipschitz 1987; 1988; 1992; 1994), pasture for flocks and wild game (Weinstein & Helwing 1988; Kishon & Helwing 1990), and a convenient landscape for their vineyards and olive groves (Horowitz 1987: 7). The considerable presence of olive wood and some stones provides evidence for oleaculture (Lipschitz 1994: *58, *62, table 2). Flocks appear to have been an important component of the economy. The ovicapridae from various contexts, which range between sixty-six to eighty-two percent of the MBA faunal sample, are characterized by ninety-five percent adults and a four-to-one ratio of sheep to goats (Weinstein & Helwing 1988; Kishon & Helwing 1990), which suggests the exploitation of secondary products of milk and wool. Comparable species representation is reported from MB IIB remains from Emek Rephaim and Tell Jemmeh (Horowitz 1989; Wapnish & Hesse 1988), although age breakdown varies at the latter.

The lowland around the tell extending from the foothills westward is well suited for the dry farming of seasonal field crops, e.g., grain and vegetables, supplemented by irrigation from the ample springs. Evidence for agricultural activity is furnished by the contemporary lithic blade assemblage (Hershman 1990).²⁶⁷ As in most areas of the coastal plain, the low gradient and physical obstacles impeded drainage and the “blessing” of lush water sources had to be controlled in order to prevent the formation of swamps. Maintenance of the landscape depended on a strong central authority. The contribution of cattle and, to a lesser extent, equids to ploughing and landscaping can perhaps be inferred by their presence in the material record. Cattle comprise 13% of the general MBA remains (equids less than 1%) and ca. 15% of the assemblage from MB IIB palace (Weinstein & Helwing 1988: 65; Kishon & Helwing 1990: 48). Of the latter, 99.07% were of adult or aging individuals (Kishon & Helwing 1990: 48), suggesting that they were also being exploited for more than their meat and hide,

²⁶⁷Analysis of the lithic remains indicates that the assemblage is dominated by a limited range of flake tools. Hershman (1990) notes that sickle blades are made of superior raw materials that are absent in the local debitage, suggesting exchange with an unknown specialized production center. She further suggests that the high percentage of sickle blade tools in the assemblage indicates that during this period metal forms were already replacing the variety of flint tools that had been available (Rosen 1984).

i.e., milk and physical strength. The consumption of wine or beer is suggested by the presence of bone strainer (Maeir & Garfinkel 1992; Kishon & Helwing 1990: 49, fig. 23:3).

1.2.1.3 Communication

Kabri sits on the coastal highway, running at the base of the foothills of the Western Galilee, leading from the Akko Plain to Lebanon (Kempinski 1986). The principal lateral road was along the course of the Ga`aton river, which connected the site with the port of Nahariya. Diagonal routes may have existed to the port of Akhziv or the Lokhamei HaGetaot site (Dorsey 1991: 87-8, map 3). The current absence of material evidence for a nearby highland population precludes any attempt to suggest additional axes of interaction or areas of utilization. The limited presence of equids noted above may not necessarily be representative, but rather a result of the nature of the contexts/middens that have been excavated and reported thus far. At Emeq Rephaim, adult equids represent 8.3% of the assemblage (Horwitz 1989: fig. 2). Further, it is noteworthy that although two equid burials are reported from Tell Jemmeh, no disarticulated remains appeared included in the faunal analysis (Wapnish & Hesse 1988: 83). Lastly, the presence of fish and molluscs in the faunal assemblage indicates contact with the coastline communities (Weinstein & Helwing 1988).

1.2.2 Summary of MB IIa remains

Following an extensive EBA sequence that ends in the EB III period, Kabri appears to have been abandoned until the MB IIa period (Kempinski 1990a; 1993b; Table 7). No conclusive evidence of an IBA occupation has been found on the tell apart from some equivocal sherds from previous sondages (Kempinski 1987a: 15-6; Giv'eon 1988: 12, IV). In light of the fact that the EB III remains were "shaved" off (Kempinski 1990a), and are represented by quantities of sherds alone, it is possible that this was also the fate of the IBA remains. However, within the confines of a Roman-Byzantine cemetery, one kilometer east of the tell, a single IBA tomb is reported (Getzov 1995).

Excavations so far suggest that the nucleus of the MB IIa settlement was on the remains of the EBA tell on the northern half of the site, but much of this was apparently shaved off along with earlier levels during the late MB IIa urban reorganization or during Ottoman times (Kempinski 1989c: table 1, fig. 1; 1994: *2). The earliest phase is represented principally by tombs 990, 1045, and 1050 in Area B, and various robbed walls (Kempinski 1989c: table 1; Gershuni 1989; Scheftelowitz 1990). With the construction of the earthen ramparts in a later phase of the MB IIa, Kabri underwent a major physical and administrative reorganization that culminates in an urban area of 32 ha. The result was an adaption of a Syrian-Mesopotamian geometric plan—oval in this case—with four gates, each to a different compass point, which enclosed a spring and a palace arranged on an axis between two gates (Kempinski 1992a). Domestic and industrial levels appear to have been located initially on the inside of the rampart (Area C), while the absence of such levels in Area B suggests that the central area of the city was initially empty and was only filled in later (Kempinski 1989c). On the other hand, these areas may have been destroyed by later landscaping or cultivation (Kempinski 1989c). Limited probes

under the monumental palace in Area D and more extensive remains excavated in Area F, 20 m to the southeast, suggest the existence of a public or palatial precinct during the MB IIA period (Kempinski & Niemeier 1993; Garfinkle & Peilstöcker 1994: *12-*3).²⁶⁸ Tombs in Areas B & C2, which were built in this phase, continued to be used during the MB IIB period (e.g., T.498 & T.984), which attests to the continuity in burial custom and, by inference, population (Kempinski 1989c; 1990b).

1.2.4 Pottery finds and evidence for production

Petrographic analysis of the MBA pottery provides a basis upon which some discussion can be made of production, trade, and influences. To date, a number of pottery classes have been thin-sectioned and analyzed including a LPW jug and juglets, TEY juglets, “Anatolian” cut-away neck jugs, a purported imitation Cypriot bowl, and a red-burnished trefoil jug (Goren 1989b; 1990a). In addition to the petrographic evidence, a series of oval mudbrick installations found in Area C2 may have served as pottery kilns, although conclusive evidence for their function is still lacking (Miron 1989).

1.2.5 LPW, TEY, MC, and “Anatolian” cut-away neck vessels

Seven examples of LPW jugs and juglets, and two handleless jars were found in T.990, T.1045, and T.1050 (Gershuni 1989: fig. 14; Scheftelowitz 1990: figs. 17-8). The decorative motifs include multiple horizontal lines, pendant decorations around the neck, and paint strokes on the handle and rim.

Three TEY juglets were found in the second phase of T.984 (Kempinski 1990b: fig. 19:5-7). A single WP IV jug comes from the second, and principal phase of T.984. Eight MC sherds were found in Area C2 in a mixed context whose latest ceramics date to the MB IIB period (Maguire 1987; Miron 1987: 56-58). A small hemispheric bowl from T.1050 is thought to be an imitation of a Cypriot bowl (Scheftelowitz 1990: 30, fig. 18:3); petrographic analysis shows it to be similar in composition to the LPW jugs (Goren 1990a: table 1).

Twenty examples of “Anatolian” cut-away neck jugs or juglets have been published from Kabri, primarily from MB IIA tombs that continued into the MB IIB period.²⁶⁹ Kempinski (1989d: 31, X) considers this type to be principally a northern Levantine ceramic family that is distributed as far south as the Akko Plain, but whose distinctive incised three lines at the base of the neck are a local incarnation of an Anatolian decoration.

²⁶⁸Assuming an orthogonal plan, examination of the combined top plans for Areas D and F (Kempinski & Niemeier 1992: fig. 8) suggests a total area of nearly 3000 m², and this is without any discovery of clearly external walls.

²⁶⁹These include three examples in T.503 (Miron 1988: fig. 17:4, 5 & 7); twelve examples from Phase 1 of T.498 (Kempinski 1989d: 31-2, fig. 16:5-9); two fragments from phase one and three complete examples from Phase 2 of T.984 (Kempinski 1990b: 32-3, fig. 19:9-11); and two fragmentary neck/rims from the surface (Kempinski 1987b: fig. 9:8-9).

1.2.6 Bronze and silver finds

Only two bronze objects can be assigned with certainty to the MB IIa period, a duck-bill axe from T.990 and a toggle pin from T.1050 (Gershuni 1989: 14:2; Scheftelowitz 1990: fig. 18:6).²⁷⁰ Two other pins were found in an MB IIa-b phase of T.984 (Kempinski 1990b). In addition, thirteen bronze toggle pins were found in T.498, which spans the end of the MB IIa through the MB IIB periods, but they are not assigned to a precise phase (Miron 1989: 29; Kempinski 1989d). Nonetheless, they are metallurgically consistent with objects of the MB IIa period (Shalev 1989).²⁷¹ There is no direct evidence to indicate whether these items were produced at Kabri, although an argument might be made based on the lithic assemblage that metal tools were readily available to the population. Whether the installation discovered in Area C2 is in anyway related to metallurgy awaits further analysis and publication. Apart from bronze the only other metal found is a silver bracelet from T.1045 (Scheftelowitz 1990: 29, fig. 17:8).

1.2.7 Beads

Almost all of the beads found at Kabri in MB IIa contexts were made of imported materials, if not imported as finished products (Avidor 1991). These include one of faience (T.984) and one of carnelian (T.1050). Three other beads of faience and two of amethyst from T.498, and a serpentine bead from a working surface near one of the installations in Area C2, may also date to the MB IIa period.²⁷²

1.2.8 Cylinder Seal

A hematite cylinder seal from T.984 is of a Levantine style that preceded that of the “Aleppo School”, represented by Alalakh Stratum VII, which began towards the end of the eighteenth century (Kempinski 1993c). Depending on whether it is associated with the incipient or a later phase in this tomb, the seal offers a date in the late nineteenth or early eighteenth century for either the MB IIa/3 or MB IIa/4 phases.

1.3 Nahariya

Although published incompletely, the MB IIa sites in the vicinity of modern Nahariya, the ancient port at the mouth of the Ga`aton river, and the temple-industrial complex to its north, are all

²⁷⁰Analysis of the duck-bill axe shows it to be leaded tin-bronze (Shalev *forthcoming*).

²⁷¹Six of these toggle pins were analyzed and shown to be made with little uniformity and low quality, which suggest that their origin should be sought in remelted scrap (Shalev 1989: 43-4, table 1). The amount of tin varies from a trace of 0.1% to a slight addition of 6.1%. Of particular interest is the large amount of arsenic, 0.5% - 4.2%, which may suggests a continuity of the local pre-MBA tradition of using arsenical copper ores for metalwork (Shalev *forthcoming*).

²⁷²The bead was found in L.518, near the mouth of the earliest installation (Miron 1989: 24-7, 49, figs. 7, 8), which is assigned to the MB IIa period (Kempinski 1989c: 3, II).

important in understanding the external relations of the northern coast of Israel. In the absence of a proper integrated final publication, much of the data for both sites is unevenly reported in preliminary communiques that do not always provide attributions for many of the finds. For its time, Ben-Dor's (1950) publication of the temple-industrial complex provides a reasonable stratigraphic framework with associated finds. While the subsequent excavations by Dothan (1993a and biblio.) clarified the development of the temple complex, the publication lacks a clear attribution of the finds.

1.3.1 Environment and economy

Both the settlement and the temple-industrial complex are located in the coastal dune zone on the same *kurkar* ridge. Although the investigation of the Holocene paleogeography of the overall region is still incomplete (cf. Sivan 1996), a river anchorage is likely for the lower Ga`aton river, upon which the main settlement was based. However, this river might at one time have entered the sea at an alternate anchorage not far from the northern temple complex (Raban 1986: 219; Yoyev 1993: 1088).

1.3.2 The settlement

The accumulation of sand and extensive modern development has obscured Tel Nahariya, both in the past and present. In the past, the lack of any visible tell amidst the considerable sand dunes accounts for the lack of an Arabic name or any note of its existence following modern settlement in 1938 (Ben-Dor 1950; Yoyev 1993: 1088). With the aid of aerial photographs, chance finds, and salvage excavations within the modern city, the estimated extent of settlement and an outline of its history can be made. The MBA settlement was concentrated on the upper northern area of the mound, ca. 3 ha, on the coastal *kurkar* ridge adjacent to the southern bank of the the Ga`aton rivermouth (Yoyev 1993: 1088-9, fig.). Three phases of MB IIa habitation were uncovered, of which the earliest is characterized by red-slipped pottery, which declined in the later phases in favor of painted monochrome and bichrome wares. The chance discovery of a duck-bill axe, possibly from a tomb, belongs to this period (Miron 1992: 53-9). An MBA cemetery may have existed to the southeast of the settlement on one of the *kurkar* hills (Maier 1986: 336, fig. 1).

1.3.3 The temple and workshop complex

This complex, covering an area of ca. 764 m², is located on a *kurkar* hill 800 m north of the settlement near a now submerged spring, and was investigated by two separate teams that identified it as a temple and workshop (Ben-Dor 1950; Dothan 1993c). The rectangular building and its additions were in use primarily during the Middle Bronze Age, but some ceramic finds (i.e., four-spouted lamps and band-combed storage jars) indicate an association with the IBA culture (Ben-Dor 1950: 29, 39). The lowest of the seven floor phases (7-5) and pre-floor deposits should be attributed to the MB IIa period along with scattered finds in the dump on the northern slope outside the structure. The area to the south of this structure includes a square building, perhaps a temple, and a circular platform, which was identified as an open air *bamah* or cultic precinct (Dothan 1993c and biblio.). The five phases

arranged in three strata are synchronized in Table 8 following Dothan (1993c: 1092 and table). The first and part of the second stratum should be assigned to the MB IIa period (Dothan 1981). The large numbers of miniature vessels included incense burners, deposits of metals, and figurines (complete and scrap) that were arranged around and within the structures, and have been interpreted as being the offering or *ex votos* of a ritual precinct where metal and perhaps ceramic production were carried out.

1.3.4 Pottery finds and evidence for production

No direct evidence for pottery production has been discovered in the area of the northern complex, and only two examples of pottery have been analyzed. Based on the large quantities of similar specialized wares (e.g., seven-cupped bowls), and the presence of a clay kiln stopper, Dothan has suggested that there was a ceramic workshop at this locale (1991; Singer-Avitz & Levy 1992: n. 6).

13.5 LPW, MC, and TEY vessels

Yogev (1993) reports that painted wares, both monochrome and bichrome, dominate the repertoire of the final two MB IIa phases at the settlement. This may correspond with the northern complex where LPW handleless jars and juglets range from the earliest to latest MB IIa and transitional MB IIa-b phases. Only two have a stratigraphic attribution: a bichrome band-painted handleless jar, containing silver and bronze scrap, was found buried in the bedrock and belongs to Phase 5, and a LPW juglet was found in Phase 3-4 (Dothan 1981: 74-76, figs. 1-2). An additional LPW juglet, without any precise attribution, apparently belongs with Dothan's Phase B (1956a: 19, fig. 8). Besides stray painted sherds, a miniature LPW juglet and a handleless bichrome jar were found by Ben-Dor (1950: 39, figs. 16:325, 47, pl. VIII), but no precise attribution within the complex is given.

Two cut-away necks of juglets made of a green buff ware are identified as Cypriot by Ben-Dor (1950: 31, fig. 25), but they lack any stratigraphic attribution. Since Ben-Dor's publication these artifacts have not been re-examined. Alternatively, they may be of northern, perhaps Anatolian, origin or inspiration (Miron 1988: 24). Nine fragmentary examples of TEY juglets were reported from locus B and level 7 (Ben-Dor 1950: 31-2, fig. 26a, c, pl. IX:30).

1.3.6 Egyptian and Egyptianizing Objects

The neck and rim of one juglet is decorated with an appliqué monkey, whose hand covers its eyes (Dothan 1956a: 22, pl. 3F). Typologically, this vessel has an MB IIa-type gutter rim, while the application is of Egyptian inspiration (Gophna & Beck 1981: 64). A design scarab set in a silver ring from Dothan's excavation (1956a: pl. 3:D) is not specifically assigned to Phase A of the complex (contra Weinstein 1975: 2-3, nn. 25-6), but may still be an MB IIa find.

1.3.7 Metal production

The absence of any metallurgical analyses of the metal finds precludes any detailed discussion of metal production at the Nahariya workshop. While no metallurgical installations were found, from

the sheer quantity of both finished and cut metal objects (i.e., scrap), the considerable ash at the site, and the presence of casting molds, it is reasonable to conclude that metal production was a principal feature of this site.

13.8 Bronze finds

At least sixteen figurines and two tools were found at the temple-workshop complex. Although many more unpublished objects can presumably be attributed stratigraphically or by analogy to the MB IIa, this tally represents those objects that have secure attributions provided by the excavator or by the subsequent study by Negbi (1976).²⁷³ In addition, a duckbill axe was found in the settlement (Miron 1992: 53-59). Analysis shows it to be a tin-bronze alloy with less than one percent each of lead and arsenic (Miron 1992: 98, table 1).

13.9 Silver and gold

Five silver figurines and a bead from the temple - workshop complex are published. As with the bronze finds, these represent a small portion of the presumed quantity of finished and scrap silver.²⁷⁴ The presence of gold jewelry is mentioned by Dothan (1956a: 20), but without any details.

1.3.10 Semi-precious stones

Both Ben-Dor and Dothan mention large quantities of beads made of a variety of semi-precious stones, as well as other materials from the earliest phases at the temple-workshop complex. Thirty-seven beads made of agate, crystal and carnelian were reported from the deposits below floor VII (Ben-Dor 1950: 40). These same raw materials along with amethyst and pink chalcedony are also mentioned, either as beads or figurines, but no details are provided (Dothan 1956a: 20-2, pls. III-IV).

1.4 Akko

At the northern end of the Bay of Akko/Haifa, the ancient hill beneath Tel Akko was chosen for settlement because of its relative proximity to a lush agricultural zone, but, more importantly, because of its position near one of the best anchorages in the bay. The long habitation of this site and its political and economic importance throughout history attest to the wisdom of this choice (Dothan 1976: 1-3; 1993a). These factors led to Akko becoming one of the primary ports for the entire

²⁷³Figurines: one found below floor IV (Ben-Dor 1950: 26, pl. XII:6); three found in a ceramic vessel (no. 4650; the LPW handle-less jar?) in Phase A of the *bamah* (Negbi 1976: nos. 1525-1527); one found by A. Kempinski in the bedrock of Phase A (Negbi 1976: no. 1530); nine from jar no. 858, Phase B of the *bamah* (Negbi 1976: nos. 1531, 1608-1612, 1620, 1621, 1623); and two from the stones of Phase B of the *bamah* (Negbi 1976: nos. 1532, 1534). Tools: an adze found at the lowest course of room I, which equals floor VII (Ben-Dor 1950: 39, pl. V:1); a chisel from floor VII (Ben-Dor 1950: 39).

²⁷⁴The figurines were found as follows: one below floor IV (Ben-Dor 1950: 26, pl. XII:5); one in jar no. 4650, Phase A of *bamah* (Negbi 1976: no. 1528); two in jar no. 858, Phase B of *bamah* (Negbi 1976: nos. 1607, 1622); one from Phase B of *bamah* (Negbi 1976: no. 1533). One silver bead was found below floor VII (Ben-Dor 1950: 40).

southern Levant, serving a hinterland that extended far beyond its immediate environs and into the Galilee hills and Jezreel valley. Today, however, Tel Akko reveals little of its ancient topography and, in fact, sits some 700 m from the sea. Archaeological excavations and geomorphological studies, both on the tell and in the area towards the west, where the Hellenistic and later cities thrived, provide a picture of a very different geographical setting.

1.4.1 Environment and harbors

The site was established on an isolated *kurkar* hill, which is disconnected from the southernmost extension of the Evron ridge and 500 m north of the faultline that marks the northern edge of the Haifa Bay graben (Inbar & Sivan 1984: fig. 1). Geomorphological investigations suggest the following reconstruction of the paleogeography (Inbar & Sivan 1984; Raban 1991b):

- 1) The Holocene sea level rise inundated the area to the west of the Evron ridge, flooding the lower course of the Na`aman river, which flowed just south of the tell. Raban (1991b: 31*-2*) suggests that the sea actually filled the topographical depression on the south side of the tell, as indicated by the presence of marine abrasion platforms, which persisted into the Late Bronze Age. The underlying bedrock of Crusader Akko, which is now connected to the shore, was then an exposed island surrounded by water.
- 2) The rise in sea level increased sediment transport and deposition in the area of the tell. The sand deposited in the low energy environment to the lee of the *kurkar* island created a sandy spit or tombolo and began the formation of the present peninsula, which split the inundated area into two separated bays, south and northwest of the tell (Inbar & Sivan 1984: fig. 8).
- 3) Increased sand transport continued to silt up this area, but this effect may have been ameliorated by dredging and excavation. Such clearing efforts may be indicated by the large volume of sand in the final rampart phase of the site (Raban 1991a: 138; Raban 1991b: 35). Radiocarbon determinations of organic material from the lagoon and archaeological evidence indicate that the area between the tell and the Crusader city was a marine environment that only became dry land during the Persian period (Inbar & Sivan 1984: 89).

Very little is known of the agricultural economy of the site; in light of its paleogeography, it is clear that much of the immediate area to the south and northwest was unsuitable for cultivation. Akko's agricultural hinterland lay to the southeast and northeast, respectively, in the fertile plain and east of the *kurkar* ridge.²⁷⁵

²⁷⁵A single example of olive wood, representing 7.7% of a MBA sample, is insufficient evidence to suggest extensive oleaculture (Lipschitz 1987: 143), although such a pursuit may have been a feature of the nearby hills.

1.4.2 Settlement and fortifications

Excavations have revealed a complex sequence of six MBA phases of development (Raban 1991b; Table 9). These fortifications have been studied principally in areas to the north (Area B), the northwest (Area F), and to some extent in the south along the topographical depression (Area P).

In Area B, the earliest phase of the rampart was constructed of fine clay and carbonized loam and is crowned by a course of *kurkar*, which served as a structural foundation. Infant burials from this phase date it to the MB IIa period (Raban 1991b: 20*; Dothan 1990: 150). The second phase was composed of layers of loam, clay, crushed *kurkar*, and sand that was poured between mud and lime-plastered cross walls.²⁷⁶ A brick wall with shallow bastions and a staircase was constructed on the base of the inner slope, perhaps as a line of defense.²⁷⁷ This wall continued in use during Phase 3 when the inhabitants laid layers of loam with embedded *kurkar* slabs. In Phase 4, the last MB IIa rampart was composed solely of loam-sealed sand, and was constructed against a large 15 x 15 m brick structure, perhaps a citadel.

Excavations in Area P, at the southwestern point of the topographical depression that breaks the regular plan of the site, revealed only a single clay-covered sand rampart of Phase 4 sitting on bedrock. At this point in the line of the city, the rampart turns to the northwest following the line of the depression. A stone built potterna, 1.3 m high and 0.6 m wide at its base, was constructed inside the sand layer on the southern side of the rampart and was in use through the end of the Middle Bronze Age (Raban 1991b: 29*, fig. 12). In contrast to the excavator's suggestion, its size precludes it being a true passageway and it may instead be part of a sewer system.

The mudbrick gate in Area F, which is constructed on the clay rampart of Phase 1, was in use during Phase 2, but was dismantled and covered by the rampart of Phase 3. One additional rampart of Phase 4 is found in this area. Pottery from the last floor of the gate belongs to the middle of the MB IIa sequence. The gate has been termed the "sea gate" of the city as it is presumed to have led to the northwestern bay (Raban 1991b). Given the aforementioned paleogeography this does not seem implausible. Examination of the city plan, however, reveals that the idealized plan of the site is an ovoid polygon. The remains of a possible MB IIa gate in Area P run east-west (Raban 1991b: 29*-31*, fig. 13), but its precise construction and identification requires further study.

Although very little of the actual settlement levels have been exposed, the evidence published thus far suggests two principal stages in the city's evolution (Raban 1991b: 31*-2*). The initial fortified settlement was on the northwestern half of the original hill. Towards the end of the MB IIa period, the city expanded towards the south and east, forming the kidney shaped mound visible today.

²⁷⁶Plastered walls suggest that they were designed to stand open and only later filled in by the rampart.

²⁷⁷This type of arrangement is very similar to that found at Kabri (Kempinski 1991b: 24-5, fig. 10).

1.4.3 MC, TEY, and “Anatolian” cut-away neck vessels

A considerable quantity of MC pottery was found, but the precise number and stratigraphic context are unknown. In her study of MC chronology, Saltz (1977: 57) reports over two hundred examples, but to date only seventeen have been published of the following types: WPPL, WPCL, Composite ware, WP Framed Caduceus and other indeterminate examples (Dothan 1976: 9, fig. 8-10; Johnson 1982: 50). This material originated in the rampart fill, but its precise attribution the MB IIA period is unsubstantiated. In Area F, a few MC WP sherds and a single TEY sherd of an ‘early type’ were found (Raban 1991b: 25*), but no drawings are available.²⁷⁸ A single “Anatolian” cut-away jug was found in an unpublished late MBA intramural tomb (Artzy 1986: 12, 41), but may be an heirloom.²⁷⁹

1.4.4 Egyptian or Egyptianizing finds

An infant burial jar was found on the inner slope of one of the MB IIA ramparts in Area B. It is incised with two Egyptian signs that mean, respectively, “child/infant” and “jar” (Dothan 1990).²⁸⁰ The head of the infant was laid against a pierced stone, perhaps a fishing net weight. A single scarab of Senusert II was found on the surface of the site (Givon 1967: 34). Other unpublished MK scarabs, alabaster, and Egyptianizing finds are reported from MB IIA-b intramural tombs (Artzy 1986: 14-6, 43).

1.5 Tel Bira

East of Tel Akko, up Nahal Hilazon, on the edge of the hills in the northeastern corner of the lush fields of the southern Akko Plain, Tel Bira (Bir el-Arabi) commands a position on the inner road of the Coastal Plain. An additional road may have led latitudinally into the highlands to the east (Dorsey 1991: 161). Only limited salvage excavations have been carried out at this 20 ha site, which is enclosed by a MBA rampart (Prausnitz 1993). Of particular interest is the presence of IBA remains on the bedrock and associated tombs, which may have been re-used in the MB IIA period (Prausnitz 1993). In addition, the floor of a courtyard house contained an IBA teapot along with ceramics of the MB IIA, providing evidence of a degree of contemporaneity between the two periods (Kempinski 1991a: n. 8). A WPPL jug is illustrated, but its precise context is unknown (Prausnitz 1993).

²⁷⁸Neutron Activation Analysis of fourteen examples show that they can be divided into two chemical groups (Dothan 1976: 9). A similar division was found in analysis of material from Kalopsidha in Cyprus, a site which provides the best chemical fit for the Akko material.

²⁷⁹A photograph of this vessel adorns the cover of *Michmanim*, vol. 5 (1991). Kempinski (1992c: 171, fig. 6) considers it and a similar example from Tell el- Ajjul to be imports from Byblos.

²⁸⁰Petrographic analysis by Y. Goren demonstrates the jar to be consistent with manufacture in the immediate area of the site as well as parts of the Upper and Lower Galilee (Dothan 1990: 148, n. 3).

1.6 Khirbet Kurdaneh (Afek)

Situated upriver from Akko at the source of the Na`aman river, Khirbet Kurdaneh is on a limestone hill that rises some 30 m above the alluvial plain. Although still not systematically surveyed, preliminary examination indicates a 2 ha site, which was fortified with a rampart and inhabited as during the MB IIa period (Maisler 1939). This habitation may have been founded on an earlier EBA settlement. A number of chance finds include a duckbill axe (Maisler 1939; Miron 1992: 54; Yogev 1985: 105), a MC WP juglet (Åström 1966: 81, n. 20), and a TEY juglet (Kaplan 1980: 84a; Maisler 1939).²⁸¹

2. Carmel Coast

The Carmel Coastal Plain is bounded in the north by the eroded cape of Mt. Carmel, in the south by Nahal Taninim, and in the east by Mt. Carmel; the plain gradually broadens from north to south. The plain is divided by three *kurkar* ridges into a series of troughs, the eastern valley being the broadest. The western zone is characterized by these ridges and by sand dunes, while the troughs contain primarily alluvial soils, often overlain by sandier soils. South of Athlit, the coastal ridge is partly eroded and submerged, forming large sandy stretches of beach, broken up by rocky shores and peninsulae. North of Athlit, the two westernmost ridges are submerged and the eastern ridge is at the backshore of a long unprotected sandy beach. In this region, the *kurkar* ridges and dunes caused marshy environments (e.g., the Kebara swamp), which were alleviated by both natural and artificial outlets (Nir 1959; Botrimovitz 1971; 1988). In terms of potential resources, the Carmel hills served a function similar to those of the Galilee. Water was available from the coastal aquifer, some annual rivers, and precipitation (450 mm near the shore and 600 mm in the nearby hills). Lateral movement inland towards the mountain passes (and Jezreel Valley) was somewhat restricted by the eastern ridge; the main longitudinal movement followed these ridges or, presumably, the foot of the Carmel.

Apart from some isolated BA sites, the Carmel Coast was sparsely inhabited prior to the MBA (Gophna & Portugali 1988). During the IBA, the mountain margins were preferred, although some ceramic finds are reported on the plain at Tel Megadim and Tel Mevorakh (Gophna & Portugali 1988: 25; Wolff 1998: 31).²⁸² With the exception of a tomb at Tirat Carmel (Marcus 1995c), MB IIa evidence was limited to the region south of Tel Megadim and was located principally in the western coastal zone (Table 6.2). The meager MBA settlement along the western margins of the eastern trough may suggest its sparse utilization.

²⁸¹X-ray fluorescence, a semi-quantitative analysis, indicates the axe is made of leaded tin-bronze (Shenberg 1985).

²⁸²Note that no IBA remains were found during the excavations at Tel Mevorakh (Stern 1984). At Tel Megadim, finds include LPW, TEY, and MC pottery, scarabs, bronzes, and beads (Wolff 1998: 32), but their precise attribution is not indicated.

2.1 Tel Nami

Tel Nami is one of a cluster of MB IIa and LBA sites located midway between the ancient ports of `Athlit and Dor. Following surface inspection by an ASI survey team ([Olami] 1969), and a limited investigation in 1975 ([Raban, Dothan & Flemming] 1977), excavations and surveys in the Tel Nami region have been carried out since 1985 (Artzy 1993b and biblio.). The general abandonment of the sites in this region following the LBA have made MB IIa settlement levels very accessible, allowing horizontal exposures of well-preserved remains. This accessibility, and the evidence found thus far, have contributed greatly to our understanding of maritime activity during this period.

2.1.1 Environment and Economy

Tel Nami, or *Jezirat en-Nami* “the island of the soft [sand]”, is located on a peninsular relic of the coastal *kurkar* ridge. The “island” is connected to the shore by a sandy spit, or tombolo, which is subject to marine inundation. Geomorphological investigations of the tombolo have demonstrated that it is composed of unconsolidated sand to a depth of -2 m MSL (Marcus 1991). This lithology suggests that the bedrock of Tel Nami was an island in the past, which was eventually connected to the shore by the accretion of sediments. The ancient shore in this instance is partly occupied by Nami East, a site some 100 m east of the tell. Unlike Tel Nami, this site was founded on sterile sand, indicating that Holocene sand deposition in this area had begun before the MB IIa period, and that the sand was stable and dry by the time of initial settlement. Whether Tel Nami remained an island during the MB IIa is still unknown, but it seems plausible that an anchorage existed between it and Nami East or, alternatively, south or north of the developing tombolo.²⁸³

The immediate landward area of this region is today used for fishponds. Prior to their construction, the area suffered from poor drainage caused by the inability of Nahal Ha-Me`arot to break through the sand dunes. A large, oval, and perhaps seasonal body of water east of Nami East appears as a swampy lake on nineteenth and twentieth century CE, maps and aerial photographs until ca. 1949 (Marcus 1991). This lake persisted despite attempts to drain the river into the sea near its present outlet north of Tel Nami. This outlet is absent in early maps, although the name of the nearby peninsula, *Jezirat el-Wadi* (“the island of the river”) suggests the presence of an outlet there by the last quarter of the nineteenth century CE. In aerial photographs, the area around the lake is cultivated, suggesting that, if properly managed, agriculture was not impeded by the stagnant water. If the landscape was similar in antiquity, this or other depressions east of the sand dunes may have served as water reservoirs—the traditional *birke*—for livestock or irrigation. Raban (1985: 19-20, figs. 8, 13) suggests that this area was a lagoon connected to the sea.

The eastern bank of this swampy lake reaches the northernmost edge of the middle *kurkar* ridge upon which a poorly preserved MB IIa site is located. This site appears to have been the largest

²⁸³The existence of an ancient anchorage is suggested by the discovery of five stone anchors, possibly of LBA type, at a depth of 1.5 m immediately south of the tell (Galili & Sharvit 1997: 143-4, fig. 202:10).

of the three; sherd scatters of the plowed area covers an area of 2 ha. This settlement is in the middle of a lush agricultural zone that is bounded by the large eastern *kurkar* ridge. No sites were found on this ridge, nor in the alluvial trough to the east. An artificial outlet through this ridge indicates that drainage of this area was impeded in antiquity. Whether this was a BA feature is not clear, although the current absence of any sites on the eastern ridge may indicate inhospitable conditions. The western base of the ridge is the natural longitudinal route of the Carmel Coast. The lack of any settlements along the entire eastern trough of the Carmel Coastal Plain, between the eastern *kurkar* ridge and the foot of the mountain, preclude the precise delineation of this route. Nevertheless, the nearby Carmel mountain offered the inhabitants wood (Lev-Yadun, et al. 1996), possibly raw materials for lime (Artzy 1987), and a potential area for pastoral and horticultural activities.

2.1.2 Summary of MB IIa remains

The most extensive investigation of the MB IIa remains at Tel Nami has been in Area D, on the southeastern edge of the site.²⁸⁴ Nearly 100 m² (ca 2.5% of the site) has been exposed, revealing two principal strata of this period. The initial stratum appears to be largely domestic in character, with two rows of rectangular rooms and courtyards, some with multiple floor phases and ovens. The two rows of dwellings are divided by a paved alleyway. In the second stratum, this alleyway and settlement plan is only partly utilized and the built-up area is reduced. One room, became a storage space for what may be a larger structure to the north and northwest, in still unexplored areas. This storage room was burned by a fierce fire and its contents, including over thirty ceramic vessels of various types, were sealed by the debris. Following this phase, the site seems to have been largely abandoned until the Late Bronze Age.²⁸⁵

Excavations in Area G, on the northern side of the tell, produced some MB IIa remains including a stone drain (Marcus 1991: 98-9). Area O was also founded during the MB IIa period, as indicated by a well (Marcus 1991), a building and installation, which may be a granary, and one chamber of a stone-built tomb complex (Artzy 1993a; 1995: 20).

Although the current survey has not identified any architecture at Sites 104-106, Olami's survey investigated a partially exposed building built of well-fashioned *kurkar* foundations and mudbrick superstructure (Olami, p.c.). The remains of the building measured 13.5 x 6 m, suggesting a public or patrician structure and were associated solely with MB IIa ceramics.

²⁸⁴These investigations were supervised by the author (Marcus 1991).

²⁸⁵Although this conclusion may be modified by future excavation, it should be noted that this assessment is based on examination of two areas on the site, including material from LBA fills. There is some evidence that the site may have served as a burial ground perhaps during the late MB IIb-early LB I period (Marcus & Artzy 1995: 144).

2.1.3 Pottery finds

The limited presentation of the pottery remains (Marcus 1991; Artzy 1995: fig. 2.4) preclude a detailed discussion of the phasing of Area D. However, pending more detailed analysis, the two principal strata can be provisionally assigned to the MB IIa/2 and MB IIa/3 periods. The assemblage from the stone-built tomb in Nami East suggest that it should be assigned to MB IIa/2 or even earlier.

2.1.3.1 LPW, MC, and other Wares

Two painted vessels, from the stone-built tomb, include a small handleless jar with bichrome bands and strokes over the rim, and a jug with bichrome bands and net-pattern decorations (Artzy 1995: 20, fig. 2.4).²⁸⁶ Eight fragmentary examples of MC pottery have been found, three in association with MB IIa habitation levels and the remainder in later fills, which, in the absence of an MB IIb settlement, are dated to the MB IIa period (Artzy & Marcus 1992). These include a single WP Composite Ware bowl, one WPPL jug, three from WPCL jugs, a WP amphora, and two indeterminate WP sherds. In Area D, an Anatolianizing element is a krater with cross-decorated disc handles (Marcus 1991: 140-3, figs. 38-39; Kislev, Artzy & Marcus 1993: fig. 5).

2.1.4 Egyptianizing object

A terra-cotta loom weight impressed with a scarab seal was found in a disturbed context, but which is assigned circumstantially to the MB IIa period (Marcus & Artzy 1995). The scarab impression provides a *terminus post quem* of the reign of Senusert II or Amenemhet III (*see infra* Chapter Five).

2.1.5 Bronze finds

Three bronze objects were found in MB IIa levels in Area D: a dagger, a fragmentary figurine, and a pin (Artzy 1995: 19; Marcus 1991: 103). The figurine has parallels in Nahariya and Byblos (Artzy 1995: 19).

2.1.6 Organic imports

Charred remains of *lathyrus clymenum*, a cultivated legume from the Aegean region, were found in three jars from the aforementioned store room and scattered in this and an adjacent room (Kislev, Artzy & Marcus 1993). Analysis of wood remains from the MB IIa well in Area O revealed three fragments of *cedrus libani*, whose nearest source is the Lebanon (Lev-Yadun, et al. 1996).

²⁸⁶The former has a good parallel from a well-stratified tomb at Megiddo (Loud 1948: pl. 8:8). The latter, which the excavator relates to the Amuq-Cilician Painted Wares (Artzy 1995: 20), has good parallels at Amrith and Dhaharat el-Humraiya (Tubb 1983: fig. 1:4).

2.2 Tel Dor

Located just west of the mountain pass of Wadi Milik, which connects the Jezreel Valley with the coast, Tel Dor is the largest site (ca. 25 ha) on the Carmel Coast.²⁸⁷ Its great size and long maritime history are most certainly a product of the anchorages around the site, aspects of which have been revealed both on land and underwater (Stern 1992; 1993; 1995a; Wachsmann & Raveh 1984; Raban 1993d; 1995a; Raveh & Kingsley 1993; Kingsley & Raveh 1996).

2.2.1 The anchorages of Dor

Dor possesses three potential protected bodies of water: the North Bay, the central “Love Bay”, and the Tantura lagoon to the south, a marine topography situation that sets it apart from many other Levantine ports (Stern 1995c: 11). The first two are based on protected rocky embayments with sandy beaches to their lee sides. The third is a long, shallow channel of water protected by a chain of *kurkar* islands that still serves local craft. Geomorphological studies suggest that the paleogeography of the area has changed considerably during the last five thousand years.

Prior to the Middle Bronze Age, as sea level rose, the area to the south and east of the coastal *kurkar* ridge was a marine-inundated or brackish lagoon (Sneh & Klein 1984; Raban 1995a: 286-9, 350). This lagoon may have even reached the North Bay, creating a ca 2 km long and 200 m wide *kurkar* island, whose wider and higher northern section was settled during the MB IIa period (Raban 1995a: 286-7).²⁸⁸ At the very least, the site was a peninsula, whose lee anchorage was accessed from the south. In its original state, without the relatively recent tombolo dividing it and the *kurkar* ridge immediately to its east allowing a 300 m maximum width, the 2-3 m deep lagoon south of the tell covered an area of ca. 27 ha (Raban 1995a: 289).²⁸⁹ The eastern basin would have greatly increased the area of the anchorage, but was only 1.0-1.5 m deep. It is not clear when the sand deposition silted up the entry to the eastern basin and rendered it unusable. With its better circulation, the Tantura lagoon was used, on and off, throughout antiquity. The North Bay encloses an area of ca. 6 ha and is protected by an island on the west, near an entrance channel some 1.80 m deep. At present, it is a shallow, sand-covered topographical hollow, which has a substratum of hydromorphic clay up to a height of -1.5 m MSL (Raban 1995a: 288). “Love Bay” is the smallest cove, with an area of only 1.5 ha. It is protected by small islets, and has two entrances to the south, both 4.5m deep, and one in the north, which is 1.2 m deep (Raban 1995a: 288-9).

²⁸⁷Stern's estimate (1995c: 9-10) is a maximum based on eroded portions of the mound and the eastern lower city.

²⁸⁸Some Chalcolithic and EB I sherds from later fills (Stern 1995b: 271) may suggest an earlier habitation.

²⁸⁹For a pre-modern depiction of the lagoon without the tombolo, see Wachsmann & Raveh (1984: fig. 16).

As MB IIA remains were found solely along the eroded western side of the tell, near Love Bay and the slipways, Raban (1995a: 301-2, 350) suggests that this bay was incorporated within the city's fortification line as the principal anchorage, but no marine finds have been found to confirm this suggestion. Regarding the Tantura lagoon, at a time when sea level was lower by 1-2 m, Raban (1995a: 350) suggests that not all of its extent was utilized.²⁹⁰ Although hundreds of stone anchors have been found in the lagoon, clearly MBA finds, including pottery and stone anchors, were found near the southern part of the lagoon.²⁹¹ Thus, reasons other than an inadequate anchorage led the MB IIA inhabitants away from settling near the lagoon (Raban 1995a: 285).²⁹² The North Bay appears to have been used during later periods (Raban 1995a: 289-96), although earlier use should not be precluded.

2.2.2 Summary of MB IIA Remains

As a result of its long occupation, even a decade of intensive excavation has revealed little of the BA settlement, let alone the MB IIA period, its incipient phase. Apart from the odd sherd out of context (Stern 1995b: 271), the only known MB IIA remains have been exposed by marine erosion on the western sea side of the site. In the "Love Bay" area, MB IIA levels were founded on bedrock as low as 1.60 m above MSL (Raban & Galili 1985: 334-5, fig. 17; Raban 1995a: 287, 302, 306), which may suggest a slightly lower sea level at the time. A 2 m wide wall of unhewn stones may also date to this period (Raban 1995a: 302-3, fig. 9.7). Subsequent sand and shell deposits suggest some marine intrusions, along with later MB IIB levels (Raban 1995a: 302, fig. 9.6). The ceramics are reported to belong to MB IIA/3 period (Raban 1995a: 303, n. 38). South of Love Bay, near the Classical period slipways, an MB IIA level produced similarly dated pottery, including MC WP wares (Raban 1995a: 309). The limits of the MBA settlement are not known, and await further investigation, although the orthogonal shape of the site may have been partially influenced by a rampart fortification.

2.3 Tel Mevorakh

This small site is located near the southern bank of Nahal Tanninim, which is the natural geographical border between the Carmel and Sharon Coastal Plains. Excavations at the site only briefly examined the MBA remains, which produced some important small finds.

²⁹⁰An MB IIA sea level of -1.00 msl is suggested by evidence from Tel Nami (Marcus 1991: 195-7) and from a partially submerged MBA cemetery at Athlit (Galili, Weinstein-Evron & Ronen 1988).

²⁹¹MB IIA sherds, including a MCCL fragment, have been found in the lagoon in recent excavations on the lee side of the Tafat and Dor islands (Wachsmann 1995: 6; Sibella 1995: 13, fig. 1; Wachsmann & Raveh 1984: 239).

²⁹²Perhaps the low-lying, inshore *kurkar* ridge parallel to the lagoon did not afford sufficient topographical advantages (e.g., security, protection from waves, or height above a marshy land).

2.3.1 Environment and economy

Despite Tel Mevorakh's small size ca. 0.1 ha, its strategic position at the start of the inner route of the Coastal Plain between Mt. Carmel and the Kebara swamps made this an important road stop for longitudinal movement and, logically, one of the principal fording points on Nahal Tanninim. Although a detailed paleogeographic study is lacking for this region, during all periods, presumably, the river and impeded drainage were certainly factors affecting the economy and the development of the site. Raban (1985: 17) suggests that in the Bronze Age the area of the tell was subjected to marine inundation, and the entire region of the lower Nahal Tanninim basin was a navigable lagoon.²⁹³ If this suggestion should prove correct, then the importance of the site would increase considerably as it would have served as an inland lagoonal anchorage. Excavation at the northern base of the site, near the earliest levels of habitation, revealed a black swampy layer indicating either the proximity of an ancient course of Nahal Tanninim, or considerable inundation by a fairly substantial, but quiet body of water (Stern 1984: 52).²⁹⁴ In any event, lithic finds, the majority of which are sickle blades, indicate that some arable land was available and that agriculture played a role in the economy of the site (Goring-Morris 1984: 82).

2.3.2 Summary of MB IIA remains

The earliest remains, Stratum XV, were located only in the center of the site (Stern 1984: 51). Here, on the virgin summit of the ancient *kurkar* and *hamra* hill, the inhabitants constructed a mudbrick building (B-349) built on stone foundations, whose superstructure survived in some sections up to a height of 3 m. The exposed portion of B-349 measured 6.5 x 2.5 m, but the one meter wide walls suggests a large building that could have supported a second story (Stern 1984: fig. 28). The excavator identifies it as a fort, but by analogy with construction at other sites (e.g, Tel el-Ifshar and Nami region Sites 100-104), it likely to have been a dwelling or patrician building. A burial jar near B-349, together with a basalt pestle (Stern 1984: pl. 45:8), may belong to this stratum.

Stratum XIV includes the MB IIA levels found above Stratum XV in the central area and, by ceramic comparison, other limited exposures and probes around the site (Stern 1984: 51-2). During this phase the site reached its maximum size, beyond the line of a later MB IIB rampart (Stern 1984: 46-50). Mudbrick structures were added to B-349, and apart from a single one meter wide wall, the scant remains are mostly of modest, perhaps domestic, structures with 40-50 cm wide walls, paved floors, and clay ovens (Stern 1984: 51-4).

²⁹³This contention is based on his identification of a marine abrasion platform at the foot of the tell, a formation that has yet to be dated.

²⁹⁴Stern (1984: 52) suggests that this "hard, sterile and almost black layer which had the appearance of a swamp bed" is the result of seasonal inundation, but this question demands a more substantial geomorphological investigation.

2.3.3 Pottery finds

The limited exposures provided small pottery assemblages. However, a sufficient quantity and range of types were collected to assign both strata to the middle of the MB IIa, probably MB IIa/3, period (Kempinski 1984: 57-58).

2.3.3.1 Painted and TEY Wares

Kempinski (1984: 57-58) correctly notes the general absence of the pottery forms that are characteristic of the earliest strata at Aphek, including the painted wares. The only vessel decorated with paint is the burial jar associated with the Stratum XV building, B-349 (Kempinski 1984: fig. 17:8). It is decorated with a single black line in the middle of its shoulder. One TEY fragment was found in Stratum XIV, and another example from a later context may also derive from this MB IIa phase (Kempinski 1984: 56-57, pl. 42:9, 10).

2.3.4 Egyptian or Egyptianizing finds

A Predynastic to Early Dynastic Egyptian greywacke vessel was found in one of the limited probes on the eastern side of the site among finds assigned to Stratum XIV (Brandl 1984). As no EBA levels are found at the site it was certainly an “antique” when it was deposited in this MB IIa context (Brandl 1984: 62).²⁹⁵ Although more common in earlier periods (Reese, Mienis & Woodward 1986), this site is the only one to have produced evidence for the import of *aspatharia* molluscs from the Nile during the MB IIa period. One of three shell halves was found in the same locus as the Egyptian stone vessel (Mienis 1984). The other two come from Strata XIV and XIII in the area south of building B-349. Stern (1992: 21) reports that two of the halves were from a complete shell, perhaps indicating that they were transported alive (Reese, Mienis & Woodward 1986: 82-3). These finds clearly attest to the inhabitants' desire for foreign exotica.

3. Sharon Coastal Plain

The Sharon Coastal Plain is bounded in the north by Mt. Carmel and Nahal Taninim, in the east by the Samarian Hills, and in the south by the Yarkon River. Physiographically, this plain is dominated by the central hills of *hamra* (sandy loam) and sand that separate the western coastal zone and the eastern alluvial trough. North of Nahal Hadera, the western coastal zone is fairly similar to the Carmel Coast, with alternating rock and sand beaches. Apart from the western coastal kurkar ridge, other ridges are slightly less defined. South of Nahal Hadera, the exposed shoreline is increasingly dominated by a steep escarpment, broken by occasional river mouths. This relatively high plateau (up to 25 m above msl), is characterized by *kurkar*, red sandy loam (called *hamra*), and clays, generally overlain by sand dunes. The eastern margin of the coastal zone is bounded by a prominent *kurkar* ridge, thus forming a narrow trough between it and the coastal plateau. The *hamra* hills were not

²⁹⁵It is impossible to determine if this “antique” is a contemporary or ancient import.

cultivated in antiquity; only the alluvial river basins were utilized (cf. Chernoff 1988), the largest of which is Nahal Yarkon. The *hamra* hills and the coastal plateau were impediments for drainage; some of the low lying areas, such as the coastal trough and the eastern valley, were probably annual or perennial swamps, or even lakes (Kaplan & Ritter-Kaplan 1993b: 1452-3). The central hills may have had an oak park forest (Har-el 1977), which would have offered accessible wood. The rivers, springs, coastal aquifer, and precipitation (500-600 mm) provided water. Movement longitudinally was along the plateau and trough of the coastal zone and the Samarian foothills of the eastern valley. Latitudinal movement was restricted to the rivers that transect the central *hamra* hills.

Settlement in the coastal zone of this region was extremely sparse during the millennium preceding the MB IIa period, following which it increased considerably (Table 6.3). Apart from some small sites, the eastern valley, where amenable, was preferred. Remains of the IBA are known from cemeteries, although occasional sherds in later MBA contexts may indicate some sedentary sites.

3.1 Tel Burga

Tel Burga is located upriver from Tel Mevorakh in the northeastern corner of the Sharon Plain. This 25 ha site is situated in the heart of a rich alluvial trough that is bordered in the north and east by the Carmel mountain, in the south by red *hamra* hills, and in the west by a *kurkar* ridge. Surface surveys and limited sondages have revealed two possible mudbrick towers, a gate in the east, and segments of an earthen rampart that surround the site. A fosse or moat completed this fortification, although the northern slope, the base of which is now covered with river pebbles, may have been protected by Nahal Tanninim, which is now some 100-200 m north of the site.²⁹⁶ Apart from some IBA sherds, all other ceramics found within the enclosure belong are types that range from MB IIa/1 to MB IIa/3 periods, following which the site was abandoned (Kochavi, Beck & Gophna 1979: 142-51). No other pertinent finds are reported, with the exception of a body sherd from a storage jar decorated with three horizontal painted lines of red and white (Kochavi, Beck & Gophna 1979: fig. 12:8).

3.2 Tel Esur - Barqai

At the southern slopes of the entrance to Wadi `Ara, on the Barqai hill, an IBA-MB IIb four-chambered shaft tomb was found that may be associated with the nearby settlement at Tel Esur (Gophna & Sussman 1969: 1; Dothan 1993d). The ceramic and metal finds associated with the MB IIa phase include painted juglets, with bichrome red and black, and monochrome red horizontal lines, and two socketed spearheads (Gophna & Sussman 1969: fig. 4:1-2, 13-14, pl. II:2²⁻³, 4-5). The painted and other juglets, bowls, and handleless jar suggest an attribution to MB IIa/2-3 period.

²⁹⁶During a recent visit to the site, a non-local ballast stone was found, which might indicate that the river was navigable up to a point fairly close to the site.

3.3 Tel Zeror

Tel Zeror is the largest of the MB IIA sites in the western Sharon Plain and is located at the confluence of Nahal `Iron, Nahal Haviva, and Nahal Hadera (Kochavi 1993). This position probably served as a fording point over Nahal Hadera and, if the river was navigable, an inland port. Excavations have revealed four phases of MB IIA habitation founded on virgin soil, but no evidence of any MB IIB remains was documented (Kochavi, Beck & Gophna 1979: 151-155; Kochavi 1993). These levels are associated with two superimposed stages of fortification characterized by brick walls up to 4.5 m wide and built on a rampart, and defended by a 10 m wide fosse or moat (Kochavi 1993: 1525). A two-chambered tower on the western side further indicated the defensive nature of this construction (Kochavi, Beck & Gophna 1979: fig. 16; Kochavi 1993: 1525, fig.). The pottery repertoire reveals phases coeval with MB IIA/1-3 phases (Kochavi, Beck & Gophna 1979: 155-60). The fortifications are assigned to MB IIA/2-3 phases (Kochavi 1993). Among the ceramic finds is a body sherd of a storage jar decorated with concentric circles, perhaps a handle-less jar (Kochavi, Beck & Gophna 1979: 160, fig. 18:22).

3.4 Khirbet Ibreiktas

This BA cemetery is located on the middle *kurkar* ridge, south of a Hellenistic to Byzantine settlement (Porath, Dar & Appelbaum 1985: 113-22). Salvage excavation revealed seventeen hewn shaft tombs concentrated in an area of ca. 1500 m² (Edelstein 1971). The remains were primarily of IBA date, but a number of MB IIA finds led the excavator to conclude that either the tombs were re-used during the subsequent period, or that the timespan between the two phases of burial was quite short (Edelstein 1971: 17).²⁹⁷

All of the tombs are reached by a shallow shaft (0.70-1.00 m depth) that appears to be part of a planned and uniform cemetery. This uniformity is reflected in their dimensions, shape, and orientation. The preserved shafts are described as round, rounded, and square. The number of interments did not exceed two skulls or bone concentrations. Although not all of the finds are presented (Edelstein 1971: 18, ill., inventory table), those published include a variety of IBA pottery, stone disks, a red semi-precious stone, perhaps carnelian, and bronze weapons. Artifacts belonging to the MB IIA cultural period were found in Tombs 5, 8, 9, and 19, but according to the inventory, not in any of those tombs that contained IBA remains. Tomb 5 contained an MB IIA basket-combed storage jar with an incised sign at the base of the shoulder, a bowl with a thickened rim, and a socketed spearhead. Tombs 8 and 19 each contained a socketed spearhead. Tomb 9 contained a socketed spearhead and two bronze pins (cf. Philip 1989: 92-5, 366, cat. 318, 319).

All of these contexts were disturbed, either in ancient or modern times. Nevertheless, given the similarity, clustering, and orientation of the tombs, it seems reasonable that the excavator is correct in interpreting the MB IIA phase as a reuse of an existing IBA cemetery. If so, the complete lack of

²⁹⁷Recent salvage excavations have uncovered additional fragmentary MB IIA ceramics (Kletter & Rapuano 1996; 1998: 44).

even fragmentary IBA pottery in the MB IIA contexts is surprising, unless these chambers were completely cleared out with not even a single sherd being left behind from the original deposit. Two alternative explanations may be offered: the cemetery was discovered by the inhabitants of an unknown MB IIA settlement, who practiced similar burial customs, or the IBA population continued to use this cemetery and augmented or replaced its customary burial offerings with newer MB IIA material.

3.5 Tel el-Ifshar (Hefer)

Excavations have been carried out at Tel el-Ifshar since 1979, as part of the Emek Hefer Archaeological Research Project (Paley & Porath 1993; 1997). Although only preliminary reports have come forth, scholars have already noted the importance of the data from this site, not the least because of the discovery of Egyptian pottery (Weinstein 1992). The fine stratification of eight distinct MB IIA phases with varied, abundant, and restorable pottery found on living levels separated by clear destruction layers, ensures that when properly published this will be a key site for the period. Until then, the available evidence must be used with due caution as future analysis and publication may supercede *prima facie* observations.²⁹⁸

3.5.1 Environment and Economy

The site is located some four km upriver from the sea, upon a summit of the eastern *kurkar* ridge, on the northern side of the Nahal Alexander watergap (Paley & Porath 1993: 609). This 600 m watergap is complemented by a smaller 300 m gap in the intermediate ridge and a larger 1600 m breach in the coastal ridge, all attesting to the impact of this river in the Pleistocene period, when its flow prevented the accumulation of sand from which the *kurkar* formed (Porath 1985: 19-20). In antiquity, the coastal breach may have been a broad bay, suitable for sheltering ships and providing access to the river, which may have been navigable as far as Tel el-Ifshar (Paley & Porath 1993: 609). With the inevitable accumulation of a sand bar at the mouth of the bay, a fact which may reflect changes in the hydrological regime during the Holocene period, Raban (1985: 19, fig. 5) suggests that an artificial outlet was cut, similar to the one at Akhziv. But for the sand bar and modern exploitation of its waters, this perennial river might still be navigable for small craft. From the Late Bronze Age onward, Tel Mikhmoret, on the northern end of the coastal breach, served as the port for this stretch of coastline (Porath 1985: 126-7; Porath, Paley & Stieglitz 1993).²⁹⁹

²⁹⁸The author had the opportunity to serve as field assistant to Y. Porat and S. Paley during the 1990 excavation season. Since then long discussions and collaborative efforts have ensued on a variety of topics. The excavators generously permitted the author to examine the finds and an unpublished manuscript of a preliminary report (Porath & Paley in preparation), and to take ceramic samples for a provenience study and organic samples for C-14 dating. Despite basic familiarity with the site and finds, the present review relies on the published reports, with unpublished data quoted only with the excavator's permission.

²⁹⁹Excavations at Tel Mikhmoret did not reveal any MBA remains (Porath, Paley & Stieglitz 1993), although Raban (1985: 17) hints otherwise. In light of the post-BA formation of sand dunes, which tends to obscure ancient remains (e.g., Nami East), it would be worthwhile to resume the search

In addition to riverine communication, the site also controlled an important fording point on the main longitudinal route along the eastern *kurkar* ridge. This vantage also provided access to the Samarian foothills and abundant alluvial lands of the intermediate and eastern troughs of the Coastal Plain (Porath 1985). Water was available from the river and a number of nearby springs (Paley & Porath 1993: 609). A topographical depression to the northwest of the tell, which in the past was supplied by a spring (Porath 1985: 163, n. 1), may have served as the local reservoir or *birke*. Wood would have been available from the park forest of Tabor oak and stone pine covering the red *hamra* hills of the Sharon plain (Waisel & Agami 1990: 115, 117-20).

Regular sampling during excavation and detailed archaeobotanical analysis provides an instructive picture of intensive agricultural exploitation (Chernoff 1988). This research shows that the potential agricultural zones, which presumably were augmented by water and soil management, permitted the MB IIa inhabitants to produce a variety of pulses, such as lentil, broad bean, bitter vetch, and chickpea; cereals, such as emmer wheat and barley; and fruits, such as grape and fig (Chernoff 1988: 192-8). In contrast, the absence of particular field crops such as field pea and various *lathyrus* species, and orchard crops such as olive, date, almond, and pomegranate (Chernoff 1988: 206-7), is equally instructive, but the choice of cultigens is largely enigmatic in the absence of further research. This evidence further suggests that alluvial soils were preferred and continuously sown, although the inventory of field weeds suggest that some sandy clay soils may also have been utilized (Chernoff 1988: 337-40, 345-347). Although the evidence is limited, Chernoff (1988: 367-9) notes an increase in barley cultivation from the middle of the MB IIa period onward, perhaps suggesting an increase in the salinity or alkalinity of the alluvial soils.

3.5.2 Summary of MB IIa remains

Following the incipient EB Ib settlement, the site appears to have been abandoned until the MB IIa period, although a few IBA sherds attest to some presence, perhaps associated with other settlement or burial activity in the region (Paley & Porath 1993: 610; Dar 1985). The greatest horizontal exposure of MB IIa remains, 750 m², has been achieved in in Area C, on the eastern side of the site, where eight phases have been discerned; four phases have been identified in more limited exposures in Area A on the western side of the site (Porath 1991: 13; Paley & Porath 1993: 610-12; 1997: 369; Table 10).

Phase A in Area C marks the beginning of MB IIa settlement and is characterized by wall and floor fragments established either on virgin soil or over scant EB Ib remains (Paley & Porath 1993: 611). This level was either destroyed or leveled for the construction of a large building complex in Phase B (Porath 1991: 13). This complex comprises two wings with rooms and courtyards, separated by a larger main courtyard. The entrance to the eastern wing is paved with a 2 m long monolithic *kurkar* threshold (Paley & Porath 1993: 611; 1997: 370, fig. 13.1). Paley & Porat (1993: 611) compare this stone with the stelae from Byblos and Gezer and suggest that it may have originated in a

for pre-LBA remains at Mikhmoret, or further inland near the easternmost extent of the presumed paleo-bay.

sacred context from Phase A. However, the possibility should not be excluded that it originated in an IBA "bamah" similar to that at nearby Tel Ashir, just west of Tel Poleg (Gophna 1992: 154; 1993c: 1195). The large size of the complex, with up to one meter wide walls, might indicate a second story. Moreover, the use of charred cedar beams in the superstructure (Porath & Paley 1993: 34) suggests an important public or monumental function, perhaps a palace, a fort, part of a ritual center or, at the very least, the residence of a wealthy patrician. The complex was destroyed in a fierce conflagration.

In Phase C, the complex was rebuilt with some alterations in plan. One room of the western wing has a two to three centimeter thick plaster floor, similar to those from the palaces of Aphek and Kabri (Paley & Porath 1993: 611; 1997: 370). A sunken depression in the center of the room was probably the base of a column. Along the northern wall of the room is a plastered, stepped installation with five depressions. The excavators suggest that these depressions could have served as seats, as offering tables, or as a plinth (Paley & Porath 1993: 611). The fierce destruction that marks the end of this phase also signifies the end of the public or monumental character of this side of the site. Phase D is a localized phenomenon, in which some hearths were constructed and storage and refuse pits were dug into the debris.

In Phase E, the area was transformed into a domestic quarter of rooms and courtyards, along with a mudbrick granary. This phase ended in a fierce conflagration. Phases F-G represent a gradual development of domestic character, with no major change in plan, both of which also end in fire. In Phase G a shaft tomb was dug underneath a storage room floor. Phase H is a poorly preserved MB IIa level.

In contrast to the importance of Area C during Phases B-C, the relatively synchronous Phases 15-16 in Area A are characterized by meager domestic remains (Paley & Porath 1993: 611). This situation reversed during Phases 13-14 in Area A, when a sequence of two large, perhaps public buildings were constructed, apparently abutting what may have been a city wall (Paley & Porath 1993: 611). The transfer of elite or public structures from one locale to another is paralleled at Aphek.

3.5.3 Pottery finds

Although a reliable correlation with other sites must await more detailed publication of the stratigraphy and finds, the little that has been reported provides some useful data. Following the stratigraphic and functional distinction between Phases A-C and Phases E-H in Area C, the excavators distinguish two main stages in ceramic development (Porath 1991; Paley & Porath 1993: 612; 1997: 373). Among the features of the early phases are surface decoration of wheel and pattern combing, and burnished unslipped jars. Some storage jars have applied relief or incised rope decorations. Two types of storage jars appear: rounded (often handleless and painted) and conoid. Jars, jugs, and juglets of the LPW type are painted (often on a white wash) with bands, circles, spirals, and net patterns (cf. Porath & Paley, in preparation). In the early phases, hemispheric bowls were combed only; the red burnished hemispheric and carinated bowls, so characteristic of the MB IIa period, began in Phase C onward. Cooking pots appear both in straight-walled handmade type and the tall, ovoid, and wheel-

made type. The former does not change greatly with time, but the rims of the latter evolved from a simple everted gutter to a folded tubular form. Of singular importance is that, unlike at Aphek, burnished red slip surface treatment began to appear at Ifshar, albeit sporadically and unevenly applied, alongside LPW in Phase B, but only became the dominant surface decoration in Phase D (Porath 1991: 15; Paley & Porath 1993: 612; 1997: 373; Porath & Paley in preparation). In the later phases (D-H), red slip is generally common and painted decoration decreases, although further study should seek to elucidate and characterize the nuances of this development.

In comparing the Ifshar sequence with other sites of the southern Levant, the excavators assign Phases A-B to the MB IIa/1 phase. Phase C, when LPW and burnished red-slipped wares patently coincide, and the ambiguous Phase D, are likely to belong in the MB IIa/2 phase. Given the dominance of burnished red-slipped wares and the decreasing appearance of painted wares in Phases E-G, it seems reasonable to associate them with the MB IIa/3 phase and Phase H to the MB IIa/4 phase, but any greater refinement would be premature.

3.5.3.1 Phase B and Levantine Painted Wares

A small selection of ceramic vessels from Phase B in the Area C building have been published (Porath 1991: fig. 3; Porath & Paley 1993: fig. 41:a-b; Paley & Porath 1997: 373, figs. 13.5-13.6). Among these are squat onion-shaped jars, which represent a heretofore unknown type in the local repertoire (Paley & Porath 1993: 612). One possible parallel to this type is a squat jar from Byblos, which is one of the LPW types from the early MB IIa contexts (Saghieh 1983: 95, pl. XLI:3639; Dunand 1937: pl. CLX:3639a-b; 1939: 248). Another unusual ceramic type is a large, deep krater, found stuck in a floor depression (Porath 1991: 15), which is roughly paralleled by an example from Tel Dan Stratum XII (Ilán 1996b: 204, 220, fig. 4.103:3). Two LPW handleless jars with internally concave rims are decorated in brown-red and black painted horizontal bands, with a net pattern (Porath 1991: 15, fig. 3:1-2). Another unique addition to the local repertoire is a jug with imitation metal nails beneath its single handle, which is painted in net pattern-filled arcs and a pendant decoration around the base of the neck (Porath 1991: 15, fig. 3:6). A near identical example is known from Ugarit, where it is assigned to *UM* 1 (Porath 1991: 15; Schaeffer 1949: fig. 99:27), both of which share decorative elements with the jug from Tel Nami. Apart from the aforementioned decorative elements in LPW examples from this phase, there are brush strokes on rims, net pattern-filled triangles and pendant decorations, and concentric circles on jars, jugs, and juglets (Paley & Porath 1997: fig. 13.5:1-3, 5; Porath & Paley in preparation).

3.5.4 Egyptian pottery and Egyptianizing elements

Fragmentary sherds from Phases B-C and a complete Egyptian jug are the most plentiful and best documented examples of Twelfth Dynasty pottery in MB IIa contexts of the southern Levant (Paley & Porath 1993: 612; 1997: 373, fig. 13.5:4). The complete vessel was found in a brick collapse that was initially assigned to Phase C (Paley & Porath 1993), although re-analysis of the stratigraphic

relationship between this context and the large building suggests that it may belong instead to Phase E (Weinstein 1996: 57; Paley & Porath 1997: 373, fig. 13.3; Y. Porath, p.c.). The vessel is described by the excavators as Qena Ware of the Twelfth Dynasty, well-known from el-Kab and Thebes, and dated by Dorothea Arnold to the first half of the nineteenth century, during the reigns of Senusert II or III (Paley & Porath 1993: 612; 1997: 373). Arnold, who has relied solely on photographs for her assessment, further notes that while the vessel is of Upper Egyptian origin, its form is best paralleled in the north at Riqqeh (1991a: 53-4; Bietak 1989a: 96; Weinstein 1992: 34-5). The remaining sherds can only be dated somewhere between the early 11th and 13th Dynasties (Weinstein 1992: n. 27; Paley & Porath 1997: 373). A number of incised Egyptian signs from Tel el-Ifshar are cited by Dothan (1990). Lastly, a strong similarity exists between the plan of the Phase E granary and those known from Egyptian clay models (Chernoff & Paley forthcoming).

3.5.5 Metal finds

The excavators report a small number of metal finds (Paley & Porath 1993: 612). In addition, a crucible with the remains of copper was found in Phase A (Porath & Paley 1991: 136).

3.5.6 Summary

The available data from the excavations of Tel el-Ifshar correlate well with its geographic position in the the Nahal Alexander basin of the Sharon Plain. With an agriculture based primarily on the alluvial soils of nearby river banks and the eastern trough of the Coastal Plain, the site could have served as the seat of authority of a local elite. The remains in Area C, both the large building and the later grain storage facilities, support this characterization. The north-south road and a navigable river through the uncultivated and partly forested *hamra* hills meant that this local elite was not isolated from developments in more distant regions, including the coastal zone. Its foreign relations clearly demonstrate such interaction. In particular, the cedar used in the construction of the large building indicate that the inhabitants could embellish their elite or public structures with the finest building materials available. Although not as large in size compared to its fortified contemporaries in the region, it no less important nor impoverished, inasmuch as the available sample of excavated sites can support such a comparison. While the periodic destruction hints at belligerency directed at the site, the identity of the perpetrators is unknown; these “events” may indicate that the site, its position, or its agricultural wealth were coveted.

3.6 Tel Poleg

Tel Poleg is a 1.2 ha site situated on a *kurkar* ridge that is 1.2 km upriver from the sea (Kochavi, Beck & Gophna 1979: 133; Gophna 1993c). The southern and western sides of the site are bounded by Nahal Poleg and the northern side is protected by a 10 m wide artificial breach, which drains the Poleg marsh basin to the east (Kochavi, Beck & Gophna 1979: 133, fig. 5; Gophna 1993c: 1194, fig.). These natural and artificial obstacles created a site that was, until modern intervention,

surrounded by water. Salvage excavations at this site, which was nearly obliterated by the modern quarrying of its *kurkar*, have revealed a fortification system comprised of a five meter wide mudbrick wall in the west, a 15 by 8.5 m tower protected by a glacis in the south, and a gate in the west. A 2.7 m wide wall in the east, with smaller walls abutting it, is interpreted as being part of a defensive system. This wall may be narrower because the steeper slope of the ridge and the eastern marsh afforded additional defense, but an oven and an infant burial jar may indicate that it is merely part of a large building (Gophna 1973: 111, fig. 2).³⁰⁰ With the exception of some IBA, LBA, and later sherds, all of the ceramic remains belong to MB IIa/3 phase (Kochavi, Beck & Gophna 1979: 137-141). A rock-cut shaft tomb, whose chamber was destroyed by quarrying, contained an ichthyomorphic vessel executed in TEY style (Gophna 1969b). The blocked shaft, which was properly excavated, included a number of vessels that may be assigned to the period of habitation (Gophna 1969b: 45; Kochavi, Beck & Gophna 1979: 141). Regarding the scant pre-MB IIa finds at the site, note that an IBA site, Tel `Ashir, is situated immediately west of Tel Poleg on the summit of the next *kurkar* ridge, overlooking Nahal Poleg. Only a small, perhaps cultic, open-air installation with a group of limestone stelae or *massebot* is reported (Gophna 1992: 154; 1993c: 1195).

The dating of the artificial outlet on the northern side of the site is problematic. Raban (1985: 17) prefers to see this breach as a navigable channel that allowed boats to sail upriver into the marshy lake to the east. Gophna (1973: 119) attributes the origin of this breach to the MB IIa period when, conceptually, it seems to have been an integral part of the fortification system. The presence of Persian period remains in Area B on the southern side of this ten meter wide escarpment clearly establishes that its current extent post-dates that period.³⁰¹ Roll & Ayalon (1989: 119, 180-1) associate the present extent of the ancient breach with the sixth century CE Byzantine land reclamation in the Sharon Plain. Although it is plausible that a narrower fosse or channel existed at this point in the MB IIa period, only further excavation south of the breach will resolve this question.

3.7 `Ein Zurekiyeh

This site was established on a *kurkar* ridge, some 3.5 km southeast of Tel Poleg, near a spring that flows into the ancient marshes of this basin (Gophna & Ayalon 1982: 69; Gophna 1993c: 1194-5). Two fortification phases were discerned, both comprised of 3.2 m wide mudbrick walls and associated habitation levels (Gophna & Ayalon 1982: 69-72). The excavators assign the finds to the MB IIa/2 phase, and suggest that this settlement is slightly earlier than Tel Poleg (Gophna & Ayalon 1982: 74-

³⁰⁰The three different wall widths: 5 m on the west, 3.4 m on the south, and 2.7 on the east are not explained by the excavator. The difference in brick size between the eastern wall (50 x 60 x 12 cm) and the tower and other walls (55 x 35 x 12 cm) could indicate discrete construction phases or functional differences.

³⁰¹The stone walls on the edge of the escarpment, still clearly visible, are quite narrow and insubstantial. It seems implausible that buildings could have existed in such a precipitous circumstance.

77). The site's position at a narrow point in the marshes on the western side of the *hamra* hills suggest that it guarded an important fording point for north-south movement (Gophna & Ayalon 1982: 77).

3.8 Small Yarkon river basin sites

In addition to the larger tells, some soundings and surveys have identified some small sites in the lush Yarkon river basin (Kochavi & Beit-Arieh 1994). Many individual IBA and MB IIA tombs are known from the hills above the north bank of the river, but have yet to be published fully (Kaplan & Ritter-Kaplan 1993b: 1451-4).³⁰² At the Tel Aviv exhibition grounds, MB IIA tombs were found in the proximity of an IBA settlement on the north bank of the Yarkon river.³⁰³

A unique habitation site is Sede Dov, located north of the Yarkon river mouth. It is described by the excavator as an elliptical hollow that was dug out of the *kurkar* bedrock, measuring 20 x 9 m (Kaplan & Ritter-Kaplan 1993b: 1454, photo). In their opinion it was a squatter's encampment of the early MB IIA period. Among the finds were the remains of goats, sheep, turtles, wild animals, and the complete skull of a donkey.

3.9 Tel Qasile

Only limited MBA remains were discovered during the extensive investigations of this important site on the northern bank of the Yarkon river, ca. 2 km upriver from the sea. In addition to a few MB II tombs, MB IIA sherds were found on bedrock in all areas of excavation (Mazar 1980: 9). Salvage excavations exposed an MB IIA kiln located in a narrow gully east of the main site (Ayalon 1986-1987: 12-5). Among the MB IIA ceramics associated with this installation were fragments of a MCCL style jug and a TEY ware juglet (Ayalon 1986-1987: fig. 16:8-9; Zevulun 1986-1987b). A small settlement of this period apparently existed on some unexcavated portion of this 1.6 ha site, and functioned as a small riverine anchorage and fording point that complemented Tel Gerisa. Ayalon (1986-1987: 9) notes the presence of foreign ballast stones in a fill of a Byzantine road on the western side of the site, which is clearly indirect evidence that an anchorage existed here even at some later date.

3.10 Tel Gerisa

Three teams of investigators have worked at this site. Sukenik carried out the initial excavation of the fortifications, which were partially re-excavated and published by Geva (1982). At present, a long term project is underway that will presumably incorporate the results of the earlier

³⁰²It appears, *prima facie*, that the area south of the Yarkon river began to be utilized for habitation and burial only in the MB IIB period. As the pottery from these sites is unpublished, this observation is based on secondary sources and syntheses (Gophna & Beck 1981; Broshi & Gophna 1986; Gophna & Portugali 1988) and a gazetteer of sites in the greater Tel Aviv-Jaffa area (Or (Ordentlich), et al. [1986]).

³⁰³An unusually high sample of Cypress pollen (forty-eight percent) is reported at this site, perhaps suggesting intentional cultivation (Horowitz 1988: 277).

project (Herzog 1993). Many questions were left unaddressed by Geva's report and much of the reconstruction of the sequence remains in doubt (Chapman 1984).

13.10.1 Environment and economy

The site was established on the third *kurkar* ridge of the Coastal Plain ca. 4 km upriver from the sea, near the confluence of the Ayalon and Yarkon rivers (Herzog 1993: 480). The ridge outcrops into the river like a cataract, creating a waterfall whose flow in recent centuries was utilized for power, hence its modern appellation: "Seven Mills" (Geva 1982: pl. 1:1-3; Herzog 1993: 480). The river was clearly navigable up to this point until the British Mandate. In antiquity, this site served both as a fording point for north-south movement and as a riverine port, although it is not clear what types of craft were navigating the river.³⁰⁴ If further stretches upriver were navigable, goods could be transshipped or portaged past the *kurkar* cataract on to other craft. Archaeobotanical remains of wheat, peas, dates, olive wood (sixty percent) and stones (Lipschitz 1987: 144; 1989: table 5), may suggest of mixed agricultural activity or consumption.

3.10.2 Summary of MB IIa remains

Following an EB II-III settlement, and a phase represented by IBA sherds, Tel Gerisa is resettled during the MB IIa period (Herzog 1993: 482). At some time during the middle of the period, the site was encircled by a 1.7 m brick wall, the first of three fortifications phases protected by a glacis (Herzog 1993: 480-2). This glacis was created with alternating layers of *hamra*, *kurkar*, and sand, the latter perhaps to facilitate the drainage of rainwater penetrating the upper layers of the clay and mudbrick facing (Herzog 1993: 481). The second MB IIa phase is quite complex with two types of 2.2 m wide wall configurations, single and double, incorporated in a single area; two habitation levels were associated with each MB IIa wall phase (Herzog 1993: 482). Among the other features reported with the habitation levels are silos and some cultic vessels. Sukenik discovered an installation which he termed the 'workshop oven' (Geva 1982: 10-2, pls. 6 & 11), which may have been a pottery kiln (Herzog 1993: 480). In addition, there is an enigmatic reference to the presence of MBA "slag" in a preliminary communiqué ([Sukenik] 1944).

3.10.3 The water system

Among the most technologically sophisticated discoveries at Tel Gerisa is the MB IIa water system (Tsuk 1992). The inhabitants quarried a rectangular shaft (6.2 x 5.1 m) through the underlying *kurkar* bedrock down to the water table, leaving behind a hewn stairway complete with a raised protective wall. A square stone-built well was constructed within the shaft at a later, perhaps Iron Age, date, putting the original system out of use. So far excavation has reached 8.4 m below the top of the well, still some 11 m above the estimated depth of the water table. Despite the fact that Sukenik's earlier excavations disturbed many of the levels surrounding the installation, a stratigraphic

³⁰⁴Examples of rounded non-local ballast stones can still be seen on top of the tell, which is suggestive of seagoing craft (personal observation).

relationship could be established with the MB IIa levels, supporting the suggestion that the shaft was a component considered in the planning and fortification of the city.

3.10.4 Pottery finds

As the pottery from the recent excavations is unpublished, only those sherds published by Geva are available for study. Her stratigraphic sequence and typology may be significantly amended by future work, but for now it is sufficient to note that the majority of the published ceramics from both of her strata date to the MB IIa/2-3 phase.³⁰⁵

3.10.4.1 MC and TEY pottery

Five examples of MC sherds, including examples of WPPL and WP “Wavy Band Line” were found in the deepest MB IIa levels (Geva 1982: 36-37, fig. 32). Four WP sherds, including the handle of what appears to be a WP V “Eyelet Style” jug, were found in Stratum III (Geva 1982: fig. 31:7).³⁰⁶ One body sherd of TEY ware was discovered in the bricks of the city wall (Geva 1982: fig. 33:23). Another suggested example is a button base from the glacis fill (Geva 1982: 55, fig. 38:20). As the locus of the former is not mentioned anywhere in the volume, it is impossible to ascertain its precise fortification phase.

3.10.5 Summary

The establishment and prosperity of Tel Gerisa apparently derived from its location on a navigable stretch of river near a fording point along one of the north-south land routes. The small sites in the vicinity, both north of the Yarkon and perhaps to the south of the tell, which are represented by settlements and tombs, may have been part of the immediate agricultural hinterland of Tel Gerisa. Future studies should seek to clarify its role in local and international exchange. The MC wares and the site's contemporaneity with Aphek make the riverine port of Tel Gerisa a good candidate, perhaps together with the unexplored MBA site at Tel Qasile, to be the commercial maritime partner of Aphek.

3.11 Tel Aphek

As a result of the swift preliminary publication of its substantial MB IIa remains, Tel Aphek (*Râs el-`Ain*) has been a key site for the study of this period for over 20 years. Its importance relies on a well-excavated ceramic sequence derived from stratified settlement levels. Although these ceramics do not originate from destruction levels, and comprise a limited number of complete vessels, the sequence has become the foundation for all studies of southern Levantine ceramics during this period.

³⁰⁵Apart from the aforementioned kiln, no other evidence for pottery production has been found, although some storage jars were thin sectioned and found to be made of a non-calcareous clay, perhaps Yarkon river alluvium or *hamra* soils (Shoval & Gaft 1993).

³⁰⁶If the latter identification is correct, and it is not derived from a dubious assemblage, this might be one of the earliest imports of this type.

Until more substantial publication of the finds from other sites, the analyses of Beck (1975; 1985b) provide the most reliable typological sequence for this area. The relative chronology of the present study relies heavily on the Aphek sequence, despite various limitations which are alluded to in the text. A detailed presentation of the ceramic finds from Aphek follows in order to provide a clear understanding of the criteria for the relative chronological framework employed.

3.11.1 Environment and Economy

Aphek is located in the southeastern corner of the Sharon Plain, in the heart of a lush alluvial zone bordered in the east by the Samaria hills, and the north and south-west by *hamra* hills. The site's position on a presumed ancient hillock beside the abundant springs of the Yarkon river attracted human settlement at least as early as the Chalcolithic period (Beck & Kochavi 1993). Its importance was also augmented by being on the corridor that runs along the inner part of the Coastal Plain. From this position Aphek could have controlled a fording point, within an occasionally swampy region.

The proximity to the hills (ca. 2.5 km) enabled utilization of the nearby slopes for stone, wood, horticulture, pastoral activity, and interaction with highland communities. The nearby limestone could have been quarried for building stone, as was the case in the construction of MBA Palace III (Beck & Kochavi 1993: 67). The presence of olive wood and stones in MBA contexts is indication of oleiculture (Lipschitz 1987: 144; 1989: table 5). Other wood suggests the exploitation of nearby forests (Kochavi 1975: 23). The presence of wheat may only reflect one type of field crop of the inhabitant's agricultural base (Lipschitz 1989: table 5). Comparison of the MB IIa faunal remains with those of nearby EBA Tel Dalit indicates a relative increase in cattle, perhaps suggesting the increased use of draft animals, i.e., agricultural intensification (Hellwing & Gophna 1984: 57). The dominance of caprovines is consistent in both periods, but in the MB IIa period there is a slight increase in the slaughter age, suggesting that animals were being kept longer in order to exploit their secondary products (Hellwing & Gophna 1984: 51).

3.11.2 Summary of MB IIa remains

The MBA remains of ancient Aphek were first excavated during the 1930s (Areas O₁ and O₂; Ory 1936; 1938; Illife 1936), and then explored more extensively in the 1970s and 1980 (Areas A, B, X, & G; Beck & Kochavi 1993; Table 11).³⁰⁷ MB IIa levels were uncovered in seven excavation areas, suggesting that much of the 10-12 ha mound was occupied during that period. In most instances the remains were built directly upon levels of the EB II period, which was the previous substantial settlement, although scattered EB III sherds were found (Beck & Kochavi 1993: 65-6, tables).³⁰⁸ No

³⁰⁷Excavations by Eitan (1969) produced some ceramics and a cyst grave, but no significant architectural remains.

³⁰⁸In light of the massive MB IIa construction activity, particularly in the acropolis area, it is possible that EB III or IBA settlements, albeit limited, may have been destroyed, or lay in unexcavated

IBA remains were found on the site, although a cemetery was excavated at Kibbutz Horshim, 10 km to the northeast (Gilboa & Yannai 1992).

Ory's excavations in Areas O₁ and O₂ unearthed, respectively, a MB IIa city wall and cemetery. The TAU excavations concentrated on exposing MB IIa levels of the acropolis on the northwestern corner of the tell (Areas A, B, and X), where the "shaving off" of the ancient summit for the construction of the Ottoman fort made BA remains more easily accessible (Beck & Kochavi 1993: 66). Area G, on the southwestern slope, served as the MBA potters' quarter (Beck & Kochavi 1993: 66-7, table). The remains from all areas have been condensed into a four phase chronological scheme based on stratigraphy and ceramic typological development (Beck 1975; 1985b):

Phase A (=MB IIa/1)

The earliest remains were found in the acropolis area, which may have been the nucleus of the initial unfortified settlement (Beck 1985b: 188-90). The settlement is characterized by dwellings (Areas B & X), wooden installations, and a burial (T.494, Area A), all of which the excavators stress existed for a short duration (Kochavi 1975: 23; Beck & Kochavi 1993: 65-6, tables).

ceramics: no red-slipped ware; incised and relief designs; painted geometric net-pattern designs; and flat and disc-base bowls.

Phase B (=MB IIa/2)

The acropolis underwent its first major urban organization. In Area X, a 3 m fill composed of EBA and MB IIa/1 material was laid within retaining walls to prepare a foundation for Palace I (Beck & Kochavi 1993: 67). The limited exposure of this presumed public building revealed a courtyard enclosed by uniformly 1.2 m wide walls, containing ovens and a storage facility. A second phase was marked by the general raising of the floors and walls, accompanied by intramural burials. Kempinski's suggestion (1992c: 170) that this is a patrician dwelling cannot be resolved at present, but it is noteworthy. In Area B, north of the building, a 3.5-4.0 m city wall was built, protected from the steep slope and a gully by substantial stone foundations with well-made drainage openings and external buttresses. The excavators suggest that the precipitous gradient and the swampy soil at its base was the reason for the four repairs distinguished in this phase. The orientation, construction, and pottery associated with the wall in Area O₁ suggest that this is a continuation of the wall in Area B (Beck & Kochavi 1993: 67-8, table). Private dwellings were constructed in Area A, complete with ovens, silos, and intramural burials (Beck & Kochavi 1993: 67; Kochavi 1975: 23-4). Analysis of the pottery from these burials suggests that they are coeval with some of the built tombs in Area O₂ and may have been used by the inhabitants of Palace I, which was separated from the cemetery by the aforementioned gully (Beck & Kochavi 1993: 67).

areas. Perhaps, as in the Shephelah (Seger 1989), where there is a paucity of the *fossile directeur* Khirbet Kerak ware, different criteria are needed for identifying the EB III presence at Aphek.

ceramics: appearance of red-slipped and burnished ware along with painted designs; appearance of the carinated bowl.

Phase C (=MB IIa/3)

Palace I was abandoned during this phase, and the seat of Aphek's central authority shifts 100 m to Palace II, which was constructed on the western slope of the tell in Area A (Beck & Kochavi 1993: 67). Despite the destructive effects of erosion, three phases of this structure were exposed in an area over 750 m². The plan included rooms and courtyards, which contained ovens, column bases, and intramural burials placed beneath fine plaster floors. The fortification system in Area B was replaced with a new city wall.

ceramics: zenith of red-slipped and burnished wares; appearance of deep bowls with knobs, biconical carinated jugs, and piriform juglets with button base; ring bases; rarity of incised decoration and hemispheric bowls; absence of flaring neck storage jars, holemouth kraters, medium-size storage jars with internally concave rims, medium-size storage jars with handles, and painted sherds.

Phase D (=MB IIa/4)

Palace II was abandoned at the beginning of this phase and on its remains private dwellings were built that include intramural jar burials (Beck & Kochavi 1993: 67). It is possible that the construction of Palace III in Area X, the most monumental of the Aphek palaces, begins in this phase. This structure, which reached its zenith in the MB IIb period, was built with massive stones on foundations that were 2 m wide and 2.5 m deep. Only the northern wing was exposed, which covered an area of 2000 m².³⁰⁹ This wing consisted of a series of rooms surrounding a central hall, 150 m² in area, whose roof was supported by columns one meter in diameter.³¹⁰ The 25 cm thick plaster floor of this palace is particularly impressive.³¹¹ A potters' workshop was established upon EBA remains, far from the acropolis on the southwestern slopes of Area G. Initially it consisted of a single kiln, but the workshop was expanded in the MB IIb period (Beck & Kochavi 1993: 66-8, tables).

ceramics: appearance of unslipped bowl with high, rounded carination and stepped rim juglets; many types that are harbinger of later forms.

³⁰⁹Assuming a basic symmetry of plan, Kochavi (1989a: 48-9) estimates the palace to have covered an area of as much as 4000 m², which is comparable the estimated area of the Kabri palace.

³¹⁰It is not clear whether these columns were constructed entirely of unhewn stones, or whether they were foundations for mudbrick or wooden columns. In either case, the span of the roof would have demanded long timber, which is generally unavailable locally (Lipshitz & Biger 1995: 121-2).

³¹¹While purely conjecture, given the effort displayed in the construction of this palace, and particularly this floor, some unexcavated portion of the palace might have been decorated with painted plaster, perhaps including Aegean motifs similar to those at Kabri.

3.11.3 Levantine Painted Ware

In Phase A, LPW types include storage jars, juglets, and, possibly, handleless jars. The storage jars are decorated in both monochrome and bichrome bands; lozenges and triangles filled with net-pattern decoration; and a schematic tree motif (Beck 1985b: 183, fig. 3:7-10). A possible handleless storage jar fragment has bichrome bands and concentric circles (Beck 1975: 54, fig. 1:9), and juglet fragments occur with monochrome concentric circles (Beck 1975: fig. 1:7-8).

In Phase B, storage jars are decorated with monochrome bands, and framed wavy and intersecting lines (Beck 1975: 53, fig. 3:7-10). One juglet fragment is decorated with monochrome concentric circles (Beck 1975: fig. 15:3). A number of LPW examples were found in Ory's T.2, T.4, and T.5, which are attributed to this phase. In T.2, a globular jug is decorated with red bands, triangles filled with net pattern, and a pendant design around its neck (Ory 1938: 116, #77, pl. XXV; Amiran 1969a: pl. 35:8, photo 113). Two juglets are decorated with horizontal red bands, and are painted both on the handle and rim (Ory 1938: 117, #80-81, pl. XXX:5, 6). A large jug is similar in decoration to the preceding juglets (Ory 1938: #82, pl. XXIX:4). In Ory's T.4, two jugs of identical shape decorated in bichrome paint in horizontal lines and net-pattern filled triangles were found (Ory 1938: 118, #89-90, pl. XXV; Amiran 1969a: pls. 33:9, 35:7, photos 112, 114). In Ory's T.5, one jug was found with horizontal red lines (Ory 1938: 119, #105, pl. XXXI:4), while the other is decorated in bichrome horizontal lines, with red pendant decoration around the neck (Ory 1938: #106, pl. XXX:3).

A number of other vessels are attributed to either Phase A or B: one trefoil bichrome painted jug (Kochavi, Beck & Gophna 1979: fig. 4:8; Kochavi 1989a: fig. 24); a handleless jar with bichrome bands and herringbone decoration (Kochavi, Beck & Gophna 1979: fig. 4:9; Kochavi 1989a: fig. 24); and a globular juglet with gutter rim, decorated in two shades of red with concentric circles, pendant decoration, and horizontal lines on the neck and triple handle (Beck 1975: 76-82, fig. 14:8, pl. 12:8).³¹²

3.11.4 Tell el-Yahudiyah Ware

No examples were reported from the most recent excavations. Fragments of a juglet were found in Ory's excavation (1938: 108, #10, pl. XXXIV:11-12), but they may belong to the MB IIB period.

3.11.5 Cut-away neck and other "Anatolian" elements

A possible cut-away neck juglet from Phase C is reported (Beck 1975: fig. 10:3). In the same locus, a deep bowl with cross decorated knobs was found, which Beck (1975: 64-5, fig. 10:4) compares to designs from Ugarit and Karahöyük in the Konya plain in Anatolia.

³¹²Two unstratified handleless jars were found in Ory's excavation, one with pink bands (Ory 1938: 113, #44, pl. XXXIII:18) and another with horizontal black bands (Illife 1936: 123, #29, pl. LXV).

3.11.6 Egyptian and Egyptianizing elements

A ceramic alabastron, which imitates Twelfth Dynasty Egyptian stone vessels, was found in Phase D (Beck 1975: 74, fig. 10:7). Visual inspection by Beck suggests it is made of a TEY-like fabric.

More than a dozen scarabs from Aphek are attributed to the Middle Bronze Age, but only two can be stratigraphically attributed to the MB IIa or MB IIa-b periods, Phases C and D (Giveon 1988: 40-56).³¹³ Many of the scarabs from later levels may be heirlooms, and it seems that scarabs occur only from the MB IIa/3 phase.

3.11.7 Local pottery production

The existence of a potter's workshop in Area G is direct evidence for local pottery production. Until the publication of this installation and analysis of its associated ceramics, and those from the site, little can be said regarding the typological range of production. The storage jars used as comparanda in the analysis of a seal impression indicate that non-calcareous clays were among the raw materials used, perhaps from the Yarkon river alluvium or *hamra* soils (Shoval & Gaft 1993).

3.11.8 Seal impression

A fragmentary seal impression was found in a rubbish pit in Area A, which contained mixed material as late as the Iron Age (Beck 1993). Stylistically the impression is related to the "South Levantine Green Jasper workshop", although some artistic elements and the quality of workmanship point to a North Syrian connection. The back of the impression has imprints of grain stalks, perhaps from a wicker box or basket. Despite its dubious context, the sealing is a reflection of the role of Aphek as a focus of central authority and economic administration.³¹⁴

3.11.9 Metal finds

With the exception of one surface find, all of the MB IIa metal finds are weapons that come from tomb contexts. While the finds from Ory's excavation are primarily from Phase B, only a general attribution can be given to the material from the most recent excavations. These include two socketed spearheads, one flat spearhead, two daggers, and two duckbill axes.³¹⁵

³¹³These scarabs were found in Area A, Stratum 14 (Palace II) and Stratum 13 (ruins of Palace II) (Giveon 1988: 44-7, #37, #38).

³¹⁴Petrographic and infra-red analysis suggest an origin consistent with the greater Yarkon river basin (Shoval & Gaft 1993).

³¹⁵Socketed spearheads from Tombs 2 and 4 (Ory 1938: 120, pl. XXXII B:5, 7); daggers from Tombs 4 and 5 (Ory 1938: pl. XXXII B:2, 6); one flat spearhead found with MB IIa vessels (Ory 1938: pl. XXXII B:3); and two duckbill axes from Tombs A & C (Miron 1992: 54, pl. 16:247-8). Some other daggers and spearheads are assigned a MB IIa provenience (Kochavi 1989a: fig. 40). Although all are assumed to be bronze, only the duckbill axes have been analysed, both of which are

3.11.10 Summary

For the reasons described above, Aphek continues to be one of the key sites for the study of the MB IIA material culture, whose utility perhaps decreases with distance (Beck 1985b). While absence of evidence is not always evidence of absence, it is instructive to note the lack or rarity of many local types, such as LPW dipper jugs and juglets, MC pottery, etc (Beck 1985b: 195). In addition to its modern scholarly importance, its importance in antiquity is evident in the material remains. Clearly, this fortified site possessed great economic and political wealth. However, while broad characterizations of the site and the geographic extent of its influence may be premature (Kochavi 1989a: 55, fig. 38), they may serve as working hypotheses for future research.

4. Southern Coastal Plain and Shephelah

The Southern Coastal Plain is bordered in the north by Nahal Yarkon and in the south by the Sinai desert.³¹⁶ In contrast to the region's other coastal plains, this region is bordered in the east by a gradually rising plateau, called the Shephelah, which marks the transition to the Judean Hills. The region is bisected by numerous ephemeral streams, although some of the lower reaches of these courses are perennial (e.g., Nahal Sorek). The western region is characterized primarily by sand dunes and kurkar ridges, but some *hamra* hills are present. Together they divide the coastal zone from the inland eastern zone, which is composed of alluvial soils that are increasingly replaced by loess to the south. The straight shoreline is composed of alternating coastal cliffs and more moderately sloped sand dune beaches, both of which are occasionally broken by sand-filled river mouths.

Thus, on the one hand, this is the broadest coastal plain of the southern Levant, affording a more expansive lowland agricultural zone. On the other hand, the greater distance from the highland, meant lessened access for shoreline communities to the horticultural zones, woodlands, and limestone sources. The function of the Shephelah was, therefore, both as a broad highland-lowland interface and a mixed agricultural-horticultural zone. Water was available near the shore from the high aquifer, with springs and precipitation increasing towards the hills in the east. As in the other coastal regions, impeded drainage was a major factor affecting land use and movement. Longitudinal communication was carried out along the inner part of the plain, near the foot or, on top of the Shephelah, and perhaps along the shoreline itself, all of which connected to the northern Sinai coastal route. Lateral movement probably followed the river courses that enabled easier passage through the dunes, hills, and ridges.

The extremely sparse IBA presence is represented primarily by occasional tombs and sherds in later settlement levels (Gophna & Portugali 1988: 16-7, fig. 6). Urban settlement in the MB IIA period is divided between shoreline and inner Coastal Plain, occasionally surrounded by small rural

tin-bronze, one of which is leaded. The analytical results are as follows: pl. 16:247 Cu 94.30 Sn 4.83 Pb 0.30 As 0.25 and pl. 16:248 Cu 68.34 Sn 5.90 Pb 25.53 As 0.24 (Miron 1992: 98, table 1).

³¹⁶Some scholars divide this plain into three sub-units, the Judean, Philistine, and Negev coasts (e.g., Orni & Efrat 1971: 36).

sites (Gophna & Beck 1981; 1988; Gophna & Beit-Arieh 1997: 63-4, 52*-3*; Table 6.4). While urban settlement extends along the coast as far south as Tell el-`Ajjul, its inland counterpart appears to end somewhat further north, perhaps with the exception of Tell Beit Mirsim, on the Highland-Shephelah interface.

4.1 Jaffa

Although the only evidence of MB IIa occupation at Jaffa are a few tombs (Kaplan & Ritter-Kaplan 1993b: 659), the extreme depth of the remains and later ancient and modern accumulation may well explain this bias. Jaffa's later prominence as an important port suggests that it could have also served MBA navigators.

Although most scholars view the modern fishing harbor, built upon a natural *kurkar* reef, as the site of the ancient anchorage, Raban (1985: 27) identifies an alternate location. Towards the end of the last century, a local minister observed the seasonal formation of a swamp just east of Jaffa and surmised the position of an ancient body of water connected to the sea (Hanauer 1903; 1903). He further noted that attempts made to dig a well were thwarted by a large wall, and that sand was found at a depth of 11 m, far deeper than is usually the case in the area (Hanauer 1903: 260). Local residents reported that stone anchors had been found in this depression, although excavation revealed no remains of a harbor (Barton 1903; Shepstone 1937: 265). This seasonal swamp is clearly marked on Jacotin's map of 1799 (Elster 1964). Raban suggests that this feature may have been akin to a Phoenician "cothon", i.e., an excavated basin connected to the sea by a channel, but this does not preclude the utilization of what was originally a natural basin. He further suggests that the original course of the Ayalon river may have entered the sea here, and was intentionally diverted to its current course.³¹⁷ Until a thorough geomorphological investigation is carried out, this harbor will remain an enigma.

4.2 Bat Yam

Part of a large building was exposed during a salvage excavation on the summit of the second *kurkar* ridge in a poorly drained area southeast of Jaffa, some 2 km from the sea (Gophna & Beck 1981: 53, pl. 8). With the exception of two jug rims, which could be MB IIB types, all of the ceramic finds belong to the MB IIa/3-4 period (Gophna & Beck 1981: 62; 1988: 76-8). Among other finds are a ceramic stand, a seven-cupped bowl, part of an ornithomorphic vessel, and the shoulder of a MCWP jug.

4.3 East of Yavne Yam

Among the finds from this small settlement, which is attributed to MB IIa/2-3 (Gophna & Beck 1981: 63-5), are a juglet with a monkey appliqué and a LPW pendant motif jug (Gophna & Beck 1981: fig. 10:25, pl. 14:8, 35).

³¹⁷Raban (1985: 27) suggests that a layer of river pebbles found in corings off the coast of Jaffa are an indication of any ancient river outlet.

4.4 Bank of Nahal Sorek

This 0.7 ha settlement is located on the northern bank of Nahal Sorek, east of Yavne Yam, and has MB IIA/4 ceramics (Gophna & Beck 1988: 79). A possible stone anchor was also found.³¹⁸ These finds and the presence of fish bones suggest that small fishing craft may have used this river for navigation.

Ten meters to the east, two MB IIA pottery kilns, which apparently belong to this site, were exposed and damaged by a winter torrent; only one surviving kiln was excavated (Singer-Avitz & Levy 1992). The ceramics from this kiln belong to the MB IIA/2-3 phases (Singer-Avitz & Levy 1992: 10), which are somewhat earlier than those collected at the settlement.

4.5 Dhaharat el-Humraiya

Dever (1976: 18, n. 104) was the first to draw attention to the importance of the MC imports among the MB IIA remains in this cemetery, which is near Nahal Sorek. Ory's excavation (1948) concentrated on an area of ca. 420 m², from an estimated total of 750 m², revealing sixty-three tombs spanning the MB IIA through the LBA periods. All of the MBA tombs are shallow pit graves with a single interment (Ory 1948: 75-7, n. 1, fig. 2). Although the actual finds require re-examination in light of current typological criteria, what may be gleaned from the illustrations suggests that tombs 12, 21, 55, and 62 should probably be assigned to MB IIA; tombs 1, 13, 15, 18, 34, 38, and 50 belong at least to MB IIA-b, if not earlier; and Tombs 42 and 49 should be provisionally assigned to MB IIA-b.³¹⁹

On the basis of the bichrome painted jugs in T.62, this site may date as early as the MB IIA/2 phase, although the majority of the red-slipped wares in the cemetery seem to be from a later phase. Of particular interest is the combination of LPW and MC jugs in T.62, although the excavator notes that the tomb was slightly disturbed (Ory 1948: 88). Note that this cemetery has produced the largest number of MCWP wares of any site in the southern Levant (Johnson 1982; Maguire 1990: 17).

4.5.1 Levantine Painted Wares

Two painted jugs were found in an MB IIA tomb (T.62). They are decorated in red slip, and painted with diagonally-crossed black lines and red paint on their necks and handles (Ory 1948: 88,

³¹⁸Prof. R. Gophna kindly showed the author a slide of this object, which is located today in the Kibbutz Palmahim museum. The anchor is fairly round and small (ca. 50 cm in height), and could have served a small boat.

³¹⁹In a recent study, Dever (1994: 67) has slightly modified his views on the relative dating of these tombs, but has not offered any detailed reasons. Dever (1976: 18, n. 104; Ward & Dever 1994: 67) notes that T.2 should be placed within an MB IIA-b range, but the presence of juglets of the candlestick rim type (Ory 1948: figs. 7, 8) may argue against his assignment. Tomb 1, ascribed by Dever to the MB IIB period has possible late MB IIA forms.

fig. 36, 37, pl. XXXII:1).³²⁰ One storage jar with red painted bands on its shoulder was found in an MB IIA-b tomb (T.18) (Ory 1948: 88, fig. 34).

4.5.2 Middle Cypriot Wares

MB IIA tombs (12, 55, and 62) contained five examples of WPPL jugs (Ory 1948: 81, 86, 88, figs. 13, 37, pl. XXXII: 2, 6, 19). MB IIA-b tombs (1, 13, 18, and 34) contained seven WPPL jugs and one WPCL jug (Ory 1948: 79, 81-2, 84, 86, figs. 14-15, pl. XXXII: 2-3, 8, 14, 19, 21, 24).

4.5.3 Egyptian or Egyptianizing finds

An MB IIA-b tomb (18) contained a faience bottle with Levantine features, such as a pedestal base and pinched sides (Ory 1948: 82, fig. 20; Weinstein 1975: 5, n. 45). The shape is reminiscent of the fruit-like TEY vessels (Amiran 1975).³²¹ Two possible MB IIA-b tombs (42 and 49) contained a clay imitation of an Egyptian calcite jar and a steatite design scarab set in an electrum band (Weinstein 1975: 5; Ory 1948: 86, pl. 33:11).

4.5.4 Metal finds

MB IIA tombs (12 and 21) contained a bronze toggle pin and a dagger (Ory 1948: 81, 83, pl. XXXIII:22). An MB IIA-b tomb (15) produced another bronze toggle pin (Ory 1948: 82, pl. XXXIII:23). A possible MB IIA-b tomb (49) produced a bronze knife and silver earring (Ory 1948: 86).

4.6 El-Jisr

MB IIA finds were present in tombs excavated by both Mayer (1926) and Ory (1946). Mayer (1926: 2) excavated a three-chambered tomb entered via a staircase. Although only a representative sample of pottery was published, the ring bases might suggest a MB IIA/3 attribution (Mayer 1926: pl. 1, bot. right). Of particular interest is a drop-shaped MK Egyptian calcite jar and a metal plate or mirror (Mayer 1926: 2, pl. 2 bot. right; Weinstein 1975: 4). These tombs may attest to the existence of a settlement that was associated with a fording point at Nahal Sorek (Ory 1946).

4.7 Yavne-Yam

Yavne-Yam is located ca. one km south of the present outlet of Nahal Sorek along a section of the coastline characterized by eroded *kurkar* cliffs and sand dunes. Although only limited surveys and salvage excavations have probed the predominantly sand covered area, a number of relevant discoveries have been made. Kaplan's excavations (1993b) established that the site was enclosed by an

³²⁰These vessels have typological parallels at Tel Nami and Amrith, although the designs vary.

³²¹See also examples cited by Kaplan (1980: fig. 22) from Tell el-Yahudiyah and Tell el-Dab'a.

MB II rampart composed of alternating layers of *hamra*, *kurkar*, and sand, the first phase of which may have originated in the MB IIa period. Domestic remains of this period were found on virgin soil in one probe near a city gate in the southeast of the site (Kaplan 1993b: 1505-6). In Kaplan's opinion (1975: 4-6), the city had a square plan of ca. 64 ha, whose western two-thirds were eroded by the sea. In light of the evidence from Ashkelon, Finkelstein (1992b: 205) suggests that seafront was unfortified. Underwater surveys of the nearby shore have found no traces of any terrestrial remains (Galili & Sharvit 1991: 113; Galili, Dahari & Sharvit 1993: 61-3). However, Raban (1993a: 964) reports that there are submerged remains of a terrestrial character. Thus, the area of the city is more like the 25 ha estimate suggested by Sadeh (1991: 18).

The nearshore area, 6 ha of which is protected by submerged reefs, served as an anchorage from at least the Late Bronze Age onward (Galili & Sharvit 1991: 113; Galili, Dahari & Sharvit 1993: 61-3). Stone anchors, some of which are LBA types, were found primarily in the vicinity of a crude stone rampart measuring 100 by 50 m, which appears to have augmented the natural protection of the reef at some unknown time (Galili, Dahari & Sharvit 1993: 62, fig. 2, 3a-b). Some of the amorphous anchors collected here may belong to earlier periods. While there is nothing to preclude this anchorage having been used in the Middle Bronze Age, the lack of positive evidence might indicate that alternate sites for Yavne-Yam's harbor should be sought elsewhere, perhaps at the ancient river mouth on the northern side of the city.

4.8 Gezer

Following its initial exploration by Macalister, the American excavations revealed enough evidence to suggest that during the MB IIa period Gezer was an unfortified site established on EBA remains (Dever 1993a: 500). No real EB III finds are apparent and only scant IBA pottery precede the predominantly domestic remains of the middle to late MB IIa period (Dever 1993a: 498).

4.8.1 Levantine Painted Wares

A tomb from Macalister's excavation produced two painted vessels: a jug with two bands of net-pattern filled lozenges, all in black, and a biconical juglet with horizontal bichrome lines and pendant decoration (Macalister 1912: 298-300, fig. 158:6-7).³²² A juglet found by the latter expedition is decorated with red paint strokes on its double handle, two horizontal lines at the middle of the body, with perpendicular lines extending to the base (Dever, et al. 1986: pl. 1:6).

4.8.2 Egyptian finds

An MK statue of an Egyptian princess was found in secondary use in an LBA wall (Weinstein 1974). It could have arrived earlier, but this is not supported by any independent evidence.

³²²Although the line drawings of the accompanying pottery are difficult to assess, the handleless jar, hemispheric bowl, the jug and juglet forms, and the use of burnishing suggest an MB IIa/2 attribution.

4.9 Tel Migne - Ekron

Deep, but limited, soundings and sherds from later contexts suggest that this 20 ha site had its origin in the MB IIa period (Dothan & Gitin 1993: 1054). Given the geometric shape of the mound, which is typical of MBA cities, its plan and size may already have been established in the MB IIa period, but this will require further investigation. Among the ceramic finds attributed to this phase are painted storage jars and TEY ware (Killebrew 1986: 8).

4.10 Ashkelon

The estimated size (ca. 60 ha), presumes great importance for this port site, which was blessed with fertile soil, abundant available groundwater, and an anchorage that is still obscured by later geomorphological processes (Stager 1993: 103). Excavations on the north tell have exposed the stone facing one of the most impressive glacis fortification ever excavated in the Levant, which were crowned by a mudbrick wall (p.c. cited by Finkelstein 1992b: 205). Four phases of this rampart construction have been distinguished. The earliest phase is attributed to the MB IIa, and was covered with sloping mudbricks and mudplaster (Stager 1993: 106), a construction similar to that of Tel Gerisa. An arched mudbrick gate from the MB IIb period was also found in this area and may cover an earlier gate. MBA installations and sherds were also found in excavations of the southern tell, some 750 m from the northern tell. Even if the maximum extent of the rampart, which is 2 km long, should prove to be a later construction, the distance from the northern edge of the site to the southernmost exposure of MB IIa remains (Grid 50) suggests an impressive urban center. Like other sites considered in this work, Ashkelon most likely developed in stages, with its present estimated size being the MB IIb culmination. Like Yavne-Yam, this site does not appear to have been fortified on its seaside (Finkelstein 1992b: 205). The only published small find from the MB IIa period is a hematite cylinder seal of Old Assyrian style (Stager 1993: 106; Collon 1987: 43, #138). No context is given for this find. A duckbill axe reported by Maxwell-Hyslop (1949: 121) is attributed to the site. From seven MB IIa ceramics samples submitted for INAA analyses, a TEY vessel probably originated at Tell el-Dab`a and two Canaanite jars were of unknown provenience (McGovern & Harbottle 1997: 151).

4.11 Tell Beit Mirsim

Over sixty years later, Albright's excavations at Tell Beit Mirsim still remain a cornerstone of the archaeological record for the southern Levant. Although not rich in small finds, Albright's meticulous recording and comprehensive analysis of the large ceramic assemblage has ensured that this otherwise ordinary southern Shephelah site has an enduring role as a key site for much of the Bronze and Iron Ages. It was here, following his analysis of the stratigraphy and pottery of Strata G and F, that Albright (1938: 24-5) hesitantly coined the term "Middle Bronze Age IIa", which, some would argue, unjustifiably remains in the literature to this very day.

Albright (1938: 17-9) argued that Stratum G was a walled city established on the remains of an IBA settlement, although re-analysis of his original plans shows that the city wall belongs to a later MBA stratum (Yadin 1973 *contra* Eitan 1972). The MB IIa settlement is generally characterized by modest domestic structures, although a single, perhaps two-story, patrician house appears to have existed along the southeastern perimeter (Albright 1938: 20-2, pls. 49, 56).³²³ Unfortunately, the pottery of Strata G and F could not be divided typologically (Albright 1932: 14-8, pls. 6-7, 41:1-6; 1933: 67-75, pls. 4-5, 21-22). Even today, in light of better understanding of MB IIa ceramics, the nature of the publication and range of repertoire does not allow any finer distinctions. The abundance of red-slipped and burnished wares suggests a position well into the MB IIa/2-3. Some traits, such as knob-handled kraters, high-footed and ring bases, and wide flaring carinated bowls (Albright 1933: pls. 4:7, 9, 11-12, 5:5), suggest an MB IIa/3-4, or later, attribution. The appearance of the net-pattern decoration on a storage jar, considered an MB IIa/1-2 hallmark, is found on an elongated rim with an external ridge, a form found throughout the Aphek sequence, but common in the MB IIa/2 phase and later (Beck 1985b: 194).

4.11.1 LPW and MC Pottery

Examples of storage jars are decorated with red net pattern on a white wash, and with wavy and horizontal lines of red and blue, or perhaps black, paint (Albright 1933: 70, pls. 4:13, 16, 22:1-1b). Numerous body sherds show similar decoration (Albright 1933: pl. 22:2-4, 6, 8-10).³²⁴ One large body fragment from a MC WPCL jug was found in Stratum G-F (Albright 1933: 74-5, pl. 22:7).

4.11.2 Metal Finds

Among the copper, or perhaps bronze, finds from Strata G-F are pins, needles, and a chisel (Albright 1938: 23-24, pl. 42:4, 8, 9). A whetstone and a limestone mold for producing axes, a knife, and an adze were found (Albright 1938: 24, pl. 43:a, c), but these types are common, long-lived forms.

4.11.3 Semi-precious stones

Albright (1938: 24) reports one carnelian bead, which he notes along with the paucity of non-ceramic small finds in these strata.

4.12 Tell el-`Ajjul

Tell el-`Ajjul is the southernmost permanent coastal settlement with MB IIa remains. The area possesses plentiful groundwater from the shallow coastal aquifer, which could be exploited by wells, and potential arable land that is now obscured by the extensive sand dunes. The ability to

³²³In recent years salvage excavations of looted tombs in the area have produced IBA and MB IIa remains (Greenberg 1993).

³²⁴A pottery stand, decorated with red and black bands, is considered an MB IIa type (Albright 1932: 30-31, pl. 44:14; 1938: 24).

maintain a year-round sedentary population at the junction of the north Sinai and latitudinal routes, and an anchorage at the mouth of Nahal Besor (Tufnell 1962: 1; Oren 1997b: 255), all contributed to making this site an important maritime and terrestrial "gateway".

4.12.1 Summary of MB IIA remains

Investigations of the tell and its immediate environs by Petrie (1931; 1932; 1933; 1934) have revealed MB IIA remains, some of which have been subsequently re-analyzed (Stewart 1974; Tufnell 1993; Kempinski 1993a and biblio.). Although Petrie found an IBA cemetery on the outskirts of the site, no contemporary remains were found within the confines of the tell (Tufnell 1993: 49). The earliest remains are MB IIA buildings and tombs from the "Courtyard Cemetery" (Tufnell 1962; 1980; Kempinski 1993a: 53). The tombs of this cemetery are arranged in six groups, based both on their stratigraphic relationship with Palace I and comparative typological considerations (Tufnell 1962: 4-8). The range of repertoire limits any refinement, but the pottery of Groups 1-2 are clearly of MB IIA/2-3 types (Tufnell 1962: figs. 3, 9-10). Group 3 appears to have transitional material, i.e., MB IIA/4 or MB IIA-b (Tufnell 1962: fig. 11). Tufnell (1980) ascribes the upper phase of Cave 303 to a stage between Groups 3 & 4, and the lower phase to Group 2. Considering the presence of unslipped bowls with ring bases and the brown-slipped TEY juglet with broad button base (Tufnell 1980: fig. 3:7-8, 11), the earlier phase should be assigned to no earlier than the MB IIA/3-4 periods. The finds of the later phase seem to be MB IIB material (Tufnell 1980: fig. 3:1-4).³²⁵ A particularly elaborate MB IIA/3 burial is T.1417, which is bilobate in plan with a well-carved pillar in the center, and an equid burial one meter east of its entrance (Tufnell 1962: 4, figs. 1-2; Wapnish 1997: 350).

Some typologically MB IIA artifacts, including examples of LPW, TEY, and "Anatolian" cut-away vessels have been identified from Petrie's published plates (Dever 1976: n. 19; Gerstenblith 1983: 32; Tubb 1983: 53). All are apparently from the poorly preserved MB IIA settlement, found just west of Palace I (Kempinski 1993a: 53; Stewart 1974: 10). The erasure of this settlement should perhaps be associated with the monumental building activities in the MB IIA-b or MB IIB phases, during which it seems plausible to associate the creation of the rampart enclosure.

4.12.2 LPW, TEY, and "Anatolian" cut-away vessels

The few LPW vessels include: a handleless jar with horizontal lines (Petrie 1933: pl. XXXIII:32A11); a dipper juglet, with strokes on its rim, a pendant motif around its neck, and triangles framed with horizontal lines on its body (Petrie 1931: pl. XLVII: AY); and a globular juglet, with strokes on its rim and handle, a pendant motif, and a spiral framed with horizontal lines on its body (Petrie 1934: pl. LIV: J60N7). The earlier phase of T.303 contained the lower two-thirds of a brown-slipped, piriform TEY juglet with a flat button base (Tufnell 1980: 47, fig. 3:11). It is decorated in the

³²⁵Note her parallels in this regard. The line drawing of the unslipped carinated bowl (fig. 3:1) is misleading; the description on p. 47 indicates a (semi) ring base and not a disc base as illustrated.

middle of the body with alternating rectangular frames, and with triangles along the bottom. A fragmentary “Anatolian” cut-away spouted jug was also found, which has been discussed extensively (Tufnell 1969: 9-10, 15).

4.12.3 Bronze finds

Finds that may be ascribed contextually to this period include three toggle pins, one torque, one ribbed dagger, and a socketed spearhead.³²⁶ Numerous other finds may be assigned typologically to the MB IIa (Dever 1976: n. 19).

5. Jezreel Valley

The Jezreel Valley is an enclosed lowland bordered by the Carmel, Samarian, and Lower Galilee Highlands. The adjoining Akko Plain and Beth Shean valleys are easily accessed, respectively, via an intermontane pass to the west and the Harod Valley to the east. The northern and eastern hill margins are typified by basalt exposures, which were exploited for a variety of uses. This almost triangular valley is blessed with a lush variety of alluvial and other soils around its margins, but is afflicted with hydromorphic soils in its center (Ravikovitch, Koyumdjisky & Dan 1960). The latter is a result of an overabundance water, from precipitation (500-650 mm), mountain springs, and the valley's low gradient, which with only a single river to drain it, Kishon, made it prone to swamps. Thus, in the best circumstances the Jezreel was the potential “bread basket” of the southern Levant; in less optimum conditions, or the absence of human intervention, it was a scourge for agriculture. Because of the topography and poor drainage, movement in the valley was along a “ring road,” that followed the settlements that occupied the hilly margins, which connected with routes up into and through the highlands, to adjacent valleys, and to the Akko and Carmel coastal plains.

Given the physical geography and limited degree of archaeological visibility of this lowland region (Gal 1991b), it is not surprising that nearly all the known sites with evidence of IBA material culture, including habitations, cemeteries, and sherd scatters, are along the margins of the valley (Raban 1982; Esse 1991: fig. 31). Many of these sites continued, either as rural sites or urban centers, in the MB IIa period, when this “ring-road” settlement pattern matured, and intermediate and major tells are located at all the main entries into the valley (Table 6.5).

5.1 Tel Me`amer

Although earlier excavations indicated that the initial settlement at Tel Me`amer dated from the Iron Age, three MBA tombs were salvaged from the southern side of the site (Drucks 1982). All appear to be shallow shaft tombs with niches hewn out of the limestone. The pottery repertoire ranges

³²⁶From Group 1: two toggle pins in T.1409 (Tufnell 1962: 16, fig. 5:1). From Group 2: a torque in T.1422, a toggle pin in T.1419, a ribbed dagger in T.1417, and a socketed spearhead in T.1417 (Tufnell 1962: 16-7, 27, figs. 10:11, & 17-18). An old unspecified analysis revealed the ribbed dagger to have the following composition: Cu 97.45 Sn 1.0 Pb 0.7 As 0.5 (Tufnell 1962: 17).

from the mid-MB IIa to early MB IIb periods. Among the pertinent finds are a jug painted in bichrome, with alternating red and white triangles, red and white bands, and a pendant decoration; parts of three TEY juglets; and a scarab (Drucks 1982: fig. 3:2-4, 5, 14).

5.2 Tel Qashish

Excavations revealed limited remains of a late MB IIa - transitional MB IIa/b fortified settlement built directly on the remains of the EB III city (Ben-Tor 1993b). Pottery evidence, however, suggests an even earlier MB IIa settlement (Ben-Tor 1993b: 1201-2). One TEY sherd is reported from this phase (Ben-Tor, Portugali & Avissar 1981: fig. 13:8).

5.3 Tel Yoqneam

Three phases of MB IIa settlement were discovered at Yoqneam (Ben-Tor 1993a). The first settlement, Stratum XXIIIB, was established on bedrock and fortified by a wall and glacis. Three bell-shaped tombs, hewn out of the limestone and accessed via a shaft, precede this initial fortification (Stratum XXIIIC). A second fortification system, consisting of a 3 m wide wall and tower, was built over the first (Stratum XXIIIA). The IBA is represented by sherds only. A MB IIa bowl found in a LBA fill was impressed before firing with a scarab bearing the cartouche of Amenemhet III.

5.4 Tell Qiri-Hazorea

Excavations in this settlement, now covered for the most part by buildings of Kibbutz Hazorea, revealed only limited MBA remains (Ben-Tor 1987). Two noteworthy sherds from dubious contexts are possible fragments of a MC WPPL jug and a large burnished TEY jug (Ben-Tor 1987: 272, fig. 65:1-2).

Southeast of Tell Qiri is an EBA to MB IIa settlement that has yet to be excavated (Anati, et al. 1973: 25). Meyerhof (1989) has published some of the tombs from a nearby IBA cemetery. Among the eighteen rock-hewn tombs, chamber B of T.2 contained a red-slipped and burnished MB IIa juglet found on the remains of a fallen support wall (Meyerhof 1989: 6-8, fig. 5:24). It is the only post-IBA artifact in the cemetery.

5.5 Megiddo

No study of the archaeology of the Levant can be complete without consideration of the site of Megiddo, where historical references coupled with extensive and fruitful excavations provide an enormous body of information on many aspects of the material culture of the region and its relations with neighboring areas. The definition of Megiddo as a “key site” is both an understatement and a misnomer, as no other tell site has been as broadly excavated, or has produced such rich assemblages. At the same time, the nature of the recording method and the lack of detailed publication of much of the remains has frustrated many attempts to fully utilize its potential. The non-stratigraphic character of Schumacher's sondages (1908) prevent any real integration of his results with later work by the Oriental

Institute of University of Chicago, much as the latter's "architecturally" oriented *découpage* prevents a true debris/layer phasing. Since the cessation of publication of the latter excavation (Loud 1948), subsequent field investigations and synthetic studies have sought to put in order much of what is essentially no more than an excavation catalogue (Kempinski 1989a: 6-9). For the purposes at hand, the works of Kenyon (1969), Dunayevsky & Kempinski (1973), Gerstenblith (1983: 23-8), Kempinski (1989a), and Esse (1991: 67-89) are indispensable for understanding the relative sequence and development of MBA Megiddo.

In reviewing the evidence from Megiddo, the goal is not an attempt to resolve the many stratigraphical and chronological conundrums still plaguing our understanding of the site. Until the study and publication of the data from the Chicago excavation's field diaries, plans, and photographs, little internal confirmation is available for many of the reconstructions offered.³²⁷ Nearly all of these reconstructions are problematic, as they rely on the axonometric plans of the Chicago expedition that distort any attempt to superimpose the plans in order to reassemble even local phasing (Dunayevsky & Kempinski 1973: n. 4). Walls are presented in an idealized form without accompanying sections to clarify their association with other stratigraphic components. Thus, we must rely on the excavators' attribution of strata by absolute height or architectural criteria, which is convincing in the general, but clearly suspicious or in error in the particular. Even a cursory glance at some of the plans reveal spot heights that suggest multiple architectural and living phases (Loud 1948: 84-7, fig. 396, sq N 11). For the general development of the site, the following summary and discussion will be conservative, relying on Dunayevsky & Kempinski's architectural reconstruction and dating of the strata (1973; Kempinski 1989a). This work provides the only stratigraphical reconstruction based on modern field study, trial sondage, and some attempt to rectify the axonometric distortions. Based on their work, Stratum XIVa-b provides an architectural *terminus post quem* for the MB IIa levels.

The association of small finds is a much more difficult problem. It would be convenient to follow the general trend of Gerstenblith's typological sequence for the pottery (1983), which is based on a fairly convincing, but localized stratigraphic sequence. Unfortunately, apart from her reconstruction and phasing of the structures in squares N-12/13, her "stratigraphic" attribution of many tombs (Gerstenblith 1983: 27, table 5) does not stand up to critical examination. Outside of the aforementioned "phased" squares, Gerstenblith, following Kenyon (1969: 25), relied on the vertical superposition of walls over tombs as a criterion for chronological attribution. Unfortunately, this approach is fraught with difficulties, as the axonometric plans do not always permit proper superposition of the plans. Moreover, the superposition of single walls over tombs may not always be reliable. From comparanda and the limited descriptions of the tombs, it appears that they were likely to have been variously constructed as pit, built, or shaft tombs. The depth of these tombs beneath the contemporary living level cannot be determined, because earthen floor levels and pits were not identified by the excavators (Loud 1948: 1). Therefore, the association of each tomb as a *terminus post*

³²⁷The works of Gerstenblith and Esse show clearly how much useful data is still to be gleaned from the Oriental Institute archives on Megiddo.

quem may vary considerably, although each is obviously coeval or later than the level in which it is placed. The existence of shaft tombs, however, prevents the use of tombs even directly below walls as a criteria for dating, as they may descend meters, following the faces of compact brick walls, under which a suitable chamber may be hollowed out.

A possible example of such a shaft tomb is T.5155, which appears in Stratum XIV, whose architecture is late EBA, but contains clearly MB IIB material.³²⁸ On the plan for Stratum XIV this tomb is located below a wall fragment at the juncture of squares M/N-11/12. The plans for strata XIIIb and XIIIa (both MB IIA) have two walls that form a corner at this point. In Stratum XII this point is the edge of a cut plaster floor of Palace 5001a, but in later MB IIB strata no features overlay it. It must be concluded that this tomb originated in a much later phase than Stratum XIV despite its position under that wall. Other tombs may have been similarly constructed.³²⁹ Thus we simply cannot rely, as Kenyon (1969: 25) suggested, on the “latest objects more exactly providing a *terminus post* for any intact overlying building”, but must in most instances depend on exogenous data, i.e., typological sequences from other sites. This external dependence is characteristic of *all* of the analyses of the Megiddo finds and has resulted in many biases. Kenyon, for example, relied heavily on her experience and evidence from Jericho (1969: 36 ff.), which, while crucial for the MB IIB sequence, can shed little light on the MB IIA period, which is much more substantial and long-lived at Megiddo than at Jericho. Moreover, the ceramic typology established by the Chicago expedition is presented in representative forms, some of which span four strata without any changes. None of the nuances in morphological variation, if they existed, were recorded. Until further data is made available, the reliability and autonomy of the suggested sequence at Megiddo must be severely questioned.

Nevertheless, some use can be made of material from independent loci and Gerstenblith's local sequence. Occasional stratigraphic relationships can be suggestive, when relying on loci sealed by floors recorded on the plan. In general, however, the MB IIA material discussed here will be treated as a whole and will include all post-Stratum XIV and pre-Stratum XI finds except where such material is clearly of MB IIB or later date by comparison with other sites.

5.5.1 Environment and Economy

Megiddo developed on an Eocene limestone outcrop on the eastern fringes of Mt. Carmel near the intersection of two routes: one that leads along the eastern side of the mountain chain from the foothills of Samaria to the Akko Plain, and another that connects the Galilee and Transjordan with the

³²⁸Among the indicators for the date of this tomb are an unburnished dipper juglet and especially an unburnished wide-flaring, footed carinated bowl (Loud 1948: pls. 12:13, 15:10).

³²⁹The author strongly suspects that this type of burial was extremely common and that the frequent occurrence of only a jug or juglet with a bowl, which is usually of a carinated type, in many tombs of Strata XIII-X are actually grave markers, perhaps cenotaphs, or offerings in the shaft itself (e.g., tombs 2119, w=T.2138, w=2142, 2152, 3034, and 3133). An example of such a practice was excavated by the author in late MB IIA levels at Tel el-Ifshar. The author thanks Dr. Y. Porat for permitting him to refer to this unpublished information.

Carmel Coast via Nahal `Iron. The site's location on a highland-lowland interface no doubt contributed to its prosperity. The forested hills provided a variety of resources (e.g., wood, stone, etc.) as well as horticultural and pastoral potential. The immediate foothills, which are better drained than the lower flat plain, provided a broad agricultural base. With a strong central authority even the swampy hydromorphic soils could be drained and utilized. Later textual references attest to the wealth of grain and livestock at the site (Kempinski 1989a: 132); presumably, a similar situation existed previously. Water was obtained from two sources: the `Ein el-Kubbi spring to the northeast, near the edge of the lower city, and a southwestern spring accessed through a cave near the main mound (Kempinski 1989a: 3, fig. 3). During the Middle Bronze Age, `Ein el-Kubbi may have been exploited with the aid of a short underground channel or well, while the southwestern spring was reached via a passageway through the ramparts (Kempinski 1989a: 129-30, figs. 38, 41).

5.5.2 The IBA to MB IIa transition

Following an EBA occupation in which both the upper and lower city may have been occupied (Kempinski 1989a: 23-38, 46; Esse 1991: 67-89; Portugali & Gophna 1993: 169-70, fig. 4), Megiddo suffered the same decline in urban life that is characteristic of other IBA sites. Although further excavation may reveal otherwise, the site appears to have been very sparsely inhabited with evidence for occupation limited to the immediate temple area (Kempinski 1989a: 39). In Stratum XIVa, squatters appear to have utilized the abandoned EB ruins, including the temples, with the important exception of Temple 4040. This structure appears to have served as a small shrine, complete with a stela (Dunayevsky & Kempinski 1973: 174-5; Kempinski 1989a: 176-7). Besides the ceramic finds, the date of this modification is anchored by a typologically transitional IBA-MB IIa "eye-fenestrated" axe found in the northern wall (Kempinski 1989a: 41, fig. 18:15; Miron 1992: 53, 58). Immediately to the south of this shrine, on top of the EBA circular altar, an open air, enclosed stone pavement was used for offerings. Among these offerings were IBA cups and a jar, together with a MB IIa votive cup and a "Minoan" double-axe, probably of Anatolian origin (Kempinski 1989a: 41, fig. 18:9-14; Miron 1992: 85).

Despite the meager evidence for IBA habitation on the site, this period marks the greatest period of use in the eastern cemetery (Kempinski 1989a: 189-90). Of the forty-nine shaft tombs discovered, thirty contained IBA finds and two were reused in the MB IIa period (Guy & Engberg 1938). Clearly, the intensive use of this area demonstrates its importance for a fairly significant population that may not have lived on the site.

5.5.3 Summary of MB IIa remains

MB IIa remains were found in all areas excavated on the main tell and a limited salvage excavation in the lower city. The earliest phase, Stratum XIIIb, was unfortified. It is characterized by double-flanked courtyard buildings that developed around the former IBA shrine, which continued in use as an apse surrounded by a temenos wall (Dunayevsky & Kempinski 1973: 175-7, fig. 11;

Kempinski 1989a: 122, fig. 19). In Stratum XIIIa, this area developed into a series of vaguely defined urban insulae separated by winding alleyways; no public or monumental structures were found apart from the modest open, cultic “high place” area (Kempinski 1989a: 45). The existence of tombs containing pottery coeval with Stratum XIIIa, within the earthen rampart of the lower city, indicates that it was fortified by this time. The acropolis was surrounded by a two meter wide offset-inset wall, with an inner parapet or pavement (Kempinski 1989a: 45-6, 109 *contra* Kenyon 1969). A gate existed in Area AA, on the northern side of the acropolis, with an adjacent, perhaps public, building inside the wall to the west of the gate.³³⁰

Stratum XII marked a major change in the city plan, which was formalized into well-organized insulae and streets. The layout of Area BB was thoroughly changed by the construction of Palace 5001a and rectangular courtyard buildings around the open air “high place” (Kempinski 1989a: 46). Some of these buildings abut the city wall, which in some areas was doubled in width and enhanced by occasional towers and a bent axis gate in Area AA (Kempinski 1989a: 46, 109-10).

The MB IIa period was marked by the abandonment of the eastern cemetery in preference for intramural interment. Only three burials are known from the eastern cemetery, while approximately two hundred were found in the midst of the settlement, presumably under floors and courtyards.³³¹ The bulk of the published finds originate in these burials. A number of these intramural burials and other contexts have a secure relative stratigraphic position.³³² At the very least, by analogy with other assemblages, these few contexts anchor the strata as established by Dunayevsky & Kempinski within the MB IIa sequence, and suggest that red-slipped and burnished wares were a feature of the ceramic repertoire from at least before Stratum XIIIb, appearing alongside the painted wares.

³³⁰Kempinski (1989a: 109) draws a parallel between Building 4104 (Loud 1948: fig. 378) and the later towers of Stratum XII, but this building is poorly placed to defend the gate. This structure may have been one of the public or administrative buildings missing in Area BB, perhaps another example of the shifting location of elites (viz. Aphek and Ifshar).

³³¹As Kempinski (1989a: 189) points out, only a small portion of the eastern cemetery was excavated before the area became the dump for the Chicago expedition. More MB IIa tombs may exist under this and the later MB IIb ramparts to the south and west.

³³²T.5149 (XIV), which is sealed by a wall and plaster floor 5034 of Stratum XIIIa, contains a LPW handleless jar; T.3162 (XIV), which is below city wall pavement 2149 in square O-15 of Stratum XIIIa, contains a variety of red-slipped jugs, juglets, and bowls, and a LPW vessel; T.5181 (XIV), which may be under a pavement of Stratum XIIIb, contains red-slipped jugs and a juglet along with a LPW handle-less jar; T.5183 (XIV), which is under a pavement of Stratum XII, contains a buff ware jug and bowl with red slip on their rims; S=5123, which contains a bronze figurine, may be associated with L.5123 (XIIIb), which is below a Stratum XII pavement; L.5076 (XIII), which is below a Stratum XII pavement, contains a red-slipped bowl on a disk base; N=5076 contains a scarab; and T.3147 (XII), which is below a Stratum XI pavement, contains red-slipped jugs, a juglet, and a bowl. Note that in the following notes, G followed by a number refers to Gerstenblith's phases.

5.5.4 Levantine Painted Wares

A large number of painted vessels occur in a variety of forms and with a wide range of decorations. Some are from secure contexts, but the majority are assigned typologically. These include dipper juglets, globular jugs, juglets, amphoriskoi, tankards, handleless jars, and storage jars. The decorative motifs include bichrome lines, concentric circles, pendant decorations or bands around the neck, and paint on the handles or rim.³³³ An unusually intricate example is a large jar with a relief decoration and two sets of yellow triangles and net pattern framed by red and blue-black lines, all on a white wash (Loud 1948: pls. 28:1, 123:13-14). Two kraters, both with a rope applique, are painted with red-filled triangles framed by red and black bands, and red and white checkerboard decoration, respectively (Loud 1948: pls. 13:11, 112:11-12). An assemblage of other unusual painted ceramics was found in Square M-13 "High Place" (XIIIA or XII; Kempinski 1989a: 46). These include an incense stand, a vessel with an applique face, and sherds. The decorations range from simple bichrome bands to bichrome alternating triangles, net-patterns, and herringbone designs, and even to human figures (Loud 1948: pls. 22:9-10, 12, 117:13, 121:1, 3).

5.5.5 Tell el-Yahudiyah Wares

Examples of this class include a possible ovoid juglet on a disc base, with white filled herringbone decoration in horizontal bands; two slightly piriform juglets, with ring bases, double handles, and white-filled triangle and diagonal decorations; and a cylindrical, perhaps bag-shaped juglet with white-filled horizontal bands and triangles. Unusual forms are a red burnished acorn-like juglet with incised dots, and two small "S"-shaped carinated bowls, with brown to red slip and burnish and white-filled incised decoration above the carination.³³⁴

5.5.6 Middle Cypriot Wares

The MB IIA attribution of the MC wares does not stand up to rigorous stratigraphic analysis, and is justifiably questioned by Maguire (1992). Many of the examples assigned to MB IIA strata are

³³³The examples are numerous: T.5167 (XV); T.3147 (XIV), clearly sealed by Stratum XI; T.4046 (XIV); T.5130 (XIV); T.5074 (XIV); T.3150 (XIV); T.5183 (XIV, this was found under Stratum XII pavement; =T.5130 (XIV); T.3141 (XIII); T.2151 (XIII); T.5268 (XIIIB); E=5093 (XIIIB) (Loud 1948: pls. 7:19, 11:18-19, 21-22, 16:4-5, 20:6-7, 35:6, 114:4-5, 7, 117:4, 119:18-19); twelve examples, T.911A1; T.912B; T.912D (Guy & Engberg 1938: pl. 29:2-4, 35:17). T.3168 (XIV); T.5180 (XIV) (Loud 1948: pls. 11:13, 20, 114:6); T.911A1, T.911D (Guy & Engberg 1938: pls. 29:5, 31:18, 19, 21); =T.4010 (XIII); T.3162 (XIV; **G-3/4**, but under pavement 2149 of XIIIA city wall in sq. O-15); T.2146 (XIII; **G-4**); T.2138 (XII); T.5104 (XIII; **G-4**) (Loud 1948: pls. 11:9, 17:10, 19:33, 21:2, 27:2, 113:19, 118:4, 120:2, 199:16). T.5149 (XV; sealed by plaster floor of stratum XIIIA, L.5034); T.5181 (XIV; may be under a pavement of XIIIB); T.5167 (XV); T.5181 (XIV; may be under a pavement of XIIIB; =T.5130 (XIV); E.=T.5147 (XIV); S=5218 (XIIIA) (Loud 1948: pls. 8:8-9, 12:20-22, 13:5, 111:6, 7, 115:5, 119:2); T.911A1; T.912B (Guy & Engberg 1938: pls. 29:11, 35:5); =5095 (XIIIA); =T.5104 (XIIIA); S=5270 (XIIIA) (Loud 1948: pls. 18:2, 4, 118:10, 119:3).

³³⁴T.5202 (XV); T.5177 (XIV); N=T.5171, (XIV); 4090 (XIII); T.3123, T.4099 (XII, likely MBIIa/b) (Loud 1948: pls. 9:10, 11:1, 14:35, 19:27, 24:31, 111:15, 116:9, 119:14); T.911A1 (Guy & Engberg 1938: pl. 28:40).

lone finds without any criteria for attribution before the transitional MB IIa-b period. However, the types—Composite Ware bowl, WPPL, and WPCL jugs—are consistent with MC imports from other MB IIa sites.³³⁵

5.5.7 "Anatolian" cut-away neck vessels

This class of red-burnished jugs and juglets is well represented in piriform, globular, and carinated shapes. Variations exist in the number of handle strands (single to quintuple) and in base type. The incision around the base of the neck among carinated forms is similar to examples from Kabri (Kempinski 1990b: 10-1).³³⁶

5.5.8 Evidence for local pottery production

A basalt tournette found with an MB IIa cooking pot (S=5161; XV) is the only possible evidence for ceramic production at the site (Loud 1948: pl. 269:3).

5.5.9 Egyptian or Egyptianizing objects

Four scarabs were found with MB IIa pottery, three with MB IIa-b pottery, and one with possible MB IIa-b wares.³³⁷ All were made of steatite, with the exception of one faience scaraboid. In addition, a segmented calcite jar and sherd with a potter's mark identified as leaf (perhaps an Egyptian sign) were found.³³⁸

5.5.10 Bronze finds

A large number of bronze objects were found, including weapons, jewelry, and figurines. The weapons include five shaft or socket axes, fifteen socketed spearheads, eight daggers, one tanged spearhead, and one fenestrated axe.³³⁹ The jewelry included six toggle pins and a fragment of a

³³⁵Bowl: =5061, lone find (XIII; Loud 1948: pls. 19:15); WPPL jug: T.5048 (XII; Loud 1948: pls. 26:16, 123:7); WPCL jugs: T.5068, lone find and T.3086, MB IIa/b (XII; Loud 1948: pls. 26:15, 123:5).

³³⁶W=5183 (XIV, may be under Stratum XII pavement like L.5183); T.5118 (XIV); T.5090 (XIIIA); E=5072 (XIIIA); T.5114 (XIII); T.5252 (XIII); T.5106 (XII); T.5111 (XII) (Loud 1948: pls. 11:2, 5, 16:2, 17:14-15, 24:9, 25:12, 113:15, 117:1, 119: 8, 122:11, 23).

³³⁷MB IIa: T.3143 (XIV); two from T.5090 (XIIIA); T.5106 (XII) (Loud 1948: pls. 149:1, 5-6, 48, 154:1, 5-6, 48). MB IIa-b: T.3109 (XIIIA); T.5137 (XII); T.4099 (XII) (Loud 1948: pls. 149:3, 41, 47, 154:3, 155:41, 47); and possible MB IIa-b: 4103 XIII (Loud 1948: pls. 149:2, 154:2). See also Ward and Dever (1994: 65, 96).

³³⁸Jar: =T.4010 (XIII, found with LPW jug) (Loud 1948: pl. 258:2; Weinstein 1975: 2, n. 13, fig. 1:1-2); sherd: L.5100 (XIIIA) (Loud 1948: pl. 119:11).

³³⁹Shaft or socket axes: T.3168 (XIV, MB IIa) (Loud 1948: pls. 182:1; Miron 1992: 73, 76-77, #263; Philip 1989: 268, #386); T.911A; two from T.911D; T.912D (Guy & Engberg 1938: pls. 118:3, 122:1-2, 133:4; Miron 1992: 73, 76-77, #264-267; Philip 1989: 267-268, #385, 387-389).

possible bracelet or handle.³⁴⁰ The figurines are discussed by Negbi (1976).³⁴¹ Although no metalworking installations were found, a mold for producing socketed axes was found on the surface, but it is clearly for producing MBA forms (Lamon & Shipton 1939: pl. 105:5; Miron 1992: 71).

5.5.10.1 Silver

Silver was found in small quantities, including four earrings and a figurine.³⁴² A rare hoard containing 135 gm of silver fragments was found in a possible MB IIa jug (T.5034, XIIIa; Loud 1948: pl. 228).

5.5.11 Semi-precious stones

Semi-precious stones are represented by carnelian and amethyst beads.³⁴³ In addition, a serpentine axehead was found in Stratum XIIIa (N=T.5094; Loud 1948: pl. 268:8).

Analyses of 121:1 & 2 show the following percentage composition, respectively: Sn 9.17 Pb 2.21; Sn 10.78 Pb 0.93; a test for arsenic was not performed (Guy & Engberg 1938: 161). Socketed spearheads: T.5181 (XIV, MBIIa); W=T.3157 (XIV); 2 from N=5184 (XV); Sq. O-13 edge of pavement XII; N=3106 (XII); (Loud 1948: pls. 173:2-5, 7, 9; Philip 1989: 383-384, #336-337, 1398, 1408, 1410); 3 from T.911A1; T.911C; 3 from T.911D; T.912B; T.912D (Guy & Engberg 1938: pls. 118:6-8, 120:13, 122:5-7, 125:12, 133:7; Philip 1989: 374, 381-383, #234, 338-339, 344-349, 382). Analyses of 122:7 and 133:5 show the following percentage composition, respectively: Sn 7.69 Pb 0.39 and Sn 10.67 Pb 0.40; a test for arsenic was not performed (Guy & Engberg 1938: 161). Daggers: =5061 (XIIIa); W=5087 (XIIIa); 5093 (XIIIa, possibly MB IIa) (Loud 1948: pls. 178:2-3, 6; Philip 1989: 117-118, 131-134, 438, 466, 473, #602, 1048, 1320); T.911A1; T.911D; T.912D; (Guy & Engberg 1938: pls. 118:5, 122:8-9, 133:5-6; Philip 1989: 117-118, 132-135, 437-438, 470, 480, 500, #603-604, 1156-1157, 1194). Analyses of 122:8-9 and 133:5-6 show the following percentage composition, respectively: Sn 1.38 Pb 0.84; Sn 8.69 Pb 3.14; Sn 1.91 Pb 3.43; and Sn 9.35 Pb 0.40; a test for arsenic was not performed (Guy & Engberg 1938: 161). Tanged spearhead: 5061 (XIII, within enclosure wall of Temple 4040) (Loud 1948: 178:5). Philip (1989: 81-82, 338, #37) considers this object to be of Anatolian origin or inspiration. Fenestrated axe: (XIV, found in the fill of Temple 4040) (Loud 1948: pl. 182:3). This axe is considered to be a transitional type between the EB "eye axe" and the MB IIa duckbill axe (Kempinski 1989: 42-44; Miron 1992: 53, 58, #231; Philip 1989: 53-55, 298, #501).

³⁴⁰Toggle pins: W=T.3157 (XIV); N=4009 (XIII); T.5106 (XII, MB IIa); T.4099 (XII, MB IIa-b) (Loud 1948: pls. 219:10-11, 220:19, 23); T.911A1 (Guy & Engberg 1938: pl. 118:4). Bracelet: 5061 (XIII, within the enclosure wall of Temple 4040) (Loud 1948: pl. 284:2); however, this object looks more like the double handle of a juglet.

³⁴¹Sq. M13 (XIV); room of T.5121 (XIV); 2 in Sq. M13 (XIIIa or XII); Sq. N13 (XIII or later); Sq. S10 (XIII or later); S=5123 (XIIIa); =4006 (XII) (Loud 1948: pl. 233:1-7, 11; Negbi 1976: 64-66, #1535-1536, 1538-1541).

³⁴²Earrings: T.5090 (XIIIa, w/cut-away neck jug); figurine: M-13 (Loud 1948: pls. 225:1, 233:8; Negbi 1976: #1537).

³⁴³Carnelian beads were found in S=5181, XIV, possibly under a XIIIb pavement; with an amethyst bead in T.5090, XIIIa; in W=4089, XIII, with an MBIIa carinated bowl (Loud 1948: pl. 207:10, 13-14).

5.6 Tel Shimron

This site was founded on a limestone ridge bordered by basalt outcrops on the northern valley margin and is surrounded by four springs (Raban 1982: 83). This location afforded the site proximity to some of the lushest horticultural areas of the Lower Galilee and was on an important route from the Jezreel to the Beth Netophah valleys, at Tel Hannathon. Earthen and crushed basalt ramparts surround this mound, which is characterized by several terraces, the summit of which is ca. 185 msl (Raban 1982: 83; Portugali 1982). Trial soundings suggest an MB IIa date for part of the fortification, although the ceramics span the Middle Bronze Age. Raban (1982: 72, fig. 7) located two MBA gates in the north and south while in the west the ramparts enclose a spring, which now serves as a well.

5.7 `Afula

Perhaps best known for its large number of TEY juglets, `Afula is located in the eastern Jezreel Valley, near the western foot of Mt. Moreh, an important junction for movement from the western Jezreel southeast to the Beth Shean Valley, and northeast, via Mt. Tabor, to the Lower Galilee. The region is characterized by rich *terra rosa* and basaltic soils, and high groundwater, which provided the agricultural base for the local population. The nearby hills were probably horticultural and pastoral zones, and basalt escarpments could have provided raw materials for a local ground stone industry. What little is known about the site comes from limited salvage excavations, which suggest an area of at least 2.4-3.0 ha (Dothan 1955; 1993b; Sukenik 1948; Zori 1977: 52; Zevulun 1990: 174; Gal & Covello-Paran 1996).

5.7.1 Summary of MB IIa remains

The limited excavations demonstrate that the site was occupied in the IBA and MB II periods (Dothan 1993b; Gal & Covello-Paran 1996: 25-6, table 1). The IBA settlement apparently covered a large area and included a potter's workshop with three kilns (Gal & Covello-Paran 1996: 38-44; Dothan 1993b).³⁴⁴ Remains of the MB IIa settlement also covered a large area of the mound (Gal & Covello-Paran 1996: plan 1). The preserved architecture is basically domestic in character, and includes silos, tabuns, plastered installations, and burials (Gal & Covello-Paran 1996: 44-7; Sukenik 1948; Zori 1977: 52, pl. 14:4). In addition to settlement levels, a refuse pit containing fired and unfired pottery attests to ceramic production in the MB IIa period (Zevulun 1990). Analysis of the ceramic assemblage suggests that it begins in the MB IIa/2 period and continued through the Middle Bronze Age (Gal & Covello-Paran 1996: 56, 64). Gal & Covello-Paran (1996: 64) consider `Afula to be part of the agricultural hinterland of larger Jezreel Valley sites.³⁴⁵

³⁴⁴Although the IBA to MBA transition is not very clear stratigraphically, some of the IBA ceramic forms, such as cooking pots, are harbingers of MB IIa types (Gal & Covello-Paran 1996: 38-40).

³⁴⁵The charred wheat and pulses, which were found along with weeds (Melamed 1996), are merely a hint at the potential of site's environs.

5.7.2 The potter's refuse pit

With Zevulun's publication (1990) of the potter's refuse pit from `Afula, an important archaeological context has finally been properly presented and understood. The pit, which contained numerous TEY juglets, was found accidentally and excavated by Ben-Dor in 1950 (Zevulun 1990: 174, 185-7). Since a selection of these juglets was initially presented (Amiran 1969a: 118-20, pl. 36), this assemblage has been referred to by numerous scholars, who have considered its typology, chronology, origin, and the significance of this widely distributed ware (Zevulun 1990: 174, nn. 4-10). Often these references mistakenly attribute the finds to a kiln or its immediate vicinity, or have suggested that the fired juglets were found outside the pit (Zevulun 1990: 174, n. 12). In order to understand the significance of the `Afula TEY juglets, the circumstances of their discovery must first be established.

All of the TEY wares from this excavation, both fired and unfired, were found in the same pit together with other MBA pottery in a similar state. The 1.26 m deep pit was dug out of virgin soil on the eastern side of the tell, and apparently served initially as a cooking oven (Zevulun 1990: 185-7, fig. 30). Subsequently, it served as a potter's mixing pit and finally as a refuse pit for flawed pottery. No other installations for pottery production were found, although they may yet be preserved in the vicinity of this pit. Unfortunately, at the time, means were not found to conserve many of the unfired sherds and only a representative sample of pottery is preserved, including a few storage jar rims and bases characteristic of the MB IIa period (Zevulun 1990: 174, nn. 15-16). The dating of the TEY juglets must rely largely on their typology.

The upper 30 cm of the pit contained over thirty-six defective juglets. Ten are from complete or cracked vessels, which, together with broken sherds form a minimum of twenty-six juglets, comprise the largest contemporaneous assemblage of TEY wares ever found and the only one associated with its production locale (Zevulun 1990: 174). In Zevulun's opinion (1990: 174-5, nn. 18-19), the circumstance of the finds and the homogeneity of the assemblage suggest a short time span during which these vessels were made, perhaps in two or three kiln batches. This homogeneity is reflected in the basic light brown appearance, the paste, and many morphological and decorative traits, such as the small disc base and upper and lower registers of incised horizontal lines (Zevulun 1990: 174-5). The vessels vary in size, rim type, and decoration. Specific decoration appears to be related to vessel size. Only the large juglets, generally ovoid, are decorated with framed horizontal designs of punctured herringbone, triangle, and "butterfly" patterns, many of which appear in painted MB IIa examples. The medium and small juglets, which are, respectively, ovoid and ovoid-piriform, are decorated with vertical strips of a puncture decoration. Five different rim types are present, all well known in the MB IIa ceramic repertoire of jugs, juglets, and even bowls and jars (Zevulun 1990: 175-6, n. 23). The occurrence of the ridged collarete rim, together with the folded and pseudo-stepped rim forms, may invalidate some widely held chronological distinctions (Zevulun 1990: 185, n. 45, figs. 13, 21, 23).

In addition, other examples of this class were found on the tell. A fragment and a complete piriform TEY jug, which have MB IIa characteristics, were found in two tombs, both of which contain

MB IIa and MB IIa-b pottery (Sukenik 1948: pl. XIV:10, 18).³⁴⁶ Another fragment with concentric circles was found in the more recent excavations (Gal & Covello-Paran 1996: fig. 23:13).

The importance of this assemblage is its typological and decorative affinity to the late-MB IIa ceramic tradition. In particular, the appearance of a variety of rim types demonstrates a degree of typological contemporaneity that may require reassessment of some established ceramic synchronisms.

5.7.3 Levantine Painted Wares

Painted decorations appear on fragmentary jugs, a krater, and a storage jar (Gal & Covello-Paran 1996: figs. 21:11, 22:7, 23:9-11, 24). Motifs include bichrome lines and bands, pendant decorations on the bodies and strokes on a jug handle.

5.7.4 Other imported finds

One Egyptian alabaster vase was found in a late-MB IIa/MB IIb jar burial (Gal & Covello-Paran 1996: 54, fig. 25:4). A rare find is a 25 gm lead fragment (Gal & Covello-Paran 1996: 54).³⁴⁷ Two ostrich eggs, one decorated with horizontal lines and the other undecorated, were found in a tomb (Sukenik 1948: 13, pl. XV:18; Zevulun 1990: fig. 28). These may reflect exchange with arid regions to the south, where ostriches were indigenous at the time (Horowitz & Tchernov 1989: 292, n. 7).

6. The Galilee Highlands

The upper and lower portions of the Galilee highlands are divided by the steep rivers, cliffs, and ravines that characterize the approximate route of the Akko-Safed road (Gal 1992: 1). The Upper Galilee, which continues into modern Lebanon, is further bounded by the northern Akko Plain in the west and the Huleh Valley and northern Sea of Galilee in the east. The mountainous and fragmented nature of the topography were clearly limitations on agriculture, except in intermontane valleys on the eastern side (Esse 1991: 4; Frankel & Getzov 1997: 9*-10*). Horticulture may have been practiced, particularly along the slopes of the lowland borders, where marginal “highland” sites are known. Rainfall ranges from 500 mm on the lower eastern slopes to 1100 mm on the highest peaks. Movement is relatively treacherous and results in many isolated hills. The Lower Galilee stretches from the border of the Akko plain east to the heights above the Sea of Galilee and southwards where it borders the Jezreel and Beth Shean valleys. The Lower Galilee is a topographically segmented and complex region possessing a fair number of level and agriculturally rich intermontane zones, the largest of which is the Beit Netofa valley, whose slopes are amenable to intensive horticulture (Gal 1992: 1-11). Apart from the agricultural potential of this lush valley, it is part of the *Darb el-*

³⁴⁶Many of the juglets are red-slipped and burnished (Sukenik 1948: pls. XIV:13, 14, XV:1, 2), but the drawing appears to show candlestick rims, suggesting a transitional MB IIa-b or later attribution.

³⁴⁷Analysis has shown the following percentage composition: Cu 0.07 An 0.04 Fe 0.03 Pb 99.5 Ag 0.05 Sb 0.06 (Gal & Covello-Paran 1996: n. 9).

Hawarneh, an important ancient route that led from the Akko plain through the Lower Galilee to the Jordan Valley, thus avoiding the seasonal swamps of the Jezreel Valley (Gal 1992: 8-9; Esse 1991: 17-18, fig. 1).

In the Upper Galilee, the few known IBA settlements and tombs generally tend towards the highland-lowland interfaces, i.e., the western Galilee margin, the slopes of the Huleh valley, and a cluster along the slopes of Nahal Amud, which drains into the Sea of Galilee. The odd small settlement, tomb, caves dwelling, or tumuli infrequently dot the remaining landscape (Esse 1991: fig. 31; Getzov 1995: 16*-17*, fig. 12; Frankel 1986; Damati & Stepanski 1996: fig. 21). A number of MB IIA or MB IIB settlement and tomb sites are attested in this region (Table 6.6), but the nature of the ceramics often makes precise dating difficult. The main MB IIA settlements in the region were probably Sasa and Tel Rosh (Golani & Yogev 1996: 41, 48; Stepansky, Segal & Carmi 1996: 63-4), and in light of its tombs, perhaps Safed. Occasionally, these sites or tombs have IBA antecedents (Amiran 1953; Damati & Stepanski 1996: 23*, fig. 21; [Bahat] 1970). Two fortified MBA sites, Tel Avdon and the Metzad (fort) `Ein Tamir, are located on the western margin of the Upper Galilee hills, the former near Nahal Keziv's outlet from the hills, the latter 8 km further inland above a spring (Prausnitz 1973; Frankel & Getzov 1997: 100*-1*; Getzov 1992). Surveys have produced non-specific MBA pottery, but earlier remains are suggested at Tel Avdon (Kempinski 1986: n. 11). The situation in both periods is perhaps best seen as analogous to that of the Samaritan and Judean Highlands, where centers began to emerge in the late MB IIA period (Gal 1992: 61). These sites may reflect polymorphic pastoral-nomadic groups inhabiting these regions and interacting with lowland groups.³⁴⁸

IBA and MB IIA settlement in the Lower Galilee is quite limited. The former is only sparsely represented in the Central Hills, in clusters along Nahal Yavniel, and on the margin with the Jezreel Valley (Esse 1991: 152-6, figs. 31-32; Raban 1982: map 2). The ceramics from published surveys suggest that only in the MB IIB period is there a considerable sedentary presence (Gal 1992: 56-8; 1991a; 1998). Gal (1980: 76-7) is correct to warn that regional differences in ceramics may obscure the precise identification of MB IIA sites, a caveat that holds equally for other highland areas. Tel Hannathon is the only site in the central part of the region with identifiable MB IIA pottery. It is also the largest site and is located at the western end of the largest intermontane valley, Beth Netopha (Gal 1992: 3, 23), on the eastern end of the main Galilee artery, the so-called *Darb el-Hawarneh* (Esse 1991: 17-8). Other demonstrably MB IIA sites are Tel Qishyon, located on the route at the southern foot of Mt. Tabor, and Ein Ha-Yedid, a site on the eastern margin of the Issachar Heights, above the Jordan rift valley. A late MB IIA tomb at Tur'an contained a rare TEY zoomorphic juglet ([Eisenberg] 1975; Zevulun 1986-1987a: 114, fig. 3). Dever (1975a: 31, n. 36) suggests that this find and two duckbill axes found at nearby Ash-Shajara (Schumacher 1889: 76-77, figs. 14-15), belong to a still undiscovered settlement or necropolis.

³⁴⁸Catfish bones (MNI=1) found in a MB II tomb at Sasa (Horwitz 1987) are evidence of such interactions, perhaps with a site on one of the lakes or rivers of the Jordan Valley (e.g., Tel Na'ama; cf. Greenberg, et al. 1998: 28-30).

6.1 Safed

Six burial caves excavated in Safed, with abundant and opulent MB IIA finds, suggest the presence of a settlement in the vicinity, perhaps in the tell underneath the nearby Medieval citadel (Damati & Stepanski 1996; [Bahat] 1970).³⁴⁹ The only published tomb, perhaps of the shaft type, was badly damaged, and in the absence of any meaningful stratigraphy, the finds are considered typologically, and divided by the excavators into three chronological phases: the MB IIA, the end of MB IIA or MB IIA-b, and MB IIB periods (Damati & Stepanski 1996).³⁵⁰

6.1.1 Pottery and other pertinent finds

One painted juglet, decorated with brown concentric circles and bands, is assigned to the second phase (Damati & Stepanski 1996: 8*, 21*, fig. 9:1). An alabastron, similar to one from Aphek is assigned to the MB IIA phase (Damati & Stepanski 1996: 8*, 20*, fig. 9:11). Eight ostrich shell discs were found in an MB IIA vessel (Damati & Stepanski 1996: 19*, fig. 20).

6.1.2 Bronze finds

From the total assemblage of bronze finds in this cave (N=53), thirty-two belong to the first two phases (Damati & Stepanski 1996: 23*-7*). The former consisted of two duckbill axes, five elongated socket axes, twelve spearheads, three daggers, and ten toggle pins (Damati & Stepanski 1996: figs. 10-13, 14:1-2, 17:2, 18:1-10).

Among the finds from Bahat's unpublished excavation (1970), Miron (1992: 59) notes a number of bronze weapons, which were found with both red-burnished and painted pottery, and ascribed to the later phases of the MB IIA period. The bronze finds include two duckbill axes, four elongated socket axes, spearheads, daggers, and a sword (Miron 1992: 54, 73, #237-238, 258-261).³⁵¹

6.2 Meron

An unpublished tomb contained a small selection of ceramic and bronze finds, including a handle-less jar, a duckbill axe, a spearhead, an arrowhead, a strip of metal, perhaps a belt, a ring, and some nails. Miron attributes (1992: 54, 59) these to the MB IIA period.

³⁴⁹Five burial caves excavated by Bahat have yet to be published, although some finds have been dealt with separately. Salvage excavations near the citadel revealed some MB II sherds (Stepanski 1987).

³⁵⁰Ceramics of the MB IIA phase have parallels at Dan XII, Gesher, Barqai, and Aphek (Damati & Stepanski 1996: 20*); unlike Dan, and as at Gesher, some of the open bowls are flat-bottomed. Ceramics of the second phase have parallels at Dan XII-X, Kefar Szold, Ginossar, and Megiddo (Damati & Stepanski 1996: 20*-1*).

³⁵¹Analyses of the duckbill axes indicates a composition of less than 10% tin and very little lead (Miron 1992: 97).

6.3 Tel Qishyon

The site consists of three terraces totalling an area of 6 to 7 ha. Due to quarrying by *sebakheen* and modern development, it is not possible to determine what portion of the site was settled during this period (Cohen-Arnon & Amiran 1981: 205; Arnon & Amiran 1993). Salvage excavations revealed an EBA settlement into which some MBA tombs were dug (Cohen-Arnon & Amiran 1981: 206-7). In Tomb 88, the excavators found a sack-shaped jug or bottle with two sets of painted horizontal lines, each with three thin lines framed by two thick bands (Cohen-Arnon & Amiran 1981: 206, fig. 5:left, pl. 34:2). A complete globular juglet, which probably originated in another tomb, has a bichrome decoration of framed horizontal lines and a pendant decoration around its neck (Cohen-Arnon & Amiran 1981: 206, fig. 5:right, pl. 34:3). A TEY juglet is also reported (Arnon & Amiran 1993: 874).

7. Mount Carmel Highland

The Carmel mountain rises amidst three coastal plains and an inland valley, and thus was the focus of inhabitants of diverse economic strategies and orientations. The faultline running along its border with the Akko Plain has created fairly steep escarpments, making for an inhospitable, although not impossible, approach and utilization. Further to the southeast, along the Jezreel Valley, the topography affords more amenable access to the highland, which is transected by several intermontane valleys that connect the surrounding lowlands. Mount Carmel's many small river valleys and its alignment in the west, parallel to the coastline, made resources equally accessible to all the coastal lowland inhabitants.

In general, the only substantial BA settlement has been documented in the low, flat hills surrounding Wadi Milik (Olami 1981: map 2). Fields of megalithic tumuli or rujms, as well as shaft tombs, dot the landscape on both sides of this artery. Otherwise, settlement was limited to the wadi margins, and the southern heights, which may reflect IBA or earlier pastoral nomadic groups (Olami 1981: map 2; Greenberg 1992a: 149-52; Amiran 1974c; Gophna & Portugali 1988: 25; Hess 1980).

MBA sites are arrayed along the length of this valley and up Nahal Daliya and its subsidiary valleys into the broad flat highlands. Only two sites with clearly MB Ila ceramics have been identified, one a small settlement in the Ramot Menashe region and the other a cist grave within a tumulus; the remainder have been characterized as MB II sites. Kempinski's suggestion (1989b: 48) that the principal MB Ila settlement was along the main artery and expanded into the hills in the MB I Ib period seems reasonable, but apparently the broad flat heights began to be settled already in the MB Ila period (Table 6.7). Another important region, which is still unexplored, is Kerem Maharal, a lush intermontane valley that may have served as a nexus between the coast and the eastern half of Wadi Milik during the Late Bronze Age (Artzy 1994; 1995). Petrographic analysis of ceramics from Tel Nami suggests that MB Ila pottery may have been produced within this valley (Marcus 1995a). Like the fringes of Wadi Milik, this area may have attracted MB Ila settlement, and served as a

hinterland for the Carmel Coast.³⁵² Lastly, an MB IIA-b shaft tomb at Tirat Carmel, on the slope above the coast north of Athlit, may hint at a settlement in the vicinity (Marcus 1995c).

Important finds from this region are an alabaster vessel and body sherds with red horizontal lines and cross-line decoration (Sites 107 & 147; Olami 1981: 67-8, 87-8, figs. 1, 3:1, 7).³⁵³ An enigmatic find is a MK statue from `Ein Ha-Shofet attributed to the time of Senusert III (Giveon 1984).

8. Central Highland (Samaria and Judea)

This region may be divided into four basic subunits: Northern Samaria, Southern Samaria, the Central Range (North of Jerusalem) and the Judaeen Hills (Finkelstein & Gophna 1993: 2-4). With the exception of the rocky western flanks, northern Samaria is the most amenable zone for cultivation with large intermontane valleys and abundant water sources. The central range of Southern Samaria has small cultivable intermontane valleys, but the rocky western half is characterized as an ecological frontier zone, suitable for horticulture with the aid of terracing; a similar situation continues to the south. The plateau and desert fringe of the central range are considered amenable, while the agriculturally inhospitable Judaeen Hills, and especially the eastern Desert, were only sparsely settled before the first millennium; these latter were much better suited to a pastoral subsistence strategy. Precipitation varies from a high of 700 mm along the central heights, to 500 mm along the northern and western flanks, to 100 mm in the southern and eastern desert. A main longitudinal route existed along the central ridge of this region, which is crossed by a number of well-defined valley routes down to the lowlands and Jordan Rift Valley (Dorsey 1987; 1991: 117-146).

In general, IBA highland settlements were limited to the eastern half of this region and decreased to the south, where cemeteries are more common (Finkelstein 1991; 1992c; 1993b; 1994; Ofer 1993; 1994: 99; Zertal 1993; Palumbo 1991: 54-5).³⁵⁴ Evidence for MB IIA sedentary sites in this region is extremely sparse (Table 6.8), with only evidence for some rural sites and the use of IBA cemeteries, which is seen as continuation and intensification of the IBA subsistence strategy (Finkelstein 1991: 27-9; 1992c; 1993b; Zertal 1992: 42; 1993; Ofer 1993; 1994: 99). Some of the MB IIA sites (e.g., Shechem and Jerusalem) emerged in the succeeding period as important political centers, when the region was extensively settled.

³⁵²Little is known about Khirbet Shana, the largest tell in this valley, which is marked as an antiquities site on most detailed maps of the region. This may be Site 1422.07, which is reported to have EB pottery (Thompson 1979: 142).

³⁵³This cross-line decorated sherd is identified as an EBA sherd, but looks like a MC WPCL sherd. Large quantities of MC pottery were found at MB IIB Horvat Shefi, near the mouth of Nahal Dalia (Neeman, Boshnino & Porath 1991).

³⁵⁴See also the survey data (Finkelstein 1993a: 23-4; Hizmi 1993: 100; Feldstein, et al. 1993: 136; Goldfus & Golani 1993: 278; Dinur & Feig 1993: 346; Zertal 1992: 49-50; 1993; 1996: 77; Patrich 1995; Hirschfeld 1985).

8.1 Tell el-Farah (N)

Approximately 11 km north of Shechem, Tell el Farah (N) is situated at a strategic position near two springs at the source of Wadi Fara, an important conduit for movement from the Jordan Valley into the Samaria Hills (de Vaux 1993). It was abandoned during the EB II through IBA periods and only limited MB IIa remains were found, primarily tombs and cave dwellings of an unfortified village (de Miroschedji 1993b: 434-7; de Vaux & Steve 1948: 571-2, fig. 11:1, 3; Mallet 1987). Among the finds are a basalt tripod mortar and pestle, and a globular vase on a tripod base, decorated with red and yellow painted lines, dots, and zig-zags (Mallet 1987: figs. 8:9, 10, 34:5).

8.2 Shechem

Tell Balatâh, identified as ancient Shechem, was the most important center of the Samaria Highland. Located at the foot of Mt. Ebal, near two abundant springs and one of the most fertile of the intermontane valleys, the site lies on a major latitudinal route connecting the Jordan Valley, via Wadi Fara, and the Coastal Plain to the west (Campbell 1993: 1345-6). Shechem also sits astride the main north-south route along the spine of the Highlands, which connects Judea and Samaria with the Jezreel valley (Dorsey 1987). Surveys in the nearby valley have located only two IBA sites and no remains of the MB IIa period (Campbell 1991: 92), apart from a mixed tomb some 500 m west of the tell ([al-Fani & Clamer] 1976). Although IBA sherds appeared in fills, excavations at the site did not discern any architecture following the Chalcolithic period (Campbell 1993: 1347). Architectural remains of the MB IIa period were reached in Fields VI & IX, and are assigned to two main strata, XXII-XXI (Bull, et al. 1965: 9, 15-16, 26-28; Toombs 1976). These strata include remains of both a domestic and public nature, the latter reflected by a large rectangular platform in the so-called "temenos" area (Wright 1965: 110-2; Toombs 1976; Campbell 1993: 1347). The ceramic repertoire indicates that this unfortified settlement was established in a later phase of the MB IIa period (Campbell 1993: 1347). A group of bronzes discovered near the site includes some examples that may be assigned to the MB IIa period (Müller 1987).

8.3 `Ain es-Samiyeh and Sinjil

`Ain es-Samiyeh and Sinjil are primarily IBA burial complexes—`Ain es-Samiyeh is the largest cemetery in all of the southern Levant—that were re-used by MB IIa inhabitants of the southern part of the Hill Country ([Bakiya] 1970; Dever 1971; 1972; 1975a; Finkelstein 1993a: 24). All of the MB IIa finds were purchased from dealers in the village of Kufr Malik, who have systematically looted the cemetery for much of this century (Dever 1975a: 23, 29, n. 26). The village is also the source of an elongated socket axe published by Maxwell-Hyslop (1949: 116), which probably originated in this cemetery (Dever 1975a: 29, n. 26). The bronzes are MB IIa types, which is a date consistent with the apparently MB IIa/2-3 pottery purchased with them (Dever 1975a: fig. 3:4-12). The bronze finds from `Ain es-Samiyeh include a dagger, two socketed spearheads, four

elongated socketed axes, and two duckbill axes (Dever 1975a: fig. 1:1-4, 7, pl. 1; Miron 1992: 54, 74-5, #245-6, 272-3, 304-5).³⁵⁵ The finds from Sinjil include a dagger and two socketed spearheads (Dever 1975a: fig. 3:1-3).

8.4 Jerusalem

Kenyon's limited evidence (1974: 81-4) for an MBA settlement in Jerusalem has gained support from the excavations in the City of David (Shiloh 1984: 12; 1993: 701), as well as recent media reports of a MBA water system. Although MB IIA remains are present, the site was only fortified in the MB IIB period (Shiloh 1993: 701). Prag (1991) has drawn attention to a forgotten MB IIA tomb, which includes a bronze socketed spearhead (Macalister & Duncan 1926: pl. XVIII:4). An OK Egyptian statue found on Mt. Zion may be an MK, or later, import (Maeir 1989).³⁵⁶

8.5 Beth Shemesh

Among the mixed IBA and MB IIA ceramics, which were found beneath the earliest architectural stratum, were bichrome body sherds and a handle of a MC jug (Grant & Wright 1938: pl. XXIV:1-11; 1939: 27; Gerstenblith 1983: 33).

8.6 Gibeon

The excavation of the cemetery near the site of Gibeon revealed twenty-six IBA shaft tombs, ten of which were in use during the Middle Bronze Age (Pritchard 1963: 2-3). Although most of the tombs were disturbed, three deserve some attention. Tomb 58 contained IBA pottery, three MB IIA handleless jars, and two bronze socketed spearheads (Pritchard 1963: 61-62, fig. 64). Tomb 31-31A contained a fragmentary IBA jar, an MB II storage jar, an elongated socket axe, and a dagger (Pritchard 1963: 42-3, fig. 34). Both this jar and a lone example from T.64 (Pritchard 1963: 64-65, figs. 68, 95:16) appear to be MB IIA types.

8.7 Khirbet Kufin

This cemetery contains numerous IBA shaft tombs, one of which, no. 3, is a multi-chambered shaft type, hewn during the IBA and then altered during the MB IIA period (Smith 1962: 12-3). Both the IBA and MB IIA finds were in disarray, suggesting ancient looting, although in Smith's opinion (1962: 15-7) the IBA skeletons had been disturbed by the MBA interments. Smith (1962: 13) indicates that the two deposits belong to two distinct "strata". Whether this distinction is based solely on spatial and stratigraphic criteria, or on typology, is not clear. Chambers 3-4 and 6-7 contain ceramics of types best attributed to MB IIA/3-4 phases.

³⁵⁵Analysis of one of the duckbill axes shows the following composition: Cu 82.07 Sn 14.77 Pb 0.77 As 0.49 (Dever 1975a: 31, fig. 2).

³⁵⁶Although unstratified EB II-III remains are known in Jerusalem (Shiloh 1993: 701), no statues are known to have been imported during this period.

8.7.1 Bronze finds

The bronze finds are mostly weapons, including four daggers and three elongated socket axes (Smith 1962: 17, pls. VI, XIII:5-7, XVII:37-40; Miron 1992: 74-77, types I-II). In addition, a disc and a tray (which may be part of a container) were found (Smith 1962: 23, pl. XVIII:42-43).

8.7.2 Egyptian or Egyptianizing finds

The only finds of likely Egyptian origin or inspiration are three alabaster vessels (Smith 1962: pl. XVII:34-36). Smith (1962: 26, pls. VII:33, XVII:33) suggests that a jug of black limestone, whose rim is covered with lead, is Egyptian. Some bone combs are also thought to be of Egyptian origin (Smith 1962: 24, pl. XVII:45-46; Weinstein 1975: 6, n. 59).

8.7.3 Other imported finds

A black basaltic ash grinder of unknown origin and a carnelian bead are reported (Smith 1962: pl. XVII:32, 41). An ostrich egg is reported, but not illustrated (Smith 1962: 24).

8.8 Khirbet Kirmil

Both the initial survey by Kochavi (1972: 76) and the extensive investigation by Dever (1975) revealed a large IBA shaft tomb cemetery. Most of the 900 tombs were found looted, but the only IBA assemblage found *in situ* in Tomb A1A also contained ceramics of the MB IIa period (Dever 1975: 30*-2*, fig. 6:4).³⁵⁷

8.9 Efrat

This hillside site is dotted with IBA shaft tombs and crowned with a contemporaneous stone structure (Gonen 1981). Twenty-seven of these tombs were investigated, of which twenty-two were re-used during the MB II period (Gonen 1981: 27). This re-use included the hewing of new shafts into the extant chambers, but no new tombs were created. The ceramics are assigned to the MB IIa period, but only a group photograph of some ceramic forms is provided (Gonen 1981: back cover). From the photograph, this attribution appears correct, but some of the forms continued into the MB IIb period. Other finds include bronze toggle pins, spearheads, knives, daggers, a scarab seal and other rings, earrings, two badly worn scarabs, ivory and alabaster pommels, ostrich egg shell fragments, bitumen, and beads (Gonen 1981: 28). No site is known in the vicinity, except for Rujm es-Sabit, a primarily MB IIb site some 10 km away.³⁵⁸

³⁵⁷Kochavi (1972: 76) mentions an MB II tomb, but provides no other details.

³⁵⁸Another group of MB IIa tombs in the vicinity were reported (Amit 1991).

9. Upper Jordan (Hula) Valley

Like the Jezreel Valley, the Upper Jordan Valley is almost completely enclosed by highlands, although the differences in altitude are much more extreme.³⁵⁹ In the north, Mt. Hermon at 2814 m is the highest peak in the region; to the east and west are the Golan and Naftali Heights, at ca. 800 and 1000 m, respectively. These highlands rise above a lush alluvial plain that slopes from 170 m in the north to ca. 71 m in the south near the Hula swamp. The rough highlands to the west, and the plateau to the east, served as forest, horticultural, and pastoral zones; the lithology, of basalt and limestone, provided excellent building stone and workable raw materials for construction and various other crafts.

Until it was drained in the mid-twentieth century CE, Lake Hula, which was rich in fish and wildlife, was an important physical component of the valley. While the lake's southern extent was fixed by a natural dam, the Rosh Pina sill, its northern border and the extent of the Hula swamp were dynamic, varying with the amount of precipitation and, perhaps, human intervention. The lake was supplied by the waters of the Jordan River, which was fed by three rivers, the Dan, the Banias, and the Hasbani; a fourth river, the `Iyon, reached the Hula swamps directly. Surface streams from the adjacent heights, other minor springs, and the abundant precipitation (Nafatali Heights: 900 mm; Golan Heights: 1000 mm; and Mt. Hermon: 1500 mm), make this region the most water-rich of the southern Levant. Nevertheless, full use of the valley's agricultural potential depended on the landscape and water management ability of a central authority (Greenberg 1990; 1996b: 23-5).

Longitudinal movement naturally followed the Jordan rift, via Nahal `Iyon in the north to the Beq`a, and via the the Rosh Pina sill in the south. Steep mountain passes lead to southern Syria and Lebanon. Because of the swampy nature of the landscape, internal communication probably relied on the valley margins, with some rare latitudinal routes enabled by fording points. Theoretically, some of the rivers may have been navigable downstream to the lake, with upstream movement aided by draught animals moving along the banks.

In general, the sparse IBA settlement and cemetery evidence is located along the valley's margin, although some sites are in the center of the alluvial plain (Greenberg 1996b: 151-3, fig. 54). The slightly more numerous MB IIa settlements are also distributed along the margins and at several sites in its center, with major sites at the northern gateways to the valley, and subsidiary centers in the plain and along the eastern Highland-Lowland interface (Greenberg 1996b: 153-4, fig. 55; Table 6.9).³⁶⁰

9.1 Tel Dan

At the northern end of the Hula Valley below the slopes of Mt. Hermon, Tel Dan commands a strategic position beside the Dan springs, one of the principal sources of the Jordan river. These lush

³⁵⁹For a more detailed discussion, see Greenberg (1996b: 9-22).

³⁶⁰In addition to the sites discussed in detail, note that Tel Anafa has produced IBA sherds and an LPW globular juglet (Weinberg 1973: pl. 30:a).

springs, which supply 350 million m³ per annum (Tsuk 1990: 2), and the fertile alluvial plain, are two reasons for the long habitation and importance of the site (Biran 1993; 1994; 1996). Another is the site's position on a route in northern Israel between the Lebanese coast and Damascus (cf. Rainey 1981). The recent publication of *Dan I* (Biran, Ilan & Greenberg 1996), after over twenty-five years of investigation at the site—the longest and continuous in the country—has revealed impressive and illuminating remains, particularly for our understanding of the Middle Bronze Age.

9.1.1 Summary of MB IIa remains

Following a long-lived and apparently fortified EB II-III urban settlement that covered an area of at least 20 ha (Biran 1996: passim; Greenberg 1996a: 85-98), the site appears to have been abandoned. While IBA ceramics were found in two areas on the site, no architectural remains were found (Biran 1994: 44-45, fig. 20; Ilan 1996b: 195).³⁶¹ Evidence for MB IIa occupation comes from all of the excavated areas and includes the rampart fortifications and gate, numerous intramural burials, and domestic dwellings (Biran 1996; Ilan 1996b). These remains are arranged in two main strata, XII and XI, comprising seven principal architectural phases that indicate a degree of chronological continuity over a fairly large area (Ilan 1996b: 163-5, table 4.1; Table 12).

The earliest remains (St. XII, Phase 1) have been found in Areas A & B, on the southern part of the tell, and in Area Y, near the northeast corner. These remains are characterized by domestic dwellings, some with ovens, and intramural jar and cyst burials (Ilan 1996b: 163-8, 202-4). In Area Y, these features appear on an apparent EBA sloping or stepped stone structure that served as the inner embankment of the MBA rampart core (Ilan 1996b: 202-3, plan 9). Although the sample of remains may have been skewed by selective excavation, which would explain the lack of MB IIa evidence in the center of the tell (Area M), it may indicate a fairly sparse settlement existing on the fringes of a pre-existing EBA tell (Ilan 1996b: 163-4).

The domestic character of the remains continues in Phase 2 along with jar and cyst burials, one of which contains nine beads of various semi-precious stones. A new funerary feature introduced at this stage is a stone-built chamber tomb (T.1025) that abuts the sloping stone structure in Area Y (Ilan 1996b: 204-8). Among the important finds from this tomb are a pommeled bronze dagger, a

³⁶¹The investigations in Areas K, Y, and T3, and indicate that a significant portion of the EBA city wall and its components were extant and exposed during the IBA hiatus, and later used by the MBA inhabitants. The IBA ceramics suggest either a modest squatter occupation during or a significant destruction of IBA remains by MBA building activity. In Area K, Biran (1994: 37, 88; 1996: 60; Greenberg 1996a: 94-5) suggests the existence of an EBA monumental structure, perhaps a gate, upon which the later MB IIa gate was founded. In Area Y, the sloping surface may have originated as an EBA construction incorporated into the MBA rampart (Biran 1996: 57; Greenberg 1996a: 96; Ilan 1996b: 164-5). In Area T3, the MB IIa fortification, characterized by a series of offset-inset buttresses (Biran 1990), is increasingly being viewed as the re-use of an existing EBA structure (Biran 1996: 51-3; Greenberg 1996a: 96, n. 1). Note the strong similarity between its construction and the EB III, and perhaps MBA, buttress wall at Byblos called the “rempart phenicien” (Jidejian 1971: 151-2, overleaf, pls. 12, 29; Saghie 1983: 65-6). In this case, however, the buttresses are on the inside of the wall, as at Yarmuth (de Miroschedji 1995: 34), but this subject requires further investigation.

bronze bracelet and bowl, and a glass bead (Ilan 1996b: 204, 234-6; Ilan, Vandiver & Spaer 1993). Within the sloping stone structure, a cultic cache was discovered containing ceramic, metal, and other finds (Ilan 1992). The precise stratigraphic, chronological, and functional relationship between the cache and nearby tombs is not clear, although all predate the erection of the inner rampart. Phases 3-4 in Areas B and Y were domestic in character, with the possible exception that a city wall, with abutting floors, may have already existed in Area B (Ilan 1991a: 3; p.c.). Jar burials continue along with the introduction of a shaft tomb (T.3126) in Area Y (Ilan 1996b: 171-2, 208-11).

Stratum XI marks the transition from the MB IIa to MB IIb periods. At this time the site was enclosed by massive earthen ramparts as part of a major urban reorganization that greatly reduced the available area within the enclosure, from 20 to 14 ha (Biran 1994: 91). Kempinski (1992a) views the city plan as part of a general Syro-Mesopotamian concept. As the earliest habitation levels on the inner embankment date to the late MB IIb period, it appears that, initially, the inhabitants settled on the center of the resultant crater (Ilan 1996b: 164-5). Excavation of the rampart fortification at a number of points along its perimeter revealed a complex structure whose generally uniform topography hides an internal core construction that varied at different locales, e.g., a vertical stone core in Area A-B, a sloping or stepped stone structure in Area Y, and an offset-inset wall in Area T (Biran 1990; 1994: 58-73; 1996). In Area K, a triple-arched mudbrick gate was constructed (Biran 1994: 75-90; Biran 1996: 58-61), perhaps above an earlier EBA monumental structure. Among the burials assigned to this stratum are a jar burial (T.1062) containing thirty-six frit beads, and perhaps the initial phase of T.8096, which may have contained a bronze dagger, an arrowhead, and a scarab (Ilan 1996b: 194-200, 211-2).

9.1.2 Pottery finds

The detailed typological analysis of the ceramic repertoire of the Dan sequence revealed a number of trends, divergences, and distinguishing features with affinities that underscore the site's location between the inland Syrian and the Levantine cultural spheres (Ilan 1996b: 213-31, 242-4). The analysis and cited ceramic parallels suggest that this assemblage is a distinct, perhaps Jordan Valley version of the basic Levantine repertoire, which resulted from interaction with proximal and distant regions. Some general typological observations bearing on the relative chronology and synchronisms may be made for this key site. For instance, the burnished red-slipped and painted wares appear together from the earliest levels and continue through the MB IIa, the latter with variations throughout the MB IIb period. Ilan (1996b: 162-3) correctly notes that in the absence of any independent chronological anchors, the ceramic synchronisms do not permit a determination of the beginning of the MB IIa at Dan in absolute terms, or even relative to sites on the coast and western Jezreel Valley. Comparison of the earliest ceramic finds from Dan with the tomb group from Gesher in the Lower Jordan Valley suggests that, even considering the relative distance between the sites and pending the publication of ceramics from the settlement levels at Dan, some of the earliest types and perhaps the incipient phase of the MB IIa as represented in the Jordan Valley may in fact be missing at

Dan.³⁶² Among other common Levantine types absent in the repertoire are red-cross platter bowls, goblets, pedestal vases or chalices, basket handle vessels, and cut-away neck vessels (Ilan 1996b: 231).

9.1.3 Painted and TEY Vessels

Painted pottery, including types that belong to the LPW class, appears in the earliest MB IIA levels at Dan. In early Stratum XII, examples are limited to fragments of jugs and jars, which are decorated with monochrome red or bichrome red and black bands, occasionally on a burnished surface (Ilan 1996a: 157-8, figs. 1-2). In later phases of Stratum XII, painted jars disappear while kraters and globular, cylindrical, and piriform juglets are added to the repertoire (Ilan 1996a: 158-62, figs. 1, 3-4). In addition to the existing painted motifs, vessels are decorated with framed or butterfly red net-pattern; red and dusky red concentric circles; framed red and red & gray wavy lines on the bodies; and framed red wavy lines on horizontal lines or pendant decoration on the necks and rims.³⁶³

In transitional MB IIA/b-early MB IIB Stratum XI, there is an increase in the range of motifs and the addition of open shapes such as kraters and bowls (Ilan 1996a: 162-5, figs. 1, 6-8). The latter is characteristic of a pottery group termed Monochrome Painted Cream Ware (MPCW), which appears to have derived its inspiration from inland Syria. The appearance *en masse* of this new class was accompanied by a decline in LPW examples, both in range of types and sheer numbers (Ilan 1996a: fig. 1). However, LPW motifs from this stratum are assimilated into hybrid MPCW examples (Ilan 1996a: 162-5).³⁶⁴ Lastly, it is important to note that examples of LPW vessels continue into Stratum X in relatively small numbers (MB IIB; Ilan 1996a: fig. 9:1-3).

A few TEY sherds were found in upper fills of the rampart and are probably coeval with Phases 5-8 of Area B, i.e., MB IIA-b period (Ilan 1991a: 133; 1996b: 231).

³⁶²For example, the small carinated bowl from the earliest tomb, T.23 (Ilan 1996b: 217, fig. 4.90:2), is best paralleled by examples from T.4 and T.10 at Gesher, which are both considered typologically later in the relative sequence (Garfinkel & Bonfil 1990: figs. 2:1, 4:3; Hess 1990: fig. 1:5). Some of the open bowls with low disc bases from T.1025 (Ilan 1996b: 213, 216, fig. 4.104:1, 5) also show some similarity to examples from the “later” tombs at Gesher (Garfinkel & Bonfil 1990: fig. 5:1, 6). The absence at Dan of the flat-based open bowl and the rarity of the handleless jar, both prominent features in the Gesher tombs (Garfinkel & Bonfil 1990: *passim*) and early contexts elsewhere (e.g., Hagosherim; Covello-Paran 1996: fig. 4:1), should be noted. At best vague parallels can perhaps be drawn between the two-handled storage jars of T.902b-d and examples from Gesher. Publication of the ceramics from settlement levels at Dan will contribute much towards resolving this issue.

³⁶³See also T.1025 (Ilan 1996a: fig. 4:3; 1996b: fig. 4.105:12) and T.3126 (Ilan 1996a: fig. 4:4, 5; 1996b: fig. 4.106:4, 8).

³⁶⁴Two juglet examples: T.1062 and T.8096a (Ilan 1996a: fig. 7:8-9; 1996b: figs. 4.100:10, 4.106:5).

9.1.4 Metal industry

No direct evidence for metal production is reported. Despite the assertion that the cache in Area Y is a cultic offering (Ilan 1992: 261), the absence of many of the stated criteria for a “founder’s hoard” does not exclude the possibility that the fragmentary bronze and silver objects were prepared for recycling, and only subsequently deposited in their final context.

9.1.4.1 Bronze

The majority of the bronze artifacts originated in the cache from Area Y. This context included forty-six objects including two daggers, two or three socketed spearheads, two flat hafted axes (or adzes), one duckbill axe, twelve toggle pins, three belt buckle fittings or fasteners, two spatulae, a ring or armlet, and twenty-three miscellaneous fragments (Ilan 1992: figs. 4-8). Other objects originated in tombs (T.1025 and T.8096a), and included two daggers, an arrowhead, a bronze bracelet, and bowl (Ilan 1996b: 234-5, figs. 4.100:16, 4.101:1, 4.106:1). One simple blade was found in a mixed EBA-MBA fill of the rampart (Miron 1992: 12).

9.1.4.2 Silver

Three silver objects were discovered in the cache from Area Y. These included one sheet metal figurine, one strip in six fragments, and one ring or armlet (Ilan 1992: 257-60, figs. 8:7, 11:1, 2)

9.1.5 Semi-precious stones and other materials

Beads made from semi-precious stones, frit, and one of glass were found in mortuary contexts and

in the cache from Area Y. The semi-precious stones included carnelian, rock crystal, garnet, and amethyst.³⁶⁵ The glass bead found in T.1025 is the earliest example of this material in the southern Levant (Ilan, Vandiver & Spaer 1993; Ilan 1996b: 236, fig. 4.106:3).

9.1.6 Egyptian finds

Two fragments of Egyptian statues, which might have originated in MBA contexts, were found in later contexts in Area T. The first is a headless granite statue used as a building stone in a 9th century wall (Biran 1994: 161, fig. 120). It is in the style of a MK private statue, but the name of the owner’s father, Seti, is more common in the New Kingdom. Schulman (1990: 240, n. 8) considers it to be of MK origin. The time of its arrival could be any time before its re-use in the Iron Age wall.

The second fragment is part of a MK block statue that was found on the surface (Biran 1994: 161).³⁶⁶ The statue was inscribed in the Middle Kingdom and then re-inscribed in the Third

³⁶⁵Forty-eight beads were found in the cache: thirty-six of carnelian; one of rock crystal; and eleven of frit (Ilan 1992: 256-257, figs. 9, 10:3-11). Thirty-six frit beads were found in T.1062, and nine beads were found in T.4244, including two of carnelian, two of garnet, one of crystal, and four of amethyst (Ilan 1996b: 235, figs. 4.90:4).

Intermediate Period (Schulman 1990: 236). Despite Schulman's suggestion that it was reinscribed at Dan, the date of its arrival is pure speculation.

9.2 HaGosherim

Three rock-hewn shaft tombs at Kibbutz HaGosherim near the unexcavated site of Khirbet Kisas contained IBA and early MB IIa ceramics and other finds period (Covello-Paran 1996). The ceramic forms have parallels with examples from Dan XII, the Gesher tombs, and other Jordan Rift Valley sites, but less so with sites southwest of Megiddo (Covello-Paran 1996: *passim*).³⁶⁷ The framed bichrome black & red line decoration on the single LPW storage jar (Covello-Paran 1996: fig. 9:5) is paralleled on similar vessels at Dan XII (Ilan 1996a: figs. 2-3). In light of similarities with examples from inland Syria, Covello-Paran (1996: 82) is correct in postulating a north-south inland corridor of cultural interchange. Other finds included bronze toggle pins, copper wire, and beads made of agate and ostrich eggshell, the last of which might have originated in an IBA context, as numerous examples were found in shaft tombs previously excavated in the vicinity (Covello-Paran 1996: 75-6, 79, figs. 5, 7:3, 5; Yeivin 1962; 1966).

9.3 Kefar Szold (T. Kalil)

The tomb of Kefar Szold is located in a natural cave on an elongated ridge, known as Tel Kalil, that rises above the alluvial plain near a number of springs (Epstein 1974: 13). Together with the tombs from Ginossar, the ceramic finds from this assemblage were the basis for the term “transitional” MB IIa-b period, and are coeval with Stratum XI at Tel Dan. Among these finds are four painted piriform and globular juglets decorated in a variety of LPW motifs, including a body decoration of horizontal framed wavy lines, triangles filled with dots and net pattern, concentric circles, and a pendant decoration around neck and rim in two shades of brown (Epstein 1974: 14, figs. 1:5-8, pl. III:5-7). One damaged socketed spearhead and a scarab were also discovered (Epstein 1974: fig. 4:10, 13).

9.4 Tel Na`ama

Limited salvage excavations at the 3 ha site of Tel Na`ama have revealed considerable evidence for MBA habitation (Greenberg 1990; Greenberg, et al. 1998). Following several phases (5-7) of an IBA habitation, at least three MB IIa phases (2-4) are represented, during which this site was, apparently, fortified by a mudbrick wall (Greenberg, et al. 1998: 11-6, 31). Among the ceramic finds from the first two phases are a bichrome LPW jug with net-pattern filled diamonds and a TEY juglet fragment (Greenberg, et al. 1998: 17, fig. 18:10-12). An LPW juglet with monochrome red concentric

³⁶⁶It was not found in a seventh century Phoenician level as stated by Schulman (1990: 236).

³⁶⁷Note further similarities with the form of the carinated bowls, handled storage jar shapes, and rims at Dan XII (Ilan 1996b: fig. 4.78).

circles belongs to the last phase (Greenberg 1990: fig. 118; Greenberg, et al. 1998: 17, fig. 17:4). Also, two bronze objects, an axe and spearhead, were found in a cache (Greenberg, et al. 1998: 17, fig. 19).

9.5 Tel Hazor

Tel Hazor, with its ca. 12 ha upper and 68 ha lower city (Yadin 1993), is by far the largest BA site in Israel. However, excavations have revealed only scattered MB IIA remains between EBA levels, IBA pottery, and MB IIB remains.³⁶⁸ Assemblages that are stratigraphically or typologically earlier than Stratum XVII (MB IIB) are assigned to an ambiguous "Pre-XVII" MB IIA-b stratum (Yadin 1972: 121-2). These include finds from cyst and jar burials and various loci in Areas A & L in the Upper City and stratified remains from the Lower City, all of which could be termed MB IIA or MB IIA-b.³⁶⁹ The only significant assemblage of MB IIA finds is from a rock hewn shaft tomb (T.1181) in Area L (Maeir 1997).³⁷⁰ This tomb contained 130 ceramic vessels, three bronze weapons, two toggle pins, and five beads, which Maeir (1997: 311-322) concludes are reflection of fifty to eighty years of late MB IIA to MB IIA-b use.³⁷¹ Among the ceramic finds was a local imitation of a MC WPCL jug, a painted jug, and various painted juglets, decorated in monochrome red horizontal, wavy, and crossed lines on the body, and one instance of paint strokes on a handle of a basket-shaped form (Maeir 1997: 301, 305, figs. IV.5:12-14, 17, IV.8:2, 6). The beads are made of rock crystal, carnelian, and amethyst (Maeir 1997: 317).

In Yadin's opinion (1972: 202-203), the position of this tomb's shaft under the Stratum XVII city wall is conclusive evidence that the Upper City was not previously fortified, a point contested by

³⁶⁸Note the numerous IBA tombs around the tell (Stepansky 1992).

³⁶⁹Upper City: Areas A, BA, and G (Yadin, et al. 1961: pls. CLVI:18-32, CCXXXV:12-20, 31-34, CCXXXVI:1, CCXLVI:2-15). Lower City: Areas D, D3, and E (Yadin, et al. 1958: C:1-10, 12, 19, CXII:17, 20, CXIII:1, CXVII-CXXI: passim, CXXXII:1-6). Most of these were first identified either by Dever (1976: n. 32) or Maeir (1997: n. 107). Additional tombs and loci with possible pottery from this phase were found in Areas A and L (Bonfil & Greenberg 1997: 33-34, 54-65, 162-163; Garfinkel & Greenberg 1997: 194-202), although the bulk of the material tends towards the MB IIB period. See, in particular, the opinion of Ben-Tor (1997: 4-7). Apart from the pottery there are also a number of other objects, including bronze finds, which could be assigned to this period. One example is the broken mushroom-head toggle pin from the Cistern 9024 (Yadin, et al. 1958: CXVIII:21).

³⁷⁰Dr. A. Maeir kindly showed the author material from this tomb.

³⁷¹Four metal objects, a socketed spearhead, two daggers, and a pin were analyzed (Shalev 1997). The percentage composition of the principal elements was as follows: spearhead Cu 98.56 Sn 0.42 Pb 0.11 As 0.59 Ni 0.14; dagger (corrosion) Cu 78.56 Sn 0.76 Pb 0.08 As 1.14; dagger Cu 96.22 Sn 2.09 Pb 0.11 As 0.97 Ni 0.14; and pin Cu 93.84 Sn 4.85 Pb 0.24 As 0.76 Ni 0.14 (Shalev 1997: table IV.C.3). In light of the variation in composition, Shalev (1997: 350) suggests that the local industry may have relied on recycled scrap, and may also indicate either a gradual decrease over time in arsenical coppers and an increase in the use of tin bronze, or a correlation between type and composition over a shorter time. Given the chronological range of the ceramics and number of interments, Maeir (1997: 317) rules out the former explanation. It is possible that more than one workshop, following slightly different traditions, produced these objects.

Maeir (1997: 317-9). Sections cut in the northern side of the fortified eastern extension of the Upper City suggest that these earthen embankments were late MB IIA or MB IIA-b constructions (Dunayevsky & Kempinski 1990). Based on this evidence the following sequence of urban development is suggested: a) the nucleus of an MB IIA settlement, which began on the Upper City, originated on the remains of the EBA and, possibly, IBA tell; b) towards the end of the MB IIA period, the settlement was extended to the east and fortified with an earthen embankment; c) the MB IIB site increased fivefold, creating the Lower City (Dunayevsky & Kempinski 1990: 27-8). In assessing Hazor during the MB IIA period, it is crucial to recall that the exposures of MBA remains were quite limited (Yadin 1967: n. 29). It is possible that the excavated areas may not be representative of MB IIA settlement, or that these remains were erased by MBA, or later, monumental constructions.³⁷²

Although Maeir (1997: 323) notes the lack of any Egyptian contact during the early MB II settlement at Hazor, a red-slipped storage jar handle bears an incised “Egyptian” sign similar to those at Akko and Tel el-Ifshar (Yadin, et al. 1961: pl. CLVI:27). It was found in an open courtyard adjacent to the MB IIB palace in the same locus as a mold for daggers (Yadin, et al. 1961: pl. CLVI:30).³⁷³

9.6 Ginossar

The shallow hewn tombs found on a steep soft rock escarpment of Nahal Salmon near Kibbutz Ginossar are grouped in two clusters (Epstein 1974: 20). Tombs 1 and 5 belong to the IBA and MB IIA period, respectively. Tombs 2-4, which are located ca. 100 m away, were used from the MB IIA through the MB IIB periods.³⁷⁴

Tomb 1 was used during the MB IIA and the MB IIA-b periods. The latter phase contained two painted vessels, a band painted carinated bowl and jug (Epstein 1974: 20-1, figs. 5:4, 7:13). Tomb 4 is transitional MB IIA-b and contained six painted piriform juglets, decorated in monochrome and bichrome concentric circles (some dot or spoke-filled), spirals, horizontal lines, vertical ladders or ibexes on the body, and branch or pendant motifs on the neck (Epstein 1974: fig. 14:1-5, 9). Tomb 4 also contained a MCPL jug (Epstein 1974: fig. 15:9). The metal objects include three socketed spearheads, three daggers, two knives, and a narrow bladed axe (Epstein 1974: figs. 7:14-15, 18:1-7; Philip 1989: 267, 363, 366, #304, 308, 399; Miron 1992: 73, #268).

³⁷²The stratigraphic position of some of the earliest MB II burials and fills in Areas A and L suggest such a disturbance. For example, T.651 presumes a non-extant living level, and the finds from the fill of the MB-LB temple, such as L.644B, had to derive from somewhere. Similarly, in Area L, some MB II burials, including jar burial 1179, which is presumably from a house, were found at the base of Iron Age walls (Garfinkel & Greenberg 1997: 194). There is no way to assess the intensity of the presumed missing strata.

³⁷³Other evidence for MB II metallurgy can be found at the site, e.g., tuyères and crucibles in Cistern 9024 (Yadin, et al. 1958: pl. CXVIII:6-14).

³⁷⁴The IBA cemetery is much larger than this one tomb would suggest. Sherds and complete vessels of this period have been found periodically on this slope (Epstein 1974: n. 36).

9.7 Golan Heights sites

Surveys and excavations have failed to identify any settlements of the MB IIA period on the Golan Heights, although several dolmens were in use during this period (Epstein & Gutman 1972; Epstein 1985a; Hartal 1989; Kochavi 1989b; Dauphin & Gibson 1992-1993). Apparently these megalithic structures belonged to an IBA population that inhabited the slopes and heights on both sides of the Hula Valley (Epstein 1985a; Eisenberg 1985; Zohar 1992). The burial grounds of this population, which apparently interacted with the lowland MB IIA urban cultures, was the likely source of the bronze eye and duckbill axe in the village of `Ein Sied (Epstein & Gutman 1972: 290-1, figs.). Five excavated dolmens were in use during the MB IIA and the MB IIA-b periods (Epstein 1985a: 30, 32-7). Dolmen #13 contained a copper or bronze socketed spearhead, a pin, and a ring (Epstein 1985a: 32-33, fig. 3:18-20). Dolmen #14 produced pottery of the MB IIA/4 to transitional MB IIA-b periods, including several black-slipped and burnished wares, parts of three painted juglets, and a fragmentary TEY juglet (Epstein 1985a: figs. 5:18-21).

Recent surveys in the Hauran region and excavations at Bosra have demonstrated the presence of IBA and extensive MBA settlement south of Damascus (Seeden 1986; 1988; Braemer 1993). Together with the archaeological evidence from northern Jordan (Eames & Schroder 1997), this suggests that the Golan Heights was only one part of a complex landscape of pastoral and sedentary populations that extend all the way to Jawa (Helms 1989a). This relationship between this region and the lowland Jordan Rift Valley sites has not been sufficiently studied (Braemer 1993: 154-62, figs. 39-40).³⁷⁵

10. Lower Jordan Valley (including the Beth Shean Valley and Transjordan)

The most important feature in this region is the Jordan Rift Valley, which has created a fragmented geography with extreme transitions in elevation, making broader cultivable land scarce. Below the Rosh Pina sill is Lake Kinneret (the Sea of Galilee), which is the largest freshwater basin in the region. It is fed primarily by the Jordan River, but receives additional supply from streams on both the western and eastern shores. Although narrow strips of land characterize both of these shores, broader valleys can be found on the northern and southern shores, where the Jordan river enters and leaves the lake. From this point to the Dead Sea, the meandering Jordan river and its tributaries divide numerous sub-valleys and plateaus, of varying sizes, on both sides of the rift (cf. Maeir 1997: 10-37). Intra-regional agricultural potential varies considerably, and because of the low precipitation (300-400 mm) is precarious, except in proximity to permanent water sources (Najjar 1992: 150; Maeir 1997: 21-34). Longitudinal movement was possible on either side of the rift valley. In the Kinneret region,

³⁷⁵Among the MBA finds from this region are painted and TEY wares from Tell Sakka (Taraqji 1993: fig. 21, 24-25), TEY wares from tombs at Dhibin, painted and TEY wares, and a bronze axe from Tell al-Ash`ari (Al-Maqdassi 1993: figs. 45-46, 52-53). The decoration of the last painted juglet may be compared with the example from Dolmen #14. The framed vertical line (or horizontal ladder) decoration appears quite often in MBA Jordan Valley sites (e.g., Gesher, Dan, and Ginossar).

longshore terrestrial traffic intersected with latitudinal routes up into the adjacent highlands and nearby valleys; the advantages of lacustrine navigation should not be discounted. Numerous fording points emerged along the Jordan River (Maeir 1997: 37, fig. 11).

IBA sedentary settlement was extensive along the eastern and central Jordan Valley. MB IIA settlement is fairly limited in numbers, size, and density, both in comparison with other periods and other contemporary regions (Maeir 1997: 217-221, figs. 18, 88, 92; Magness-Gardiner 1997; Table 6.10).³⁷⁶

10.1 Beth Shean

Extensive excavations by the University of Pennsylvania and the Hebrew University have not revealed any settlement on the tell between the IBA and the MB IIB period, although some burials may have existed (Mazar 1993; Maeir 1997: 69, table).³⁷⁷ In his study of the large IBA cemetery, Oren (1971; 1973) identified one deposit of MB IIA bronzes in T.92, which he termed a “warrior tomb”. This assemblage was found in an IBA four-chambered shaft tomb, in the back chamber, which was untouched by later disturbances (Oren 1971: 109-11). The finds include a bronze duckbill axe, a socketed spearhead, a dagger, an arrowhead, and a scarab (Oren 1971: fig. 2:1-5). In the absence of pottery, the bronze finds are dated by comparison. Unfortunately, the one scarab is missing and unavailable for modern inspection; it is alternately dated to the FIP or MK period (Oren 1971: 116-7).

10.2 Gesher

This MB IIA cemetery was discovered on the southern bank of Nahal Tavor’s outlet into the Jordan Valley, from which a number of disturbed objects were collected (Hess 1990). Subsequently, thirteen graves were excavated, all apparently shaft burials cut out of the soft Lisan marl; most were single burials (Garfinkel & Bonfil 1990: 132; Garfinkel 1993). No evidence of an MB IIA settlement has been found in the area.

The layout of the cemetery lacks any stratigraphic relationship, but the excavators have divided the tombs typologically into an earlier and a later phase, anchored by one radiometric determination (*see infra* Chapter Five). All of the vessels are wheel-made and unslipped (Garfinkel & Bonfil 1990: 142), with the exception of one red-slipped globular juglet (Hess 1990: fig. 1:6). In general, the ceramic assemblage has its strongest similarities with the early phases of other Jordan

³⁷⁶In addition to the present survey, note the evidence for late MB IIA fortifications at Pella (Bourke 1997: 104-7, 113-4), a TEY juglet from Beit Yerah (Zevulun 1990: n. 36), which was mistakenly attributed to Ḥafula (Amiran 1969a: 118, photo 117), a TEY juglet from an MB IIA-b tomb at Munahata (Ferembach, Furshpan & Perrot 1975: fig. 6:7); and a report of a locally-made LPW sherd from Tall al-Fukhar (McGovern 1997: 421, 423).

³⁷⁷As the foot of Tel Beth Shean is surrounded by a later Roman-Byzantine city, it is possible, however speculative, that some remains of the MB IIA had existed there, but were covered up or destroyed. An example of a later Greco-Roman city covering up a BA Lower City is known from Troy (Korfmann 1995).

Valley sites (e.g., Dan XII, Hagosherim, and Tell el-Hayyat), and to a lesser degree with more distant sites (Garfinkel & Bonfil 1990: *passim*).

10.2.1 Levantine Painted Wares

This class was found in three of the later tombs. It appears as jugs and handleless jars, which are painted red in horizontal or vertical lines, triangles, with framed net-pattern on the body, and one pendant decoration around the neck (Garfinkel & Bonfil 1990: figs. 4:5, 5:2, 9; Hess 1990: fig. 1:7).

10.2.2 Bronze finds

Both early and later tombs produced bronze objects, including weapons and jewelry. The weapons included three duckbill axes (T.2, 12, & 13; Garfinkel and Bonfil 1990: figs. 1:6, 4:10, 5:3), three socketed spearheads, and an elongated socket axe (Garfinkel & Bonfil 1990: figs. 1:5-6, 4:10, 5:3-4, 10; Hess 1990: fig. 1:10).³⁷⁸ One toggle pin was found (Garfinkel & Bonfil 1990: fig. 2:8).

10.3 Tel Rehov

Tel Rehov is the largest site in the Beth Shean valley, but has yet to be properly excavated.³⁷⁹ However, Zori (1962: 176-7, pl. 21:6) noted a rampart fortification, collected MBA sherds, and an OB cylinder seal (Maeir 1997: 217). South of the tell, across a stream bed, Yoyev (1985) excavated a number of tombs, ranging from the Intermediate Bronze Age through the MB IIB period, some of which were disturbed by modern development. Two of the preserved tombs (2 & 8) contained MB IIA remains.³⁸⁰ Tomb 2 contained a single interment found near the entrance, whose blocking stone was found *in situ* (Yoyev 1985: 92). The finds included a handleless jar, a dagger with an alabaster crescentic pommel, a duckbill axe, and two socketed spearheads (Yoyev 1985: figs. 3:2, 4:2-5, pl. XVIII:3, 8-11).³⁸¹ In addition, two complete IBA four-spouted lamps were found near the entrance of the tomb, 30 cm above the floor level (Yoyev 1985: 93, fig. 1:89, pl. XVI:4). Yoyev (1985: 93) suggests that they were brought in by a current of water, which deposited large quantities of soil. However, the fact that the blocking stone was found *in situ* argues either for the use of antique

³⁷⁸Analysis of two of the duckbill axes shows a continuation of the local EBA tradition of mixing bronze alloys with up to 3% arsenic (Shalev *forthcoming*). The composition of the spearheads, with 0.7-1.6% arsenic, 0.75% nickel impurities, and less than 0.01% tin, is similar to an example from Hazor (Shalev 1997: 349).

³⁷⁹Excavations have recently begun under the direction of Prof. A. Mazar.

³⁸⁰The handleless jars from both tombs are paralleled by examples from Gesher and HaGosherim (Garfinkel & Bonfil 1990: figs. 1:3, 3:1; Covello-Paran 1996: 82, fig. 9:6-7), suggesting they belong to an early phase of the period.

³⁸¹Analysis of the metal finds using X-ray fluorescence revealed the following percentage composition: spearhead (4:4) Cu 95 As 1-2 Sn 1 Pb 1-2 Ag <0.1; spearhead (4:5) Cu 95 As 1-2 Sn 1 Pb 1-2 Ag <0.2; Dagger Cu 90-99 As <3 Sn 0.5-5.0 Pb 0-5 Ag <0.1; duckbill axe Cu 80-90 As <1 Sn 6-8 Pb 3-8 Ag <0.2 (Shenberg 1985).

IBA vessels during the MB IIa period, or a temporal contemporaneity between IBA and MB IIa material cultures.³⁸² Tomb 8, whose blocking stone was also found *in situ*, contained fragmentary IBA vessels and an intact MB IIa handleless jar (Yogev 1985: 94, figs. 2:16-17, 3:1). As finds of both periods appear on the same floor, Yogev (1985: 94) suggests that little time had elapsed between both episodes of use.

10.4 Tell el-Hayyat

Although small even by the standards of the southern Levant, excavations at the half-hectare site of Tell el-Hayyat has provided a rare glimpse of MB IIa settlement east of the Jordan river. Three seasons of investigation have revealed substantial evidence for the sophistication and complexity of village life from the IBA through the MB IIB periods. As excavations at larger sites in Jordan have rarely reached these early levels, and none have been reached in such wide exposures, Tell el-Hayyat has become a key site for the MB IIa period in this region.

10.4.1 Environment and economy

The site is located amidst fertile land on the first terrace above the Jordan River floodplain (Falconer & Magness-Gardiner 1984: 53). The nearest visible water sources are the Jordan river (2 km) and the ancient springs at Pella (3 km). While dry farming was feasible, the possibility of irrigation agriculture, or wells, should be considered (Falconer & Magness-Gardiner 1984: 53). The archaeobotanical assemblage includes wheat and barley, as major components, while peas, lentils, fruits (e.g., figs and grapes), nuts, and olives were also present (Metzger 1984; Falconer & Magness-Gardiner 1989a; 1993: 593; Magness-Gardiner & Falconer 1994: 146-8).³⁸³ The faunal remains show that sheep and goats dominated, followed by pig and cow (Metzger 1984; Falconer & Magness-Gardiner 1989a: table 4; 1993: 593; Magness-Gardiner & Falconer 1994: 142-6; Falconer 1995: 405-9, fig. 7). Among the ovicapridae, there is an noticeable increase through time in sheep, perhaps indicating a preference for their “secondary products” and use in temple-based ritual activity (Metzger 1984: 69; Falconer & Magness-Gardiner 1989a: 343-4; Magness-Gardiner & Falconer 1994: 143-4, table 2).

10.4.2 Summary of MB IIa remains

Excavation of approximately 400 m², or some eight percent of the site, which was restricted to the southwestern quadrant of the site, has revealed six principal architectural phases from the Intermediate Bronze Age through the MB II period (Table 13). For the relative dating, the most recent reports are followed (Falconer 1987: 251; Falconer & Magness-Gardiner 1989a: table 1; 1989b: 255;

³⁸²The section of the tomb (Yogev 1985: plan 3) leaves about a 20 cm gap for these 5 cm high 10 cm wide objects to be swept into the tomb. However, no other IBA vessels, or even sherds, were swept through this narrow gap.

³⁸³Lithic remains, including Canaanian blades, cores, and flakes, indicate local production of, *inter alia*, agricultural implements (Falconer & Magness-Gardiner 1984: 56).

1993: 591, table; Magness-Gardiner & Falconer 1994) and for the radiocarbon determinations, see *infra* Chapter Five.

Only scant IBA remains were found in probes and in later fills (Magness-Gardiner 1996: 184). The state of these remains is probably a result of subsequent building activities. By analogy with the evidence for sedentary life at nearby Tell Abu en-Niaj, the excavators suggest that a village, and not a pastoral/nomadic presence, may have existed at Tell el-Hayyat already in Phase 6 (Falconer & Magness-Gardiner 1989a: 340-1).

In the initial MB IIa level, Phase 5, an area was leveled for the first in a series of four small temples (Falconer & Magness-Gardiner 1989a: 341-2, figs. 5, 7; 1989b: 256, fig. 2a; Magness-Gardiner & Falconer 1994: 136-8, fig. 5a). An earthen wall enclosed this temple and its forecourt, into which a small stela was later inserted, but no other significant architecture was erected. The excavators compare the plan of this temple *in antis* (external piers or buttresses) to examples from Syria and the Levant (Magness-Gardiner & Falconer 1994: 135-8, figs. 3-4).³⁸⁴ They also suggest that as the first structure constructed at this site, its institutions may have directed or subsidized the initial settlement (Magness-Gardiner & Falconer 1994: 136).

In Phase 4, a second MB IIa mudbrick temple is constructed along a similar, but more elaborate plan. A group of six limestone stelae are erected outside the northeastern corner of the temple (Falconer & Magness-Gardiner 1989b: 256-8, fig. 2b; Magness-Gardiner & Falconer 1994: 138). A mudbrick enclosure wall separated the temple compound from domestic structures. The temple continued in use during the final two MBA phases.

In Phases 4 to 2, dwellings are established around a wall and alleyway that encloses the temple area. Outside the main area, on the southern edge of the site, an updraft pottery kiln belonging to Phase 4 was discovered (Falconer & Magness-Gardiner 1984: 54-5, figs. 5-6; 1989a: 344-5, fig. 15).

10.4.3 Pottery finds

Only representative examples of pottery have been published for the site. In general, the published ceramics are fragmentary, which may partly explain the repetitive range of forms in both MB IIa phases.

Falconer & Magness-Gardiner (1984: 58-61; 1989b: 256) suggest that some IBA to the MB IIa transitional forms exist among the pottery of Phase 5, but they have never developed this idea. In general, apart from the straight-walled cooking pot, the MB IIa pottery of this phase is wheel-made, and the fabric is coarse, with occasional surface decorations of red-burnishing (Falconer & Magness-Gardiner 1984: 58; 1989b: 260; 1993: 592). Phase 4 ceramics show a greater similarity to the MB IIa/1-3 forms on the western side of the Jordan, including a higher proportion of red-slipped and

³⁸⁴Their parallel from Nahariya, however, is less convincing, as it is based on a speculative reconstruction by Dothan (1965: fig. 1:2) and republished by Mazar (1992: 161-2, fig. 1). Examination of the original plans (Dothan 1956a: fig. 1; 1956b: fig. 1) shows clearly how very little of this plan is based on an actual structure. Dothan admittedly attempted to relate this structure to the Megiddo temples, and never published this reconstruction anywhere else (cf. Dothan 1977; 1993c).

painted fine-wares (Falconer & Magness-Gardiner 1989b: 260; 1993: 592). As settlement material from these early phases is still not abundant in the Lower Jordan Valley, the limited range of published material does not permit more than vague comparison with recently published early-MB IIA pottery from Gesher and Tel Dan. For example, the simple, rounded everted storage jar rim of Phase 5 is well-represented at Gesher, although the carinated forms are absent at both Gesher and Tel Dan.

10.4.3.1 Levantine Painted Wares

Painted wares appear in Phases 3 and 4 on closed forms (storage jars and jugs) and a few open forms. The body sherds of the closed vessels are decorated in monochrome and bichrome, often on a white background, variously with a net pattern, horizontal lines, concentric circles, and framed wavy lines (Falconer & Magness-Gardiner 1984: 62-4, fig. 17). Four carinated bowls painted with external horizontal stripes, and decoration on rim interiors, are found in Phase 4 (Falconer & Magness-Gardiner 1984: 61, fig. 14:3). In addition, an internally concave rim of a jar is decorated with red paint strokes (Falconer & Magness-Gardiner 1984: 61, fig. 16:11).

10.4.4 Evidence for ceramic production and exchange

The direct evidence for ceramic production provided by the Phase 4 kiln, is complemented by petrographic and INAA studies that were carried out on samples from Tell el-Hayyat (Falconer 1987; 1987). Comparison with analysis of samples from other contemporary sites demonstrates complex pottery exchange between large and small regional sites.

10.4.5 Metal finds and evidence for metallurgy

Copper-alloy and silver finds, and metallurgy, are significant features of the temple complex during both MB IIA phases (Falconer & Magness-Gardiner 1989a: 344; Magness-Gardiner & Falconer 1994: 154-6, table 8).³⁸⁵ Finished objects of both a ritual and symbolic nature, e.g., tools and figurines, were found on the temple floors and courtyards.³⁸⁶ Utilitarian objects were also found in domestic contexts.

Evidence for metallurgy includes a fragmentary crucible with remains of metal still adhering to it, which was found on a Phase 5 floor of the temple. Quantities of slag, stone molds, broken fragments of tools and figurines, and two flat objects, which according to the excavators resemble

³⁸⁵Initially, a limestone mould for tanged weapons was reported in Phase 3 (Falconer & Magness-Gardiner 1989a: 344). However, the most recent publication makes no reference to any metallurgical activity after the MB IIA period (Magness-Gardiner & Falconer 1994: 156).

³⁸⁶Illustrated finds include an anthropomorphic figurine from Phase 5, two bronze socketted spearheads, and two quadruped zoomorphic figurines from Phase 4 (Falconer & Magness-Gardiner 1989a: 342-4, figs. 8, 13).

miniature “oxhide” ingots, were also found on the floors and courtyards.³⁸⁷ While the figurines and a mold for an anthropomorphic figurine suggest a sacred role for the metallurgy practiced within the confines of the temple precinct, a limestone mold for tanged implements demonstrates that utilitarian items were produced as well. In this respect, these temples are part of a larger Levantine phenomenon of religious sanctuaries that served as the focus for metal recycling and production.

10.5 Jericho

Despite extensive IBA and MB IIb evidence, only one tomb and a few early deposits in multiple-use tombs (T.K3 and T.B48A) with MB IIa/4 or MB IIa-b remains have been identified (Kenyon 1965: 203-28; Gerstenblith 1983: 34-5; Ward & Dever 1994: 68-71). Among the other objects are two, possibly Egyptian, alabaster vessels, scarabs, two rings, a pin and other fragments of bronze, amethyst, turquoise, and other beads of semi-precious stones (Kenyon 1965: 206, 209, 221, 226, fig. 100:1-2; Kirkbride 1965). Although there is no precluding future discoveries, the finds fit the general pattern in the Lower Jordan Valley, where MB IIa material culture is relatively quite limited. It also goes far towards explaining Kenyon's opinion (1960: 155) regarding the short length of this period.

11. The Negev, Arava, and Sinai arid zones

Over 150 km of arid Sinai desert coast separates the Pelusiac mouth of the Egyptian Nile Delta from the southernmost cultivable Levantine zone. It is one of many geographical frontiers in the Levant, and perhaps the only physical barrier in an otherwise contiguous zone of cultivation known as the Fertile Crescent. Owing to a chain of oases and available high groundwater (Gilead & Issar 1987), which may enable small agriculture plots, the coastline was the most amenable route, and was known in Pharaonic times as the “Way of Horus” (Gardiner 1920). In general, these arid zones became increasingly desiccated during the Holocene period and, apart from episodes such the Chalcolithic Negev culture, were sparsely inhabited by pastoral and nomadic groups (see review in Finkelstein 1995a). However, these regions possessed natural resources (e.g., copper, semi-precious stones, etc.) that attracted the attention of sedentary groups in neighboring regions.

Following extensive IBA settlement in the Negev, Arava, and southern Sinai arid zones, no evidence of MB IIa material culture has been identified (Cohen 1981; 1985; Haiman 1986; 1991; 1993; Lender 1990; Avni 1992; Govrin 1992; Gazit 1996; Rosen 1994). Radiocarbon determinations from some sites suggest to Avner et al. (1994: 284-5) that occupation continued into the Middle Bronze Age. The results of analysis by Gat (1998) on the material from the North Sinai Survey (Oren 1973; 1993: 1388; 1997: 275-9) has shown that the traditional “Way of Horus” was maintained by a network of sites stretching across the northern Sinai coast. Egyptian and Canaanite material culture is represented, with the relative intensity varying in direct relation to the proximity of the core areas.

³⁸⁷Golden's suggestion regarding the use of ingots for the production of sheet metal (see *supra*, n. 4), may explain the function of these MBA ingots.

Chapter 5

Maritime Trade and the MB IIa Southern Levant

“. . . and the Canaanites dwell by the sea and along the Jordan.”

Numbers XIII:29

The preceding chapter placed the relevant south Levantine MB IIa material culture in its proper relative and geographical context. It is now time to explore the spatial, cultural, and chronological issues in order to elucidate the role of trade in the development of urban culture and the emergence of a nascent internationalism that marked a change in the relations between the southern Levant and the east Mediterranean world.

1. The Distribution of Traded Objects

In summarizing the artifactual evidence for international and inter-regional trade in the southern Levant (Tables 14-16), a number of caveats are necessary. In general, burials tend to offer contexts rich in small finds, and so it is not surprising that the majority of relevant finds derive from mortuary contexts rather than settlement levels. In the particular case of the MB IIa period, this balance is further biased by mortuary practices, which favor military and prestige items that ultimately derive from distant sources (Hallote 1995). In addition, the sample has been skewed by excavators' bias towards fortifications, gates, and palaces, which have not produced an abundance of finds. Ironically, two non-fortified sites, Tel Nami and Tel el-Ifshar, have produced abundant small finds that have greatly contributed to our understanding of cross-cultural contact.

In general, organic commodities, such as oils, resins, and wine, or raw materials, such as bitumen, which are known to have been important traded items in other periods, have been largely ignored. However, the MB IIa Canaanite jar, whose morphological development continued along the trajectory begun in the Early Bronze Age, has been shown by an INAA study on vessels from Tel el-Dab`a to have been a successful and plentiful commercial container, well suited for transporting such commodities (*see supra* Chapter Two). Apart from this study, and a limited sample of jars from Tel Nami (Marcus 1995a), material analysis of this potentially significant evidence for trade has been largely ignored. Small samples of other pottery forms, both fine and common wares, have been analyzed (Falconer 1987; Goren 1990a; 1992; McGovern 1997: 423-4; Maeir 1997), but the state of the research is far behind that encountered in the preceding periods. The evidence for ceramic production encountered at a number of sites suggests a multitude of workshops, which have yet to be sufficiently studied.

1.1. Levantine Painted Ware

The various types and design motifs subsumed under the heading of Levantine Painted Wares are among the most widely distributed and readily identified ceramic families. Although no longer derived or related to the Khabur painted wares (Stein 1984: 26 *contra* Amiran 1969), this family does overlap

geographically with the Amuq-Cilician Wares (Gerstenblith 1983: 64-70; Artzy 1995: 20, n. 20), but is clearly a distinct ceramic class with typological and decorative analogues that range from the coastal Levant to the Egyptian Delta, and inland to the Jordan Valley (Tubb 1983; Bagh 1988). Chronologically, there are clear typological and decorative developments in this class, from its appearance at the onset of the MB IIa period and throughout the sequence (Ilan 1996a; Beck 1985b: 183, 194), a characteristic that should be a warning about the interpretation of individual examples or isolated body sherds. Only limited material analysis has been carried out on this ceramic class, but the results of INAA and petrographic analysis on examples from Kabri, Tel el-Ifshar, Tell el-Dab`a, Tall al-Fukhar, and other sites, shows that a number of production locales existed (Bagh 1988: appendix A/1; Goren 1990a: xlv-xlv, table 1; Paley & Porath 1993: 612; 1997: 373; McGovern 1997: 421, 423).³⁸⁸ Until a geographically and chronologically broader study is carried out, the question of the origin of this class, its cultural implications, and any discussion of trade versus inspiration, must be deferred. However, it is clear from even a cursory comparative analysis of the published examples that there is a much greater relative similarity between types and motifs from the southern and northern Levantine coast, than between the southern Levantine coast and the more geographically proximate Jordan Valley. This suggests much more intense communication along the coast regardless of whether the long-shore similarities are the result of actual trade or inspiration. Lastly, while there has been no attention paid to the meaning of the LPW motifs or the possible contents of the vessels, it is worth considering that some of the designs may be evocations of wicker-work or textiles (cf. Stager 1990; Barber 1991: 220, n. 4, 354-355, 365). Note the similarity between the bichrome pattern on the clothing worn by the `Amu in the Beni Hasan depiction and some of the LPW designs (cf. e.g., Newberry 1893: pl. XXVIII; Kochavi, Beck & Gophna 1979: fig. 4:9).

1.2. Tell el-Yahudiyah Ware

Tell el-Yahudiyah Ware is one of the most widely distributed MBA ceramic classes, occurring throughout the Levant, Egypt, and Cyprus, with outliers in Nubia and Thera (Kaplan 1980). This class originated in the MB IIa/2-3 southern Levant, where typologically it represents the continuation of the local juglet development with the application of a distinctive punctured (and often white-filled) surface decoration (1990; Beck & Zevulun 1996).³⁸⁹ This phase is typified by ovoid and piriform juglets, but other shapes and forms, such as bowls, botanical or fruit-shaped, ichthyomorphic, and zoomorphic vessels are known (Gophna 1969b; Zevulun 1986-1987a; Ziffer 1990: figs. 23*, 61; Amiran 1975). The decorations evoke patterns known from painted vessels (e.g., filled triangles and butterfly motifs), and also seem to complement the botanical forms. A fascinating cross-craft skeuomorph is the ovoid form

³⁸⁸Three LPW jugs from T.1045 at Kabri and ceramics from Hama, including a MB II carinated bowl, were compared petrographically; the jugs are consistent with a production in northern Israel, as are some vessels from Hama (Goren 1990a: xlv-xlv, table 1). Only one jug from Tel el-Ifshar, with parallels at Ugarit, was analyzed by INAA and shown not to be an import. For the LPW from Tell Dab`a, INAA has only been able to demonstrate a southern coastal Canaan derivation, but some examples of unknown chemical match may have a more northern origin (Bietak 1997: 98).

³⁸⁹Note Kaplan's confusion (1980) on this issue (Weinstein 1982).

with vertical bands, which is a clear evocation of an ostrich egg container in a metal harness (Zevulun 1990: 184). In a typologically MB IIB unprovenanced example (Ziffer 1990: fig. 20*), a reserved brown burnish over a white background is another example of the use of color to evoke such a container (cf. Vickers & Gill 1994: 106-53). Clearly, as with the hybrid painted TEY vessels at Tell el-Dab`a (Bagh 1988: fig. 37), this class was subjected to extensive experimentation by potters, perhaps with an eye towards creating commercial recognizability. Although there has been no attempt to identify the original contents of the closed vessels, the shape and size suggests some type of oil or resin (hence the acorn decoration), or fruit-juice. While such commodities would be consistent with the petrographic and INAA evidence for TEY production at `Afula, or at least two more southern Levantine MB IIA sources (Artzy & Asaro 1979; Kaplan 1980; Yellin 1984: 92-3; Goren 1990a: xlv-xlbi, table 1), the local production of these vessels at Tell el-Dab`a, may hint at other commodities or uses.

1.3.Middle Cypriot Ware

The distribution of MC pottery in the east Mediterranean archaeological record is among the clearest evidence of maritime trade. Although recently Maguire has sought to exclude the possibility of Cypriot imports during the MB IIA, because it was represented by equivocal sheritage, dubious, or poorly excavated contexts, there are clearly securely dated MC ceramics to indicate its export to the Levantine coastal regions, already in the MB IIA period (Artzy & Marcus 1992; Marcus 1991; Dever 1976: n. 104), with time enough for local imitations to appear at Kabri and Hazor (*see supra* Chapter Four).³⁹⁰ Part of the reluctance to this date for the beginning of MC exports is the absence of MC imports in MK Egypt and a large portion of the Syro-Lebanese coast, especially Byblos. Given the MB IIA context for MC pottery elsewhere, this selective distribution may be coincidental, or a result of incomplete publishing, or the poor fortunes of excavation. However, it is possible that this distribution pattern owes itself to selective, or even restrictive, trade relations, i.e., unlike the northern Syrian and southern Levantine coast, Egypt and its Egyptianized Lebanese partners were excluded or did not have the same desire for MC imports. Support for this argument may be found in the fact that MC pottery only arrives in Egypt with the Canaanite settlement in the Delta. Further excavation in the pre-Stratum H levels at Tell el-Dab`a should provide some resolution to this question.

In the absence of any residue analysis, it is impossible to explore the role of MC pottery in the extra-Cypriot record, where it is often present in burial contexts. While open vessels are clearly traded for their own desirability, the more common closed forms may have functioned as containers for some unknown liquid commodity, as is the case of the LBA Cypriot juglets (Knapp 1991). In any event, the appearance of MC pottery marks the beginning of extensive contacts between Cyprus and the southern Levant, and given the distribution pattern, most likely by maritime rather than indirect terrestrial contacts

³⁹⁰This point cannot be over-emphasized, as when querying excavators as to whether they have found any MC pottery in MB IIA contexts, the response most often heard by this author is “there are no MC imports in the MB IIA period”.

(Weinstein 1975: 7-9; Dever 1976: n. 78). Whether MC pottery “piggy-backed” on a more substantial cargo, such as copper, has yet to be resolved.

1.4. “Anatolian” cut-away vessels

Since Amiran (1968) first remarked on the similarities between contemporary Anatolian and southern Levant ceramics, the term “Anatolian” has remained in the archaeological lexicon as a designation for various Levantine types and traits, although their pedigree is unclear (Gerstenblith 1983: 68-70, 80-2). While there is no denying the visual similarities in types, cross-designs, and the red-slipped surface treatment, the traits seem chronologically unrelated in the Levantine context (Beck 1985b: 198), and their relationship still unresolved. In the southern Levant, the distribution of these traits is limited to the Coastal Plain and Jezreel Valley, where it appears in later MB IIa phases (Table 14). The only material analysis carried out thus far has been on examples from Kabri, which were produced locally.³⁹¹ Until more extensive sampling is carried out, a distinction between trade and inspiration is unresolvable and the chronological utility of examples from Byblos (Tufnell 1969: 14-5, fig. 5:52), Akko (*see supra* Chapter Four), Tel el-ʿAjjul (*see supra* Chapter Four), and Tell el-Dabʿa (*see supra* Chapter Three) cannot be assessed.

1.5. Metals

While silver is present in a number of sites, occasionally in some concentration (e.g., Nahariya and Megiddo), copper-based alloys, such as tin-bronze, are abundant in the MB IIa southern Levant. Rarely does an excavated settlement or tomb fail to produce some weapon, jewelry, or other object, as numerous typological studies and corpora demonstrate (Henschel-Simon 1937; Maxwell-Hyslop 1949; Gerstenblith 1983: 89-100; Miron 1986-1987; 1992; Philip 1989). Two parallel technologies were used to produce a variety of objects, one a continuation of the local arsenical copper tradition, the other an imported tradition involving the increased use of tin-bronze, which is often leaded for better casting (Philip 1991b; Shalev 1989; 1997; forthcoming; Ilani, Rosenfeld & Dvorchek 1997; Khalil 1984). This tin-bronze technology is believed to have originated in the northern Levant and inland Syria, where a significant portion of the material repertoire has its typological origin or inspiration. Despite the inherent advantages of tin-bronze technology, the two traditions continues throughout the Middle Bronze Age (Shalev & Northover 1993b). Whether this dichotomy was due to craft conservatism (Ilani, Rosenfeld & Dvorchek 1997: 46), asymmetrical access to raw materials (Philip 1995: 529a), or typology (Shalev 1989: 44), or some combination of all three, is still unclear. Variations in production may well be the result of the multiplicity of metal workshops, such as the temple-based industries at Nahariya and Tell el-Hayyat.

Despite the ubiquity of copper-based alloys, very little is known about the origin of the copper ore (Philip 1995a: 524). No evidence has been found to indicate that the Feinan or Wadi Arava mines were being used during this period (Hauptmann & Weisgerber 1992: 63), although some circumstantial

³⁹¹Petrographically, two surface sherds and two examples from T.498 at Kabri, were consistent with local production at the site, or elsewhere in the southern Levant (Goren 1989b).

evidence for exploitation of the Sinai mines is suggested, as well as some Egyptian sources. In contrast to previous periods, the southern arid zone populations appear to have played an extremely limited or no role at all in this enterprise, except perhaps in the Sinai, under Egyptians tutelage. This marginalization is reflected in the absence of any contemporary Negev, Arava, or Sinai sites.

Despite the lack of a comparative analytical study of the south Levantine and Cypriot copper industries or their raw materials, textual evidence and some technological and typological affinities between Cypriot and mainland metal forms (Balthazar 1990; Philip 1991a), make it difficult to ignore the possibility of the introduction of Cypriot ores into the Levantine network. Which sources were exploited, and the identity of the miners and smelters, are all unknown. Increasing artifactual evidence, metallurgical analysis, and the study of settlement patterns, suggest an initial interest in some Cypriot copper sources, followed by a growing intensification of metallurgy (Todd 1988: 140; Gale & Stos-Gale 1989; Knapp, et al. 1992; Knapp 1990: 159-61; 1994: 279-80). The absence of coastal sites might indicate a general lack of Cypriot orientation towards overseas export (Knapp 1990: 158), but such maritime interfaces might be obscured by radical geomorphological changes, such as those that nearly conceal later LBA Cypriot ports (Gifford 1985; Blue 1997).

Regarding tin, textual evidence indicates a land-based network originating east of Mesopotamia. Even if Anatolian tin were mined in the Early Bronze Age, it was apparently exhausted by the second millennium (Yener, p.c. cited by Pulak 1997: 240), when the Assyrian caravan trade supplied tin to Asia Minor. In the southern Levant, Hazor may have served as a “gateway” for tin, which may have been one of the reasons for its emerging greatness in this period (cf. Ilan 1995a: 306-7; Maeir 1997a: 237-42). However, the possibility of a maritime tin route from the northeastern Mediterranean should not be excluded, particularly in light of the role of Ugarit in east-west maritime trade, and the evidence for communication between the northern and southern Levantine littoral zones.

The leaded tin-bronze industry might be one reason for rare finds of lead, in particular the almost pure specimen from Ḳafula (*see supra* Chapter Four). It is clearly an import, perhaps from Anatolia (Philip 1991b: 101), if not the Aegean (Gale & Stos-Gale 1981b: 151; Gale, Stos-Gale & Davis 1984). Philip (1991b: 101) suggests that the use of lead was partly a result of its abundance as a by-product of silver cupellation, a precious metal that also appears in the Anatolian region. In any event, the occurrence of lead in the Jezreel Valley is particularly instructive as it is the principal southern Levantine lowland between the parallel copper and tin routes.

How metals were transported is also unknown. No ingots have been found; rather it seems likely that finished goods served as a convenient means of transport, and perhaps were valued principally for their weight (cf. Vickers & Gill 1994: 33-46). Support for this may be found in the Kamose stela and the Mit Rahina inscription, both of which mention weapons as a prized commodity, or the numerous metal objects in the Tod treasure, and other hoards (Tufnell & Ward 1966; Philip 1988). In whatever form, raw materials and finished products of similar type seem to have been mobile, as they have been found over long distances throughout the Levant and the Egyptian Delta. In inter-regional terms, the distribution of

southern Levantine metals, suggests close highland-lowland relations, as evinced by the concentrations of metals in the Upper Galilee and Central Highlands.

1.6. Organic Imports

As older excavations rarely involved any collection of organic samples, the evidence for imported woods is quite limited. However, even more recent excavations have produced only two examples of imported cedar, from a well at Tel Nami (Lev-Yadun, et al. 1996), and a patrician dwelling at Tel el-Ifshar (Porath & Paley 1993: 34). Given the local absence of the requisite longwoods for roof timbers capable of spanning large halls (Liphschitz & Biger 1995; Liphschitz 1992b), presumably cedar or other coniferous woods were imported for the palaces of Aphek, Kabri, and other elite or public structures.

A unique organic import is *lathyrus clymenum*, Spanish vetchling, which was discovered in several local jars and scattered in two rooms at Tel Nami (Kislev, Artzy & Marcus 1993; Marcus 1995a). As this domesticated pulse never grew in the Near East, but was cultivated in the Aegean (Sarpaki & Jones 1990; Sarpaki 1990; 1992), it is clearly an import from that region, the earliest in the southern Levant. In the absence of any other MBA Aegean finds at Tel Nami, including additional samples from other phases and areas, or any other examples of this food plant in the Levant, it is difficult to assess the meaning or significance of its presence at the site. A number of possibilities include an Aegean at Tel Nami, who desired his own cuisine, a Canaanite, who had developed a taste for this product, or a one-off exchange with the crew of a visiting ship. This particular species contains the most powerful neurotoxin of the genus and, if not prepared properly by soaking, will in large quantities cause *lathyrism*, debilitating disease involving paralysis or death (Kislev, Artzy & Marcus 1993; Klawans 1988: 29-45). Thus, despite the absence of any Aegean kitchenware, which might support an ethnic identification based on the presence of a particular cuisine, it seems very likely that this find should not be considered ephemeral. Note that the medicinal effects of the “*keftiu* bean” (see *supra* Chapter Two), e.g., as a laxative, does not correspond to any reported effects of this pulse.

1.7. Semi-precious Stones and other Lithics

Semi-precious stones are a fairly common artifact in the archaeological record, where they are more often found in mortuary contexts. As with other artifacts, this distribution is partly a result of their role as prestige items (Hallote 1995: fig. 10), but also because they are easy to miss in settlement levels, if sieving is not consistent. No synthetic study on the subject has yet been done, and often some identifications may be confusing or in error. Apart from the rare notable exception (Avidor 1991), semi-precious stone beads are usually “re-buried” in excavation reports without any consideration of the evidence they provide for trade. This ill-handling is unjustified as the desire for semi-precious stone beads in antiquity was considerable, as is best exemplified by the thousands of beads found on the Uluburun ship (Pulak 1997: 245). Among the materials found in the southern Levant, which derive from external sources are amethyst, agate, chalcedony, and rock crystal from Egypt (Lucas & Harris 1962: 386-9, 392, 402-3; Shaw & Jameson 1993; Moorey 1994: 94); serpentine perhaps from Egypt (Lucas & Harris

1962: 420-1), although a Cypriot or Anatolian source is also suggested (Avidor 1991); and carnelian or garnet—the two are often confused (Ilan 1996b: 235)—from either the southern arid zones or Anatolia. Other common stone artifacts, such as the distribution of basalt in regions lacking this material (e.g., Gophna & Beck 1981: 63, 74), or the production of geometric sickle blades, which replace the previous Canaanite technology (Rosen 1989: 218-9; 1997: 59-60, 111-2, fig. 3.19), are largely ignored as evidence for inter-regional trade.

1.8. Egyptian and Egyptianizing objects

As in the preceding EB II-III urban culture, the relative degree of contact between the southern Levant and Egypt pales in comparison to the latter's relationship with Byblos. In this respect, there is as Weinstein (1975) pointed out, little evidence to support any notion of an Egyptian empire or hegemony of any kind, but the small finds indicate that some limited contact did exist. Various contemporary objects and curated antiques, along with the appearance of Egyptian signs and ceramic evocation of Egyptian motifs and vessels, suggest that a cultural exchange was occurring. In some instances, such as the pottery and perhaps the granary at Tel el-Ifshar, there is evidence of more profound, but inexplicable influence. However, only in the later part of the MK/MB IIA period can any widespread impact be documented. Ben-Tor (1994; 1997) has demonstrated that scarabs only occur at the end of this chronological phase, when they are both imported and produced locally, and enter Canaanite mortuary practice probably via their Egyptianized compatriots in the Delta. These types of hybridization of Near Eastern and Egyptian symbols, and even a text (Malek 1996) are also reflected in glyptic representations, but always with a distinctly Levantine character (Keel 1989; Teissier 1990; 1996; D. Ben-Tor 1997: 185; Beck 1998).

2. Additional Cross-cultural Contacts

2.1. Small Finds

In addition to the widely distributed evidence just detailed, other small finds suggest substantial cross-cultural relationships. A unique object is a glass bead from Tel Dan, which is indicative of inland contacts. The sudden appearance of the conoid loom weight in the MB IIA southern Levant indicates the introduction of the warp-weighted loom (Barber 1991: 283-93, 299-302, fig. 14.3; Marcus 1991; Marcus & Artzy 1995). Barber (1991: 300-1, fig. 14.3) traces the antecedents of these weights to EBA Anatolia and suggests that it may have been brought by immigrant craftswomen from Cilicia. This object is absent in the Syrian and Lebanese coastal and inland regions, which suggests a maritime route for this transference (Barber 1991: 300, n. 3, Appendix A), and at Tell el-Dab`a (M. Bietak, p.c.).³⁹²

³⁹²To Barber's catalogue (1991: Appendix A) should be added the examples from Tel Nami and Tel el-Ifshar, and additional MB IIB weights from Kabri palace (Rosenberger 1991).

2.2. Writing

Despite the advent of writing in the core areas of Egypt, Syria, and Mesopotamia already in the fourth millennium, only in the Middle Bronze Age is there sufficient evidence to begin considering south Levantine literacy, and its social and cultural implications. Moreover, recent discoveries at Hazor (Ben-Tor 1992; Horowitz & Shaffer 1992a; 1992b; Horowitz 1996; 1997) suggest that the paucity of local documents may be remedied shortly by substantial discoveries. When, and if, an archive at Hazor is finally discovered, contemporary developments (e.g., highland scribal centers and signs of the Proto-Alphabet) are quite remarkable (Teissier 1996: 8-9), and are, to a large degree, a by-product of cross-cultural relations and the ethno-linguistic make-up of the south Levantine population. Moreover, the wider use of writing is a prerequisite for more sophisticated administrative organization, commercial ventures, and trade, some of which may involve transactions that span long periods of time (Wiener 1987: 263, nn. 21-22).

The preceding millennium provides only equivocal indirect evidence of a written means of communication, such as a glyptic tradition of cylinder and stamp seals. While cylinder seals were typically used to impress a broad field (e.g., a tablet or a jar), stamp seals were meant to impress relatively small areas, such as bullae, which were used to seal bags, boxes, and bundles of papyrus (Williams 1977); however, this should not be considered a rigid division. While both sealing traditions are amply represented in the archaeological record, which accords well with a region situated between papyrus and clay-based writing traditions, neither clay tablets nor papyrus have been documented in the southern Levant during this period. It is unlikely that direct evidence for an archival overlap between these two traditions will ever be archaeologically demonstrated, as the preservation factor that favors the survival of clay tablets, i.e., fire, utterly destroys papyrus (Millard 1986: 391). However, indirect evidence, serendipitously preserved on durable materials, shows that a papyrus-based syllabic writing system did develop in Byblos, perhaps as early as the late Old Kingdom. No similar indirect evidence for the use of this system or of papyrus has been found anywhere else in the EBA Levant.³⁹³ The only extra-Byblian example of the syllabary, which appears to have remained unnoticed, are two incised cobras on the neck of an MB IIb jar from Tel Dan (Ilan 1996b: 178-9, fig. 4.23a, 4.94:1). A possible reading would be *nun*, i.e., “fish.” Although the *nahaš* sign appears in Proto-Sinaitic as well, the full form of the cobra snake depicted here most closely resembles the Byblian paleography, which better preserves the original hieroglyph (Sass 1988: 125-6, tables 4-5; Hoch 1990: 119; Colless 1992: 59).

In addition to hieroglyphic and syllabic scripts, Byblian scribes were familiar with cuneiform, as suggested by a single Ur III tablet from an IBA level (Dossin 1969; Saghie 1983: 64), which is the earliest cuneiform text in the coastal Levant. A seal from Ugarit demonstrates that cuneiform was being used there as early as the nineteenth century (Millard 1979: 613). The earliest cuneiform inscriptions found in the southern Levant appear, no earlier than eighteenth century, at Hazor (Yadin, et al. 1960: 115-

³⁹³While the arid zones would seem the most likely region where papyrus might survive, these were far from the Egyptian sphere of influence. The exception, of course, is Sinai, which has not produced any evidence for papyrus either.

7; Landsberger & Tadmor 1964; Hallo & Tadmor 1977; Tadmor 1977; Horowitz & Shaffer 1992; 1992; Horowitz 1997), followed by later examples at Shechem, Hebron, and Gezer (Shaffer 1970; 1988; Anbar & Na'aman 1986-1987). These tablets, an inscribed envelope from Gezer, and an inscribed jar from Hazor, represent OB Mesopotamian influence on the Canaanite scribal tradition (Demskey 1990: 158). The range of texts include a lexical list dealing with rates of exchange, mathematical exercises, juridical documents, letters, religious, administrative or economic records, and divination models, all indicating a well-developed local scribal system serving a complex society (Demskey 1990). The personal names appearing in these texts reflect an ethno-linguistic make-up of a chiefly Amorite population with some Hurrian groups (Anbar & Na'aman 1986-1987: 7, 10-1; Shaffer 1970: 111; Horowitz & Shaffer 1992a: 22-3). The geographical distribution of these texts suggests that cuneiform writing first appeared in the Upper Jordan Valley, then in the central Highland and Shephelah, and only reached the coastal region in the Late Bronze Age.

Lastly, although best preserved on metal and stone, the Proto-Sinaitic alphabetic script was designed for pen and ink, i.e., a papyrus-based writing system (Millard 1986: 395). An Egyptian origin is clear, both in the derivation of the signs and the direction of the writing (Millard 1986: 395; Sass 1988; 1989; Hoch 1990), but the precise date and location of its development is still debated.³⁹⁴ The earliest preserved Twelfth Dynasty-MB IIa examples derived either from MK group writing (Sass 1988; 1989) or from the Byblos syllabary (Hoch 1990: 119-21).³⁹⁵

Thus, in the Middle Bronze Age, scribes in the Levant were writing in at least three different scripts: the Proto-Sinaitic, the Byblian Syllabary, and Old Babylonian cuneiform. The first two were used in specific regions, expressing different, but related Semitic languages. The third script reflects the Syro-Mesopotamian character of the urban cultures of the Jordan Valley corridor and the Hill Country (i.e., legal system, extispicy, language, and literature), which maintained relations with inland Syria (e.g., Mari). The fact that three writing systems co-habited in the Levant may suggest three primary socio-cultural, economic, and, perhaps, ethno-linguistic zones: the Byblian, the southern Levantine coastal, and the Jordan Rift Valley-Central Highland.

3. Settlement Pattern and Specialization

The MB IIa settlement landscape is hierarchical pattern of fortified, rural, and specialized sites, whose material cultural and, hence, urban demographic core is in the Coastal Plain and inland valleys. A number of studies have analyzed, characterized, and attempted to simulate the general MBA socio-political intra-regional organization, based on geographical and spatial criteria (Kotter 1986; Finkelstein

³⁹⁴The lack of an agreed upon decipherment has left the Byblos syllabary in a somewhat ambiguous position in the study of the early alphabet (Naveh 1982: 21; Healey 1990: 16, 61; Sass 1988: 86, n. 58; Millard 1992).

³⁹⁵Given the nature of Egyptian-Canaanite relations in the Delta, it is interesting that no epigraphic evidence of this script has been found. We should not discount future incised or inked examples on durable materials, such as pottery, as in the MB IIb Gezer jars (Colless 1991: 20-31).

1992b: 210-2, table 1; Ilan 1995a: 301-5; Maeir 1997a; Dever 1997). In terms of international and inter-regional interaction, specifically for the MB IIA period, an urban site division of the core area of settlement into “central-places” and “gateways”, along with rural hinterland (Marcus 1991; Ilan 1995a: 305-6), is indeed a fitting characterization of the settlement pattern as known to date, and a model for understanding some facets of the MB IIA economic organization.

An examination of the settlement landscape by sub-regions shows distinct divisions in site location. In the core area of the Coastal Plain, the major urban sites are located either in the inland agricultural or coastal maritime zones. The former may best be characterized as “central-places” that are the focus of the rural hinterland, but also interface with highland pastoral and horticultural communities, and benefit from some degree of latitudinal communication. The coastal centers generally lack a large agricultural hinterland, and instead their position on the shore or immediately up a navigable waterway (e.g., Tel Gerisa) gave them the role of a maritime “gateway” that interfaces with long-shore trade networks. This general model of twin sites arrayed in a synaptic settlement pattern holds for most of the Coastal Plain, although the physical geography may have afforded some coastal (e.g., Dor) and inland sites (e.g., Tel Zeror and Tel el-Ifshar) a dual role. The location of one coastal site, Tell el-`Ajjul, gave it a unique role as both a terrestrial and maritime “gateway”. Inland valley urban sites are located on various phytogeographical interfaces, usually near mountain pass (e.g. Megiddo, Shimron), or along river systems (Greenberg 1996), with geographical and cultural inland “gateways” that changed with time (e.g., MB IIA: Dan; MB IIB: Hazor). Highlands centers arose along longitudinal and latitudinal routes in the pastoral-horticultural zones, sometimes near intermontane valleys (e.g., Shechem). Their interaction with the lowland society is indicated by the appearance of MB IIA pottery types, metals, particularly tin-bronze, and occasional foreign exotica. Apart from the traditional highland-lowland dimorphic interaction of lowland agricultural produce and imported materials for highland orchard and pastoral products (Finkelstein 1992c), there may have been other inter-regional interactions of both a perennial or sporadic nature. Whether the Jezreel or Hula Valleys served as “bread baskets” for coastal communities, on a regular or an emergency basis is unclear, but certainly each region had a dynamic agricultural potential which might be altered by short-term climactic shifts, that might take them below or beyond subsistence levels (*contra* Gophna, Liphshitz & Lev-Yadun 1986-1987). Such a longitudinal sub-regional variation has been documented in MBA herds, with a decrease in cattle and pig to the south, and concomitant increase in caprovines (Horwitz 1996: 61).

Lastly, a number of very small, specialized sites stand out in any review of the MB IIA settlement landscape. In terms of the role and impact of trade, the finds from Tel Nami clearly demonstrate that traded items were not only the privy of palatial and elite segments of the society, but smaller specialist sites also had access to the fruits (or legumes) of cross-cultural interaction.³⁹⁶ More importantly perhaps are the two small fortified sites in the central Sharon Plain: En Zurekiyeh and Tel Poleg. In the MB IIA/2, En Zurekiyeh was the sole fording point across the Poleg basin, followed by Tel Poleg in the MB IIA/3. Given

³⁹⁶Unless future research should suggest that Tel Nami functioned as a satellite port of Dor.

the swampy surroundings, and limited agricultural and demographic base, it seems unlikely that these fortified sites, particularly Tel Poleg, were built by their inhabitants (cf. Finkelstein 1992b: 211). Instead, it seems much more likely that an unknown central authority, perhaps from the Yarkon River basin or the northern Sharon Plain, built and maintained these coastal road forts. While there are no criteria at present for identifying the patrons of these site, it seems reasonable to suggest that these sites mark a border that divided the Sharon Plain, and perhaps their character is indicative of inter-regional competition or hostility. Another similar border may have developed between the Carmel and Sharon Plains at Tel Mevorakh. If indeed there were a number of competing or even hostile socio-political units in the coastal lowlands, then it may explain the widespread construction of fortifications, the latitudinal economic array with a multiplicity of ports, and possibly some of the sub-regional variations in material culture.

4. Towards a Radiocarbon Chronology of the MB IIa Period

Sir Mortimer Wheeler mused that the establishment of an ancient chronology is akin to preparing a railroad time-table (cited by Manning 1993: 928), and although he implored us to run some trains, it would be remiss not to consider their schedule to some degree, if only to avoid a head-on collision. As with many archaeological periods, MB IIa chronology is the most contentious topic of research (Bietak 1984; 1991a; 1997: 125-8; Weinstein 1992; 1996; Lilyquist 1993; Ward & Dever 1994; Beck & Zevulun 1996). Essentially, there are three fundamental sub-topics in the ongoing debate: i) the reliability of the internal relative chronological sequence; ii) the calendrical dates for the beginning of MB IIa material culture; and iii) the transition to the MB IIb period, which is dependent on historical synchronisms. The goal of this discussion is not to rehash all of the previous arguments and then enter the fray armed with a new relevant artifact or two. Rather, it is to offer a brief epistemological consideration of the evidence, with an attempt to glean reliable fact from polemical supposition (and posturing), and to offer some suggestions for possible avenues of research.

4.1. Relative Chronology

Although the continued publication of ceramics from more refined excavation of multi-period tells and other contexts have provided an increasingly richer and more reliable relative chronological sequence, a number of fundamental issues remain unresolved. First and foremost is the degree to which the relative sequence of the various sub-regions of the southern Levant (and beyond) followed uniform stages of development. As a number of scholars have noted (Gerstenblith 1983: 52; Beck 1985b: 194-200; Ilan 1991b; 1995a: 299-300; 1996b: 231, 242-4; Maeir 1997a: 322-3), these regional variations are clearly evident within the confines of the southern Levant, and even more so with the distant material cultural analogues in the northern Levant, inland Syria, and the Canaanized Egyptian Delta. With every substantial contribution to the ceramic corpus these differences become more acute, and therefore greater weight and reliance must be placed on regional key sites for the relative chronology.

The second issue regards the generally espoused relationship between cultural and temporal nomenclature, which pigeonholes seemingly disparate material culture into rigid, formalized matrices, and

precludes any discussion of temporal overlap (Ilan 1995a: 297, fig. 3). Thus, for example, in the traditional sequence, the possible contemporaneity of IBA and MB IIa cultures becomes, *a priori*, either a methodological paradox or a non-subject of research. Only by moving beyond the sole reliance on ceramic morphology for the creation of relative chronologies, i.e., archaeological time, can an objective study of this phenomenon begin.

In considering typological parallels alone, only recently has consideration been given to the question of the nature of the ceramic parallel, i.e., whether the perceived similarity is a result of trade, inspiration, or the movement of potters. As Porat's work (1989a) amply demonstrated, petrography can go beyond merely identifying the loci and modes of ceramic production, and becomes a valuable tool in elucidating relative chronological issues. Whether a similar argument can be posited for MBA ceramics and chronology is still unexplored.

These are questions that this work does not seek to answer, even though they go to the very heart of the comparative ceramic method, and its reliability as a means of temporal synchronism. Arguably, the resolution of these issues must await far more extensive publication of the already excavated body of evidence, combined with material analysis and an independent temporal control. In lieu of such a resolution, the approach taken in Chapter Four relied on the few published key sites, and the material culture was organized within a sub-regional framework in the hope of mitigating the potential incongruities that relative degrees of communication may impart to the ceramic sequence.

4.2. Historical Synchronism

In the absence of a written Levantine history, which might provide an indirectly-based calendrical sequence for the local material culture, the historical synchronization of the relative chronology must rely on the Syro-Mesopotamian and Egyptian archaeo-historical record. Unfortunately, this task is fraught with difficulties, not the least of which is the equivocal nature of both the pertinent historical and archaeological evidence).

From broad political events in Syro-Mesopotamia, such as the vague movements of the Amorites (Dever 1977: 84-86), to purported Egyptian pictorial depictions and references, to the socio-economic and, by inference, chronological stage of Levantine culture (e.g., Redford 1992: 82-87; 1996), nearly all the proposed arguments have been based on equivocal interpretations and suppositions. For example, hardly a shred of evidence offers a reliable marker for the beginning of the period. The one exception is the depiction of epsilon, fenestrated, and duckbill axes in successive tombs at Beni Hasan, which suggests a date for the IBA/MB IIa transition around 1900 (Bietak 1993-1994; 1997: 125; Shaheen 1990). While there is no reason to doubt the general identification of the axes, such a utilization of the Egyptian pictorial record is tantamount to viewing tomb depictions as newspaper photographs.³⁹⁷ Regardless of

³⁹⁷A similar method is employed by Matth?us (1995) for LBA Aegean bronze vessels, but the radical typological changes over the short timespans between successive tombs are a major flaw in this argument (noted by S. Manning in his comments following Matth?us' lecture at the Institute of Classical Studies, 10 April 1994).

the nature of the Egyptian artistic idiom in this specific case, all that really can be said is that the Beni Hasan evidence provides a *terminus post quem* for Egyptian familiarity with one aspect of MB IIa material culture; it says absolutely nothing about when the duckbill axe appeared in the Levant or how much time passed before the Egyptians became familiar with the weapon. For the latter part of the period, textual evidence does not offer any reliable chronological anchors, and the purported synchronization of Hazor in the Mari archives with the MB IIb city relies solely on the supposition that any reference to Hazor must be to the city at its greatest expanse (Malamat 1998d), a point that is clearly debatable (Ilan 1996b: 244; Maeir 1997b: 321).

Archaeological synchronisms for the beginning of the MB IIa period are equally lacking. Unlike at Byblos, where the early Twelfth Dynasty scarabs of the Montet Jar were found (Ben-Tor 1998), no scarabs are documented in the southern Levant until late in the MB IIa sequence, when they are also produced locally (Ben-Tor 1994; 1997).³⁹⁸ Scarabs, other glyptic or inscribed finds in the Levant (see *supra* Chapters Four and Five), and Levantine imports to Egypt, offer *termini post quem* for the middle and late phases of the MB IIa period. For example, the scarab seal impression from the Tel Nami loom weight offers a *terminus post quem* for the site's final MB IIa/3 stratum in the reigns of either Senusret II (1868-1862^{high}; 1842-1836^{low}) or Amenemhet III (1843-1798^{high}; 1817-1772^{low}). The cylinder seal from Kabri provides a late nineteenth or early eighteenth century date for the MB IIa/4, if not the MB IIa/3 phase at the site. An exceptional find, the Egyptian jug at Tel el-Ifshar, confers a *terminus post quem* of 1900 for the MB IIa/2 or MB IIa/3 phases, depending on its final stratigraphic attribution. An argument could be made that this import arrived during an earlier phase and survived the periodic conflagrations that ravaged the site, but its unblemished appearance suggests that it was not an heirloom, but a relatively recent acquisition. If it were deposited shortly after its production and arrival, a *terminus ante quem* of 1850, or shortly thereafter, could be argued for either phase. If correct, this evidence could offer a unique temporal bracket for the middle of MB IIa sequence.

Other critical contexts for the synchronization of the MB IIa/MB IIb transition with either the late Twelfth or early Thirteenth Dynasties include the Royal Tombs at Byblos, which contained objects bearing the names of Amenemhet III and IV (Tufnell 1969; Lilyquist 1993: 41-4), and the assemblages from Stratum G at Tell el-Dab`a, whose evidence is still divisive (Weinstein 1992: 29-30; 1996; Ward & Dever 1994: 77-9; Beck & Zevulun 1996; D. Ben-Tor 1997: 163-4; Bietak 1997). In the context of this work, the resolution of this debate is neither sought, nor warranted. As this transition marks the lower chronological boundary of this work, it matters little whether the MB IIa archaeological and historical processes under consideration ended with the final or penultimate MK Dynasty.

What does matter is the relative synchronism of the southern Levant with Tell el-Dab`a, a topic which has elicited considerable debate. For the present study, the key question is to what stage of the Levantine MB IIa sequence does the beginning of Tell el-Dab`a belong. In a recent article, Bietak (1997: 98) chided Dever (1991) for stating that he had claimed to have material culture at Tell el-Dab`a that

³⁹⁸The literature on scarab typology and MBA chronology is voluminous (e.g., Ward 1978b; 1987; Tufnell 1984; Bietak 1984; 1989a; 1991a; O'Connor 1985; Givon 1988; Ward & Dever 1994).

represents earliest phases of the Middle Bronze Age. In support of Bietak, he never explicitly made that claim. However, in Dever's defense, by drawing parallels between the incipient Stratum H and the earliest phases at Tell Aphek and Tell el-Ifshar, Bietak (1989a: 96; 1991a: 53-4; 1992: 36) implies an MB IIa/1-2 date for Stratum H. Moreover, in one instance, Bietak (1991a: 54) states that "Stratum H=d/2 is close to or even contemporary with Phase 2 at Aphek. At least in Palestine, the beginning of MB IIa cannot be much earlier" In the absence of a sufficient range and quantity of published ceramics from Stratum H, it has been difficult to assess this synchronism. However, based on the presence of a TEY juglet, some red-burnished juglets, and LPW jugs Weinstein (1992: 28-9, 32) agreed with Bietak's date, even though such an assemblage would be incongruous in the Levantine ceramic sequence (Beck & Zevulun 1996: 68), particularly if the now illustrated examples of "Anatolian" cut-away vessels are included (Bietak 1996: fig. 29). One study suggested that regional differences could account for this discrepancy (Ilan 1991b: 238), but this does not seem likely for the founding stage of settlement of foreigners, when cultural analogues have yet to suffer significant divergence from the source region.³⁹⁹ Instead, the solution rests in correcting the misinterpretation by Bietak of the LPW "vessels" in Stratum H. As already noted, all of the relevant LPW examples are sherds, some even from pits. Until recently it was assumed that Stratum H was the earliest phase at Tell el-Dab`a, such that there was no context earlier than Stratum H from which to derive this material. With the discovery of at least five Twelfth Dynasty strata preceding Stratum H, one of which included an LPW sherd, it now seems that the LPW sherds in Stratum H are derived from an earlier phase, and this stratum should be dated by the other reported material, i.e., no earlier than the MB IIa/3 phase.⁴⁰⁰

4.3. Radiocarbon Chronology

As with many other historical periods of the Near East, radiocarbon dating has not been systematically applied to the issues of MB IIa chronology, a sore point that has been bemoaned by a number of scholars (Weinstein 1984; 1996: 57; Waterbolk 1987; Bruins & Mook 1989; Ilan 1995a: 299). The goal of a radiocarbon chronology, however, should not be seen as a substitute for other relative or historical chronological frameworks, but as representing parallel and interrelated sets of data.

The history of radiocarbon dating and its interpretation (cf. Damon 1987) shows clearly the improvement in precision and accuracy of the laboratory methods, along with improved sampling, handling, and recording by archaeologists. Much standardization has emerged and more frequent, and now published, inter-laboratory comparison is subjecting radiocarbon facilities to ever more rigorous standards of quality assurance (Scott, et al. 1990; 1991; Pilcher 1991: 32; Kalin, et al. 1995). However, it

³⁹⁹This notion is analogous akin to the more extreme "founder effect" in island colonization (Vayda & Rappaport 1963; Held 1989: 8).

⁴⁰⁰Lack of space prohibits a consideration of the full implications of this re-dating on the subsequent strata. Suffice to say that the large-scale arrival of Canaanites at the site must now be seen as a later MB IIa phenomenon, which reaches its peak just before the end of MB IIa/4 or the beginning of the MB IIb phase.

must be recognized that the plethora of previously published determinations, in particular those produced in the early days of radiocarbon dating, may have found regular statistical biases, even in assays from common sites (Waterbolk 1987).⁴⁰¹

In this work, a number of criteria are used for deciding the inclusion here of particular determinations (Tables 19-20). Most of the pertinent determinations were carried out relatively recently and are considerably more reliable. Older assays with error margins greater than one hundred are generally excluded, following Waterbolk (1994: 368, figure key), but some short-lived samples with higher margins of error are included, while others are presented for comparative purposes or for use as upper bounds, i.e. *termini post quem*.⁴⁰²

Long-lived samples (e.g., wood and charcoal) continue to be the principal material submitted for radiocarbon determination. However, despite their abundance in the archaeological record, their chronological utility is limited to the degree that an assessment can be made of the relative age of the sample in comparison with the parent wood. Old wood samples can enter a context either by re-use or because they originated in an inner ring of a long-lived tree. Thus, the radiocarbon determination precedes, by X number of years, the felling of the tree and the context in which the sample was found. Species identification is often difficult and only rarely does the anatomy of a sample reveal outer rings or bark. Offsetting the radiocarbon date by a stated number of years is an assumption (Manning & Weninger 1992: 638-9; Manning & Swiny 1994: 161-2, fig. 10), as is assuming that charcoal in arid environments derives from fairly recent trees, except when they are identified as twigs or bushes (Avner, Carmi & Segal 1994: 279). Examples of some Levantine species, Red Juniper (*Juniperus phoenicia*) and Lebanese cedar (*Cedrus libani*), are reported to have lived 865 and nearly 1000 years, respectively (Lev-Yadun 1987). The roof timbers of the Al-Aqsa mosque, which was built in 693 CE and refurbished between 750-780 CE, probably derived from an earlier Byzantine building (Lev-Yadun, Lipschitz & Waisel 1983; Lev-Yadun 1992).⁴⁰³ In general, unless there is evidence to the contrary, it is prudent to assume that a long-

⁴⁰¹Most of these assays were from long-lived samples, for which broad differences are possible. Moreover, many of the deviations are insignificant as the calibrated distributions overlap. However, the point is well taken, and clearly many early dates are best used with extreme caution. Suggestions to increase the error value by a factor of 1.2 to 2.5 (Pilcher 1991), and to apply statistical inconsistency tests (Hassan & Robinson 1987), have been criticized as, in some comparisons, contemporaneity may actually be erroneously confirmed (Bowman 1994). The laboratory alone must be the ultimate arbiter of its own error, for it can consistently monitor and assure the quality of an assay (Bowman 1994: 839). Many of the earlier published dates cannot be adequately assessed, and expensive, time-consuming re-measurement of earlier dates is not feasible, except for critical samples, or in the extreme case of the British Museum radiocarbon debacle (Bowman, Ambers & Leese 1990).

⁴⁰²Despite its importance, the MB IIa radiocarbon determinations from Kabri cannot be used as they come from disturbed contexts with material as late as the Iron Age (Peilstöcker & Garfinkle 1992; Bonani 1994). Ironically, the calibrated dates are consistent with other MB IIa ranges, but as the samples are charcoal they could be old wood from a later use.

⁴⁰³The radiocarbon determination of an oak beam was 2860±180 BP, 1550-500 CAL BC, and a cypress beam was 2600±180 BP, 1250-200 CAL BCE.

lived tree was the source of all charred samples. This caveat is increasingly true further back in time, when longer-lived trees had still escaped man's impact on the natural vegetation (Lev-Yadun, p.c.; Gophna, Liphshitz & Lev-Yadun 1986). Thus the typical lone sample and even a consistent series of charred wood can only provide a spurious *terminus post quem* for the context. Instead, better temporal resolution should be sought among short-lived samples, particularly single-year cultigens, i.e., seeds. Ideally, the best context is an *in situ* sample stored in a jar, granary, or silo, where presumably the harvest preceded the deposit by no more than a few years to a decade. Scattered seeds found within rooms should not be discounted, particularly where they are in undisturbed, well-stratified layers, e.g., sandwiched between stone or lime-washed terra pissé floors. The ability to date minute samples is an important result of the development of Accelerator Mass Spectrometry (Hedges 1983; 1991), a promising technique especially for the archaeology of historical periods.

Regardless of the error margin, given the slope and the “wiggly” nature of the calibration curves for the period under discussion (ca. 2200-1700), single determinations can have multiple calendrical equivalents (e.g. 3500 BP, Fig. 9), and the relationship between suites of samples is certainly affected (Pilcher 1991). Given the nature of the curve, and the error margin associated with the determination, the result cannot be seen as a single intercept, but rather as a distribution of calendrical ranges with varying probabilities. A working group to compare methods of calibration found that differences of opinion among scholars exist about whether to divide the calibrated calendrical ranges along lines of probability or to treat them as a span (Aitchison, et al. 1989). In this work, ranges are treated as a span, in which all of the dates are considered of equivalent “possibility”.⁴⁰⁴

4.3.1. IBA radiocarbon determinations

Reliable radiocarbon determinations for the IBA culture are limited in number and geographical scope. All of the samples from sites west of the Jordan river come from the southern arid regions, where difficulty exists in distinguishing material culture of different EBA phases, especially from surface survey (Sebbane, et al. 1993; Avner, Carmi & Segal 1994: 279-82). The samples from Transjordan come from somewhat better settlement contexts.⁴⁰⁵ The calibrated IBA distributions ranges cluster in the last two centuries of the third millennium (Fig. 10). A number of ranges pass the 2000 mark (RT-1421: 2200-1900; RT-899c: 2280-1910; RT-1438: 2340-1980; P-2573: 2400-1970; SI-2875: 2140-1740; BM-2621: 2320-1970; BM-2622: 2280-1880), suggesting at least the possibility that this material culture extended into the second millennium.

⁴⁰⁴A study is in preparation that incorporates a more detailed probabilistic interpretation of these stratified determinations and the historical data, utilizing Bayesian statistics (Buck, et al. 1991; 1992; 1994; Litton & Buck 1995).

⁴⁰⁵Dever (1992: 20, n. 2) reports an unpublished radiocarbon determination on an oil residue from Tell Handaquq with a calibrated range of 2341-2044, but neither the raw determination or the standard deviation are indicated.

4.3.2. MB Ila Radiocarbon Determinations

With the recent addition of samples from Tel Nami and Tel el-Ifshar (Hedges, et al. 1997: 256-57), the number of MB Ila radiocarbon determinations has more than doubled.⁴⁰⁶ Moreover, with the exception of the samples from Gesher, and the two determinations from Tell el-Da`ba, all are from single-year cultigens, which greatly increases the temporal proximity between the radiocarbon *event* being dated, i.e., the harvest, and the deposit of the sample in the archaeological record.⁴⁰⁷ With the exception of the statistical outliers from Tell el Hayyat (AA-1238 and AA-1237), all of the calibrated ranges are fairly tightly clustered in the first three centuries of the second millennium (Fig. 11), in some instances overlapping with IBA ranges (fig. 12).⁴⁰⁸ By themselves, the 2 sigma ranges are too broad to be the arbiter between the different proposed chronologies, although a number of individual determinations (OxA-5358, OxA-5359, OxA-4532, and AA-1239) clearly place the MB Ila period before 1740, and their upper bounds starting point for dating the beginning of this material culture.⁴⁰⁹ With the incorporation of the stratigraphic sequence and the inclusion of the historically synchronized data from Tel el-Ifshar and Tel Nami, these ranges are sufficiently truncated to provide meaningfully short time spans that may be the chronological basis for the various sub-phases. For example, given the interpretation suggested for the Tel el-Ifshar jug, the calendrical ranges from samples deriving from Phase E onwards would begin with 1900; those prior would have to end somewhere around 1850.

Until regular sampling of short-lived cultigens is carried out and radiocarbon determinations are *de rigeur*, a southern Levantine MB Ila radiocarbon chronology is still premature, although the evidence does not favor a low date for the start of the period. The ranges available to date suggest that further strategic sampling of stratified sequences can provide more refined timeframes and be a tool for assessing the degree of temporal overlap between IBA and MB Ila material cultures.

5. On the transition from IBA to MB Ila

The interpretation of the IBA-MB Ila transition has oscillated over the years from one of gradual change to sharp break (Amiran 1960: 215-7; Prag 1974; 1984; Tubb 1983; Dever 1985; Beck 1985: 200-1; Palumbo 1991), depending on which sub-region or material culture aspect is emphasized. While

⁴⁰⁶This projected was initiated by the author, and enjoyed the support and assistance of Dr. P.R.S. Moorey, and various of the Oxford Radiocarbon Accelerator Unit, in particular Dr. Rupert Housely and Dr. Christopher Bronk Ramsey.

⁴⁰⁷In the case of Tel Nami, stratigraphic separation by plaster and stone floors, and the origin of the imported *lathyrus clymenum* in jars increases the reliability of the sequence. Apart from the granary context in Phase E, some of the Tell el-Ifshar samples have imprecise phase attributions, and, although similar floor separation is probably reflected in the sequence, future study is needed to clarify this view.

⁴⁰⁸Note that the Tell el-Dab`a ranges are consistent with this cluster, but as wood samples they are not refined enough for a comparison with the single-year determinations.

⁴⁰⁹Despite its high range, the sample from the Gesher axe handle is excluded, as in contrast to Ward and Dever (1994: 57), old, hard wood may have been preferable for such a use.

evidence from surface surveys in the Coastal Plain and Jezreel Valley can only be considered circumstantial (*contra* e.g., Raban 1982; Ilan 1995a: 301-302), increasing excavated settlement evidence from the Jordan Valley (Greenberg, et al. 1998) suggests a gradual development from IBA to MB IIa life in that region. Unless MBA building activity is evoked as the catch-all solution for the lack of a stratigraphically demonstrable IBA-MB IIa development, then the western lowlands, with its numerous newly founded sites, have seemed to represent a distinct phenomenon.

While some IBA elements do continue into the succeeding material culture, such as shaft tombs, some weapons and tool types, arsenical copper metallurgy, and a few vague ceramic traits, others, such as city-planning, public structures, fortifications, mortuary traditions, the general ceramic repertoire, and even lithic types, are clearly new attributes. To date, none of the attempts at deriving the MB IIa from an IBA antecedent by rural agricultural revival (Tubb 1983: 57; Palumbo 1991: 133-4; Falconer 1994a; Magness-Gardiner 1997: 315), or peer-polity interaction (Bunimovitz 1992: 228; 1996: 18-9; Ilan 1995a: 298, 301), have convincingly documented any evidence for an IBA-MB IIa urban social transformation that also explains the decidedly exogenous attributes.

The rural agricultural revival model fails to explain the wide range of new material cultural traits, or the location of the core areas of the phenomenon. If MB IIa culture was merely the intensification of an existing rural base, then it presumably would have been built on, and thrived initially in, those areas that had previously formed the socio-economic core, i.e., Transjordan and the Highland areas, relying and building on pre-existing symbols and institutions. For example, if the Tell el-Hayyat temple was “an expression of local communal piety rather than the arms of centralized institution” (Magness-Gardiner & Falconer 1994: 156), it should demonstrate some autonomy if not a considerable divergence of form, rather than emulating, in scaled-down fashion appropriate for its community, the temple types of the more sophisticated north. Unless this model is modified to account for a latitudinal “colonial” move from the IBA core to the coastal and inland lowlands, with some explanation of how so many northern material attributes were assimilated, it is not a viable explanation.

Regarding peer-polity interaction as a model for social change (Renfrew 1986), a number of criteria for its implementation are not applicable in IBA society, namely spatially well-defined autonomous social units and documented polity interaction at its inception. Moreover, the notion of peer symmetry among IBA groups who inhabit heterogeneous phytogeographical zones, and practice, alternatively, highland or lowland subsistence strategies, seems contradictory. It must be remembered that this model was developed primarily as a diffusion-less explanation for the “core”-less Aegean (Renfrew & Cherry 1986: viii), and indeed may not be applicable in a region proximate to a well-developed state (Cherry 1986: 150). This model in its original form suggests that among autonomous social units of comparable scale, an organizational change in one will be followed by a similar transformation in others, with the emergence of concomitant institutional features that “will not be attributable to a single locus of innovation”, but rather the result of polity interaction (Renfrew 1986: 7-8). Such a model cannot tolerate all the documented external trappings at the incipient phase of the MB IIa period, nor the notion that a foreign-inspired edifice, i.e., a rampart, was the “outcome of competitive emulation between neighboring

tribal groups” (Bunimovitz 1992: 228). On the other hand, the notion that a combination of exogenous and endogenous factors molded MB IIA culture (Ilan 1995a: 300-2, fig. 4) is welcome—it just need not be called peer-polity interaction.⁴¹⁰

Instead of attempting to resolve the two traditional approaches, the IBA-MB IIA transition should be seen as a process of amalgamation between at least two material cultural traditions and populations, a new lowland culture with a demonstrably urban orientation and a highland culture, which maintained its low-level agricultural and pastoral way of life.⁴¹¹ In the Coastal Plain, and probably the Jezreel Valley, these IBA groups/elements were assimilated into the urban social pattern, which rank-size analysis has demonstrated to have been a “primo-convex distribution” which may reflect the “superimposition of a centralized or colonially derived system” (Falconer & Savage 1995: 41, table 4). In the Highlands, the relative paucity of MB IIA material culture may indicate a longer lifespan for IBA pastoral life, perhaps until it was assimilated by MB IIB lowland material culture (Finkelstein 1991). Such an amalgamation process may have varied by region, perhaps reaching the Lower Jordan Valley at a later MB IIA phase. Although dependent on exogenous factors for much of its inspiration, this model goes far towards explaining the perceived temporal overlap documented at various tombs and sites (*see supra* Chapter Four), and the highland-lowland IBA-MB IIA socio-economic divergence. In this context, the Coastal Plain and Jordan Valley should be seen as two parallel corridors that convey cultural change and population, both enclosing between them the continuation of highland culture (cf. Kenyon 1966). It is quite possible that inter-regional trade was an important catalyst in the highland-lowland interaction, but for explaining developments along the southern Levantine shore another catalyst must be invoked.

6. Maritime activity and the origin of MB IIA urban culture

Had the MB IIA settlement pattern been identical to its EBA urban predecessor, perhaps some form of model combining agricultural intensification with trade (Gerstenblith 1983: 123-6), with some external colonization, might suffice in explaining the re-emergence of urban life. But, the difference in weight of settlement from the Central Hill Country towards the Coastal Plain, and the establishment of a multitude of port sites, whose orientation is clearly not towards maximizing command over an agricultural hinterland, demand a different explanation.

Given the current state of research, two hypotheses may be suggested. With the resumption of maritime trade between Egypt and Byblos, agricultural groups that had moved terrestrially into the Coastal Plain were stimulated by the vibrant long-shore traffic to establish ports-of-call. The alternative is that the ports of the southern Levant were founded specifically by maritime-oriented groups from the northern Levant, which had entered the second millennium with their urban culture intact (Van Loon 1992). With their maritime seafaring tradition, which had continued unabated during the Intermediate Bronze Age,

⁴¹⁰Moreover, there is no evidence that the some terminal phase of IBA culture took advantage of the purported positive endogenous factors.

⁴¹¹Note that skeletal remains are limited to the MB IIB period, but are indicative of a new population (Smith 1995: 69).

these groups sought to participate and secure their position in the burgeoning trade with Egypt. Bietak's suggestion (1996: 60, fig. 50) that Egypt set up this network is not supported by the evidence, although the distribution of anchor types clearly delineates this cabotage route from Egypt to Byblos, and possibly Ugarit. Whatever the origin of this phenomenon, the crystallization of this synaptic pattern with a maritime "gateway" to the west and an agricultural "central-place" to the east enabled these coastal polities, whatever their configuration (i.e., independent port city or port-inland agricultural alliance) to participate actively in the growing maritime network. Maritime centers became entrepôts for import and export, and as their material wealth increased it was conspicuously consumed in lavish public works projects. The material wealth enjoyed by these polities may have been one of the factors behind the rapid pace of urbanization documented in the archaeological record.⁴¹²

While the reality of maritime activity and the potential of its economic impact on the southern Levant are fairly straightforward, the identities of the seafarers and their ports of origin are not. Although, an intermittent maritime tradition appears to have existed along the southern Levant coast from earliest times up to the MB IIa period (*see supra* Chapter Three), the absence of sufficient long woods for ship construction (Liphschitz 1992b: 42), suggests that even if these ports were directly involved in long distance seafaring, they were always dependent on timber from the northern Levant or Cyprus. The corpus of maritime artifacts is equivocal on the subject, as applying an "anchors equals sailors" identification beyond the generic Levantine appellation, seems unwarranted and probably incorrect (cf. Kingsley 1996).

7. Tell el-Daba` and beyond

In this maritime model for the rise of urbanism along the southern Levant, the establishment of Tell el-Dab`a should be seen as part of the process of coastal settlement and the founding of ports. The site location, its harbor, the evidence for trade, the reference to maritime trade in the Kamose stela, the maritime motifs on the Tell el-Dab`a cylinder seal (Fig. 5), which might suggest the worship of Baal *êafon* and Asherah (Bietak 1996: 26-9; 1997: 104; Brody 1996: 21-30, 42-6), and an *ex voto* copper trident in a temple deposit (Bietak 1997: 105), all point to this being a maritime-oriented site that was the central hub of a vast east Mediterranean trade network. With such a maritime characterization, it might seem surprising that no votive anchors have been found in over thirty years of excavation. However, as Brody (1996: 70-81) has noted, anchors are usually found clustered in specific temples, usually with adjacent temples lacking in similar or other maritime artifacts. Thus, it is possible that future excavation will discover a temple with *ex voto* anchors and other maritime paraphernalia, if they were not looted in antiquity.

In this model, a significant component of the gradual Canaanite settlement of Tell el-Dab`a should be seen in light of the re-establishment of the MK "Byblos run", which involved other polities in the Levantine interstices, and more distant regions, such as Cyprus, Anatolia, and the Aegean (Bietak 1996: 14-20, 55-63). It is possible that several mutually exclusive maritime networks existed at the same time,

⁴¹²This phenomenon is reflected in the fortification of urban sites, almost immediately after an initial founder phase (e.g., Dan, Aphek, etc.).

which might be reflected in the restrictive distribution of MC wares. The increasingly foreign, heterogeneous demographic make-up of the site, the origin of which may not necessarily be equated with the eventual supply source(s) of the earliest LPW vessels or other pottery (*contra* Bietak 1996: 55-60; 1997: 98-9), might reflect different economic networks interested in commercial access to the Nile Valley. However, given the redating suggested here, the southern Levant is no longer a chronologically objectionable origin (Bietak 1996: 59-60). As Canaanite Avaris (Stratum H onwards) rode the wave of MB IIa/3-4 maritime trade, a vibrant east Mediterranean “Trade Diaspora” of various Canaanites and, perhaps, Cypriot groups was created (Bietak 1997: 98-9), in some sense forming the first “pre-Phoenician” Canaanite maritime colony. This urban population, particularly the elite, went through a process of Egyptianization, which was partly cemented by intermarriage (Bietak 1996: 36), but was balanced by the maintenance of social and cultural traditions, and by close relations with their Canaanite homeland. Their position at this critical trade node and principal Nile “gateway” no doubt enabled the accumulation of considerable economic wealth. While the events surrounding the Canaanite usurping of political control of the Delta from the MK rulers is cloudy, it must be assumed that one component was their ability to translate their material wealth into political power. In this respect, the state structure in the Delta, and in a considerably scaled-down version along the Levantine coast, is akin to the riverine coastal state models of southeast Asia, in which control of the entire river system and, indirectly, the highland-lowland interaction, is achieved by “direct rule on only coastal plains and rivermouths” (Hall 1985: 1-3). In addition, if not written for southeast Asia, the following description could easily describe the Egyptian Delta:

for a river plain state desiring to participate in the international commercial networks, the aid of foreign merchants and seafarers was a necessary source of extended economic contacts,

but

the use of seafarers of as maritime allies was a double-edged sword . . . these allies could be a source of support or a serious threat to the political system's stability . . . there was always the potential for a port community to initiate a challenge to the state's authority . . . by establishing its autonomy from royal control or by undermining royal authority by supporting one royal faction against another (Hall 1985: 19).

While this analogy does not prove the economic basis for the eventual Canaanite domination, it certainly suggests avenues for further inquiry.

The following MB IIB period is characterized by an intensification of east Mediterranean maritime interaction, with Tell el-Dab`a serving, perhaps, as *axis mundi*. Following the destruction of the Canaanite kingdom, the Egyptians established an imperial apparatus in the southern Levant to insure that this region would no longer threaten the Nile Valley with invasion. However, the role of the Delta as a maritime staging point continued in the NK with the dockyards at *prw-nfr*, which may have been located at the harbor of Avaris (Bietak 1996: 82), in Classical times with a Greek colony at Naukratis, and finally by Alexandria, which even in twentieth century CE maintains a cosmopolitan, east Mediterranean character.

8. Conclusion

“Civilization is a matter of roads, ports, and quays”

Charles Seignobos (cited by Braudel 1987: 5)

In some respects, Seignobos' remark is an apt epigram for the conclusion of a work that began with an oft-handed observation regarding the relationship between terrestrial road networks and ports. In the intervening pages, the discussion has lead from the *longue durée* of the southern Levant's role in Egyptian-East Mediterranean relations, to the terrestrial and maritime means that enabled these relations to take place, to the impact of maritime trade on the MB IIa zenith of southern Levantine urban culture. This discourse has not been without some difficulties, primarily the synchronic and diachronic unevenness of the available textual and archaeological data. Nevertheless, it has demonstrated the utility of a maritime approach to the history of the Levant, and the nascent internationalism of the early second millennium. While there is no ignoring the contribution of terrestrial approaches to the southern Levant, they should not be applied with a total negation or ignorance of the maritime component. The maritime history of this 250 km long coastal interaction zone deserves more than to be relegated to a mere footnote, as so often has been the case.

Inasmuch as this work has sought to challenge long-accepted norms regarding the history of the southern Levant, it has also sought to stimulate others to transcend temporal chauvinism and be cognizant of the reality of inter-regional and international terrestrial and maritime trade. It is hoped that more substantial basic materials research will be applied to some of the questions posed herein, and only partially answered.⁴¹³ Only then can a full appreciation of the impact of trade and seafaring as a cross-cultural conveyor be achieved. In the final years of the twentieth century CE, it is incumbent upon us make an effort to maintain cross-disciplinary dialogue on cross-cultural issues, if we are to fully understand the maritime dynamics that emerged in earnest at the end of the twentieth century BCE. If this work should stimulate some to bring relevant data to publication, and others to explore the theoretical, socio-economic, and linguistic facets of the emergence of the MBA cultural *koine*, then a first step will have been made towards enabling the chronicles of these southern Levantine shores to take their rightful place amongst other Mediterranean maritime histories.

⁴¹³Among these should be analysis of ceramics, stone, metals, and more targeted and regular radiocarbon sampling.

MARITIME TRADE IN THE SOUTHERN LEVANT
FROM EARLIEST TIMES THROUGH THE MIDDLE
BRONZE IIA PERIOD

VOL. II: BIBLIOGRAPHY, TABLES AND FIGURES

A Thesis submitted to the University of Oxford
in Fulfillment of the Requirements
for the Degree of Doctor of Philosophy (D. Phil.)

Trinity Term 1998

EZRA S. MARCUS

Wolfson College

Table of Contents

Volume II.

Table of Contents	i
List of Tables	ii
List of Figures	iii
Bibliography.....	225
Tables 1-20	
Figures 1 - 13	

Table 1. Relative Chronological Synchronism between Egypt and the Southern Levant (adapted from Gophna 1995: table1 and Stager 1992)

<u>Egyptian period</u>	<u>Levantine Period</u>	<u>Characterization</u>
Second Intermediate Period	MB I Ib	Canaanite Deltaic “Hyksos” Kingdom
Middle Kingdom (Twelfth to Thirteenth Dynasty)	MB IIa/3-4	Thriving east Mediterranean maritime trade, Canaanite settlement in the Delta
Middle Kingdom (Twelfth Dynasty)	MB IIa/1-2	Resumption of Maritime trade with Byblos and south Levantine urban culture
First Intermediate Period	Intermediate Bronze Age	Minimal Land-based trade
Old Kingdom (Fourth to Sixth Dynasties)	EB III	Byblos Run
First to Third Dynasties	EB II	Beginning of trade shift northwards
Naqada IIIb (Dynasty “O”)	EB Ib	Egyptian colony abandoned
Naqada III a	EB Ib	Colony zenith (Abydos Tomb Uj)
Naqada IIc,d	EB Ib	Colony
Naqada IIb	EB Ia	Egyptian colony / Uruk maritime expansion
Naqada I-IIa	Chalcolithic	Negev Culture - Expeditionary Trade
Neolithic (Amratian -Badarian)	Pottery Neolithic	“First contact”

Table 2. Twelfth Dynasty Rulers - “High” and “Low” Chronologies (after Kitchen 1987)

Ruler	High	Low
Amenemhet I	1979 -1950	1937-1908
Sesostris I	1959-1914	1917-1872
Amenemhet II	1917-1882	1875-1840
Sesostris II	1884-1878	1842-1836
Sesostris III	1878-1859	1842-1836
Amenemhet III	1859-1814	1817-1772
Amenemhet IV	1814-1805	1772-1763
Sobeknofru	1805-1801	1763-1759

Table 3 Tell el-Dab`a

Pharaohs	AI	SI	AII-SII	SII-SIII	AIII			AIV-So	13th Dynasty							
Archaeological Period (after Bietak)					IBA	MB IIa/1-2	MB IIa/1-2	MB IIa	MB IIa	MB IIA-B						
Revised synchronism	IBA- MBA?		MB IIa?	MB Iia/1-2	MB IIa	MB IIa/3?	MB IIa/3-?	MB IIa/3-4?	MB IIa/4?	MB IIa/4						
Ez.Rushdi phases	undesignated		e/1-3 - d	c/1-2	b/1-2			a								
Ezbet Rushdi	Occupied		planned settlement	two temple phases	settlement			pits cellars								
F/I phases					e/2-3	e/1	h	d/2b	d/2a	d/1	h	c	e	b/3		
F/I					Egy. planned settlement; mixed community		h i a t u s	Asiatic type houses, burials; equid burials	Palace; garden cemetery		i a t u s	dense, egalitarian settlement; intramural burials	p i d e m i	continuity; villa house; intramural burials; servant's quarters		
A/II phases=General stratigraphic sequence	N	M	L	K	I			H	G/4	G/1-3	c	F				
A/II								open courtyards; animal pens	rectangular huts; herdsmen	same as Area F/I	b u r i	Temple; cemeteries; warrior burial				
% of Levantine wares					cooking pots		18%-20%		<20%	20%-40%	a	40%				
Levantine Painted Wares											l					
Anatolian “cut-away” neck																
Tell el-Yahudiya ware								?							p	
Metals													i			
Middle Cypriot wares														t		
Aegean imports										?			s			

Table 4. Comparison of means of ancient transport

Means	Carrying Capacity (kg.)	Distance (total km/ no. of hrs)	Reference
Human	20-30	30 /10	Dorsey 1988:895; Broodbank 1995:54
Donkey/Ass	90	25/6	Moorey 1994:12
Donkey/Ass	50	25/6	British Army Regulations; Moorey 1994:12
Mule	77	32-40/6	British Army Regulations ;Moorey 1994:12
Horse	1 man+	40-50/10	Dorsey 1988:896
Paddled Craft canoe	1-4 persons + 50-150 Kg	40 km/8	(see Chapter 3)
longboat	25 man (minimun cargo)		(see Chapter 3)
Sail Boat	(dependent on size of vessel)	Straight sail (tacking is less)	(see Chapter 3)
4 knots (7.4 km/hr)		74/10	(see Chapter 3)
6 knots (11.1 km/hr)		111/10	(see Chapter 3)

Table 5. Percentage of Observed Offshore Winds along the Levantine Coast, 1941-1970 (compiled from the *Mediterranean Pilot*)

Place -->	Port Said								Tel Aviv								Beirut							
Hour -->	0800				1400				0800				1400				0800				1400			
MONTH	SW	S	SE	Total	SW	S	SE	Total	SE	E	NE	Total	SE	E	NE	Total	SE	E	NE	Total	SE	E	NE	Total
January	26	18	7	51	18	6	2	26	29	8	1	38	6	7	4	17	20	3	3	26	3	2	7	12
February	26	14	7	47	14	6	1	21	28	4	6	38	3	3	1	7	16	8	5	29	4	2	13	19
March	14	11	8	33	7	3	2	12	22	6	6	34	5	4	2	11	14	5	8	27	5	2	13	20
April	10	8	8	26	3	1	2	6	14	5	4	23	2	1	1	4	4	8	10	22	4	4	12	20
May	9	4	6	19	2	1	2	5	12	3	5	20	1	1	1	3	1	4	8	13	1	4	14	19
June	9	5	4	18	2	0	1	3	4	3	3	10	0	1	0	1	1	1	4	6	0	0	6	6
July	11	4	3	18	1	0	0	1	8	2	0	10	0	0	0	0	1	1	2	4	0	0	2	2
August	12	3	2	17	1	0	1	2	9	2	1	12	0	0	0	0	2	1	2	5	0	0	1	1
September	10	3	2	15	2	0	0	2	8	3	8	19	1	1	0	2	8	3	10	21	2	1	7	10
October	8	6	3	17	3	1	2	6	11	11	8	30	1	2	1	4	12	3	9	24	2	1	13	16
November	17	11	6	34	8	3	2	13	27	14	4	45	3	6	1	10	15	6	9	30	2	1	16	19
December	26	15	6	47	17	5	2	24	34	15	2	51	8	8	3	19	22	4	6	32	7	2	10	19
Means	15	8	5	28	7	2	1	10	17	6	4	27	2	3	1	6	10	4	6	20	2	2	9	13

Table 6. MB IIa Sites by sub-region

Key:

Site	Size (in hectares)
T.= tell or tel	VS = very small
Kh. = Khirbet	T = tomb(s)
K. = Kefar	< = “less than”
Kb. = Kibbutz	↓ = decreasing to”
S. = “south of”	↑ = “increasing to”
E. = “east of”	? = uncertain (e.g. size)
Rd = road	R = site fortified by a rampart
? = unknown	tmpl = temple

6.1 Northern Coastal Plain

Site	Size	Reference
T.Akhziv	7	Prausnitz 1975: 203
T.Kabri	13↑32	Kempinski 1989c: 1-2
T.Nahariya	3	Yogev 1993
tmpl/workshop		Dothan 1993c
T.Akko	20	Dothan 1993a: 17
T.Bira	20	Prausnitz 1993b: 262
Kh.Kurdane (Afek)	2	Maisler [Mazar] 1939
T.Zvat		S.Yankelevich, p.c.

6.2 Carmel Coast

Site	Size	Reference
Tirat Carmel	T	Marcus 1995c
T.Megadim	1	Broshi & Gophna 1986: 84; Wolff 1998
Atlit	?; T	Johns 1993; Raban & Linder 1993
T.Nami	0.4	Artzy 1993; Marcus 1991
Nami East	0.8	
Sites 101-104	? <2	
T.Dor	10	Broshi & Gophna 1986: 83
S. of Dor	0.4	Gophna & Beck 1981: 46-48
T.Mevorakh	0.1	Stern 1984

6.3 Sharon Plain

<u>Site</u>	<u>Size</u>	<u>Reference</u>
T.Burgha	25R	Kochavi, Beck & Gophna 1979: 142-151
T.Esor	3?, T	Dothan 1993d; Ne'eman 1990 : 23-25
Barqai	T	Gophna & Sussman 1969
T.Jatt	?	Ne'eman 1990 : 63-64
T.Zeror	5	Kochavi, Beck & Gophna 1979: 151-161
Kh.Ibreiktas	T	Edelstein 1971
T.Ifshar	4.4	Paley & Porath 1993: 609
Tulkarm	T	Broshi & Gophna 1986: 85
Ein Zurekiyeh	0.4	Gophna & Ayalon 1982
T.Poleg	1.2	Gophna 1993c
E.of Shefayim	0.2	Gophna & Portugali 1988: 26
K.Shemaryahutmpl	0.1	Kaplan 1971; Gophna & Portugali 1988: 26
Jaljuliya	0.2	Gophna & Portugali 1988: 26
Biyar Adas	0.2?	Gophna & Portugali 1988: 26
T.Dhahab	0.2	Gophna & Beck 1981: 71
T.Aphek	10-12?	Gophna & Portugali 1988: 26
Fejja	0.2	Gophna & Portugali 1988: 26; Kaplan 1993
Nahshonim		Gophna & Beck 1981: 50 ;
(MBIIa/4-IIb)	0.2	Gophna & Portugali 1988: 26
T.Hashomer		
(MB IIa/2-3?)	0.2	Gophna & Beck 1981: 50-52
T.Qana	0.7	Gophna & Portugali 1988: 26
S. of T.Qana	0.2	Gophna & Beck 1981: 74
T.Qasileh	1.6?	Mazar 1980: 9
Country ClubJunction		
	T	Gophna & Beck 1981: 71
S. of Country Club junction		
	0.1	Gophna & Portugali 1988: 26
Sede Dov	0.2	Gophna & Portugali 1988: 26; Kaplan 1993
Tel Aviv:		
Hadar Yosef		
(MBII/2)	T	Gophna & Beck 1981: 48-50
Exhibition grounds		
	0.2, T	Gophna & Portugali 1988: 26;
		Gophna & Beck 1981: 73
T.Gerisa	5R	Gophna & Beck 1981: 52-53

6.4 Southern Coastal Plain and Shephelah

<u>Site</u>	<u>Size</u>	<u>Reference</u>
Jaffa	?; T	Kaplan & Ritter-Kaplan 1993a
Bat Yam	0.1	Gophna & Beck 1981: 53-63
S. of Bat Yam	T	Gophna & Beck 1988: 82
E.Ramle Prison?		Gophna & Beck 1981: 52-53
Rishon Letzion (MB IIa/2)		
dunes	0.2	Gophna & Beck 1981: 63
indust. area	0.1	Gophna & Beck 1981: 63
dune cemetery	4	Levy 1993
E. Yavne-Yam	0.2	Gophna & Beck 1981: 63-65
Bank of Nahal Sorek		Gophna & Beck 1988: 79 ;
(MB IIa/4)	0.7	Gophna & Portugali 1988: 26
Dhahrat el-Humraiya	T	Ory 1948
El-Jisr	T	Mayer 1926; Ory 1946
Ayanot	0.2	Gophna & Portugali 1988: 26
Yavne-Yam	25?R	Kaplan 1993b
S. of Yavne	O.1?	Gophna & Beck 1981: 74
Gezer	13.2	Dever 1993a
E.Mazkeret Batya	0.1	Gophna & Beck 1981: 74
Sha`alevim (MB IIa/3)	T	Singer-Avitz & Levy 1993
Gedera	0.2	Gophna & Portugali 1988: 26
T.Miqne	16-20?R	T.Dothan & Gitin 1993
Kb.Revadim (MBIIa/3)	0.2	Gophna & Beck 1981: 65-71
Quarry	0.2; T	Gophna & Portugali 1988: 26
T.Poran	10-12; R	Gophna 1992
Gat-Gal`on Rd	1	Gophna & Beck 1981: 71
Rujum ed-Darbi	0.1	Broshi & Gophna 1986:85
T.Ashkelon	60?R	Stager 1993
S. of Ashkelon	0.2	Gophna & Portugali 1988: 26
Kh.Judei`	1.5	Dagan 1992 : 40 [*]
`Cemetery 2000'	T	Dagan 1992 : 41 [*] ;
N.W. Settlement		
(Area 1500)	2.5	Dagan 1992 : 68, 59 [*] ;
Kh.K. Lakhish	4.5	Dagan 1992 : 60 [*] ;
Lachish	?, T.	Gerstenblith 1983: 32-33, nn. 24-25
T.Beit Mirsim	3; T.	Albright 1993; Greenberg 1993
T.`Ajjul	11-13?	Tufnell 1993; Kempinski 1993a

6.5 Jezreel Valley

<u>Site</u>	<u>Size</u>	<u>Reference</u>
T.Me`amer	?R?; T	Drucks 1982
T.Qashish	1.0 R	Ben-Tor 1993b
T.Yoqneam	10 R	Ben-Tor 1993a
T.Qiri	1-1.5?	Ben-Tor & Portugali 1987
Hazorea	0.8; T	Broshi & Gophna 1986: 78 ; Meyerhof 1989
T.Abu Zureiq	?0.8	Broshi & Gophna 1986: 78
Megiddo	10-12R,T	Kempinski 1989a: 150
Afula	2.4-3.0	Dothan 1955; 1993: 37; Sukenik 1948
Gid`ona	0.7	Zori 1977: 24
T.Shimron	15-20	Raban 1982 : 69-76; Portugali 1982
Gineigar	VS	[Gal] 1978
Sarid	0.15	[Raban] 1981b
T.Shush	1.5-2.0R	[Zigelman] 1977
Beer Tiv`on	0.6-0.7	Raban 1982 : 24-29
Kh.Zeror	VS?	Raban 1982 : 29
T.Risim	0.5-0.6?	Raban 1982 : 37
T.Re`ala	0.3	Raban 1982 : 42-43
K.Yehoshua	1?	Raban 1982 : 43-45 MB II kiln
T.Saifan	0.4	Raban 1982 : 58-61
Nahalal Junct.	0.3-0.5	Raban 1982: 58-61

6.6 Galilee Highlands

<u>Site</u>	<u>Size</u>	<u>Reference</u>
T.Avdon (?)	3	Prausnitz 1973; Frankel & Getzov 1997:100 [*] -101 [*]
Mezad `En Tamir(?)fort		Getzov 1992
2.31 (MBII?)	VS	Frankel & Getzov 1997:76 [*]
Kh. `Ein Hur?	2	Frankel & Getzov 1997:77 [*]
Kh.Edmit?	2	Frankel & Getzov 1997:79 [*]
Kh.Umm Tuma(IIa-b) 2		Frankel & Getzov 1997:102-106, 82 [*]
“Namer” cave		Frankel & Getzov 1997:84 [*]
2.143?	VS	Frankel & Getzov 1997:102 [*]
Meron	T	Miron 1992: 54, 59
T.Rosh	2.5?	Amiran 1953
Safed	T	[Bahat] 1970; Damati & Stepanski 1996
Sasa	?, T	Bahat 1986: 85, n. 6; Davis 1976; Yogev 1977: 12; 1981: 9
T.Hannathon	5	Gal 1992: 23
Tur`an	T	[Eisenberg] 1975
T.Qishyon	6-7?	Cohen-Arnon & Amiran 1981
Ein Ha-Yedid	1	Gal 1980: 51-52; Zori 1977: 98-100
Ein Be`era	2	Gal 1980: 18-24 ; 1991 : 12 [*]

6.7 Carmel Highland

<u>Site</u>	<u>Size</u>	<u>Reference</u>
Site 106	T	Olami 1981: 67
Site 125	0.3	Olami 1981: 77-78

6.8 Central Highlands

<u>Site</u>	<u>Size</u>	<u>Reference</u>
T.Fara (N)	0.5	de Vaux 1993; de Miroschedji 1993b
Jenin	S	Broshi & Gophna 1986: 79
Shechem	4-5	Campbell 1993; Bull <i>et al.</i> 1965
	T	[al-Fani & Clamer] 1976
Sinjil	T	Dever 1971; 1975a
`Ain es-Samiyeh	T	Dever 1975; [Bakiya] 1970
Bethel	2	Kelso 1968 : 21
Gibeon	T	Pritchard 1963
Jerusalem	4; T	Shiloh 1984: 12 ;Prag 1991
Elazar	T	Amit 1990a
Beth Shemesh	3	
Giv`at Yesha`ayahu	T	[Negbi] 1965
Efrat	T	Gonen 1981; Amit 1990b
Kh.Keile	5	Kochavi 1972: 48-49
Kh.Kufin	T	Smith 1962
Kh.Kirmil	T	Kochavi 1972: 76 ;Dever 1975b

6.9 Upper Jordan Valley and Golan sites (Hula Valley and immediate environs)

<u>Site</u>	<u>Size</u>	<u>Reference</u>
Abel Beth-Ma`akah	10-14R	Dever 1986; Greenberg 1996b: table 3
`Ein Abel	0.5	Greenberg 1996b: table 3
Dan	20↓14R	Biran 1993
Kefar Szold	?; T	Epstein 1974
Kh.Khisas	3	Broshi & Gophna 1986: 76; Greenberg 1996b: table 3
S.Kh. Khisas	0.5	Greenberg 1996b: table 3
HaGoshrim	T	Covello-Paran 1996
Wawiyat?	1.5	Greenberg 1996b: table 3
Tehunat al-Tabha	?<1	Greenberg 1996b: table 3
T.Kalil	?	Greenberg 1996b: table 3
T.Anafa	3	Greenberg 1996b: table 3
T.Na`ama	3R	Greenberg 1996b: table 3; 1998
Yardinon Dam	<1	Greenberg 1996b: table 3
Wadi Katzav	1-2	Greenberg 1996b: table 3
Nahal Hamdal	0.5-1	Greenberg 1996b: table 3
Darbashiya	1-1.5	Greenberg 1996b: table 3
T.Malaha	3	Greenberg 1996b: table 3
<i>Dolmens:</i>		
#8		Epstein 1985b: 30
#13		Epstein 1985bb: 32-33
#14		Epstein 1985bb: 33-34
#23 (Qubbet Qar`a)		Epstein 1985bb: 35-36
#25 (El-Arba`in)		Epstein 1985bb: 37
T.Hazor	10↑20R	Dunayevsky & Kempinski 1990
Ginnosar	T	Epstein 1974

6.10 Lower Jordan Valley sites (including Beth Shean Valley and TransJordan)

Site	Size	Reference
T.al-Fukhar	?;T	Strange 1997: 402
Beit Yerah	?;T	Maeir 1997a: #3
T.Ubeidiyeh?	5	Maeir 1997a: #7
Kh. Halukim	<0.3;T	Maeir 1997a: #17
Veterinary Station	0.5	Maeir 1997a: #28
T.Shamat?	1.6	Maeir 1997a: #34
Munhata	T	Ferembach et al. 1975
Gesher	T	Garfinkel & Bonfil 1990; Hess 1990
Ein Hayadid	<0.3	Maeir 1997a: #46
T.Kitan	1	Eisenberg 1993: 880
Gidona	0.72	Maeir 1997a: #60
T.Yosef (old)	5.0;T	Maeir 1997a: #67
T.P. 696	>0.1	Maeir 1997a: #69
`Arba`in	1.5	Ibrahim et al. 1976:49; Maeir 1997a: #73
T.Huga	0.06	Maeir 1997a: #75
T.Zhara	0.25	Maeir 1997a: #77
T.Istaba	T	Maeir 1997a: #78
T.Amal	2.5	Maeir 1997a: #81
Beth Shean	T	Oren 1971
Kh.e-Sheikh Moh.	<1	Maeir 1997a: #85
T.Shoqeq	0.3	Maeir 1997a: #87
T.Nisa	1.5	Maeir 1997a: #93
Givat Hahazavim	0.4	Maeir 1997a: #97
T.Artal	1.4	Maeir 1997a: #103
Rehov	4.0R;T	Zori 1962: 176-182 ; Yogev 1985
Pella	7	Hennessy et al. 1989:416-417; Bourke 1997: 104-107, 113-114
T.Zaqqum	<1	Maeir 1997a: #118
T.Roeh	0.06	Maeir 1997a: #121
T.el-Hayyat	0.5	Falconer & Magness-Gardiner 1993
Tirat Zvi	0.1	Maeir 1997a: #126
T.Menora	1.5	Maeir 1997a: #127
T.Malquah	1	Maeir 1997a: #131
Abu el-Haraz	3.5	Mabry & Palumbo 1989: 94; Maeir 1997a: #139
T.Malqat	0.15	Maeir 1997a: #140
Subeireh	<1	Mabry & Palumbo 1989: 94

Fo`arah	T	Dornemann 1983: 15
Mughair	T	Dornemann 1983: 15
Jawa	?	Helms 1981: 232-233; 1991: 54
`Amman	?	Dornemann 1983: 15, figs. 47-48
Sahab	?, T	Ibrahim 1972
Um Hammad	?	Helms 1989: 583-588
Jericho	T	Kenyon 1965:203-228
T.el-Khaizah	?	Jobling 1989: 8

Table 7. Tell Kabri

Absolute Chronology				1800 ↓	
Archaeological Period	EB III	IBA	MB IIa/1-2	MB IIa/3-4	MB IIb
Stratum	6	gap	5	4	3
B	Layer scrape off tell, sherds found in rampart	Some dubious shards	T.990 T.1045 T.1050 Robbed walls	T.984 [1 2 3]	
C				Ramparts-----> buildings installation floors 5-----4-----3-----2---1 T.498 [1 2 3 4] T.902 T.503 - T.502	
D				Pre-palace layers	Palace phases 3a-d
F				Public precinct	Part of Palace
Levantine Painted Ware					
"Anatolian" cut-away neck					
Tell el-Yahudiya Ware					
Middle Cypriot Ware					
Duckbill axe					
Dagger					
Toggle pin					
Silver					
Scarab					
Amethyst					
Serpentine					
Carnelian					
Faience					
Cylinder seal					

Table 8. Nahariya

Archaeological Period	IBA	MB IIa			MB IIb
Settlement		IIIC	IIIB	IIIA	II Fortification, Gate
Levantine Painted Ware					?-]
Duckbill axe		[-----?-----]			
Building (Ben-Dor's phasing)	Ceramics finds	Pre 7	7-5		4-1
Bamah complex (Dothan's phasing)		A 5	B 4-3		C 2-1
Levantine Painted Ware					
"Anatolian" cut-away neck		?	?		?
Tell el-Yahudiya Ware					
Middle Cypriot Ware		?	?		?
Silver					
Bronze					
Gold		?	?		?
Chalcedony		?	?		
Carnelian					
Crystal					
Agate					

Table 9. Akko Ramparts

Archaeological Period	MBIIa/?	MB Iia/2-3?	MB Iia/3?	MB Iia/4?	MB I Ib	MB I Ic
Area ↓ \Phase->	1	2	3	4	5	6
B	Clay rampart, wall? (infant burial)	Kurkar, loam, clay and sand, wall + bastions	Loam + kurkar slabs against wall	Sand rampart, citadel	Sand	Sand
F	Clay rampart	Gate (3 phases), rampart	Gate phase 2, rampart	Post gate, rampart		
P				Rampart-----> ?Potterna----->		
Harbor	Anchorage to the lee of an island		Tombolo forming shallow peninsula and two bays		Dredging activities?	
Middle Cypriot wares	[-----200(?) examples -----]					
“Anatolian” cut-away neck				[-----1-----]		
Tell el-Yahudiya ware	[?-----1 reported from Area F-----?]					
Egyptianizing object	[?-----?]					

Table 10. Tel el-Ifshar

Absolute chronology						1900-1850?		1900-1850?						
Archaeological Periods	EB Ib	IBA	MB I Ia/1	MB I Ia/1		MB I Ia/2		MB I Ia/2-3	MB I Ia/3		MB I Ia/3		MB I Ia/4?	MB I Ib?
Area A MBA phases----->			16		15				14		13		12	
A			Remains of walls and floors						Large building, wide brick wall (city wall?)		Public Building		Sherds only	
	Area B MBA phases----->		A	B		C		D	E		F-G		H	
C	Storage installations	Sherds	Walls, floors and pits	Large building with large courtyard	de s t	Building rebuilt, royal or cultic room	de s t	Pits, hearths dug into debris	Private houses, bins and granary	de s t	Private dwellings, ovens, intramural burials	de s t	Poorly defined	Sherds only
Levantine Painted Ware								?	?					
Tell el-Yahudiya Ware										?				
Egyptian pottery														
Egyptianizing element														
Cedrus libani														
Metal														

Table 11. Tel Aphek

Archaeological Period	EB II	EB III	IBA	MB IIa/1		MB IIa/2		MB IIa/3	MB IIa/4 - MB IIa-b		MB IIb
Site Phase			shards	A		B		C	D		E
Area A strata	19-18			17		16	15	14 c-a	13	12	11
A	dwelling	sherds		Structures & wooden installations, T.494		private buildings, installations		Palace II	Ruins of Palace II	dwelling, burial jars, T.272	Structures & tombs
Area B strata	7			6		5		4			3
B	frag. floors, use of EB I wall ?			Poorly built dwellings		City Wall, structures		City Wall repair	----->		----?--?---> Palace III
Area X strata				20	19	18	17			16	
X				Poorly built dwellings	Fill for Palace I	Palace I (patrician building?)		abandoned	Palace III begun?		Palace IIIa
Area G strata	11-9							8			
G	dwelling	sherds							Early pottery kiln		Late kilns
O1	use of Ory's early (EB I) wall?					City Wall					
O2						Tombs 2,4,5		Tombs			
Levantine Painted Ware											
Tell el-Yahudiya Ware											?
"Anatolian" cut-away neck								?			
Egyptian or Egyptianizing Object											
Scarab											
Socketed spearhead								?			
Dagger								?			
Duckbill axe				?							

Table 12. Tel Dan

Archaeological Period	EB II	EB III	IBA	MB IIA				MB IIA-b		
Stratum	XV	XIV	XIII	XII				XI		
Area A MBA phases----->				1	2	3		4		
A	domestic dwellings			T.23 w.6, l.11 tabun	Pit L.44	L.42,43 W.28, W.29		Rampart----->		
Area B MBA phases----->				1	2	3	4	5	6	7
B	7 phases domestic			domestic	-----> T.4244	City Wall?- ----->	-----> T.4242 T4356	Rampart-----> domestic----->		
Area M MBA phases----->						e			d	
M	5 phases domestic	?							T.8096a T.8185?	
K	Gate or monumental structure 2 phases							Mudbrick Gate		
Area Y MBA phases----->				1	2	3	4	5		
Y	3 phases of architecture; sloping stone fortification?- ----->			T.902b-d cache domestic ----->	T.1025 T.3050 ----->	T.3126 ----->	----->	T.1062 -----> Rampart->	-----> ----->	-> ->
T	Massive fills surfaces fortification- ----->			----offset-inset wall?-----glacis?----->				Rampart----->		
Levantine Painted Ware										
Monochrome Painted Cream Ware							1 sherd			
Middle Cypriot Ware										
Tell el-Yahudiya Ware				?						
Scarab										
Carnelian or garnet										
Amethyst										
Crystal										
Frit beads										
Glass bead										
Duckbill axe										
Silver										
Toggle pin										
Dagger										
Spear or arrowhead										
Miscellaneous bronze										

Table 13. **Tell el-Hayyat**

Archaeological Period	IBA	MB IIa/1-2	MB IIa/2-3	MB IIb?
Phase	6	5	4	3
	scant remains	shrine with <i>massebot</i>	Temple, <i>massebot</i> , village, kiln	Tower (?) temple, village
Levantine Painted Ware				
Metals				

Table 14. Traded Objects in the Coastal Plain, Jezreel Valley, and the Galilee Highlands

[illegible]

Table 15. Traded objects in the Carmel and Central Highlands, and the Upper and Lower Jordan Valleys

	L P W	T E Y	A N A T O L I A N	C Y P R I O T	Cu/ B R O N Z E	Ag	Pb	Au	E G Y P T I A N	A M E T H Y S T	C A R N E L I A N	A G A T E	C Y L - S E A L	C E D A R	Misc. items
`En -Hashofet															
Farah (N)															
Shechem					?										
Samiyeh/Sinjil															
Jerusalem									?						
Beth Shemesh															
Gibeon															
Kh. Kufin															Ostrich egg
Efrat					?				?						Ostrich egg, bitumen, ivory, alabaster
Dan									?						Glass bead, frit, crystal
Hagosherim															Ostrich egg?
Kefar Szold															
Na`ama															
Hazor									?						Crystal
Ginossar															
Golan dolmens															
Beit Yerah															
Munhata															
Tall el-Fukar															
Beth Shean															
Gesher															
Rehov tombs															
Hayyat															
Jericho															Alabaster, turquoise, other stones

Table 16. Occurrence of MB IIa Traded Objects by sub-phase

[illegible]

Table 17. Relative synchronization of the MB IIa sites of the Northern, Carmel, and Sharon Coastal Plains, and the Jezreel Valley

	Akhziv	Kabri	Nahariya		Akko	Bira	Nami region	Dor	Mevorakh
			Temple	Tell					
MB IIa-b?						?			
MB IIa/4			?	?					
MB IIa/3			?	?					
MB IIa/2			?	?					
MB IIa/1			?				?		
IBA		sherds	vessels			vessels			

	Burga	Barqai	Zeror	Ibreik.	Ifshar	Zurek.	Poleg	Gerisa	Aphek
MB IIa/4					H				D
MB IIa/3				?	E-G				C
MB IIa/2				?	C-D				B
MB IIa/1					A-B				A
IBA	sherds				sherds		sherds	sherds	

	Bat Yam	E. Yavne	Sorek Bank	Dh. Humraiya	el-Jisr	Yavne -Yam	Poran	Ashkelon	Beit Mirsim	Ajjul
MB IIa/4								?		
MB IIa/3						?	?	?		
MB IIa/2				?						
MB IIa/1									?	?
IBA										?

	Me'amar	Qashish	Yoqneam	Qiri/Hazorea	Megiddo	Afula	Shimron
MB IIa/4					XIIA		
MB IIa/3		?			XIIB		
MB IIa/2					XIIIA		
MB IIa/1					XIIIB		
IBA			sherd	cemetery	XIV		

Table 18. Relative synchronization of the MB IIa sites in the Upper and Lower Jordan Valley

	Dan	Goshri m	Szold	Naama	Hazor	Ginossar
MB IIa/4	XIb			2	pre- XVII	T.1, T.4
MB IIa/3	?			3-4	?	T.1
MB IIa/1-2	XII			3-4		T.1?
IBA	sherds	cemetery		5-7	sherds	cemetery

	Gesher	Rehov	Hayyat	Jericho	Pella
MB IIa/4			3?		?
MB IIa/3	?		4		
MB IIa/1-2			5		
IBA					sherds

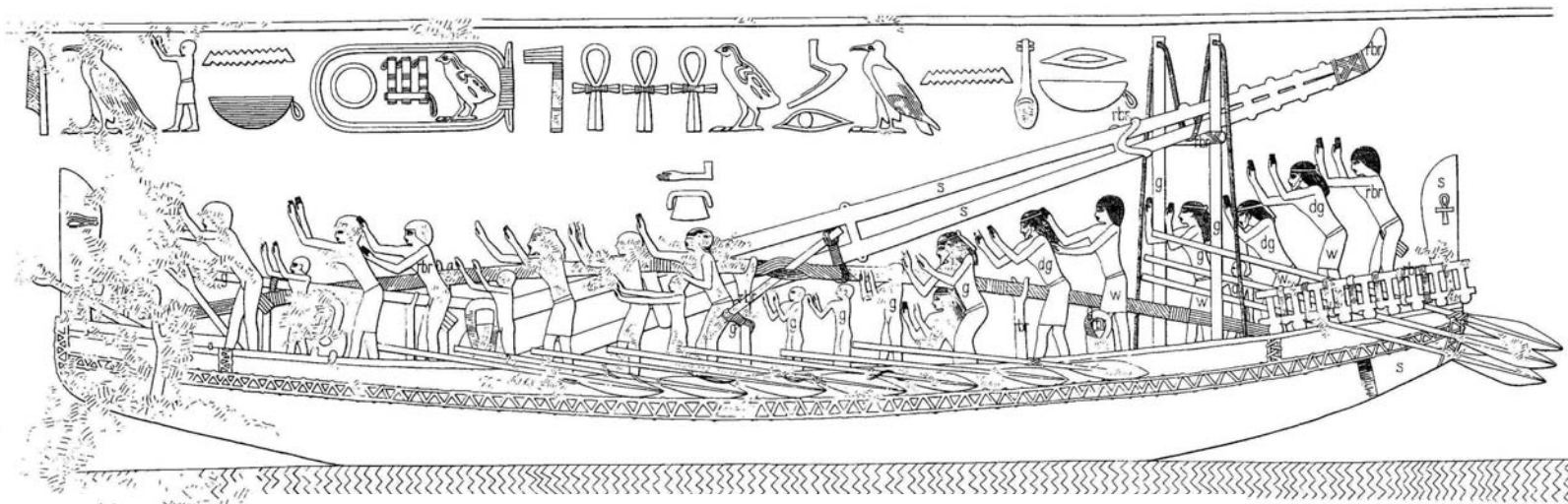
Table 19. Intermediate Bronze Age Radiocarbon Determinations (parenthesis refer to probability within the calibrated range)

Site	Lab #	BP	Material	Calibrated 1σ	Calibrated 2σ	Reference
Yotvata south	RT-1439	3980±60	charcoal	2580-2400 (96) 2380-2360 (4)	2850-2800 (2) 2700-2250 (98)	Avner et al. 1994: #76
Ein Ziq	RT-885A	3960±90	charcoal	2580-2310	2900-2800 (3) 2700-2100 (97)	Avner et al. 1994: #78
	RT-885B	3850±50	charcoal	2450-2440(4) 2400-2200(96)	2460-2140	Avner et al. 1994: #79
Dimona	RT-1558	3914±52	charcoal	2470-2320	2560-2530 (3) 2500-2200 (97)	Avner et al. 1994: #75
Biqat Uvda Site 166	RT-714B	3850±80	charcoal	2460-2190	2600-2000	Avner et al. 1994: #80
	RT-1421	3680±50	charcoal	2140-1970	2200-1900	Avner et al. 1994: #81
Ma`ale Shazarut	RT-899C	3700±55	wood (acacia?)	2180-2160 (4) 2140-1970 (96)	2280-2240 (3) 2210-1910 (97)	Carmi & Segal 1992: 122
	RT-1438	3770±50	charcoal	2080-2130 (83) 2080-2040 (17)	2340-2020 (99) 2000-1980 (1)	Avner et al. 1994: #77
Bab edh-Dhra	SI-2872	3805±60	charcoal	2340-2130	2460-2110 (92) 2090-2030 (8)	Weinstein 1984: 343; Schaub & Rast 1989: 502
	P-2573	3770±60	olive stones	2290-2120 (82) 2080-2040 (18)	2400-1970	Fishman & Lawn 1978: 226
	SI-2875	3595±70	charcoal	2040-1870 (84) 1840-1780 (16)	2140-1740	Weinstein 1984: 343; Schaub & Rast 1989: 502
Um Hammad	BM-2621	3750±50	charcoal	2280-2250 (8) 2210-2110 (59) 2090-2030 (33)	2320-1970	Ambers & Bowman 1994: 110
	BM-2622	3690±60	charcoal	2140-1970	2280-2240 (2) 2210-1880 (98)	Ambers & Bowman 1994: 110

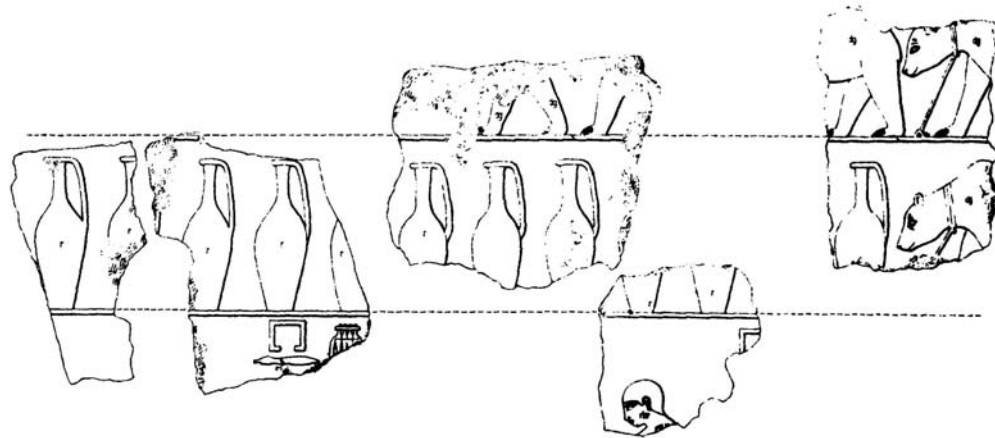
Table 20. Middle Bronze IIa radiocarbon determinations (parenthesis refer to probability within the calibrated range)

Site	Lab #	BP	Material	Calibrated 1σ	Calibrated 2σ	Reference
Tel el-Ifshar						
Phase B	OxA-5355	3550±65	<i>vicia faba</i>	1950-1760	2040-1680	Hedges et al. 1997: 256-257
Phase B/C	OxA-5356	3485±55	horse bean	1880-1740 (96) 1710-1700 (4)	1940-1640	
Phase E (granary)	OxA-5357	3505±55	emmer wheat	1890-1740	1950-1680	
Phase F/G	OxA-5358	3585±55	wheat	2030-2000 (9) 1980-1870 (74) 1840-1780 (17)	2120-2080 (3) 2040-1750 (97)	
Phase G	OxA-5359	3545±50	horse bean	1940-1770	2030-2000 (2) 1980-1740(98)	
Tel Nami						
(harvest before end of first phase)	OxA-4536	3460±60	horse bean	1880-1680	1930-1610	
(early floor of second phase)	OxA-4534	3495±65	horse bean	1890-1740 (94) 1720-1700 (6)	1980-1630	
(imported before final destruction)	OxA-4532	3560±60	<i>lathyrus clymenum</i>	1970-1770	2040-1740	
Gesher						
(axe handle)	OxA-1955	3640±70	wood	2130-2080 (21) 2050-1890 (79)	2200-1770	Hedges et al. 1990: 229; Housley 1994: 66
Tell el-Hayyat						
Phase 5 (lower)	AA-1236	3460±100	5 lentils	1890-1620	2050-1500	Falconer & Magness-Gardiner 1989: 338; 1989: 259
Phase 5 (upper)	AA-1239	3600±60	4 seeds	2040-1870 (92) 1840-1820 (5) 1800-1780 (2)	2140-2070 (9) 2050-1750 (91)	
Phase 4 (lower)	AA-1238	2930±80	3 lentils	1260-1000	1380-1340 (3) 1320-910 (97)	
Phase 4 (middle)	AA-1237	3280±100	2 olive stones	1680-1430	1900-1300	
Tell el-Dab`a						
under Stratum d/2	BM-1726N	3490±50	charcoal	1880-1740	1930-1680	Bowman et al. 1990:65; J. Ambers, letter of 5 September 1995; M. Bietak, p.c.
Stratum G	BM-1225	3436±43	charcoal	1870-1840 (11) 1770-1670 (89)	1880-1620	Burleigh & Matthews 1982: 160-161

Burleigh & Matthews 1982: 160-161



A



B

Figure 1. A. Arrival of sea going ship from the time of Sahure (after Wachsmann 1998 : fig 2.3).
 B. Associated cargo from Sahure's relief (after Smith 1965: fig 7).

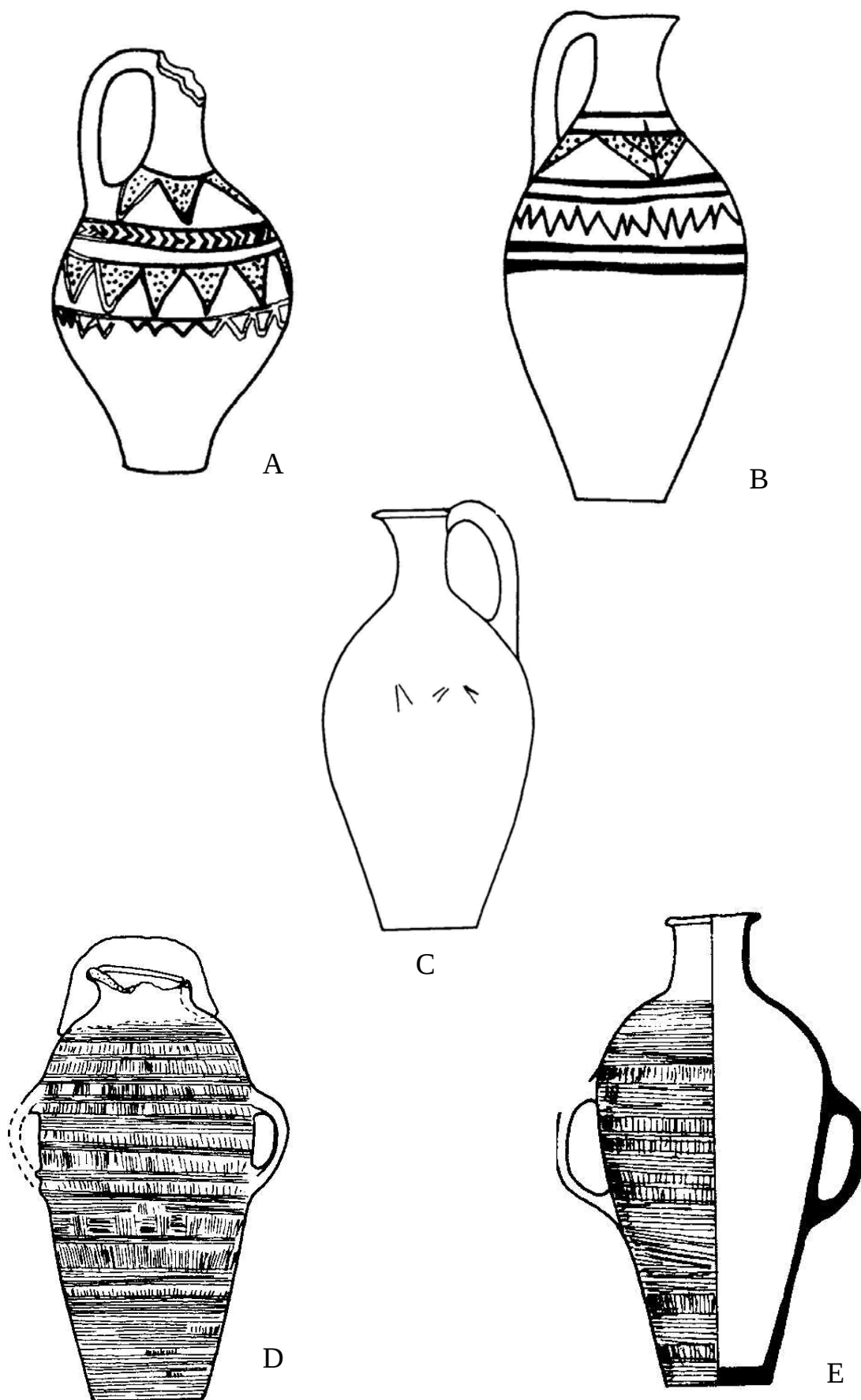


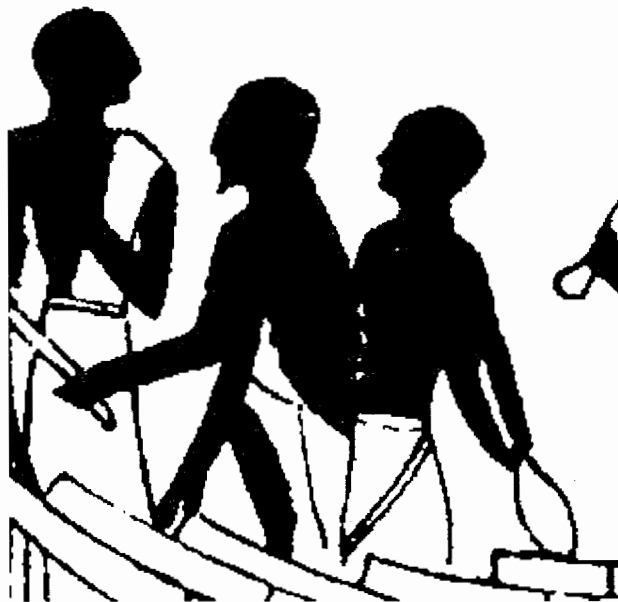
Figure 2. A,B. Light-faced Painted Ware. C. Red Polished Ware. D,E. Metallic Ware jars. (after Stager 1992: figs. 10:1, 12:1-2, 14:7,13).



Figure 3. 'Amu caravan from tomb of Khnumhotep (no. 3) at Beni Hasan (Newberry 1893: pls. XXIX and XXXI.



A



B

Figure 4. A. Scene of pottery making and ship construction from tomb of Khnumhotep (no. 3) at Beni Hasan (Newberry 1893: pl. XXIX).
B. Close-up of a bearded Levantine shipwright.

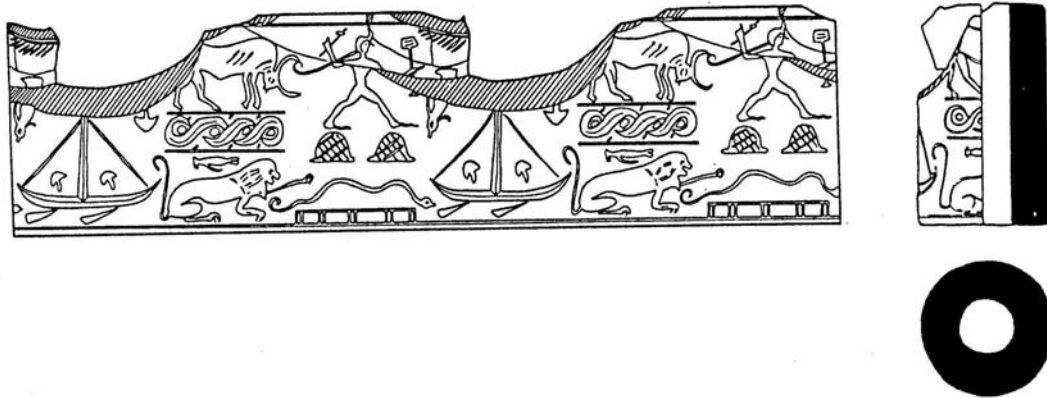


Figure 5. Cylinder seal from Tel El-Dab'a depicting a sailboat and patron gods (from Bietak 1989a: fig. 10).

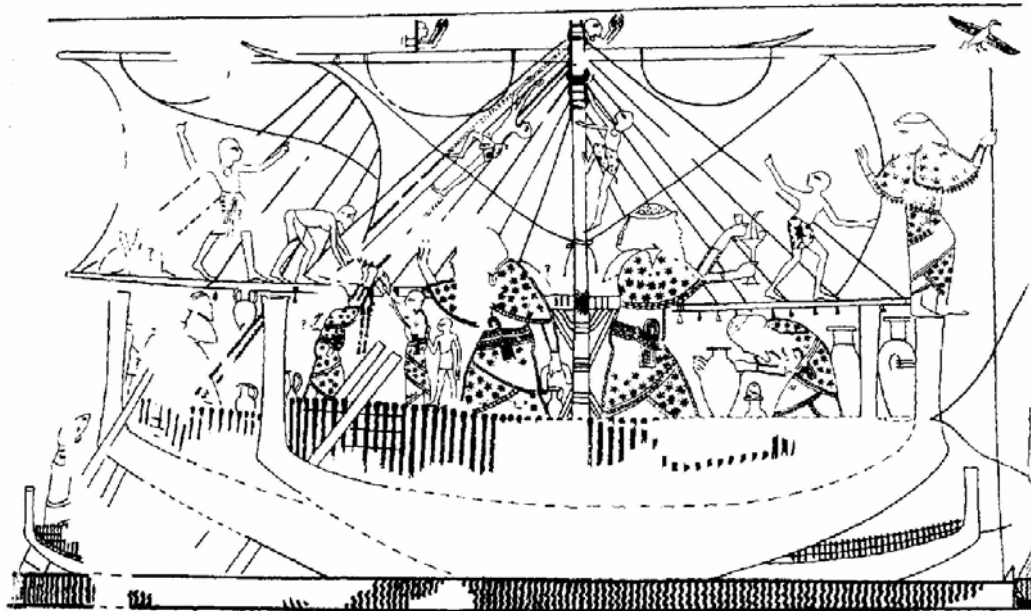


Figure 6. Depiction of Canaanite boat from the New Kingdom tomb of Kenamun (from Davies & Faulkner 1947: pl. 8).

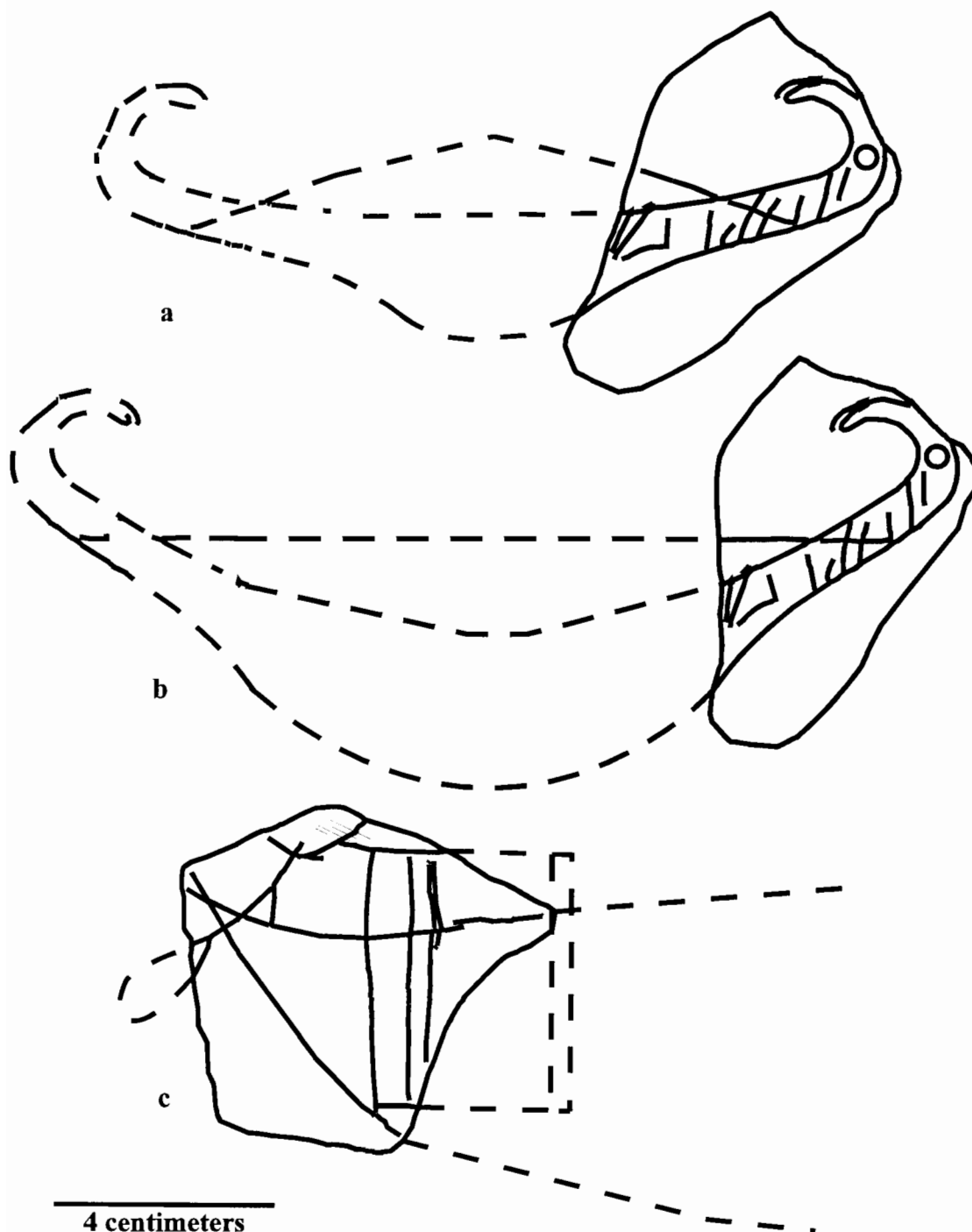
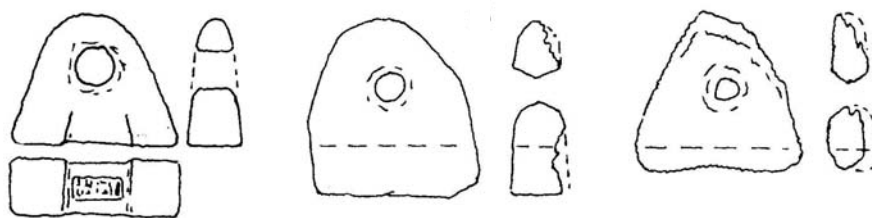
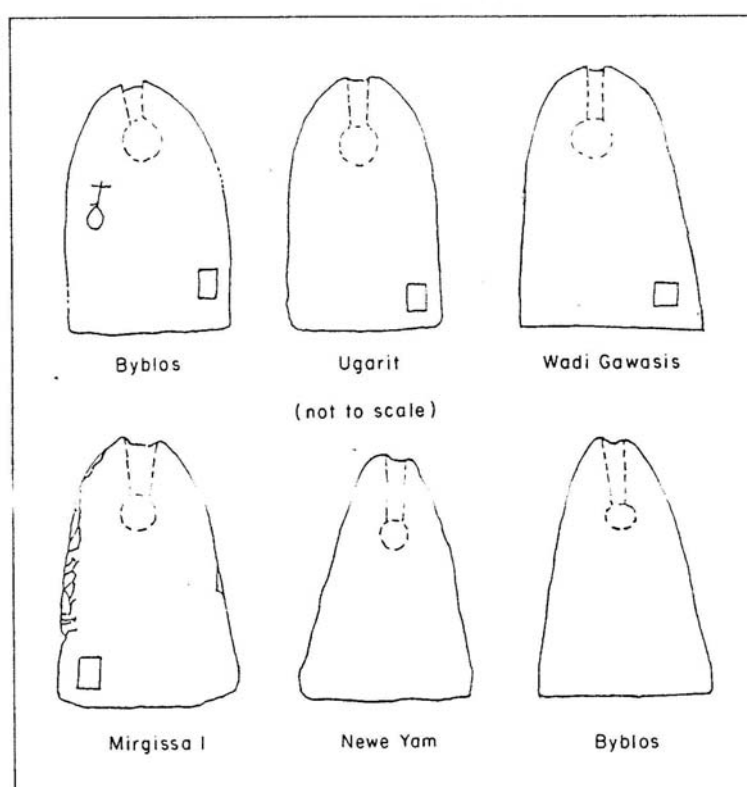


Fig. 7. EB I boats from Megiddo (after Engberg & Shipton 1934: 30, fig. 10:G, H)



a



b

Figure 8. a. Old Kingdom anchors from Abusir (from Frost 1979: fig. 1)
b. MB IIA anchor types (from Nibbi 1992: fig. 10).

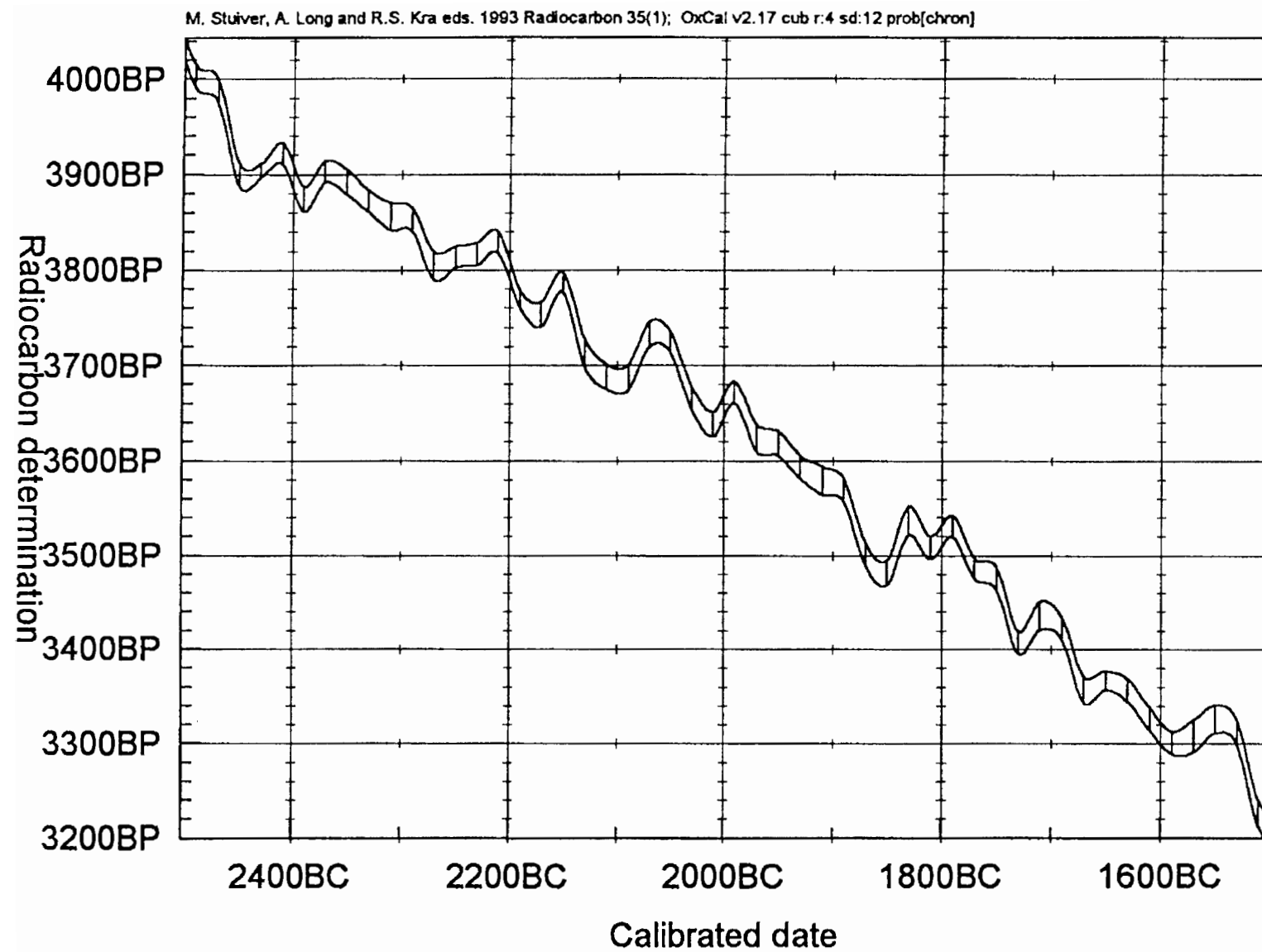


Figure 9. 1993 Radiocarbon Calibration Curve

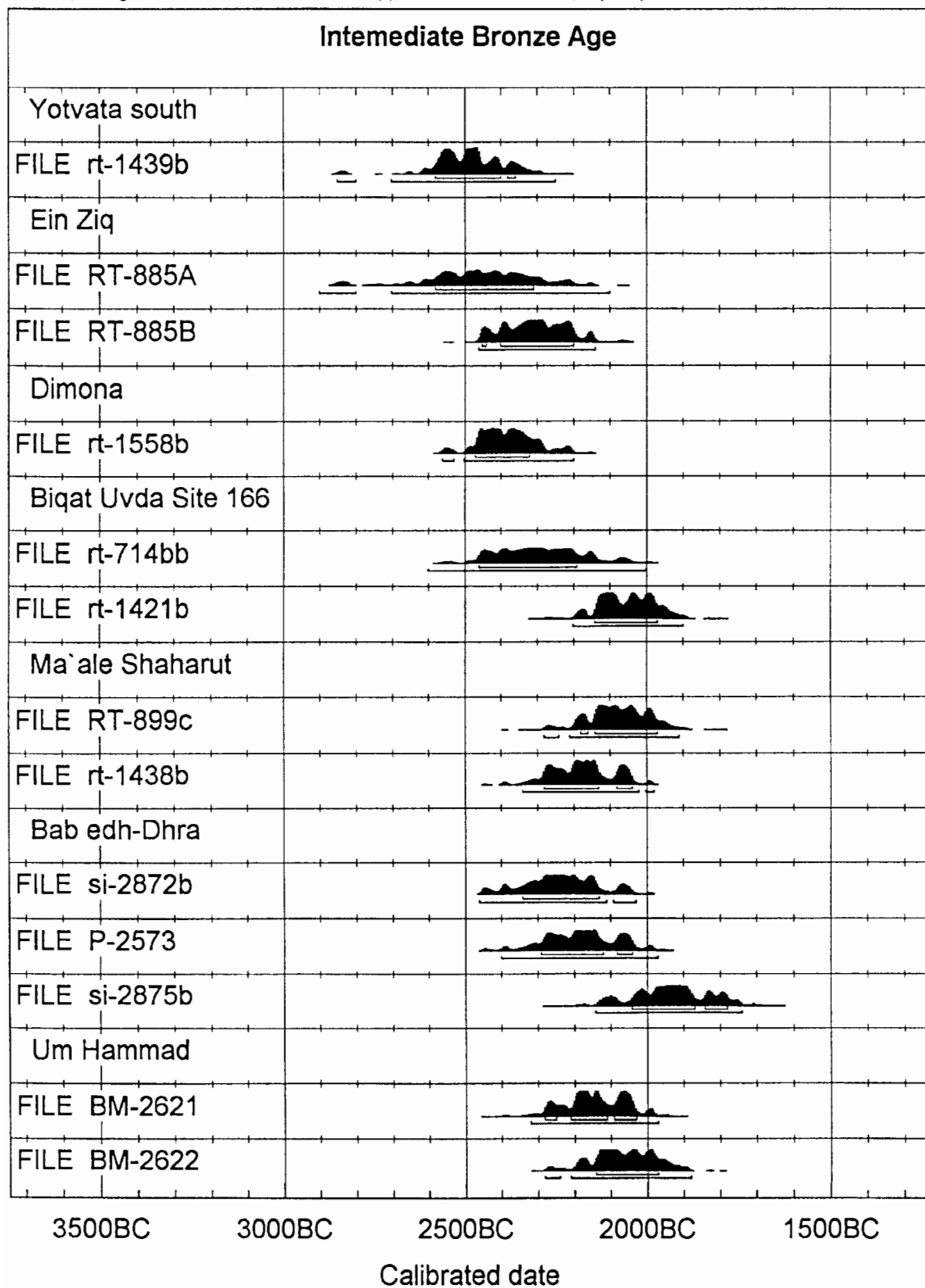


Figure 10. Calibrated Radiocarbon Determinations

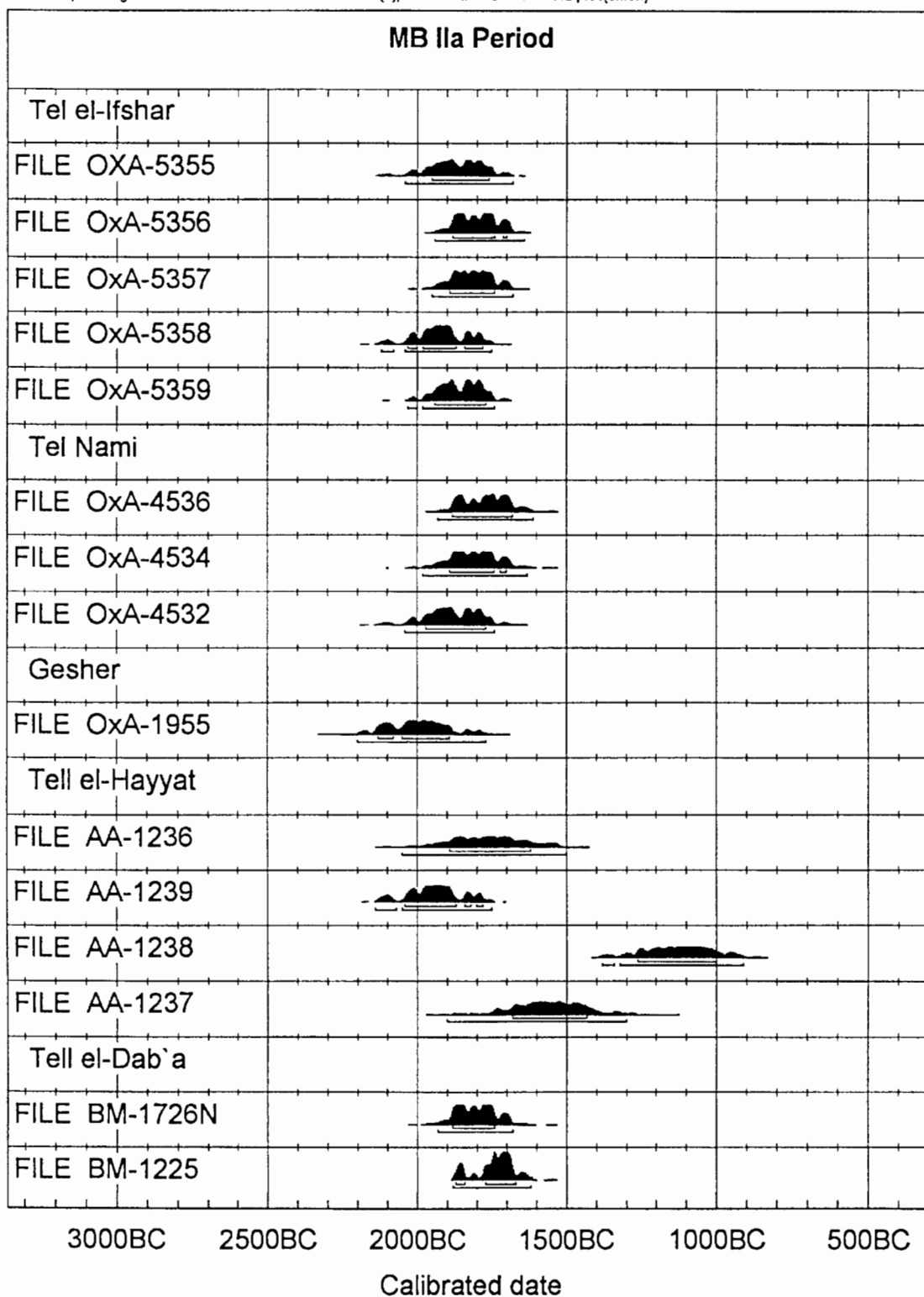


Figure 11. Calibrated MB Ila Radiocarbon Determinations.

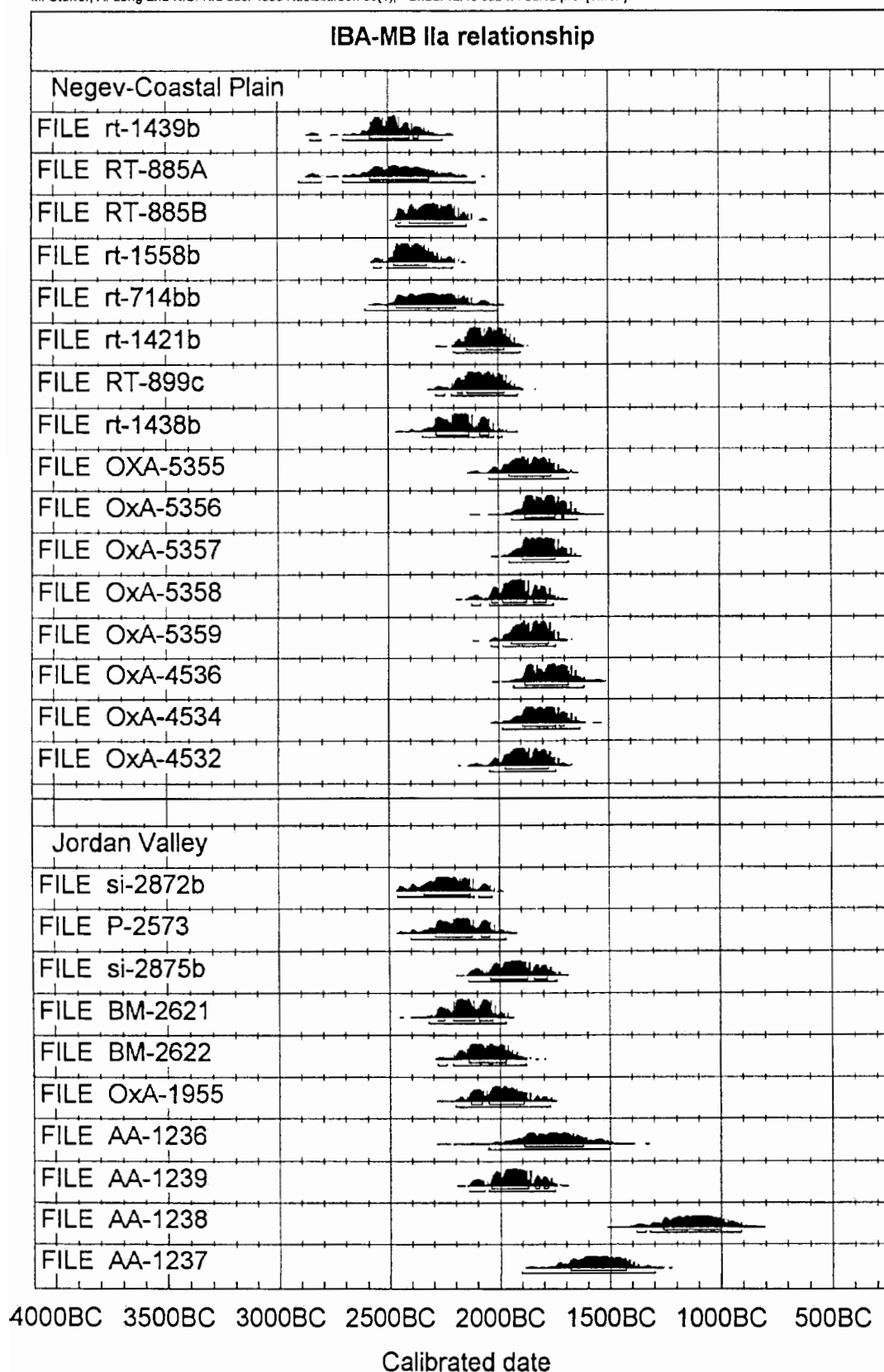


Figure 12. Calibrated IBA-MBA Radiocarbon Relationships

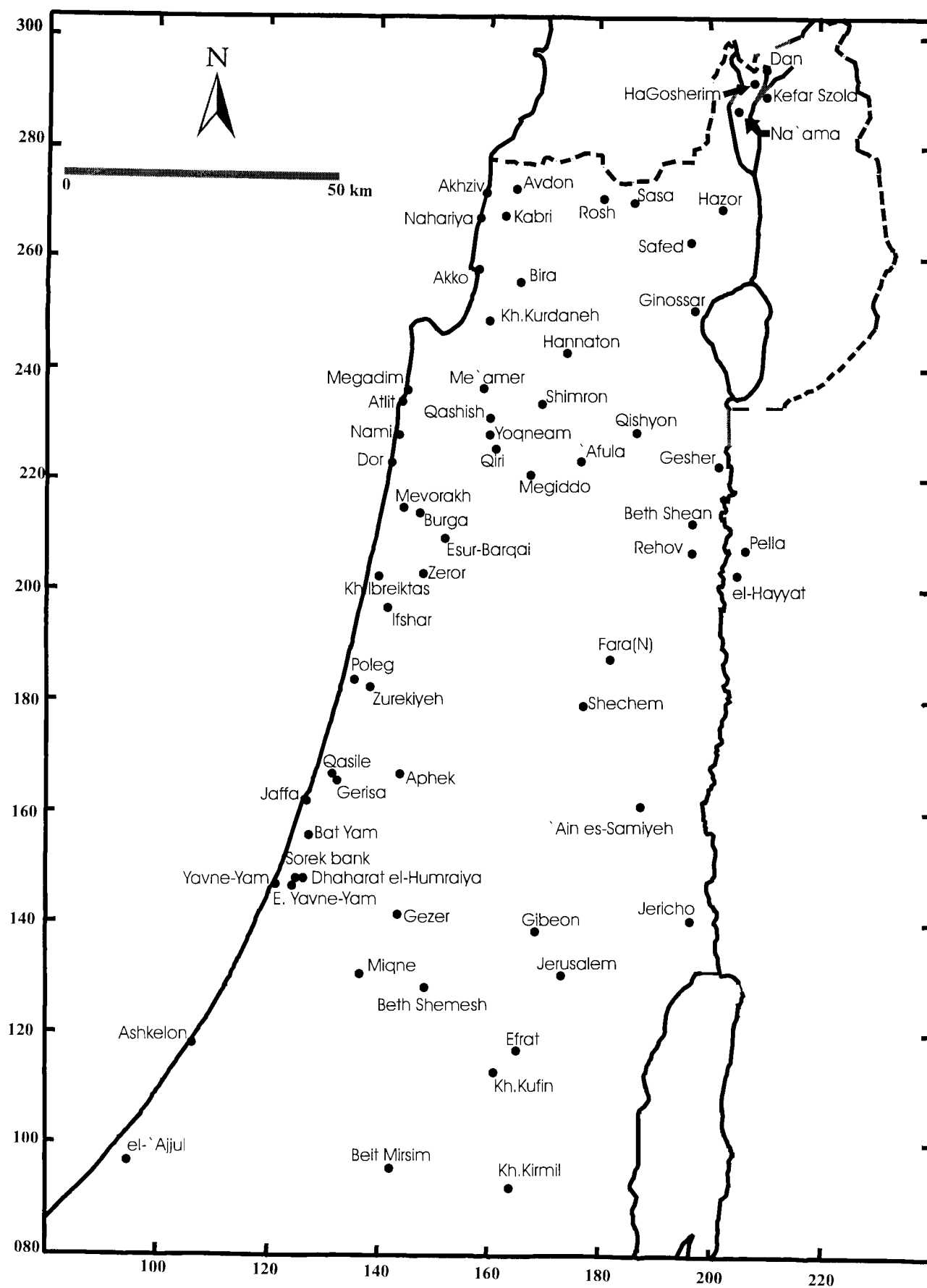


Fig. 13. Principal MB Ila sites mentioned in text

REFERENCES

- Adams, R.
1992 Wadi Fidan Project, 1992. *British Association for Near Eastern Archaeology Newsletter* 5: 53-54.
- Adams, R., and Genz, H.
1995 Excavations at Wadi Fidan 4: A Chalcolithic Village Complex in the Copper Ore District of Feinan, Southern Jordan. *Palestine Exploration Quarterly* 127: 8-20.
- Adams, W. Y.
1984 The First Colonial Empire: Egypt in Nubia, 3200-1200 B.C. *Comparative Studies in Society and History* 26: 34-71.
- Agouridis, C.
1997 Sea Routes and Navigation in the Third Millennium Aegean. *Oxford Journal of Archaeology* 16(1): 1-24.
- Aharoni, Y.
1979 *The Land of the Bible: A Historical Geography*, trans. A. F. Rainey. London: Burns & Oates.
- Ahituv, S.
1970 On the Conduct of Trade in Canaan During the Late Bronze Age. Pp. 318-30 in *Shmuel Yeivin Volume: Studies in Bible, Archaeology, Linguistics and the History of Israel Presented in His Honor*, eds S. Abramski, Y. Aharoni, H. Gabriyahu and B. Luria. Jerusalem: Israel Exploration Society.
- 1984 *Canaanite Toponyms in Ancient Egyptian Documents*. Jerusalem: Magnes Press.
- Aitchison, T., Leese, M., Michczynska, D., Mook, W., Otlet, R., Ottaway, B., Pazdur, M., Van der Plicht, J., Reimer, P., Robinson, S., Scott, E., Stuiver, M., and Weninger, B.
1989 A Comparison of Methods Used for the Calibration of Radiocarbon Dates. *Radiocarbon* 31(3): 846-64.
- Albright, W. F.
1928 The Egyptian Empire in Asia in the Twenty-First Century B.C. *Journal of the Palestine Oriental Society* 8: 223-56.
- 1932 *Vol. I: The Pottery of the First Three Campaigns*. In *The Excavation of Tell Beit Mirsim*. Annual of the American Schools of Oriental Research, vol. 12.
- 1933 *Vol. Ia: The Bronze Age Pottery of the Fourth Campaign*. Pp. 55-127 in *The Excavation of Tell Beit Mirsim*. Annual of the American Schools of Oriental Research, vol. 13.
- 1938 *Vol. II: The Bronze Age*. In *The Excavation of Tell Beit Mirsim*. Annual of the American Schools of Oriental Research, vol. 17.
- 1940 New Light on the History of Western Asia in the Second Millennium b.C. *Bulletin of the American Schools of Oriental Research* 77-78: 20-32, 23-31.
- 1941 New Egyptian Data on Palestine in the Patriarchal Age. *Bulletin of the American Schools of Oriental Research* 81: 16-21.

- 1950 Ball-Zephon. Pp. 1-14 in *Festschrift Für Alfred Bertholet*, eds. W. Baumgarten, O. Eissfeldt, K. Elliger and L. Rost. Mohr, J.C.B. Tübingen.
- 1959 Dunand's New Byblos Volume: A Lycian at the Byblian Court. *Bulletin of the American Schools of Oriental Research* 155: 31-34.
- 1964 The Eighteenth-Century Princes of Byblos and the Chronology of Middle Bronze. *Bulletin of the American Schools of Oriental Research* 176: 38-46.
- 1993 Beit Mirsim, Tell. Pp. 178-80 in *The New Encyclopedia of Archaeological Excavations in the Holy Land*, eds E. Stern, A. Lewinson-Gilboa and J. Aviram. Jerusalem: Israel Exploration Society.
- Algaze, G.
- 1989 The Uruk Expansion: Cross-Cultural Exchange in Early Mesopotamian Civilization. *Current Anthropology* 30(5 December): 571-608.
- 1993 *The Uruk World System: The Dynamics of Expansion of Early Mesopotamian Civilization*. Chicago: The University of Chicago Press.
- 1995 Expansionary Dynamics of Some Early Pristine States. *American Anthropologist* 95(2): 304-33.
- Allen, T. G.
- 1927 A Middle Kingdom Egyptian Contact with Asia Minor. *American Journal of Semitic Languages and Literatures* 43: 294-96.
- 1929 A Middle Kingdom Egyptian Contact with Asia Minor. Pp. 66-67 in *Explorations in Central Anatolia, Season 1926*, ed. H. H. von der Osten. Oriental Institute Publications, no. 5. Chicago: University of Chicago.
- Alon, D.
- 1990 Cult Artifacts from Gilat and Relations with Northern Edom in the Chalcolithic Period. *Atiqot (Hebrew Series)* 10: 1-12 (English summary, pp. 1^{*}-2^{*}).
- Alon, D., and Levy, T. E.
- 1989 The Archaeology of Cult and the Chalcolithic Sanctuary at Gilat. *Journal of Mediterranean Archaeology* 2(2): 163-221.
- Alon, D., and Yekutieli, Y.
- 1995 The Tel Halif Terrace 'Silo Site' and Its Implications for the Early Bronze Age I. *Atiqot* 27: 149-89.
- Altenmüller, H., and Moussa, A. M.
- 1991 Die Inschrift Amenemhets II. Aus dem Ptah-Tempel von Memphis. ein Vorbericht. *Studien Zur Altägyptischen Kultur* 18: 1-48.

Ambers, J., and Bowman, S.

- 1994 British Museum Natural Radiocarbon Measurements XXIII. *Radiocarbon* 36(1): 95-111.

Amiran, R.

- 1953 Khirbet Tell Er-Ruweisa in Upper Galilee. Pp. 117-26 (Hebrew) in *Eretz Israel 2 (Lif Memorial Volume)*. Israel Exploration Society: Jerusalem.
- 1960 The Pottery of the Middle Bronze Age I in Palestine. *Israel Exploration Journal* 10: 204-25.
- 1968 Similarities Between the Pottery of the MB IIA Period and the Pottery of the Assyrian Colonies, and Their Implications. *Anadolu* 12: 59-62.
- 1969a *Ancient Pottery of the Holy Land: From Its Beginnings in the Neolithic Period to the End of the Iron Age*. Jerusalem: Massada Press Ltd.
- 1969b Canaanite Jars Depicted on Egyptian First Dynasty Wooden Labels and Ivory Inlays. Pp. 119-21 (Hebrew; English abstract, p. 137) in *Eretz Israel 9 (Albright Volume)*. Israel Exploration Society: Jerusalem.
- 1970 The Egyptian Alabaster Vessels from Ai. *Israel Exploration Journal* 20: 170-79.
- 1971 The Much-Discussed Vounous Foreign Vessel Again. *Report of the Department of Antiquities of Cyprus*.
- 1974a An Egyptian Jar Fragment with the Name of Narmer from Arad. *Israel Exploration Journal* 24: 4-12.
- 1974b The Painted Pottery Style of the Early Bronze II Period in Palestine. *Levant* 6: 65-68.
- 1974c A Tomb at Geva Carmel. *Atiqot (Hebrew Series)* 7: 1-12.
- 1975 A Fruit-Like Juglet and Some Notes on the Tell el-Yahudiyeh Style. *Israel Museum News* 10: 40-48.
- 1979 The Silver Goblet from Tell el-Far'Ah (N) and Its Pottery Imitations. Pp. 115-16 in *Festschrift Reuben R. Hecht: Studies in Honor of His Seventieth Birthday*. Jerusalem: Koren Publishers.
- 1985 The Transition from the Chalcolithic to the Early Bronze Age. Pp. 108-12 in *Biblical Archaeology Today: Proceedings of the International Congress on Biblical Archaeology, Jerusalem, April 1984*, ed. J. Amitai. Jerusalem: Israel Exploration Society; The Israel Academy of Sciences and Humanities.
- 1992 An Egyptian Artist from Megiddo and a Local Canaanite Artist from Tell Farah (N) - Both from the Early Bronze Age I. P. 31 (Hebrew) in *Eighteenth Archaeological Conference in Israel, 12-13 February, 1992 (Abstracts)*. Jerusalem: Israel Exploration Society.
- 1993 The Kinneret Gold Plaque and the Alaca Royal Tombs Again. Pp. 23-24 in *Aspects of Art and Iconography: Anatolia and Its Neighbours, Studies in Honor of Nimet Özguç*. Ankara: Türk Tarih Kürümü.

- Amiran, R., Beit-Arieh, Y., and Glass, J.
 1973 The Interrelationship Between Arad and Sites in Southern Sinai in the Early Bronze Age II (Preliminary Report). *Israel Exploration Journal* 23(4): 193-97.
- Amiran, R., and Gophna, R.
 1989 Urban Canaan in the EB II and EB III Periods**Emergence and Structure. Pp. 109-16 in *L'urbanisation de la Palestine À l'Âge Du Bronze Ancien: Bilan et Perspectives Des Recherches Actuelles, Actes Du Colloque d'Emmaüs (20-24 Octobre 1986)*, ed. P. de Miroschedji. BAR International Series. Oxford.
- Amiran, R., Paran, U., Shiloh, Y., Brown, R., Tsafir, Y., and Ben-Tor, A.
 1978 *Early Arad: The Chalcolithic Settlement and Early Bronze Age City. First-Fifth Seasons of Excavations, 1962-1966*. Jerusalem: The Israel Exploration Society.
- Amiran, R., and Porat, N.
 1984 The Basalt Vessels of the Chalcolithic Period and Early Bronze Age I. *Tel Aviv* 11: 11-19.
- Amit, D.
 1990a Elazar. *Hadashot Arkheologiyot* 95: 63-64.
 1990b Ephrat. *Hadashot Arkheologiyot* 95: 64-65.
 1991 Ephrat. *Excavations and Surveys in Israel* 1989/1990 9: 160-61.
- Anati, E., Avnimelech, M., Haas, N., and Meyerhof, E.
 1973 *Hazorea I*. Edizioni del Centro, vol. 5. Capo di Ponte: Centro Camuno di Studi Preistorici.
- Anbar, M., and Na'aman, N.
 1986-87 An Account Tablet of Sheep from Ancient Hebron. *Tel Aviv* 13-14: 3-12.
- Arav, R.
 1990 Bethsaida. *Excavations and Surveys in Israel* 7-8: 177-78.
 1995 Bethsaida. *Excavations and Surveys in Israel* 14: 25-26.
- Arcari, E.
 1988 The Administrative Organization of the City of Ebla. Pp. 125-29 in *Wirtschaft und Gesellschaft von Ebla*, eds. H. Hauptmann and H. Waetzoldt. Akten der Internationalen Tagung Heidelberg 4-7 November 1986. Heidelberger Studien zum Alten Orient, vol. 2. Heidelberg: Heidelberger Orientverlag.
- Arnold, D., and Settgest, J.
 1965 Erster Vorbericht Über die Vom Deutschen Archäologischen Institut Kairo Im Asasif Unternommen Arbeiten. *Mitteilungen Des Deutschen Archäologischen Instituts Abteilung Kairo* 20: 47-61.
- Arnold, D.
 1977 Zur Keramik Aus dem Taltempelbereich der Pyramide Amenemhets III. in Dahschur. *Mitteilungen Des Deutschen Archäologischen Instituts Abteilung Kairo* 33: 21-26.

- 1982 Keramikbearbeitung in Dahschur 1976-1981. *Mitteilungen Des Deutschen Archäologischen Instituts Abteilung Kairo* 38: 25-65.
- Arnold, D., Arnold, F., and Allen, S.
- 1995 Canaanite Imports at Lisht, the Middle Kingdom Capital of Egypt. *Ägypten und Levante* 5: 13-32.
- Arnold, F.
- 1992 New Evidence for the Length of the Reign of Senwosret III? *Göttinger Miszellen* 129: 27-31.
- Arnon, C., and Amiran, R.
- 1993 Kishion, Tel. Pp. 873-74 in *The New Encyclopedia of Archaeological Excavations in the Holy Land*, eds E. Stern, A. Lewinson-Gilboa and J. Aviram. Jerusalem: Israel Exploration Society.
- Åström, P.
- 1966 *Excavations at Kalopsidha and Ayios Iakovos in Cyprus*. Studies in Mediterranean Archaeology, vol. 2. Lund: Paul Åström.
- 1972 *The Swedish Cyprus Expedition, Vol. 4 (part 1B). The Middle Cypriote Bronze Age*. Lund, Sweden: Berlingska Boktryckeriet.
- 1987 (ed.) The Chronology of the Middle Cypriote Bronze Age. Pp. 57-66 in *High Middle or Low? Part 1*. Acts of an international colloquium on absolute chronology held at the University of Gothenberg, 20-22 August 1987. Gothenberg.
- 1989 Early Connections Between Anatolia and Cyprus. Pp. 15-17 in *Anatolia and the Ancient Near East: Studies in Honor of Tahsin Özgüç*, eds. K. Emre, B. Hrouda, M. Mellink and N. Özgüç. Ankara: Türk Tarih Kümüru.
- Artzy, M.
- 1985a Merchandise and Merchantmen: On Ships and Shipping in the Late Bronze Age Levant. Pp. 135-40 in *Proceedings of the Second International Congress on Cypriote Studies*.
- 1985b Supply and Demand: A Study of Second Millennium Cypriote Pottery in the Levant. Pp. 93-99 in *Production and Exchange in Aegean and Mediterranean Prehistory*, eds A. Knapp and T. Stech. UCLA Institute of Archaeology Monographs. Los Angeles.
- 1986 Akko. Pp. 42-44 in *Mound and Sea: Akko and Caesarea Trading Centres*, exhibit curator R. Zommer. Exhibition Catalog, no. 2. Haifa: The Reubin & Edith Hecht Museum; University of Haifa.
- 1987 On the Storage of Olive Oil in Antiquity. Pp. 1-4 in *Olive Oil in Antiquity: Israel and Neighbouring Countries from the Neolithic to the Early Arab Period - Conference 1987, Haifa*, eds M. Heltzer and D. Eitam. Haifa: University of Haifa.
- 1993a Nami: Eight Years Later. *C.M.S. News* 20.

- 1993b Tel Nami. Pp. 1095-98 in *The New Encyclopedia of Archaeological Excavations in the Holy Land*, eds E. Stern, A. Lewinson-Gilboa and J. Aviram. Jerusalem: Israel Exploration Society.
- 1994 Incense, Camels and Collared Rim Jars: Desert Trade Routes and Maritime Outlets in the Second Millennium. *Oxford Journal of Archaeology* 13(2 July): 121-47.
- 1995 Nami: A Second Millennium International Maritime Trading Center in the Mediterranean. Pp. 17-40 in *Recent Excavations in Israel: A View to the West*, ed. S. Gitin. American Institute of Archaeology Colloquia and Conference Papers, no. 1. Dubuque, Iowa: Kendall/Hunt Publishing Company.
- Artzy, M., and Asaro, F.
- 1979 Origin of the Tell el-Yahudiyah Ware Found in Cyprus. *Report of the Department of Antiquities of Cyprus*: 135-50.
- Artzy, M., and Marcus, E.
- 1991 The MBIIA Coastal Settlement at Tel Nami. *Michmanim* 5: 5^{*} -16^{*}.
- 1992 Stratified Cypriote Pottery in MBIIa Context at Tel Nami. Pp. 103-10 in *Studies in Honor of Vassos Karageorghis*, ed. G. Ioannides. Nicosia: Society of Cypriot Studies.
- Aruz, J.
- 1995 Imagery and Interconnections. *Ägypten und Levante* 5: 33-48.
- Astour, M. C.
- 1991 The Location of HAZUR of the Mari Texts. *Maarav* 7: 51-65.
- Avidor, A.
- 1991 The Beads from 1986-1990 Seasons. Pp. 27-31 (Hebrew; p. 9^{*} English summary) in *Excavations at Kabri, Vol. 5. Preliminary Report of 1990 Season*, eds. A. Kempinski and W.-D. Niemeier. Tel Aviv: Tel Kabri Expedition; Tel Aviv University.
- Avner, U., Carmi, I., and Segal, D.
- 1994 Neolithic to Bronze Age Settlement of the Negev and Sinai in Light of Radiocarbon Dating: A View from the Southern Negev. Pp. 265-300 in *Late Quaternary Chronology and Paleoclimates of the Eastern Mediterranean*, eds. O. Bar-Yosef and R. S. Kra. Tucson: Radiocarbon.
- Avni, G.
- 1992 *Map of Har Saggi-Northeast (225)*. Jerusalem: Israel Antiquities Authority; Archaeological Survey of Israel. 154 pp (Hebrew); 98^{*} pp (English).
- Ayalon, E.
- 1986-87 A Byzantine Road and Other Finds from the Eretz Israel Museum Near Tel Qasile. *Israel - People and Land* 4(22): 9-33.
- Bagh, T.
- 1988 *Bemalet MBIIA Keramik Og Bemalet Tell el Yahudiyeh Ware Fundet i *egypten* (Unpublished diploma thesis). Kobenhavns Universitet.

- Bahat, D.
- 1970 Safed. *Hadashot Arkheologiyot* 33: 12-13.
- 1986 Excavations at Sasa 1975. Pp. 85-105 (Hebrew) in *Qadmoniyot Galil HaMaaravi [The Western Galilee Antiquities]*, ed. M. Yedaya. Ministry of Defense/Asher Regional Council. Tel Aviv.
- Baines, J.
- 1982 Interpreting *Sinuhe*. *Journal of Egyptian Archaeology* 68: 31-44.
- 1987 The Stela of Khusobek: Private and Royal Military Narrative and Values. Pp. 43-61 in *Form und Mass: Beitrage Zur Literatur, Sprache und Kunst del Alten Ägypten* (Festschrift für Gerhard Fecht), eds. J. Osing, Dreyer and Günther. Ägypten und altes testament. Wiesbaden: Otto Harrasowitz.
- 1996 The Aims and Methods of Black Athena. Pp. 27-48 in *Black Athena Revisited*, eds M. R. Lefkowitz and G. M. Rogers. Chapel Hill: University of North Carolina Press.
- Baines, J., and Malek, J.
- 1980 *Atlas of Ancient Egypt*. Oxford: Phaidon Press, Ltd.
- Baird, D., and Philip, G.
- 1994 Preliminary Report on the Third (1993) Season of Excavation at Tell Esh-Shuna North. *Levant* 26: 111-33.
- Bairoch, P.
- 1988 *Cities and Economic Development: From the Dawn of History to the Present*, trans. C. Braider. Chicago: The University of Chicago Press.
- [Bakiya, S.]
- 1970 'Ain Samiya. *Hadashot Arkheologiyot* 36: 11-12.
- Balthazar, J. W.
- 1990 *Copper and Bronze Working in Early Through Middle Bronze Age Cyprus*. Studies in Mediterranean Archaeology and Literature. Jonsered: Paul Åström förlag.
- Bar-Adon, P.
- 1980 *The Cave of the Treasure: The Finds from the Caves in Nahal Mishmar*. Judean Desert Studies. Jerusalem: Israel Exploration Society.
- Barag, D.
- 1963 A Survey of Pottery Recovered from the Sea Off the Coast of Israel. *Israel Exploration Journal* 13: 13-19.
- Baramki, D.
- 1973 A Tomb of the Early and Middle Bronze Ages at Byblos. *Bulletin Du Musée de Beyrouth* 26: 27-30.
- Barber, E.
- 1987 *The Cyclades in the Bronze Age*. London: Gerald Duckworth & Co.
- 1991 *Prehistoric Textiles: The Development of Cloth in the Neolithic and Bronze Ages*. Princeton: Princeton University Press.
- Bard, K. A.

- 1992 Origins of Egyptian Writing. Pp. 298-306 in *The Followers of Horus: Studies Dedicated to Michael Allen Hoffman*, eds. R. Friedman and B. Adams. Egyptian Studies Association Publication, no. 2. Oxford: Oxbow Books.
- 1994 The Egyptian Predynastic: A Review of the Evidence. *Journal of Field Archaeology* 21: 265-88.
- Bar-Matthews, M., Ayalon, A., and Kaufman, A.
- 1997 Late Quarternary Paleoclimate in the Eastern Mediterranean Region from Stable Isotope Analysis of Speleothems at Soreq Cave, Israel. *Quarternary Research* 47: 155-68.
- Barnett, R. D.
- 1982 *Ancient Ivories in the Middle East*. Qedem, vol. 14. Jerusalem: The Institute of Archaeology, The Hebrew University of Jerusalem.
- Barton, G. A.
- 1903 Examination of the Supposed Inner Harbor of Joppa. *Journal of Biblical Literature* 22: 183-86.
- Baruch, U.
- 1986 Late Holocene Vegetational History of Lake Kinneret, Israel. *Paléorient* 12(1): 37-48.
- 1994a The Late Quarternary Pollen Record of the Near East. Pp. 103-19 in *Late Quaternary Chronology and Paleoclimates of the Eastern Mediterranean*, eds. O. Bar-Yosef and R. S. Kra. Tucson: Radiocarbon.
- 1994b Palynological Evidence for Human Impact Upon the Flora of the Land of Israel in Antiquity. *Qadmoniot* 27(1-2 (105-106)): 47-63.
- Bar-Yosef, D. E.
- 1995 The Molluscs from Garar. Pp. 453-62 in *Garar: A Chalcolithic Site in the Northern Negev*, ed. I. Gilead. Beer Sheva, no. 7. Beer Sheva: Ben-Gurion University in the Negev Press.
- Bar-Yosef, O.
- 1995 The Origins of Modern Humans. Pp. 110-21 in *The Archaeology of Society in the Holy Land*, ed. T. E. Levy. Leicester University Press.
- Bar-Yosef, O., and Belfer-Cohen, A.
- 1989 The Origins of Sedentism and Farming Communities in the Levant. *Journal of World Prehistory* 3(4): 447-98.
- Bar-Yosef, O., Hershkowitz, I., Arbel, G., and Goren, A.
- 1983 The Orientation of Nawamis Entrances in Southern Sinai: Expressions of Religious Belief or Seasonality? *Tel Aviv* 10: 52-60.
- Basch, L.
- 1976 Pirogues Du Proche-Orient. *Sefunim* 5: 10-14.
- 1985 Anchors in Egypt. *Mariner's Mirror* 71: 453-67.

- 1987 *Le Musée Imaginaire de la Marine Antique*. Athènes: Institut Hellénique pour la préservation de la tradition nautique.
- 1994 Un Navire Grec en Egypte À l'Époque d'Ulysse. *Neptunia* 195: 19-26.
- 1997 Une Représentation de Navire de Type Égéen dans l'Oasis de Dakhleh (Égypte) Vers 1200 Av. J.-C. Pp. 17-29 in *Res Maritimae: Cyprus and the Eastern Mediterranean from Prehistory to Late Antiquity*, eds. S. Swiny, R. L. Hohlfelder and H. W. Swiny. Proceedings of the second international symposium *Cities on the Sea*, Nicosia, Cyprus, October 18-22, 1994. Cyprus American Archaeological Research Institute Monograph Series, vol. 1, no. 4. Atlanta: Scholars Press.
- Bass, G. F.
- 1986 A Bronze Age Shipwreck at Ulu Burun (Ka*): 1984 Campaign. *American Journal of Archaeology* 90: 269-96.
- 1972
- (ed.) The Earliest Seafarers in the Mediterranean and the Near East. Pp. 12-36 in *A History of Seafaring Based on Underwater Archaeology*. Thames & Hudson. London.
- 1997 Beneath the Wine Dark Sea: Nautical Archaeology and the Phoenicians of the Odyssey. Pp. 71-101 in *Greeks and Barbarians: Essays on the Interactions Between Greeks and Non-Greeks in Antiquity and the Consequences for Eurocentrism*, eds. J. E. Coleman and C. A. Walz. Occasional Publications of the Department of Near Eastern Studies and the Program of Jewish Studies, Cornell University, no. 4. Bethesda: CDL Press.
- Baumgarten, Y.
- 1993 Evidence for Ships in the Eastern Mediterranean During the Chalcolithic Period. Pp. 9-10 (Hebrew) in *Nineteenth Archaeological Conference in Israel, 25-26 March, 1993 (Abstracts)*. Jerusalem: Israel Exploration Society.
- 1996 Ashqelon, Hatayyasim Street. *Excavations and Surveys in Israel* 15: 99-100.
- Beal, R. H.
- 1992 The Location of Cilician Ura. *Anatolian Studies* 42: 65-73.
- Beck, K.-G., and Klug, S.
- 1990 The Anthropology of the Predynastic Sites of Maadi and Wadi Digla. Pp. 106-78 in *Maadi IV: The Cemeteries of Maadi and Wadi Digla*, eds. I. Rizkana and J. Seeher. Archäologische Veröffentlichungen, no. 81. Mainz am Rhein: Philipp von Zabern.
- Beck, P.
- 1975 The Pottery of the Middle Bronze Age IIA at Tel Aphek. *Tel Aviv* 2: 45-84.
- 1976 The Cylinder Seal Impressions from Beth Ha'Emeq. *Tel Aviv* 3: 120-26.
- 1984 The Seals and Stamps of Early Arad. *Tel Aviv* 11(2): 97-114.
- 1985a An Early Bronze Age "Family" of Bowls from Tel Aphek. *Tel Aviv* 12: 17-28.
- 1985b The Middle Bronze Age Pottery from Aphek, 1972-1984: First Summary. *Tel Aviv* 12(2): 181-203.

- 1993 A Sealing from Tel Aphek, Israel, S. Petrographic appendix by Shoval and M. Gaft. Pp. 671-73 in *Aspects of Art and Iconography: Anatolia and Its Neighbours, Studies in Honor of Nimet Özguç*. Ankara: Türk Tarih Kürümü.
- 1995 Issues in the History of Early Bronze Age Art in Eretz Israel. *Cathedra* 76: 3-33 (Hebrew; English abstract, p. 199).
- 1998 The Figure of the Ruler and Related Problems in Middle Bronze Age Art (First Half of the Second Millennium BCE. *Cathedra* 87: 7-36 (Hebrew; English abstract, p. 189).
- Beck, P., and Kochavi, M.
- 1993 Aphek. Pp. 62-72 in *The New Encyclopedia of Archaeological Excavations in the Holy Land*, eds E. Stern, A. Lewinson-Gilboa and J. Aviram. Jerusalem: Israel Exploration Society.
- Beck, P., and Zevulun, U.
- 1996 Back to Square One. *Bulletin of the American Schools of Oriental Research* 304: 64-75.
- Bednarik, R. G.
- 1997 The Earliest Evidence of Ocean Navigation. *International Journal of Nautical Archaeology* 26(3): 183-91.
- Beit-Arieh, I.
- 1980 A Chalcolithic Site Near Serabit El-Khadim. *Tel Aviv* 7: 45-64.
- 1981 An Early Bronze Age II Site Near Sheikh 'Awad in Southern Sinai. *Tel Aviv* 8(2): 95-127.
- 1983 Central - Southern Sinai in the Early Bronze Age II and Its Relationship with Palestine. *Levant* 15: 39-48.
- 1986 Two Cultures in Southern Sinai in the Third Millennium B.C. *Bulletin of the American Schools of Oriental Research* 263: 27-54.
- 1995 Text Contra Facts: Some Notes on the Article by B. Rothenberg and J. Glass in Levant XXIV. *Levant* 27: 125-26.
- Bell, B.
- 1971 The Dark Ages in Ancient History: I. The First Dark Age in Egypt. *American Journal of Archaeology* 75: 1-26.
- Ben-Dor, I.
- 1950 A Middle Bronze Age Temple at Nahariya. *Quarterly of the Department of Antiquities of Palestine* 14: 1-41.
- Ben-Tor, A.
- 1975 *Two Burial Caves of the Proto-Urban Period at Azor, 1971 / The First Season of Excavations at Tell Yarmuth, 1970*. Qedem, vol. 1. Jerusalem: The Institute of Archaeology, The Hebrew University of Jerusalem.

- 1978 *Cylinder Seals of the Third Millennium Palestine*. Bulletin of the American Schools of Oriental Research Supplement Series, no. 22. American Schools of Oriental Research.
- 1982 The Relations Between Egypt and the Land of Canaan During the Third Millennium B.C. *Journal of Jewish Studies* 33: 3-18.
- 1985 Glyptic Art of Early Bronze Age Palestine and Its Foreign Relations. Pp. 1-25 in *The Land of Israel: Cross-Roads of Civilizations*, ed. E. Lipi*ski. Orientalia Lovaniensia Analecta, no. 19. Leuven: Uitgeverij Peeters.
- 1986 The Trade Relations of Palestine in the Early Bronze Age. *Journal of the Economic and Social History of the Orient* 29: 1-27.
- 1987 The Middle Bronze Age: Stratum X. Pp. 260-73 in *Tell Qiri, a Village in the Jezreel Valley: Report of the Archaeological Excavations 1975-1977*, eds. A. Ben-Tor and Y. Portugali. Qedem, vol. 24. Jerusalem: The Institute of Archaeology, The Hebrew University of Jerusalem.
- 1989 Byblos and the Early Bronze Age I of Palestine. Pp. 41-52 in *L'urbanisation de la Palestine À l'Âge Du Bronze Ancien: Bilan et Perspectives Des Recherches Actuelles, Actes Du Colloque d'Emmaüs (20-24 Octobre 1986)*, ed. P. de Miroschedji. BAR International Series. Oxford: BAR.
- 1991 New Light of the Relations Between Egypt and Southern Palestine During the Early Bronze Age. *Bulletin of the American Schools of Oriental Research* 281: 3-10.
- 1992 The Hazor Tablet: Foreward. *Israel Exploration Journal* 42: 17-20.
- 1993a Jokneam. Pp. 805-11 in *The New Encyclopedia of Archaeological Excavations in the Holy Land*, eds E. Stern, A. Lewinson-Gilboa and J. Aviram. Jerusalem: Israel Exploration Society.
- 1993b Tel Qashish. Pp. 1200-03 in *The New Encyclopedia of Archaeological Excavations in the Holy Land*, eds E. Stern, A. Lewinson-Gilboa and J. Aviram. Jerusalem: Israel Exploration Society.
- 1995 A Stamp Seal and a Seal Impression of the Chalcolithic Period from Garar. Pp. 361-75 in *Garar: A Chalcolithic Site in the Northern Negev*, ed. I. Gilead. Beer Sheva, no. 7. Beer Sheva: Ben-Gurion University in the Negev Press.
- 1997 Introduction. Pp. 1-14 in *Hazor V: An Account of the Fifth Season of Excavations, 1968*, eds. A. Ben-Tor and R. Bonfil. Jerusalem: Israel Exploration Society; Hebrew University.
- Ben-Tor, A., Portugali, Y., and Avissar, M.
- 1981 The First Two Seasons of Excavations at Tel Qashish, 1978-1979: Preliminary Report. *Israel Exploration Journal* 31: 137-64.
- Ben-Tor, A., and Portugali, Y., eds.
- 1987 *Tell Qiri, a Village in the Jezreel Valley: Report of the Archaeological Excavations 1975-1977*. Qedem, vol. 24. Jerusalem: The Institute of Archaeology, The Hebrew University of Jerusalem.

- Ben-Tor, D.
- 1994 The Historical Implications of Middle Kingdom Scarabs Found in Palestine Bearing Private Names and Titles of Officials. *Bulletin of the American Schools of Oriental Research* 294: 7-22.
- 1997 The Relations Between Egypt and Palestine in the Middle Kingdom as Reflected by Contemporary Canaanite Scarabs. *Israel Exploration Journal* 47(3-4): 162-89.
- 1998 The Absolute Date of the Montet Jar Scarabs. Pp. 1-17 in *Ancient Egyptian and Mediterranean Studies in Memory of William A. Ward*, ed. L. H. Lesko. Providence: Department of Egyptology, Brown University.
- Berger, M. A.
- 1992 Predynastic Animal-Headed Boats from Hierakonpolis and Southern Egypt. Pp. 107-20 in *The Followers of Horus: Studies Dedicated to Michael Allen Hoffman*, eds. R. Friedman and B. Adams. Egyptian Studies Association Publication, no. 2. Oxford: Oxbow Books.
- Berry, B. J.
- 1967 *Geography of Market Centers and Retail Distribution*. Foundations of Economic Geography Series. Englewood Cliffs, New Jersey: Prentice-Hall, Inc.
- Betts, A., Van der Borg, K., de Jong, A., McClintock, C., and van Strydonck, M.
- 1994 Early Cotton in North Arabia. *Journal of Archaeological Science* 21: 489-99.
- Beynoun, D. E., Donahue, J., Schaub, R. T., and Johnston, R.
- 1986 Tempering Types and Sources for Early Bronze Age Ceramics from Bab Edh-Dhra' and Numeira, Jordan. *Journal of Field Archaeology* 13: 297-305.
- Bietak, M.
- 1984 Problems of Middle Bronze Age Chronology: New Evidence from Egypt. *American Journal of Archaeology* 88: 471-85.
- 1986 *Avaris and Piramesse: Archaeological Exploration in Eastern Nile Delta*. Mortimer Wheeler Archaeological Lecture, 1979. Oxford: The British Academy; Oxford University Press.
- 1988 Zur Marine Des Alten Reiches. Pp. 35-40 in *Pyramid Studies and Other Essays Presented to I.E.S. Edwards*, eds. J. Baines and T. James. London.
- 1989a The Middle Bronze Age of the Levant - a New Approach to Relative and Absolute Chronology. Pp. 78-120 in *High Middle or Low?* ed. P. Åström. Acts of an international colloquium on absolute chronology held at the University of Gothenberg, 20-22 August 1987, Part 3. Gothenberg.
- 1989b Servant Burials in the Middle Bronze Age Culture of the Eastern Nile Delta. Pp. 30^{*}-43^{*} in *Eretz Israel 20 (Yadin Memorial Volume)*. Jerusalem.
- 1991a Egypt and Canaan During the Middle Bronze Age. *Bulletin of the American Schools of Oriental Research* 281: 27-72.
- 1991b *Tell el-Dab'a V: Ein Friedhofsbezirk der Mittleren Bronzezeitkultur mit Totentempel und Siedlungsschichten*. Untersuchungen der Zweigstelle Kairo des Österreichischen

- Archäologischen Institutes. Wien: Verlag der Österreichischen Akademie der Wissenschaften.
- 1992 Die Chronologie Ägyptens und der Beginn der Mittleren Bronzezeit-Kultur. *Ägypten und Levante* 3: 29-37.
- 1993-94 Der Übergang von der Frühen Zur Mittleren Bronzezeitkultur Im Vorderen Orient Anhand von Wandbildern in Gräbern Des Ägyptischen Mittleren Reiches. *Mitteilungen der Anthropologischen Gesellschaft in Wien* 123-124: 391-99.
- 1995 Connections Between Egypt and the Minoan World: New Results from Tell el-Dab`a/Avaris. Pp. 19-28 in *Egypt, the Aegean and the Levant: Interconnections in the Second Millennium BC*, eds. W. V. Davies and L. Schofield. London: British Museum Press.
- 1996 *Avaris: The Capital of the Hyksos. Recent Excavations at Tell el-Dab`A* (The first Raymond and Beverly Sackler Foundation distinguished lecture in Egyptology). London: British Museum Press.
- 1997 The Center of Hyksos Rule: Avaris (Tell el-Dab`A. Pp. 87-139 in *The Hyksos: New Historical and Archaeological Perspectives*, ed. E. Oren. University Museum Monograph. 8 University Museum Symposium Series. Philadelphia: University of Pennsylvania Museum.
- Bikai, P. M.
- 1978 *The Pottery of Tyre*. Warminster: Aris & Phillips, Ltd.
- Bintliff, J., ed.
- 1991 *The Annales School and Archaeology*. Leicester: Leicester University Press.
- Biran, A.
- 1990 The Middle Bronze II Ramparts of Tel Dan. Pp. 56-65 (Hebrew; p. 103* English summary) in *Eretz Israel 21 (Amiran Volume)*. Jerusalem.
- 1993 Dan. Pp. 322-32 in *The New Encyclopedia of Archaeological Excavations in the Holy Land*, eds E. Stern, A. Lewinson-Gilboa and J. Aviram. Jerusalem: Israel Exploration Society.
- 1994 *Biblical Dan*. Jerusalem: Israel Exploration Society; Hebrew Union College - Jewish Institute of Religion.
- 1996 A Chronicle of the Excavations. Pp. 9-62 in *Dan I: A Chronicle of the Excavations, the Pottery Neolithic, the Early Bronze Age and the Middle Bronze Age Tombs*, eds. A. Biran, D. Ilan and R. Greenberg. Annual of the Nelson Glueck School of Biblical Archaeology, Hebrew Union College - Jewish Institute of Religion. Jerusalem.
- Biran, A., Ilan, D., and Greenberg, R.
- 1996 *Dan I: A Chronicle of the Excavations, the Pottery Neolithic, the Early Bronze Age and the Middle Bronze Age Tombs*, gen. ed. A. Biran. Annual of the Nelson Glueck School of Biblical Archaeology, Hebrew Union College - Jewish Institute of Religion. Jerusalem.

- Bisson de la Roque, F.
- 1937 Tôd, 1934 À 1936. *Fouilles de L'Institut Français d'Archéologie Orientale Du Caire* 17. 113-121.
- 1950 Le Trésor de Tôd. In *Catalogue Général Des Antiquités Égyptiennes Du Musée Du Caire*. Le Caire: Institute française d'archéologie orientale.
- Bisson de la Roque, F., Contenau, G., and Chapouthier, F.
- 1953 *Le Trésor de Tôd*. Document de Fouilles de l'Institut français d'Archéologie orientale du Caire, no. 11. Le Caire.
- Blackman, A. M.
- 1915 An Indirect Reference to Sesostri III's Syrian Campaign in the Tomb-Chapel of *Dhwtj-Htp* at El-Bersheh. *Journal of Egyptian Archaeology* 2: 13-14.
- Blackman, A. M., and Apton, M. R.
- 1953 *The Rock Tombs of Meir, Part VI*. The Egypt Exploration Fund. 29th memoir Archaeological Survey of Egypt. London. 38
- Blackman, D.
- 1982 Ancient Harbours in the Mediterranean, Part 1. *International Journal of Nautical Archaeology* 11(2): 79-104.
- Bloch, M.
- 1962 *Feudal Society*. London: Routledge & Kegan Paul Ltd.
- Blue, L. K.
- 1997 Cyprus and Cilicia: The Typology and Palaeogeography of Second Millennium Harbors. Pp. 31-43 in *Res Maritimae: Cyprus and the Eastern Mediterranean from Prehistory to Late Antiquity*, eds. S. Swiny, R. L. Hohlfelder and H. W. Swiny. Proceedings of the second international symposium *Cities on the Sea*, Nicosia, Cyprus, October 18-22, 1994. Cyprus American Archaeological Research Institute Monograph Series, vol. 1, no. 4. Atlanta: Scholars Press.
- Boehmer, R. M., Dreyer, G., and Kromer, B.
- 1993 Einige Frühzeitliche ¹⁴C-Datierungen Aus Abydos Und Uruk. *Mitteilungen Des Deutschen Archäologischen Instituts Abteilung Kairo* 49: 63-68.
- Bogucki, P.
- 1996 The Spread of Early Farming in Europe. *American Scientist* 84: 242-53.
- Bonani, G.
- 1994 The C14 Data. P. * 8 in *Excavations at Kabri, Vol. 7-8. Preliminary Report of 1992-1993 Seasons*, eds. A. Kempinski and W.-D. Niemeier. Tel Aviv: Tel Kabri Expedition; Tel Aviv University.
- Bonechi, M.
- 1992 Relations Amicales Syro-Palestiniennes: Mari et Hasor Au XVIII^e Siècle Av.J.C. Pp. 9-22 in *Florilegium Marianum: Recueil d'Études en l'Honneur de Michel Fleury*, ed. J.-M. Durand. Mémoires de N.A.B.U., no. 1. Paris.

- Bonfil, R.
- 1997 Analysis of the Temple. Pp. 85-101 in *Hazor V: An Account of the Fifth Season of Excavations, 1968*, eds. A. Ben-Tor and R. Bonfil. Jerusalem: Israel Exploration Society; Hebrew University.
- Bonfil, R., and Greenberg, R.
- 1997 Area A. Pp. 15-176 in *Hazor V: An Account of the Fifth Season of Excavations, 1968*, eds. A. Ben-Tor and R. Bonfil. Jerusalem: Israel Exploration Society; Hebrew University.
- Borghouts, J. F.
- 1988 Surveying the Delta: Some Retrospects and Prospects. Pp. 3-8 in *The Archaeology of the Nile Delta: Problems and Priorities* (Proceedings of the seminar held in Cairo, 19-22 October 1986, on the occasion of the fifteenth anniversary of the Netherlands Institute of Archaeology and Arabic Studies in Cairo), ed. E. C. Van Den Brink. Amsterdam: Netherlands Foundation for Archaeological Research in Egypt.
- Botrimovitz, Y.
- 1971 On Artificial Outlets in the Eastern Kurkar Ridge on the Carmel Coast. *Menashe Regional Council* 5 (April): 1-10.
- 1988 *Personal Researches in the Geography of Israel*. Tel Aviv: Or Press.
- Bökönyi, S.
- 1985 The Animal Remains of Maadi, Egypt: A Preliminary Report. Pp. 495-99 in *Studi Di Paletnologia in Onore Di Salvatore M. Puglisi*, M. Liverani, A. Palmieri and R. Peroni. Roma: Università di Roma "La Sapienza."
- Bourke, S.
- 1997 Pre-Classical Pella in Jordan: A Conspectus of Ten Year's Work (1985-1995). *Palestine Exploration Quarterly* 129: 94-115.
- Bourriau, J.
- 1990 Canaanite Jars from New Kingdom Deposits at Memphis, Kom Rabi`A. Pp. 18*-26* in *Eretz Israel 21 (Amiran Volume)*. Jerusalem.
- Bowman, D.
- 1972 *Akhziv - Rosh Haniqra: Morphology and Sedimentology of the Coastline*. The Western Galilee, the regional Israel studies group of the *Ladder of Tyre* and *Ga`aton* Councils. Haifa: Ayalon Offset Ltd. 53 pp (Hebrew).
- Bowman, S., Ambers, J., and Leese, M.
- 1990 Re-Evaluation of British Museum Radiocarbon Dates Issued Between 1980 and 1984. *Radiocarbon* 32(1): 59-79.
- Bowman, S.
- 1994 Using Radiocarbon: An Update. *Antiquity* 68: 838-43.
- Braemer, F.
- 1993 Prospections Archéologiques dans le Hawran (Syrie) III. *Syria* 70: 117-70.

Brandl, B.

- 1984 An Egyptian Stone Vessel from Tel Mevorakh. Pp. 61-62 in *Excavations at Tel Mevorakh (1973-1976), Part Two: The Bronze Age*, ed. E. Stern. Qedem, vol. 18. Jerusalem: The Institute of Archaeology, The Hebrew University.
- 1989 Observations on the Early Bronze Age Strata of Tel Erani. Pp. 357-87 in *L'urbanisation de la Palestine À l'Âge Du Bronze Ancien: Bilan et Perspectives Des Recherches Actuelles, Actes Du Colloque d'Emmaüs (20-24 Octobre 1986)*, ed. P. de Miroschedji. BAR International Series. Oxford.
- 1992 Evidence for Egyptian Colonization in the Southern Coastal Plain and Lowlands of Canaan During the EB I Period. Pp. 441-77 in *The Nile Delta in Transition: 4th - 3rd Millennium B.C.* (Proceedings of the seminar held in Cairo, 21-24 October 1990, at the Netherlands Institute of Archaeology and Arabic Studies), ed. E. C. Van Den Brink. Tel Aviv.

Branigan, K.

- 1966 Byblite Daggers in Cyprus and Crete. *American Journal of Archaeology* 70: 123-26.
- 1967 Further Light on the Prehistoric Relations Between Crete and Byblos. *American Journal of Archaeology* 71: 117-21.

Branigan, K.

- 1974 *Aegean Metalwork of the Early and Middle Bronze Age*. Oxford Monographs on Classical Archaeology. Oxford: Clarendon Press. 2
- 1982 Minoan Metallurgy and Cypriot Copper. Pp. 203-11 in *Early Metallurgy in Cyprus, 4000-500 B.C.*, eds. J. D. Muhly, R. Maddin and V. Karageorghis. The Pierides Foundation. Nicosia.
- 1989 Minoan Foreign Relations in Transition. Pp. 65-71 in *Transition: Le Monde Egeen Du Bronze Moyen Au Bronze Recent* (Actes de la deuxième Rencontre égéenne internationale de l'Université de Liège (18-2- Avril 1988)), ed. R. Laffineur. Aegaeum, Annales d'archaéologie égéenne de l'Université de Liège, no. 3. Liège: Université de Liège.
- 1991 Mochlos - an Early Aegean 'Gateway Community?'. Pp. 97-105 in *Thalassa: L'Egee Préhistorique et la Mer* (Actes de la troisième Rencontre égéenne internationale de l'Université de Liège, Station de recherches sous-marine et océanographiques (StaReSo), Calvi, Corse (23-25 Avril, 1990)), eds. R. Laffineur and L. Basch. Aegaeum, Annales d'archaéologie égéenne de l'Université de Liège, no. 7. Liège: Université de Liège.

Braudel, F.

- 1972 *The Mediterranean and the Mediterranean World in the Age of Phillip II*, trans. Siân Reynolds. London: Collins. 6
- 1993 [1987] *A History of Civilizations*, trans. Richard Mayne. New York: Penguin Books.

Braun, E.

- 1985 *En Shadud: Salvage Excavations at a Farming Community in the Jezreel Valley, Israel*. BAR International Series, no. 249. Oxford.

1989

The Transition from the Chalcolithic to the Early Bronze Age I in Northern Israel and Transjordan: Is There a Missing Link? Pp. 7-27 in *L'urbanisation de la Palestine À l'Âge Du Bronze Ancien: Bilan et Perspectives Des Recherches Actuelles, Actes Du Colloque d'Emmaüs (20-24 Octobre 1986)*, ed. P. de Miroshedji. BAR International Series. Oxford: BAR.

- 1990 Basalt Bowls of the EB I Horizon in the Southern Levant. *Paléorient* 16(1): 87-96.

Braun, E., and Gophna, R.

- 1996 Ashqelon, Afridar. *Excavations and Surveys in Israel* 15: 97-98.

Braun, E., and Van den Brink, E. C. M.

- 1998 Some Comments on the Late EB I Sequence of Canaan and the Relative Dating of Tomb U_j at Umm el Ga'Ab and Graves 313 and 787 from Minshat Abu Omar with Imported Ware: Views from Egypt and Canaan. *Ägypten und Levante* 7: 71-85.

Breasted, J. H.

- 1906 *Ancient Records of Egypt: Historical Documents from the Earliest Times to the Persian Conquest, Volume 1*. Chicago: University of Chicago.

Brody, A. J.

- forthcoming "Each Man Cried Out to His God": the Specialized Religion of Canaanite and Phoenician Seafarers. Harvard Semitic Monograph Series. Atlanta: Scholars Press.
- 1996 *Maritime Religion of the Canaanites and Phoenicians: Aspects of the Specialized Sacral Beliefs and Practices of Levantine Seafarers* (Unpublished Ph.D. dissertation). Harvard University.

Bronk Ramsey, C.

- 1995 Radiocarbon Calibration and Analysis of Stratigraphy: The OxCal Program. *Radiocarbon* 37(2): 425-30.

Broodbank, C.

- 1989 The Longboat and Society in the Cyclades in the Keros-Syros Culture. *American Journal of Archaeology* 93: 319-37.
- 1993 Ulysses Without Sails: Trade, Distance, Knowledge and Power in the Early Cyclades. *World Archaeology* 24(3): 315-31.
- 1995 *This Small World the Great: An Island Archaeology of the Early Cyclades* (Unpublished doctoral thesis submitted to the University of Cambridge).

Broodbank, C., and Strasser, T. F.

- 1991 Migrant Farmers and the Neolithic Colonization of Crete. *Antiquity* 65: 233-45.

Broshi, M., and Gophna, R.

- 1986 Middle Bronze Age II Palestine: Its Settlement and Population. *Bulletin of the American Schools of Oriental Research* 261: 73-90.

- Bruins, H., and Mook, W.
 1989 The Need for a Calibrated Radiocarbon Chronology of Near Eastern Archaeology. *Radiocarbon* 31(3): 1019-29.
- Le Brun, A.
 1989 Le Néolithique de Chypre et a Relation avec le PPNB du Levant. *Paléorient* 15(1): 161-67.
- Brunton, G., and Caton-Thompson, G.
 1924 *The Badarian Civilization and Predynastic Remains Near Badari*. London: Bernard Quaritch.
- Buck, C., Kenworthy, J., Litton, C., and Smith, A.
 1991 Combining Archaeological and Radiocarbon Information: A Bayesian Approach to Calibration. *Antiquity* 65: 808-21.
- Buck, C., Litton, C., and Scott, E.
 1994 Making the Most of Radiocarbon Dating: Some Statistical Considerations. *Antiquity* 68: 252-63.
- Buck, C., Litton, C., and Smith, A.
 1992 Calibration of Radiocarbon Results Pertaining to Related Archaeological Events. *Journal of Archaeological Science* 19: 497-512.
- Bull, R. J., Callaway, J. A., Campbell, E. F., Jr., Ross, J. F., and Wright, G. E.
 1965 The Fifth Campaign at Balatâh (Shechem). *Bulletin of the American Schools of Oriental Research* 180: 7-41.
- Bunimovitz, S.
 1992 The Middle Bronze Age Fortifications in Palestine as a Social Phenomenon. *Tel Aviv* 19(2): 221-34.
 1996 Middle Bronze Age Fortifications in Palestine as a Social Phenomenon. *Cathedra* 81: 7-22 (Hebrew; English abstract, p. 185).
- Burghardt, A.
 1971 A Hypothesis About Gateway Cities. *Annals of the Association of American Geographers* 61: 269-85.
- Burleigh, R.
 1987 Scientific Appendix III: Radiocarbon Analysis. Pp. 125-27 in *Catalogue of Egyptian Antiquities in the British Museum VII*, by W. V. Davies. London: British Museum Publications.
- Burleigh, R., and Matthews, K.
 1982 British Museum Natural Radiocarbon Measurements XIII. *Radiocarbon* 24(2): 151-70.
- Cadogan, G.
 1983 Early Minoan and Middle Minoan Chronology. *American Journal of Archaeology* 87: 507-18.

- Callaway, J. A.
- 1978 New Perspectives on Early Bronze III in Canaan. Pp. 46-58 in *Archaeology in the Levant: Essays for Kathleen Kenyon*, eds. R. Moorey and P. Parr. Warminster: Aris & Phillips Ltd.
- Campbell, E. F., Jr.
- 1991 *Shechem II: Portrait of a Hill Country Vale*. American School of Oriental Research Archaeological Reports, no. 2. Atlanta: Scholar's Press.
- 1993 Shechem, Tell Balatah. Pp. 1345-54 in *The New Encyclopedia of Archaeological Excavations in the Holy Land*, eds. E. Stern, A. Lewinson-Gilboa and J. Aviram. Jerusalem: Israel Exploration Society.
- Cariolou, G. A.
- 1997 Kyrenia II: The Return from Cyprus to Greece of the Replica of a Hellenic Merchant Ship. Pp. 83-97 in *Res Maritimae: Cyprus and the Eastern Mediterranean from Prehistory to Late Antiquity*, eds. S. Swiny, R. L. Hohlfelder and H. W. Swiny. Proceedings of the second international symposium *Cities on the Sea*, Nicosia, Cyprus, October 18-22, 1994. Cyprus American Archaeological Research Institute Monograph Series, vol. 1, no. 4. Atlanta: Scholars Press.
- Carmel, Z., Inman, D., and Golik, A.
- 1985 Directional Wave Measurement at Haifa, Israel, and Sediment Transport Along the Nile Littoral Cell. *Coastal Engineering* 9: 21-36.
- Carmi, I., and Segal, D.
- 1992 Rehovot Radiocarbon Measurements IV. *Radiocarbon* 34(1): 115-32.
- Casson, L.
- 1971 *Ships and Seamanship in the Ancient World*. Princeton: Princeton University Press.
- Casson, S.
- 1938 The Modern Pottery Trade in the Aegean. *Antiquity* 12. 464-473.
- 1951 The Modern Pottery Trade in the Aegean: Further Notes. *Antiquity* 25. 187-190.
- Catling, H., and MacGillivray, J.
- 1983 An Early Cypriot III Vase from the Palace at Knossos. *Annual of the British School at Athens* 78: 1-8.
- Caubet, A.
- 1991 Répertoire de la Vaiselle de Pierre, Ougarit 1929-1988. Pp. 205-64 in *Arts et Industries de la Pierre, Ras Shamra - Ougarit VI*, ed. M. Yon. Editions Recherche sur les Civilisations. Paris.
- Chapman, R.
- 1990 *Emerging Complexity: The Later Prehistory of Southeast Spain, Iberia and the West Mediterranean*. Cambridge: Cambridge University Press.
- Chapman, R.
- 1984 Review of Geva, Shulamit: Tell Jerishe: The Sukenik Excavations of the Middle Bronze Age Fortifications. *Palestine Exploration Quarterly* 116: 152.

- Charpin, D.
1990 Une Mention d'Alasiya dans une Lettre de Mari. *Revue d'Assyriologie* 84: 125-27.
- Chaudhuri, K.
1985 *Trade and Civilisation in the Indian Ocean: An Economic History from the Rise of Islam to 1750*. Cambridge: Cambridge University Press. 269.
- Chéhab, M.
1940 Tombes Phéniciennes, Majdalouna. *Bulletin Du Musée de Beyrouth* 4: 37-53.
- Chernoff, M. C., and Paley, S. M.
forthcoming Cereal Cultivation at Tel el Ifshar, Israel During the Middle Bronze Age. *Journal of Field Archaeology*.
- Chernoff, M. C.
1988 *The Archaeobotanical Material from Tel el Ifshar, Israel: A Diachronic Study of Agricultural Strategies During the Third and Second Millennia, B.C.E.* (Phd. dissertation submitted to the Brandeis University). Ann Arbor: University Microfilms International.
- Cherry, J. F.
1985 Islands Out of Stream: Isolation and Interaction in Early East Mediterranean Insular Prehistory. Pp. 12-29 in *Production and Exchange in Aegean and Mediterranean Prehistory*, eds A. Knapp and T. Stech. UCLA Institute of Archaeology Monographs. Los Angeles.
1986 Epilogue and Prospect. Pp. 149-53 in *Peer-Polity Interaction and Socio-Political Change*, eds C. Renfrew and J. F. Cherry. Cambridge: Cambridge University Press.
1990 The First Colonization of the Mediterranean Islands: A Review of Recent Research. *Journal of Mediterranean Archaeology* 3(2): 145-221.
- Chilardi, S., Frayer, D., Gioia, P., Macchiarelli, R., and Mussi, M.
1996 Fontana Nuova Di Ragusa (Sicily, Italy): Southernmost Aurignacian Site in Europe. *Antiquity* 70: 553-63.
- Childe, V. G.
1969 [1953] *New Light on the Most Ancient East: The Oriental Prelude to European Prehistory*. 4th ed. New York: W.W. Norton and company.
- Clarke, S., and Engelbach, R.
1930 *Ancient Egyptian Masonry; the Building Craft*. London: Oxford University Press.
- Cline, E. H.
1994 *Sailing the Wine-Dark Sea: International Trade and the Late Bronze Age Aegean*. BAR International Series, no. 591. Oxford: Tempus Reparatum.
- Cohen, R.
1981 *Map of Sede Boqer-East (168)*. Jerusalem: Archaeological Survey of Israel. 88 pp (Hebrew); 32 pp (English).
1985 *Map of Sede Boqer-West (167)*. Jerusalem: Israel Department of Antiquities and Museums; Archaeological Survey of Israel. 106 pp (Hebrew); 35^{*} pp (English).

- Cohen, R., and Dever, W. G.
- 1981 Preliminary Report of the Third and Final Season of the "Central Negev Highlands Project." *Bulletin of the American Schools of Oriental Research* 243: 1-25.
- Cohen-Arnon, K., and Amiran, R.
- 1981 Excavations at Tel Qishyon - Preliminary Report on the 1977-1978 Seasons. Pp. 205-12 (Hebrew; p. 82 * English summary) in *Eretz Israel 15 (Aharoni Memorial Volume)*. Jerusalem: Israel Exploration Journal.
- Colless, B. E.
- 1990 The Proto-Alphabetic Inscriptions of Sinai. *Abr-Naharin* 28: 1-52.
- 1991 The Proto-Alphabetic Inscriptions of Canaan. *Abr-Naharin* 29: 18-66.
- 1992 The Byblos Syllabary and the Proto-Alphabet. *Abr-Naharin* 30: 55-102.
- 1993 The Syllabic Inscriptions of Byblos: Text D. *Abr-Naharin* 31: 1-35.
- 1994 The Syllabic Inscriptions of Byblos: Texts C and A. *Abr-Naharin* 32: 59-79.
- 1995 The Syllabic Inscriptions of Byblos: Texts B, E, F, I, K. *Abr-Naharin* 33: 17-29.
- 1996-97 The Syllabic Inscriptions of Byblos: Miscellaneous Texts. *Abr-Naharin* 34: 42-57.
- Collon, D.
- 1987 *First Impressions: Cylinder Seals in the Ancient Near East*. Chicago: The University of Chicago Press.
- Cosmopoulos, M. B.
- 1991 Exchange Networks in Prehistory: The Aegean and the Mediterranean in the Third Millennium B.C. Pp. 155-68 in *Thalassa: L'Egee Préhistorique et la Mer* (Actes de la troisième Rencontre égéenne internationale de l'Université de Liège, Station de recherches sous-marine et océanographiques (StaReSo), Calvi, Corse (23-25 Avril, 1990)), eds. R. Laffinueur and L. Basch. Aegaeum, Annales d'archaéologie égéenne de l'Université de Liège, no. 7. Liège: Université de Liège.
- Cotterell, B., and Kamminga, J.
- 1990 *Mechanics of Pre-Industrial Technology*. Cambridge: Cambridge University Press.
- Covello-Paran, K.
- 1996 Middle Bronze Age Burial Caves at Hogosherim, Upper Galilee. *'Atiqot* 30: 71-83.
- Cowell, R. M.
- 1987 Scientific Appendix I: Chemical Analysis. Pp. 96-118 in *Catalogue of Egyptian Antiquities in the British Museum VII*, by W. V. Davies. London: British Museum Publications.
- Crowley, J. L.
- 1989 *The Aegean and the East: An Investigation Into the Transference of Artistic Motifs Between the Aegean, Egypt, and the Near East in the Bronze Age*. Studies in Mediterranean Archaeology and Literature. Jonsered: Paul Åström förlag.
- Curtin, P. D.
- 1984 *Cross-Cultural Trade in World History*. Cambridge: Cambridge University Press.

- Dagan, Y.
- 1992 *Map of Lakhish (98)*. Archaeological Survey of Israel. Jerusalem: Israel Antiquities Authority. 161 pp (Hebrew; 117 pp English).
- Dalley, S.
- 1984 *Mari and Karana: Two Old Babylonian Cities*. London.
- Damati, E., and Stepanski, Y.
- 1996 A Middle Bronze Age II Burial Cave on Mt. Canaan, ²efat (Wadi ²amra). *Atiqot* 29: 1^{*} -29^{*} (Hebrew; English summary, p. 107).
- Damon, P. E.
- 1987 The History of the Calibration of Radiocarbon Dates by Dendrochronology. Pp. 62-104 in *Chronologies in the Near East: Relative Chronologies and Absolute Chronology 16,000-4,000 BP*, eds. O. Aurenche, J. Evin and F. Hours. C.N.R.S. International Symposium, Lyon (France) 24-28 November 1986. BAR International Series, no. 379. Oxford: Maison de l'Orient Méditerranéen (C.N.R.S - Université Lumière - Lyon 2). 2 vols.
- Dar, S.
- 1985 The Middle Bronze (Canaanite) I Period. Pp. 47-48 (Hebrew) in *Qadmoniyot Emek-Hefer [The History and Archaeology of Emek-Hefer]* (Hebrew), eds. Y. Porath, S. Dar and S. Appelbaum. Tel Aviv: Hakibbutz Hameuchad.
- Dauphin, C., and Gibson, S.
- 1992-93 Ancient Settlements in Their Landscapes: The Results of Ten Years of Survey on the Golan Heights (1978-1988). *Bulletin of the Anglo-Israel Archaeological Society* 12: 7-31.
- David, A. R.
- 1986 *The Pyramid Builders of Ancient Egypt: A Modern Investigation of Pharaoh's Workforce*. The Making of the Past. London: Routledge & Kegan Paul.
- 1991 Religious Practices in a Pyramid Workmen's Town of the Twelfth Dynasty. *The Bulletin of the Australian Centre for Egyptology* 2: 33-40.
- Davies, N. D. G.
- 1908 *The Rock Tombs of el Amarna, Vol. V*. The Egypt Exploration Fund. 17th memoir Archaeological Survey of Egypt. London.
- Davies, N. D. G., and Faulkner, R.
- 1947 A Syrian Trading Venture to Egypt. *Journal of Egyptian Archaeology* 33: 40-46.
- Davies, W. V.
- 1987 *Tools and Weapons I: Axes*. In *Catalogue of Egyptian Antiquities in the British Museum VII*. London: British Museum Publications.
- 1995 Ancient Egyptian Timber Imports: An Analysis of Wooden Coffins in the British Museum. Pp. 146-56 in *Egypt, the Aegean and the Levant: Interconnections in the Second Millennium BC*, eds. W. V. Davies and L. Schofield. London: British Museum Press.

- [Davis, D.]
- 1976 Sasa. *Hadashot Arkheologiyot* 59-60: 9 (Hebrew).
- De Cree, F. J.
- 1991 "Mutatis Mutandis" Egyptian Relations in the Chalcolithic and Early Bronze Age I-IV. *Göttinger Miszellen* 124: 21-42.
- de Miroschedji, P.
- 1988 *Yarmouth 1: Rapport sur les Trois Première Campagnes de Fouilles À Tel Yarmouth (Israël), 1980-1982*. Éditions Reserche sur les Civilizations. Paris.
- 1993a Cult and Religion in the Chalcolithic and Early Bronze Age. Pp. 208-20 in *Biblical Archaeology Today, 1990: Proceedings of the Second International Congress on Biblical Archaeology, Jerusalem, June-July 1990*, eds. A. Biran and J. Aviram. Jerusalem: Israel Exploration Society; The Israel Academy of Sciences and Humanities.
- 1993b Farah, Tell el (N.) - Neolithic Period to the Middle Bronze Age. Pp. 433-38 in *The New Encyclopedia of Archaeological Excavations in the Holy Land*, eds E. Stern, A. Lewinson-Gilboa and J. Aviram. Jerusalem: Israel Exploration Society.
- 1993c Tel Jarmuth. Pp. 661-65 in *The New Encyclopedia of Archaeological Excavations in the Holy Land*, eds E. Stern, A. Lewinson-Gilboa and J. Aviram. Jerusalem: Israel Exploration Society.
- 1995 The Excavations at Tel Yarmuth. *Qadmoniot* 28(1 (109)): 27-38.
- de Vaux, R.
- 1951 La Troisième Campagne de Fouilles à Tell el-Far`ah, Pres Naplouse. *Revue Biblique* 58: 393-430.
- 1993 Farah, Tell el (N.). P. 433 in *The New Encyclopedia of Archaeological Excavations in the Holy Land*, eds E. Stern, A. Lewinson-Gilboa and J. Aviram. Jerusalem: Israel Exploration Society.
- de Vaux, R., and Steve, A.
- 1948 La Seconde Campagne de Fouilles à Tell el-Far`ah, Près Naplouse. *Revue Biblique* 55: 544-80.
- Delia, R. D.
- 1980 *A Study of the Reign of Senwosret III* (Phd. dissertation submitted to Columbia University). 296 p.
- Demsky, A.
- 1990 The Education of Canaanite Scribes in the Mesopotamian Cuneiform Tradition. Pp. 157-70 in *Bar Ilan Studies in Assyriology Dedicated to Pin²as Artzi*, eds. J. Klein and A. Skaist. Ramat Gan: Bar Ilan University Press.
- Dennell, R., and Roebroeks, W.
- 1996 The Earliest Colonization of Europe: The Short Chronology Revisited. *Antiquity* 70: 535-42.

- Depuydt, L.
- 1995 On the Consistency of the Wandering Year as Backbone of the Egyptian Chronology. *Journal of the American Research Center in Egypt* 32: 43-58.
- 1998 Ancient Egyptian Star Clocks and Their Theory. *Bibliotheca Orientalis* 55(1-2): 5-44.
- Dercksen, J. G.
- 1996 *The Old Assyrian Copper Trade in Anatolia*. Publications de l'Institut Historique-Archéologique Néederlandais de Stamboul, no. LXXV. Leiden: Nederlands Historish-Archaeologisch Instituut Te Istanbul.
- Dever, W. G.
- 1971 An MB I Tomb Group from Sinjil. *Bulletin of the American Schools of Oriental Research* 204: 31-37.
- 1972 Middle Bronze Age I Cemeteries at Mirzbâneh and `Ain Sâmîya. *Israel Exploration Journal* 22: 97-106.
- 1975a MB IIA Cemeteries at `Ain es-Samiyêh and Sinjil. *Bulletin of the American Schools of Oriental Research* 217: 23-36.
- 1975b A Middle Bronze Age I Cemetery at Khirbet Kirmil. Pp. 18^{*}-35^{*} in *Eretz Israel 12 (Glueck Memorial Volume)*. Jerusalem: Israel Exploration Society.
- 1976 The Beginning of the Middle Bronze Age in Syria-Palestine. Pp. 3-38 in *Magnalia Dei, the Mighty Acts of God: Essays on the Bible and Archaeology in Memory of G. Ernest Wright*. 611 pp, eds F. Cross, W. Lemke and P. Miller, Jr. Garden City, New York: Doubleday.
- 1977 Palestine in the Second Millennium: The Archaeological Picture. Pp. 70-120 in *Israelite and Judaen History*, eds J. H. Hayes and J. M. Miller. Philadelphia: The Westminster Press.
- 1980 New Vistas on the EB IV ("MB I") Horizon in Syria-Palestine. *Bulletin of the American Schools of Oriental Research* 237: 35-64.
- 1985 From the End of the Early Bronze Age to the Beginning of the Middle Bronze Age. Pp. 113-35 in *Biblical Archaeology Today: Proceedings of the International Congress on Biblical Archaeology, Jerusalem, April 1984*, ed. J. Amitai. Jerusalem: Israel Exploration Society; The Israel Academy of Sciences and Humanities.
- 1986 Abel Beit Maachah. In *The Archaeology of Jordan and Other Studies Presented to Siegfried H. Horn*, eds. L. T. Gerarty and L. G. Herr. Berrien Springs, Michigan: Andrew University Press.
- 1987 The Middle Bronze Age: The Zenith of the Urban Canaanite Era. *Biblical Archaeologist* 50(3): 148-77.
- 1989 The Collapse of the Urban Early Bronze Age in Palestine - Towards a Systemic Analysis. Pp. 225-46 in *L'urbanisation de la Palestine À l'Âge Du Bronze Ancien: Bilan et Perspectives Des Recherches Actuelles, Actes Du Colloque d'Emmaüs (20-24 Octobre 1986)*, ed. P. de Miroschedji. BAR International Series. Oxford.

- 1991 Tell el-Dab'a and Levantine Middle Bronze Age Chronology: A Rejoinder to Manfred Bietak. *Bulletin of the American Schools of Oriental Research* 281: 73-79.
- 1992 The Chronology of Syria-Palestine in the Second Millennium B.C.E.: A Review of Current Issues. *Bulletin of the American Schools of Oriental Research* 288: 1-25.
- 1993a Gezer. Pp. 496-506 in *The New Encyclopedia of Archaeological Excavations in the Holy Land*, eds E. Stern, A. Lewinson-Gilboa and J. Aviram. Jerusalem: Israel Exploration Society.
- 1993b The Rise of Complexity in the Land of Israel in the Early Second Millennium B.C.E. Pp. 98-109 in *Biblical Archaeology Today 1990: Proceedings of the Second International Congress on Biblical Archaeology, Jerusalem, June 1990, Pre-Congress Symposium Supplement*, eds. A. Biran and J. Aviram. Jerusalem: Israel Exploration Society.
- 1995 Social Structure in the Early Bronze IV Period in Palestine. Pp. 282-96 in *The Archaeology of Society in the Holy Land*, ed. T. E. Levy. Leicester University Press.
- 1997 Settlement Patterns and Chronology of Palestine in the Middle Bronze Age. Pp. 285-301 in *The Hyksos: New Historical and Archaeological Perspectives*, ed. E. Oren. University Museum Monograph. 8 University Museum Symposium Series. Philadelphia: University of Pennsylvania Museum.
- Dever, W. G., ed., Lance, H. D., Bullard, R. G., Cole, D. P., Gitin, S., Holladay, J., John S., Seger, J. D., Walker, A. M., and Wright, R. B.
- 1986 *Annual of the Nelson Glueck School of Biblical Archaeology* 4. *Gezer IV: The 1969-71 Seasons in Fields VI, the "Acropolis."* Jerusalem: Keter Press. 2 parts; text and plates/plans.
- Dijkstra, M.
- 1991 The Weather-God on Two Mountains. *Ugarit-Forschungen* 23: 127-40.
- Dinur, U., and Feig, N.
- 1993 Eastern Part of the Map of Jerusalem (Sites 429-544). In *Archaeological Survey of the Hill Country of Benjamin*, eds. I. Magen and I. Finkelstein. Jerusalem: Israel Antiquity Authority Publications. 338-422 (Hebrew with English summary).
- Dornemann, R. H.
- 1983 *The Archaeology of the TransJordan in the Bronze and Iron Age*. Milwaukee Public Museum.
- Dorsey, D. A.
- 1987 Shechem and the Road Network of Central Samaria. *Bulletin of the American Schools of Oriental Research* 268: 57-70.
- 1988 Travel; Transportation. Pp. 891-97 in *The International Standard Bible Encyclopedia*. Grand Rapids, MI: Eerdmans.
- 1991 *The Roads and Highways of Ancient Israel*. The ASOR library of Biblical and Near Eastern Archaeology. Baltimore: The Johns Hopkins University Press.

- Dossin, G.
- 1969 Trois Inscriptions Cunéiformes de Byblos. *Mélanges de l'Université Saint Joseph* 45: 243-55.
- Dothan, M.
- 1955 The Excavations at `Afula. *`Atiqot* 1: 19-70.
- 1956a The Excavations at Nahariya: Preliminary Report (Seasons 1954/55). *Israel Exploration Journal* 6: 14-25.
- 1956b The Sacrificial Mound at Nahariya. Pp. 41-46 (Hebrew) in *Eretz Israel* 4 (*Ben-Zvi Volume*). Jerusalem: Israel Exploration Society.
- 1965 The Cult of Naharia and Canaanite High Places. Pp. 63-75 in *Western Galilee and the Coast of the Galilee*. The nineteenth archaeological convention, October 1963. Jerusalem: Israel Exploration Society.
- 1976 Akko: Interim Excavation Report First Season, 1973/4. *Bulletin of the American Schools of Oriental Research* 224: 1-48.
- 1977 Nahariya. Pp. 908-12 in *Encyclopedia of Archaeological Excavations in the Holy Land*, eds M. Avi-Yonah and E. Stern. Jerusalem: Israel Exploration Society; Massada Press.
- 1981 Sanctuaries Along the Coast of Canaan in the MB Period: Nahariya. Pp. 74-81 in *Temples and High Places in Biblical Times*, ed. A. Biran. Proceedings of the colloquium in honor of the centennial of Hebrew Union College - Jewish Institute of Religion, Jerusalem, 14-16 March, 1977. Jerusalem: The Nelson Glueck School of Biblical Archaeology of Hebrew Union College - Jewish Institute of Religion.
- 1990 An Infant Jar-Burial. Pp. 148-51 (Hebrew; p. 106* English summary) in *Eretz Israel* 21 (*Amiran Volume*). Jerusalem.
- 1991 Some Notes on the Akko Plain During the Middle Bronze IIA-B Period. *Michmanim* 5: 5-11 (Hebrew; English abstract p. 35^{*}).
- 1993a Acco. Pp. 16-24 in *The New Encyclopedia of Archaeological Excavations in the Holy Land*, eds E. Stern, A. Lewinson-Gilboa and J. Aviram. Jerusalem: Israel Exploration Society.
- 1993b `Afula. Pp. 37-39 in *The New Encyclopedia of Archaeological Excavations in the Holy Land*, eds E. Stern, A. Lewinson-Gilboa and J. Aviram. Jerusalem: Israel Exploration Society.
- 1993c Nahariya, the Bronze Age Temples and Bamah. Pp. 1090-92 in *The New Encyclopedia of Archaeological Excavations in the Holy Land*, eds E. Stern, A. Lewinson-Gilboa and J. Aviram. Jerusalem: Israel Exploration Society.
- 1993d Tel Esur. Pp. 426-28 in *The New Encyclopedia of Archaeological Excavations in the Holy Land*, eds E. Stern, A. Lewinson-Gilboa and J. Aviram. Jerusalem: Israel Exploration Society.

Dothan, T., and Gitin, S.

- 1993 Tel Mique. Pp. 1051-59 in *The New Encyclopedia of Archaeological Excavations in the Holy Land*, eds E. Stern, A. Lewinson-Gilboa and J. Aviram. Jerusalem: Israel Exploration Society.

Dreyer, G.

- 1992a Recent Discoveries at Abydos Cemetery U. Pp. 293-99 in *The Nile Delta in Transition: 4th - 3rd Millennium B.C.* (Proceedings of the seminar held in Cairo, 21-24 October 1990, at the Netherlands Institute of Archaeology and Arabic Studies), ed. E. C. Van Den Brink. Tel Aviv.
- 1992b The Royal Tombs of Abydos. Pp. 55-67 in *The Near East in Antiquity, Vol. III* (German contributions to the archaeology of Jordan, Palestine, Syria, Lebanon and Egypt), ed. S. Kerner. Amman: Al Kutba; Goethe-Institut; German Protestant Institute for Archaeology.

Dreyer, G., Hartung, U., and Pumpenmeier, F.

- 1993 Nachuntersuchungen Im Frühzeitlichen Königsfriedhof 5./6. Vorbericht. *Mitteilungen Des Deutschen Archäologischen Instituts Abteilung Kairo* 49: 23-62.

Drucks, A.

- 1982 Early Tombs at Tel `Amar. *`Atiqot (Hebrew Series)* 8: 1-6 (p. 1^{*} English summary).

du Mesnil du Buisson, L. C. R.

- 1928 L'ancienne Qatna Ou les Ruins d'el-Mishrifé Au N.-E. Homs (Émèse), Deuxième Campagne de Fouilles 1927. *Syria* 9: 6-24.

Dunand, M.

- 1928 Les Égyptiens a Beyrouth. *Syria* 9: 300-02.
- 1937 *Fouilles de Byblos I: 1926-32 (Atlas)*. Paris: Librairie d'Amérique et d'Orient Adrien Maisonneuve.
- 1939 *Fouilles de Byblos I: 1926-32 (Texte)*. Paris: Librairie d'Amérique et d'Orient Adrien Maisonneuve.
- 1950 *Fouilles de Byblos II: 1933-1938 (Atlas)*. Paris: Librairie d'Amérique et d'Orient Adrien Maisonneuve.
- 1954 *Fouilles de Byblos II: 1933-1938 (Texte)*. Paris: Librairie d'Amérique et d'Orient Adrien Maisonneuve.
- 1973 *Fouilles de Byblos V*. Paris: Librairie d'Amérique et d'Orient Adrien Maisonneuve.
- 1978 Nouvelles Inscriptions Pseudo-Hiéroglyphiques Découvertes a Byblos. *Bulletin Du Musée de Beyrouth* 30: 51-59.

Dunayevsky, I., and Kempinski, A.

- 1973 The Megiddo Temples. *Zeitschrift Des Deutschen Palästina-Vereins* 89: 161-87.
- 1990 Sections in the Eastern Rampart of Hazor - 1965. *`Atiqot (Hebrew Series)* 10: 23-28 (English summary, p. 13^{*}).

- Eames, S., and Schroder, M.
- 1997 A Middle Bronze Age Landscape: Occupation and Resource Management in the Wadi al-`Ajib, al-Mafraq. Pp. 149-58 in *Studies in the History and Archaeology of Jordan VI*, eds. G. Bisheh, M. Zaghloul and I. Kehrberg.
- Edel, E.
- 1980 A Kamares Vase from Qubbet el-Hawa, Near Aswan. Pp. 176-214 in *Minoan Pottery in Second Millenium Egypt*, by B. J. Kemp and R. S. Merrillees. Mainz am Rhein: Philipp von Zabern.
- 1983 Zwei Steinschalen mit Ägyptischen Inschriften Aus dem Palast von Kamid el-Loz. Pp. 38-39 in *Frühe Phöniker Im Libanon: 20 Jahre Deutsche Ausgrabungen in Kamid el-Loz*, ed. R. Hachmann. Mainz am Rhein: Philipp Von Zabern.
- Edelstein, G.
- 1971 Excavations at the Cemetery of Khirbet Ibreiktas. *Ezra Menashe* 5 (April): 1-10.
- Edwards, I.
- 1971 The Early Dynastic Period in Egypt. Pp. 1-70 in *The Cambridge Ancient History*, Vol. 1, part 2. *Early History of the Middle East*, eds. I. Edwards, C. Gadd and N. Hammond. Cambridge: Cambridge University Press.
- Egberts, A.
- 1991 The Chronology of The Report of Wenamun. *Journal of Egyptian Archaeology* 77: 57-67.
- Eidem, J., and Højlund, F.
- 1993 Trade or Diplomacy? Assyria and Dilmun in the Eighteenth Century BC. *World Archaeology* 24(3): 441-48.
- Eigner, D.
- 1985 Der Ägyptische Palast Eines Asiatoschen Königs. *Jahreshefte Des Österreichischen Archäologischen Institutes in Wien* 56: 19-25.
- Eisenberg, E.
- 1985 A Burial Cave of the Early Bronze Age IV (MB I) Near `Enan. *Atiqot* 17: 59-74.
- 1975 Tur`An. *Hadashot Arkheologiyot* 53: 7-8 (Hebrew).
- 1993 Kittan, Tel. Pp. 878-81 in *The New Encyclopedia of Archaeological Excavations in the Holy Land*, eds E. Stern, A. Lewinson-Gilboa and J. Aviram. Jerusalem: Israel Exploration Society.
- Eitan, A.
- 1972 Tell Beit Mirsim G-F - the Middle Bronze IIA Settlement. *Bulletin of the American Schools of Oriental Research* 208: 19-24.
- 1969 Excavations at the Foot of Tel Rosh Ha`Ayin. *`Atiqot (Hebrew Series)* 5: 49-68.
- el-Alfi, M.
- 1992 Means of Transport in Neolithic Egypt. Pp. 339-44 in *The Nile Delta in Transition: 4th - 3rd Millennium B.C.* (Proceedings of the seminar held in Cairo, 21-24 October

- 1990, at the Netherlands Institute of Archaeology and Arabic Studies), ed. E. C. Van Den Brink. Tel Aviv.
- El-Baz, F., Moores, B., and Petrone, C. E.
 1989 Remote Sensing at an Archaeological Site in Egypt. *American Scientist* 77: 61-66.
- Elliot, C.
 1977 The Religious Beliefs of the Ghassulians c. 4000-3100 BC. *Palestine Exploration Quarterly* 109: 3-25.
- Elster, Y.
 1964 *Atlas of Israel* ((Hebrew)). Jerusalem.
- Engberg, R. M., and Shipton, G.
 1934 *Notes on the Chalcolithic and Early Bronze Age Pottery of Megiddo*. Studies in Ancient Oriental Civilization, no. 10. Chicago: The Oriental Institute of the University of Chicago.
- Epstein, C.
 1974 Middle Bronze Age Tombs from Kefar Szold and Ginossar. *Atiqot (Hebrew Series)* 7: 13-39; (pp. 2*-6* English summary).
 1985a Dolmens Excavated in the Golan. *Atiqot (English Series)* 17: 20-58.
 1985b Laden Animal Figurines from the Chalcolithic Period in Palestine. *Bulletin of the American Schools of Oriental Research* 258: 53-62.
- Epstein, C., and Gutman, S.
 1972 The Golan. Pp. 244-95 in *Judea, Samaria and the Golan: Archaeological Survey 1967-1968*, ed. M. Kochavi. Jerusalem: The archaeological survey of Israel; Carta.
- Esse, D., and Hopke, P.
 1986 Levantine Trade in the Early Bronze Age. Pp. 327-39 in *Proceedings of the 24th International Archaeometry Symposium*, eds. J. Olin and M. Blackman. Washington, D.C.: The Smithsonian Institution Press.
- Esse, D. L.
 1989a Secondary State Formation and Collapse in Early Bronze Age Palestine. Pp. 81-96 in *L'urbanisation de la Palestine À l'Âge Du Bronze Ancien: Bilan et Perspectives Des Recherches Actuelles, Actes Du Colloque d'Emmaüs (20-24 Octobre 1986)*, ed. P. de Miroschedji. BAR International Series. Oxford: BAR.
 1989b Village Potters in Early Bronze Palestine: A Case Study. Pp. 77-92 in *Essays in Ancient Civilization Presented to Helene J. Kantor*, eds. A. J. Leonard and B. B. Williams. Studies in Ancient Oriental Civilization, no. 47. Chicago: The Oriental Institute of the University of Chicago.
 1990 Early Bronze Age Cylinder Seal Impressions from Beth Yerah. Pp. 27*-34* in *Eretz Israel 21 (Amiran Volume)*. Jerusalem.
 1991 *Subsistence, Trade, and Social Change in Early Bronze Age Palestine*. Studies in Ancient Oriental Civilization, no. 50. Chicago: The Oriental Institute of the University of Chicago.

- 1992 Review of Byblos in the Third Millennium B.C.: A Reconstruction of the Stratigraphy and a Study of the Cultural Connections. *Journal of Near Eastern Studies* 51(2 April): 141-43.
- Evans, J.
- 1994 The Early Millennia: Continuity and Change in a Farming Settlement. Pp. 1-20 in *Knossos: A Labyrinth of History* (Papers presented in honour of Sinclair Hood), eds. D. Evelyn, H. Hughes-Brock and N. Momigliano. Oxford: The British School of Athens.
- Falconer, S. E.
- 1987a *Heartland of Villages: Reconsidering Early Urbanism in the South Levant* (Phd. dissertation). University of Arizona: UMI.
- 1987b Village Pottery Production and Exchange: A Jordan Valley Perspective. Pp. 251-59 in *Studies in the History and Archaeology of Jordan III*, ed. A. Hadidi. New York: Department of Antiquities of Jordan; Routledge & Kegan Paul.
- 1994a The Development and Decline of Bronze Age Civilization in the Southern Levant: A Reassessment of Urbanism and Ruralism. Pp. 305-33 in *Development and Decline in the Mediterranean Bronze Age*, eds. C. Mathers and S. Stoddart. Sheffield Archaeological Monographs, no. 8. Sheffield: J.R. Collis Publications.
- 1994b Village Economy and Society in the Jordan Valley: A Study of Bronze Age Rural Complexity. Pp. 121-42 in *Archaeological Views from the Countryside: Village Communities in Early Complex Societies*, eds. G. M. Schwartz and S. E. Falconer. Washington, D.C.: Smithsonian Institution Press.
- 1995 Rural Responses to Early Urbanism: Bronze Age Household and Village Economy at Tell el-Hayyat, Jordan. *Journal of Field Archaeology* 22: 399-419.
- Falconer, S. E., and Magness-Gardiner, B.
- 1984 Preliminary Report of the First Season of the Tell el-Hayyat Project. *Bulletin of the American Schools of Oriental Research* 255: 49-74.
- 1989a Bronze Age Village Life in the Jordan Valley: Archaeological Investigations at Tell el-Hayyat and Tell Abu en-Ni`Aj. *National Geographic Research* 5(3): 335-47.
- 1989b Hayyat (Tell El). Pp. 254-61 in *Archaeology of Jordan II.1, Surveys & Sites A-K*, eds D. Homès-Fredericq and J. Hennessy. Akkadica Supplementum. Leuven: Peeters.
- 1993 Hayyat, Tell El-. Pp. 591-93 in *The New Encyclopedia of Archaeological Excavations in the Holy Land*, eds E. Stern, A. Lewinson-Gilboa and J. Aviram. Jerusalem: Israel Exploration Society.
- Falconer, S. E., and Savage, S. H.
- 1995 Heartlands and Hinterlands: Alternative Trajectories of Early Urbanization in Mesopotamia and the Southern Levant. *American Antiquity* 60(1): 37-58.
- [al-Fani, I., and Clamer, C.]

- 1976 A Tomb Near Shechem (Tell Balatâh). *Hadashot Arkheologiyot* 59-60: 23-24 (Hebrew).
- Farag, S.
1980 Une Inscription Memphite de la XII^e Dynastie. *Revue D'Égyptologie* 32: 75-82.
- Fargo, V.
1979 *Settlement in Southern Palestine During the Early Bronze III* (Unpublished Ph.D. dissertation). University of Chicago.
- Faulkner, R. O.
1986 [1962] *A Concise Dictionary of Middle Egyptian*. Oxford: Griffith Institute.
- Faulkner, R.
1964 Notes on 'the Admonitions of an Egyptian Sage.' *Journal of Egyptian Archaeology* 50: 24-36.
1965 The Admonitions of an Egyptian Sage. *Journal of Egyptian Archaeology* 51: 53-62.
1973a The Admonitions of an Egyptian Sage. Pp. 210-29 in *The Literature of Ancient Egypt: An Anthology of Stories, Instructions, and Poetry*, ed. W. K. Simpson. New ed. New Haven: Yale University Press.
1973b The Teaching for Merikare. Pp. 180-92 in *The Literature of Ancient Egypt: An Anthology of Stories, Instructions, and Poetry*, ed. W. K. Simpson. New ed. New Haven: Yale University Press.
1994 [1973] *The Ancient Egyptian Coffin Texts*. Warminster: Aris & Phillips Ltd. 3 vols.
1994 [1973] *The Ancient Egyptian Coffin Texts, Volume I: Spells 1-354*. Warminster: Aris & Phillips Ltd.
1994 [1977] *The Ancient Egyptian Coffin Texts, Volume II: Spells 355-787*. Warminster: Aris & Phillips Ltd.
1994 [1978] *The Ancient Egyptian Coffin Texts, Volume III: Spells 788-1185 & Index*. Warminster: Aris & Phillips Ltd.
- Feldstein, A., Kidron, G., Hanin, N., Kamaisky, Y., and Eitam, D.
1993 Southern Part of the Maps of Ramallah and el-Bireh and Northern Part of the Map of 'En Kerem (Sites 141-321). In *Archaeological Survey of the Hill Country of Benjamin*, eds. I. Magen and I. Finkelstein. Jerusalem: Israel Antiquity Authority Publications. 133-264 (Hebrew with English summary).
- Ferembach, D., Furshpan, A., and Perrot, J.
1975 Une Sepulture Collective Du Bronze Moyen II AB a Kh. Minha (Munhata), Israel. Pp. 87-117 in *Report on Archaeological Work at Suwwanet Eth-Thaniya, Tananir, and Khirbet Minha (Munhata)*, ed. G. M. Landes. Bulletin of the American Schools of Oriental Research Supplement, no. 21. American Schools of Oriental Research.
- Finkelstein, I.
1989 Further Observations on the Socio-Demographic Structure of the Intermediate Bronze Age. *Levant* 21: 129-40.

- 1991 The Central Hill Country in the Intermediate Bronze Age. *Israel Exploration Journal* 41(1-3): 19-45.
- 1992a Invisible Nomads: A Rejoinder. *Bulletin of the American Schools of Oriental Research* 287: 87-88.
- 1992b Middle Bronze Age 'Fortifications': A Reflection of Social Organization and Political Formations. *Tel Aviv* 19(2): 201-20.
- 1992c Pastoralism in the Highlands of Canaan in the Third and Second Millennia B.C.E. Pp. 133-42 in *Pastoralism in the Levant: Archaeological Materials in Anthropological Perspectives*, eds. O. Bar-Yosef and A. Khazanov. Monographs in World Archaeology, no. 10. Madison, Wisconsin: Prehistory Press.
- 1993a Northern Part of the Maps of Beit Sira, Ramallah and el-Bireh. In *Archaeological Survey of the Hill Country of Benjamin*, eds. I. Magen and I. Finkelstein. Jerusalem: Israel Antiquity Authority Publications. 17-95 (Hebrew with English summary).
- 1993b The Southern Samarian Hills Survey. Pp. 1313-14 in *The New Encyclopedia of Archaeological Excavations in the Holy Land*, eds E. Stern, A. Lewinson-Gilboa and J. Aviram. Jerusalem: Israel Exploration Society.
- 1994 The Emergence of Israel: A Phase in the Cyclic History of Canaan in the Third and Second Millennia BCE. Pp. 150-78 in *From Nomadism to Monarchy: Archaeological and Historical Aspects of Early Israel*, eds I. Finkelstein and N. Na'aman. Jerusalem: Yad Izhak Ben-Zvi; Israel Exploration Society.
- 1995a *Living on the Fringe: The Archaeology and History of the Negev, Sinai and Neighbouring Regions in the Bronze and Iron Ages*. Monographs in Mediterranean Archaeology. Sheffield: Sheffield Academic Press.
- 1995b Two Notes on Early Bronze Age Urbanization and Urbanism. *Tel Aviv* 22(1): 47-69.
- 1997 The Megiddo Temple Complex. In *Revelations from Megiddo* (The newsletter of the Megiddo expedition). www.tau.ac.il/~archpubs/newslett.html.
- Finkelstein, I., and Gophna, R.
- 1993 Settlement, Demographic, and Economic Patterns in the Highlands of Palestine in the Chalcolithic and Early Bronze Periods and the Beginning of Urbanism. *Bulletin of the American Schools of Oriental Research* 289: 1-22.
- Finkelstein, I., and Perevolotsky, A.
- 1990 Processes of Sedentarization and Nomadization in the History of Sinai and Ther Negev. *Bulletin of the American Schools of Oriental Research* 279: 67-88.
- Fischer, H. G.
- 1959 A Scribe of the Army in a Saqqara Mastaba of the Early Fifth Dynasty. *Journal of Near Eastern Studies* 18(4): 233-72.
- Fischer, P. M., and Toivonen-Skage, E.
- 1995 Metallic Burnished Early Bronze Age Ware from Tall Abu al-Kharaz. Pp. 587-96 in *Studies in the History and Archaeology of Jordan V*.
- Fitzgerald, M. A.

- 1994 The Ship. Pp. 163-223 in *The Harbours of Caesarea Maritima*, general editor J. P. Oleson. BAR International Series, no. 594. Oxford.
- Flammini, R.
- 1998 The *h'Tyw-`* from Byblos in the Early Second Millennium B.C. *Göttinger Miszellen* 164: 41-61.
- Flemming, N.C.
- 1980 Cities Under the Mediterranean. Pp. 162-63 in *Archaeology Under Water: An Atlas of the World's Submerged Sites*, ed. K. Muckelroy. New York: McGraw-Hill Book Company.
- 1983 Survival of Submerged Lithic and Bronze Age Artifact Sites: A Review of Case Histories. Pp. 135-73 in *Quaternary Coastlines and Marine Archaeology: Towards the Prehistory of Land Bridges and Continental Shelves*, eds P. Masters and N. Flemming. London: Academic Press, Inc.
- Foster, K. P.
- 1979 *Aegean Faience of the Bronze Age*. New Haven: Yale University Press.
- Fox, E. W.
- 1971 *History in Geographic Perspective: The Other France*. New York: W.W. Norton & Company.
- Frangipane, M.
- 1985 Early Developments of Metallurgy in the Near East. Pp. 215-28 in *Studi Di Paletnologia in Onore Di Salvatore M. Puglisi*, M. Liverani, A. Palmieri and R. Peroni. Roma: Università di Roma "La Sapienza."
- Frankel, R., and Getzov, N.
- 1997 *Map of Akhziv (1) - Map of ʿanita (2)*. Jerusalem: Israel Antiquities Authority; Archaeological Survey of Israel. 233 pp (Hebrew); 128^{*} pp (English).
- Frankel, R.
- 1986 Preliminary Report of the Archaeological Survey of the Western Galilee 1976-1979. Pp. 304-17 (Hebrew) in *Qadmoniyot Galil HaMaaravi [The Western Galilee Antiquities]*, ed. M. Yedaya. Ministry of Defense/Asher Regional Council. Tel Aviv.
- Frankfort, H.
- 1951 *The Birth of Civilization in the Near East*. New York: Barnes & Noble, Inc.
- Fritz, V.
- 1993 Excavations at Tell el-ʿOreimeh (Tel Kinrot) 1982-1985 Seasons. *Tel Aviv* 20(2): 187-215.
- Frost, H.
- 1969a The Stone-Anchors of Byblos. *Mélanges de l'Université Saint Joseph* 45: 426-42.
- 1969b The Stone-Anchors of Ugarit. Pp. 235-45 in *Ugaritica VI*. Mission de Ras Shamra. Leiden: Bibliotheque Archéologique et Historique, no. 99.
- 1970 Bronze Age Stone-Anchors from the Eastern Mediterranean. *Mariner's Mirror* 56: 377-94.

- 1979 Egypt and Stone Anchors: Some Recent Discoveries. *Mariner's Mirror* 65: 137-61.
- 1985 Fishing Tackle: Three Limestone Weights. Pp. 169-73 in *Kition - Bamboulia III: Le Sondage L-N 13, Bronze Récent et Geometrique I*, eds M. Yon and A. Caubet. Editions Recherche sur les Civilisations, no. 56. Paris.
- 1991a Anchors Sacred and Profane: Ugarit - Ras Shamra, 1986; the Stone Anchors Revised and Compared. Pp. 355-410 in *Arts et Industries de la Pierre, Ras Shamra - Ougarit VI*, ed. M. Yon. Editions Recherche sur les Civilisations. Paris.
- 1991b Proto Harbours of the East Mediterranean. *Thracia Pontica* 4: 323-38.
- 1995 Harbours and Proto-Harbours; Early Levantine Engineering. Pp. 1-22 in *Cyprus and the Sea: Proceedings of the International Symposium*, eds. V. Karageorghis and D. Michaelides. Nicosia: University of Cyprus.
- Gaballa, G.
- 1976 *Narrative in Egyptian Art*. Mainz am Rhein: Philipp von Zabern.
- Gal, Z.
- 1978 Gineigar. *Hadashot Arkheologiyot* 67-68: 75.
- 1980 *Ramat Issachar: Ancient Settlements in a Peripheral Region*. Tel Aviv: Hakibbutz Hameuchad Publishing House. 116 pp (hebrew; english summary).
- 1991a *Map of Gazit (46)*. Jerusalem: Israel Antiquities Authority; Archaeological Survey of Israel. 70 pp (Hebrew) 39^{*} pp (English).
- 1991b A Note on the Settlement Pattern of the MB II Jezreel and Beth Shean Valleys. *Bulletin of the American Schools of Oriental Research* 284: 29-31.
- 1992 *Lower Galilee During the Iron Age*. American Schools of Oriental Research Dissertation Series, no. 8. Winona Lake, Indiana: Eisenbrauns. 118 pp (hebrew).
- 1998 *Map of Har Tavor (41); Map of 'En-Dor (45)*. Jerusalem: Israel Antiquities Authority; Archaeological Survey of Israel. 99 pp (Hebrew); 66^{*} pp (English).
- Gal, Z., and Covello-Paran, K.
- 1996 Excavations at 'Afula, 1989. *'Atiqot* 30: 25-67.
- Gal, Z., Smithline, H., and Shalem, D.
- 1996 A Chalcolithic Burial Cave at Peqi`In. *Qadmoniot* 29(1 (111)): 19-24.
- 1997 A Chalcolithic Burial Cave in Peqi`in, Upper Galilee. *Israel Exploration Journal* 47(3-4): 145-54.
- Gale, N., ed.
- 1991 *Bronze Age Trade in the Mediterranean*. Studies in Mediterranean Archaeology, no. 90. Jonsered: Paul Åströms Forlag.
- 1991 Metals and Metallurgy in the Chalcolithic Period. *Bulletin of the American Schools of Oriental Research* 282/283: 37-61.
- Gale, N., and Stos-Gale, Z.
- 1981a Ancient Egyptian Silver. *Journal of Egyptian Archaeology* 67: 103-15.
- 1981b Lead and Silver in the Ancient Aegean. *Scientific American* 244: 142-52.

- 1989 Some Aspects of Cypriote Metallurgy in the Middle and Late Bronze Age. Pp. 251-56 in *Transition: Le Monde Egeen Du Bronze Moyen Au Bronze Recent* (Actes de la deuxième Rencontre égéenne internationale de l'Université de Liège (18-2- Avril 1988)), ed. R. Laffineur. Aegaeum, Annales d'archaéologie égéenne de l'Université de Liège, no. 3. Liège: Université de Liège.
- Gale, N. H., Stos-Gale, Z., and Davis, J. L.
- 1984 The Provenance of Lead Used at Ayia Irini, Keos. *Hesperia* 53: 389-406.
- Gale, R.
- 1987 Scientific Appendix IV: Wood Identification. P. 128 in *Catalogue of Egyptian Antiquities in the British Museum VII*, by W. V. Davies. London: British Museum Publications.
- Galili, E., and Weinstein-Evron, M.
- 1985 Prehistory and Paleoenvironments of Submerged Sites Along the Carmel Coast in Israel. *Paléorient* 11(1): 37-52.
- Galili, E., Weinstein-Evron, M., Herskovitz, I., Gopher, A., Kislev, M., Lernau, O., Kolska-Horowitz, L., and Lernau, H.
- 1993 Atlit-Yam: A Prehistoric Site on the Sea Floor Off the Israeli Coast. *Journal of Field Archaeology* 20: 133-57.
- Galili, E., Weinstein-Evron, M., and Ronen, A.
- 1988 Holocene Sea-Level Changes Based on Submerged Archaeological Sites Off the Northern Carmel Coast in Israel. *Quaternary Research* 29: 36-42.
- Galili, E.
- 1985a *Clay Exposures and Archaeological Finds on the Sea Bottom Between Haifa and Atlit* (M.A. thesis submitted to the University of Haifa). Center for Maritime Studies.
- 1985b A Group of Stone Anchors from Newe-Yam. *International Journal of Nautical Archaeology* 14(2): 143-53.
- 1986 Historical Sea Level Changes and Seafaring Along the Southeastern Mediterranean Coast. Pp. 69-73 in *Cities on the Sea - Past and Present* (1st international symposium on harbours, port cities and coastal topography, Haifa, Israel, September 22-29, 1986, summaries), eds A. Raban and E. Linder. Haifa.
- Galili, E., Dahari, U., and Sharvit, J.
- 1993 Underwater Surveys and Rescue Excavations Along the Israeli Coast. *International Journal of Nautical Archaeology* 22(1): 61-77.
- Galili, E., Kaufman, D., and Weinstein-Evron, M.
- 1988 8000 Years Under the Sea. *Archaeology* 41: 66-67.
- Galili, E., and Sharvit, J.
- 1990 The Yavne-Yam Anchorage - Finds from the Underwater Survey. Pp. 111-21 in *Yavne-Yam and Its Surroundings*, ed. M. Fischer. Kibbutz Palmahim Publications.
- 1997 Underwater Survey in the Mediterranean Sea, 1992-1996. *Hadashot Arkheologiyot* 107: 138-44 (Hebrew).

- Galili, E., Sharvit, J., and Artzy, M.
- 1994 Reconsidering Byblian and Egyptian Stone Anchors Using Numerical Methods: New Finds from the Israeli Coast. *International Journal of Nautical Archaeology* 23(2): 93-107.
- Galili, E., Sharvit, Y., and Nagar, A.
- 1996 Neve Yam - Underwater Survey. *Hadashot Arkheologiyot* 106: 54-56 (Hebrew).
- Gardiner, A.
- 1909 *The Admonitions of an Egyptian Sage from a Hieratic Papyrus in Leiden (Pap. Leiden 344 Recto)*. Leipzig: J.C. Hinrichs.
- Gardiner, A. H.
- 1920 The Ancient Military Road Between Egypt and Palestine. *Journal of Egyptian Archaeology* 6: 99-116.
- Gardiner, A. H., Peet, T. E., and Czerný, J.
- 1952 *Part I: Introduction and Plates*. In *The Inscriptions of Sinai*. Egypt Exploration Society. London: Oxford University Press.
- 1955 *Part II: Translations and Commentary*. In *The Inscriptions of Sinai*. Egypt Exploration Society. London: Oxford University Press.
- Garenne-Marot, L.
- 1984 Le Cuivre en Égypt Pharaonique: Sources et Métallurgie. *Paléorient* 10(1): 97-126.
- 1985 Le Travail Du Cuivre dans l'Égypt Pharaonique d'Après les Peintures et les Bas-Reliefs. *Paléorient* 11(1): 85-100.
- Garfinkel, Y.
- 1993 Gesher. Pp. 492-93 in *The New Encyclopedia of Archaeological Excavations in the Holy Land*, eds E. Stern, A. Lewinson-Gilboa and J. Aviram. Jerusalem: Israel Exploration Society.
- Garfinkel, Y., and Bonfil, R.
- 1990 Graves and Burial Customs of the MB IIA Period in Gesher. Pp. 132-47 (Hebrew; p. 106* English summary) in *Eretz Israel 21 (Amiran Volume)*. Jerusalem.
- Garfinkel, Y., and Greenberg, R.
- 1997 Area L. Pp. 177-294 in *Hazor V: An Account of the Fifth Season of Excavations, 1968*, eds. A. Ben-Tor and R. Bonfil. Jerusalem: Israel Exploration Society; Hebrew University.
- Garfinkle, S., and Peilstöcker, M.
- 1994 Area F: Stratigraphy and Architecture. Pp. 16-19 (Hebrew; * 11- * 16 English summary) in *Excavations at Kabri*, Vol. 7-8. *Preliminary Report of 1992-1993 Seasons*, eds. A. Kempinski and W.-D. Niemeier. Tel Aviv: Tel Kabri Expedition; Tel Aviv University.
- Gates, M.-H.

- 1986 Casting Tiamat Into Another Sphere: Sources for the 'Ain Samiya Goblet. *Levant* 18: 75-81.
- 1992 Nomadic Pastoralists and the Chalcolithic Hoard from Nahal Mishmar. *Levant* 24: 131-39.
- Gazit, D.
- 1996 *Map of Urim (125)*. Jerusalem: Israel Antiquities Authority; Archaeological Survey of Israel. 140 pp (Hebrew); 83^{*} pp (English).
- Gazit, D., and Gophna, R.
- 1993 Appendix: Two Flint Tools from the Chalcolithic Site at Gerar 100 in 'an Unfortified Late Bronze Age Settlement at Gerar: Survey Finds.' *'Atiqot* 22: 18^{*}-19^{*} (Hebrew; English summary p. 152).
- Georgiou, H.
- 1997 Seafaring, Trade Routes, and the Emergence of the Bronze Age: Urban Centers in the Eastern Mediterranean. Pp. 117-24 in *Res Maritimae: Cyprus and the Eastern Mediterranean from Prehistory to Late Antiquity*, eds. S. Swiny, R. L. Hohlfelder and H. W. Swiny. Proceedings of the second international symposium 'Cities on the Sea', Nicosia, Cyprus, October 18-22, 1994. Cyprus American Archaeological Research Institute Monograph Series, vol. 1, no. 4. Atlanta: Scholars Press.
- Georgiou, H. S.
- 1991 Bronze Age Ships and Rigging. Pp. 61-71 in *Thalassa: L'Egee Préhistorique et la Mer* (Actes de la troisième Rencontre égéenne internationale de l'Université de Liège, Station de recherches sous-marine et océanographiques (StaReSo), Calvi, Corse (23-25 Avril, 1990)), eds. R. Laffinueur and L. Basch. Aegaeum, Annales d'archaéologie égéenne de l'Université de Liège, no. 7. Liège: Université de Liège.
- Gershuni, L.
- 1989 Tomb 990. Pp. 14-19 (Hebrew; p. V-VI English summary) in *Excavations at Kabri*, Vol. 3. *Preliminary Report of 1988 Season*, ed. A. Kempinski. Tel Aviv: Tel Kabri Expedition; Tel Aviv University.
- Gerstenblith, P.
- 1980 A Reassessment of the Beginning of the Middle Bronze Age in Syria-Palestine. *Bulletin of the American Schools of Oriental Research* 237: 65-84.
- 1983 *The Levant at the Beginning of the Middle Bronze Age*. American Schools of Oriental Research Dissertation Series, no. 5. American Schools of Oriental Research.
- Getzov, N.
- 1992 Mezad 'En Tamir. *Excavations and Surveys in Israel* 1991 10: 75-76.
- 1995 Tombs from the Early and Intermediate Bronze Age in the Western Galilee. *'Atiqot* 27: 1^{*}-18^{*} (Hebrew; English summary p. 211).
- Geva, S.

- 1982 *Tell Jerishe: The Sukenik Excavations of the Middle Bronze Age Fortifications*. Qedem, vol. 15. Jerusalem: The Institute of Archaeology, The Hebrew University.
- Gibbons, A.
- 1998 Ancient Island Tools Suggest Homo Erectus Was a Seafarer. *Science* 279: 1635-37.
- Gifford, E., and Gifford, J.
- 1996 The Sailing Performance of Anglo-Saxon Ships and Derived from the Building and Trials of Half-Scale Models of the Sutton Hoo and Graveney Finds. *Mariner's Mirror* 82: 131-53.
- 1997 The Probable Sailing Capabilities of Middle Minoan Aegean Ships. *Mariner's Mirror* 83(2): 199-206.
- Gifford, J. A.
- 1985 Paleogeography of Ancient Harbor Sites of the Larnaca Lowlands, Southeastern Cyprus. Pp. 45-48 in *Harbour Archaeology: Proceedings of the First International Workshop on Ancient Mediterranean Harbours, Caesarea Maritima 24-28.6.83*, ed. A. Raban. BAR International Series, no. 257. Oxford.
- Gilat, A., Shirav, M., Bogoch, R., Halicz, L., Avner, U., and Nahieli, D.
- 1993 Significance of Gold Exploitation in the Early Islamic Period, Israel. *Journal of Archaeological Science* 20: 429-37.
- Gilboa, E., and Yannai, E.
- 1992 Intermediate Bronze Age Tombs at Horshim. *Atiqot* 21: 1^{*}-8^{*} (Hebrew; English summary p. 173).
- Gilead, D., and Issar, A.
- 1987 Groundwater Resources in Sinai. Pp. 277-85 in *Sinai*, eds. G. Gvirtzman, A. Shmueli, Y. Gradus, I. Beit-Arieh and M. Har-El. Eretz geographic research and publications. Tel Aviv: Ministry of Defence.
- Gilead, I.
- 1988 The Chalcolithic Period in the Levant. *Journal of World Prehistory* 2(4): 397-443.
- 1995 The Foragers of the Upper Paleolithic Period. Pp. 124-40 in *The Archaeology of Society in the Holy Land*, ed. T. E. Levy. Leicester University Press.
- Gilead, I., and Goren, Y.
- 1989 Petrographic Analysis of Fourth Millennium B.C. Pottery and Stone Vessels from the Northern Negev, Israel. *Bulletin of the American Schools of Oriental Research* 275: 5-14.
- Gilead, I.
- 1986 Gerar 100: The Chalcolithic Site. Pp. 75-87 in *Preliminary Reports of ASOR - Sponsored Excavations 1980-1984*, ed. W. E. Rast. Bulletin of the American Schools of Oriental Research Supplement, no. 24. Baltimore: Johns Hopkins University Press.
- Gill, D. W.

- 1988 Silver Anchors and Cargoes of Oil: Some Observations on Phoenician Trade in the Western Mediterranean. *Papers of the British School at Rome* 56: 1-12.
- Giumlíá-Mair, A., and Quirke, S.
- 1997 Black Copper in Bronze Age Egypt. *Revue D'Égyptologie* 48: 95-108.
- Giveon, R.
- 1967 Royal Seals of the XIIth Dynasty from Western Asia. *Revue d'Égyptologie* 19: 29-37.
- 1977 Inscriptions of Sahure' and Sesostri I from Wadi Kharig (Sinai). *Bulletin of the American Schools of Oriental Research* 226: 61-63.
- 1983 *The Stones of Sinai Speak*. 171 pp (Hebrew). Bialik Institute. Jerusalem.
- 1984a An Egyptian Statue from the Vicinity of 'Ein Ha-Shofet. Pp. 35-38 (Hebrew) in *Footsteps of Pharaoh in Canaan: Essays on the Relations Between the Land of Israel and Ancient Egypt*. Sifriat Poalim Publishing House Ltd. Tel Aviv.
- 1984b *Footsteps of Pharaoh in Canaan: Essays on the Relations Between the Land of Israel and Ancient Egypt*. 197 pp (Hebrew). Sifriat Poalim Publishing House Ltd. Tel Aviv.
- 1988 *Scarabs from Recent Excavations in Israel*. Orbis biblicus et orientalis. Göttingen: Vandenhoeck & Ruprecht.
- Giveon, S.
- 1988 Pottery of the Early Periods. Pp. 10-14 (Hebrew; pp. III-IV English summary) in *Excavations at Kabri*, ed. A. Kempinski. Tel Aviv: Tel Kabri Expedition; Tel Aviv University.
- Goedicke, H.
- 1967 Admonitions 3,6-10. *Journal of the American Research Center in Egypt* 6: 93-95.
- 1969-70 An Egyptian Claim to Asia. *Journal of the American Research Center in Egypt* 8: 11-27.
- 1975 *The Report of Wenamun*. Baltimore: Johns Hopkins University Press.
- 1991 Egyptian Military Actions in *Asia* in the Middle Kingdom. *Revue D'Égyptologie* 42: 89-94.
- 1992 Where Did Sinuhe Stay in «Asia»? (Sinuhe B29-31). *Chronique D'Égypte* 67: 28-40.
- 1998 Khu-u-Sobek's Figh in 'Asia.' *Ägypten und Levante* 7: 33-37.
- Golani, A.
- 1996 Ashqelon, Hajar 'Id. *Excavations and Surveys in Israel* 16: 122-23.
- Golani, A., and Yogev, O.
- 1996 The 1980 Excavations at Tel Sasa. *'Atiqot* 28: 41-58.
- Goldfus, H., and Golani, A.

- 1993 Map of Wadi el-Makukh (Sites 322-428). In *Archaeological Survey of the Hill Country of Benjamin*, eds. I. Magen and I. Finkelstein. Jerusalem: Israel Antiquity Authority Publications. 265-338 (Hebrew with English summary).
- Gomez, B., and Pease, P. P.
- 1992 Early Holocene Cypriot Coastal Palaeogeography. *Report of the Department of Antiquities of Cyprus*: 1-8.
- Gonen, R.
- 1981 A Middle Bronze Age Cemetery at Efrat in the Hebron Mountains. *Qadmoniyot* 14: 25-29.
- Gopher, A., Tsuk, T., Shalev, S., and Gophna, R.
- 1990 Earliest Gold Artifacts in the Levant. *Current Anthropology* 31(4 August-October): 436-43.
- Gopher, A., and Tsuk, T.
- 1991 *Ancient Gold: Rare Finds from the Nahal Qanah Cave* (Exhibition catalog). Jerusalem: Israel Museum.
- 1996 The Chalcolithic Assemblages. Pp. 91-138 in *The Nahal Qanah Cave: Earliest Gold in the Southern Levant*, ed. A. Gopher. Monograph series of the Institute of Archaeology, no. 12. Tel Aviv: Institute of Archaeology of Tel Aviv University.
- Gophna, R.
- 1969a An Egyptian Flint Knife from Yavne-Yam. *`Atiqot (Hebrew Series)* 5: 80 (Hebrew; English summary, p. 10^{*}).
- 1969b Ichthyomorphic Vessel from Tel Poleg. *Bulletin of Haaretz Museum* 11: 43-45.
- 1973 The Middle Bronze Age II Fortifications at Tel Poleg. Pp. 111-19 (Hebrew; p. 26^{*} English summary) in *Eretz Israel 11 (Dunayevsky Memorial Volume)*. Jerusalem: Israel Exploration Society.
- 1974 *The Settlement of the Coastal Plain of Eretz Israel During the Early Bronze Age* (Phd. dissertation submitted to Tel Aviv University). Tel Aviv. 183 pp (Hebrew with English summary).
- 1976 Egyptian Immigration Into Southern Canaan During the First Dynasty? *Tel Aviv* 3: 31-37.
- 1978 Archaeological Survey of the Central Coastal Plain. *Tel Aviv* 5: 136-47.
- 1984 The Settlement Landscape in the Early Bronze II-III and Middle Bronze Age II. *Israel Exploration Journal* 34: 24-31.
- 1990 The Egyptian Pottery of `En Besor. *Tel Aviv* 17(2): 144-62.
- 1992a The Contacts Between `En Besor Oasis, Southern Canaan, and Egypt During the Late Predynastic and the Threshold of the First Dynasty: A Further Assessment. Pp. 385-94 in *The Nile Delta in Transition: 4th - 3rd Millennium B.C.* (Proceedings of

- the seminar held in Cairo, 21-24 October 1990, at the Netherlands Institute of Archaeology and Arabic Studies), ed. E. C. Van Den Brink. Tel Aviv.
- 1992b Early Bronze Age Fortification Wall and Middle Bronze Age Rampart at Tel Poran. *Tel Aviv* 19(2): 267-73.
- 1992c The Intermediate Bronze Age. Pp. 126-58 in *The Archaeology of Ancient Israel*, ed. A. Ben-Tor. New Haven: Yale University Press.
- 1993a 'En Besor. Pp. 393-95 in *The New Encyclopedia of Archaeological Excavations in the Holy Land*, eds E. Stern, A. Lewinson-Gilboa and J. Aviram. Jerusalem: Israel Exploration Society.
- 1993b A Faience Statuette from 'En Besor. *Tel Aviv* 20(1): 29-32.
- 1993c Nahal Poleg. Pp. 1193-95 in *The New Encyclopedia of Archaeological Excavations in the Holy Land*, eds E. Stern, A. Lewinson-Gilboa and J. Aviram. Jerusalem: Israel Exploration Society.
- 1995 Early Bronze Age Canaan: Some Spatial and Demographic Observations. Pp. 229-80 in *The Archaeology of Society in the Holy Land*, ed. T. E. Levy. Leicester University Press.
- 1996 *Excavations at Tel Dalit: An Early Bronze Age Walled Town in Central Israel*. Tel Aviv: Ramot Publishing House, Tel Aviv University.
- 1997 The Southern Coastal Troughs as EB I Subsistence Areas. *Israel Exploration Journal* 47(3-4): 155-61.
- Gophna, R., and Ayalon, E.
- 1982 A Fortified Middle Bronze Age IIA Site at 'Ain Zurekiyeh in the Poleg Basin. *Tel Aviv* 9: 69-78.
- Gophna, R., and Beck, P.
- 1981 The Rural Aspect of the Settlement Pattern of the Coastal Plain in the Middle Bronze Age II. *Tel Aviv* 8: 45-80.
- 1988 Unfortified Settlements of the Middle Bronze Age II in the Coastal Plain. Pp. 73-123 (Hebrew) in *Settlements, Population and Economy in Israel in Antiquity*, eds S. Bunimovitz, M. Kochavi and A. Kasher. Proceedings of the annual lecture day in memory of the late Yohanan Aharoni, 6 March 1985. Tel Aviv: Tel Aviv University.
- Gophna, R., and Beit-Arie, I.
- 1997 *Map of Lod (80)*. Jerusalem: Israel Antiquities Authority; Archaeological Survey of Israel. 109 pp (Hebrew); 79* pp (English).
- Gophna, R., and Gazit, D.
- 1985 The First Dynasty Egyptian Residency at 'En Besor. *Tel Aviv* 12: 9-16.
- Gophna, R., Liphshitz, N., and Lev-Yadun, S.
- 1986-87 Man's Impact on the Natural Vegetation of the Central Coastal Plain of Israel During the Chalcolithic and the Bronze Age. *Tel Aviv* 13-14: 71-84.
- Gophna, R., and Lipschitz, N.

- 1996 The Ashkelon Trough Settlements in the Early Bronze Age I: New Evidence of Maritime Trade. *Tel Aviv* 23: 143-53.
- Gophna, R., and Portugali, Y.
- 1988 Settlement and Demographic Processes in Israel's Coastal Plain from the Chalcolithic to the Middle Bronze Age. *Bulletin of the American Schools of Oriental Research* 269: 11-28.
- Gophna, R., and Sussman, V.
- 1969 A Middle Bronze Age Tomb at Barqai. *`Atiqot (Hebrew Series)* 5: 1-13.
- Goren, Y.
- 1989a Contacts Between Transjordan and Israel During the Chalcolithic Period ** Evidence from the Petrography of Pottery, Stone and Metal Artifacts. *Mitekufat Haeven, Journal of the Israel Prehistoric Society* 22: 148^{*} -150^{*}.
- 1989b Petrographic Analysis of "Anatolian" Pottery from Kabri. Pp. 36-38 (Hebrew with English summary, p. XII) in *Excavations at Kabri*, Vol. 3. *Preliminary Report of 1988 Season*, ed. A. Kempinski. Tel Aviv: Tel Kabri Expedition; Tel Aviv University.
- 1990a Petrographic Analysis of Several Wares from Kabri. Pp. xl-lII In *Excavations at Kabri*, Vol. 4. *Preliminary Report of 1989 Season*, eds A. Kempinski and W.-D. Niemeier. Tel Aviv: Tel Kabri Expedition; Tel Aviv University.
- 1990b Pottery from the Chalcolithic and Early Bronze Age I Cemeteries in Israel: Some New Aspects of the Development of Ceramic Technology. Pp. 119-26 (Hebrew; p. 105^{*} English summary) in *Eretz Israel 21 (Amiran Volume)*. Jerusalem: Israel Exploration Society.
- 1991a Petrographic Examination of the Ceramic Assemblage from Tel `Amal. *`Atiqot* 20: 129-30.
- 1991b Phosphorite Vessels of the 4th Millennium B.C. in the Southern Levant: New Data, New Interpretations. *Mitekufat Haeven, Journal of the Israel Prehistoric Society* 24: 102-11.
- 1992 Appendix: Petrographic Analysis of the Kiln. *`Atiqot* 21: 12^{*} -14^{*} (Hebrew; English summary p. 174).
- 1995 Shrines and Ceramics in Chalcolithic Israel: The View Through the Petrographic Microscope. *Archaeometry* 37(2): 287-305.
- 1996 The Southern Levant in the Early Bronze Age IV: The Petrographic Perspective. *Bulletin of the American Schools of Oriental Research* 303: 32-72.
- Goren, Y., and Gilead, I.
- 1987 Petrographic Analysis of Pottery from Shiqmim: A Preliminary Report. Pp. 411-17 in *Shiqmim I* (Studies concerning Chalcolithic societies in their Northern Negev

Desert, Israel (1982-1984)), ed. T. E. Levy. BAR International Series, no. 356. Oxford: B.A.R.

Goring-Morris, A.N.

- 1984 The Lithic Assemblages from Tel Mevorakh. Pp. 81-86 in *Excavations at Tel Mevorakh (1973-1976), Part Two: The Bronze Age*, ed. E. Stern. Qedem, vol. 18. Jerusalem: The Institute of Archaeology, The Hebrew University.
- 1995 Complex Hunter/Gatherers at the End of the Paleolithic (20,000-10,000 BP). Pp. 141-68 in *The Archaeology of Society in the Holy Land*, ed. T. E. Levy. Leicester University Press.

Goring-Morris, A. N., Goren, Y., Horwitz, L. K., Bar-Yosef, D., and Hershkowitz, I.

- 1995 Investigations at an Early Neolithic Settlement in the Lower Galilee: Results of the 1991 Season at Kefar HaHoresh. *Atiqot* 27: 37-62.

Göttlicher, A.

- 1978 *Materialien Für ein Corpus der Schiffsmodelle Im Altertum*. Mainz am Rhein: Verlag Philipp von Zabern.

Govrin, Y.

- 1990 The Question of the Origin of Early Arad's Population. Pp. 107-10 (hebrew; english summary 104^{*} -105^{*} in *Eretz Israel* 21 (Amiran Volume). Jerusalem.
- 1992 *Map of Nahhal Yattir (139)*. Jerusalem: Israel Antiquities Authority; Archaeological Survey of Israel. 178 pp (Hebrew); 105^{*} pp (English).

Goyon, G.

- 1971 Les Ports Des Pyramides et le Grand Canal de Memphis. *Revue D'Égyptologie* 23: 137-53.

Grace, V.

- 1940 A Cypriote Tomb and Minoan Evidence for Its Date. *American Journal of Archaeology* 44: 10-52.
- 1956 The Canaanite Jar. Pp. 80-109 in *The Aegean and the Near East: Studies Presented to Hetty Goldman*, ed. S. S. Weinberg. Locust Valley, New York: J. J. Augustin.

Grace, V. R.

- 1979 *Amphoras and the Ancient Wine Trade*. Rev. ed. Excavations of the Athenian Agora picture book, no. 6. Princeton: American School of Classical Studies at Athens.

Grant, E., and Wright, G. E.

- 1938 *Part IV (Pottery)*. In *Ain Shems Excavations (Palestine)*. Biblical and Kindred Studies, no. 7. Baltimore: J.H. Furst Company.
- 1939 *Part V (Text)*. In *Ain Shems Excavations (Palestine)*. Biblical and Kindred Studies, no. 8. Baltimore: J.H. Furst Company.

Green, M.

- 1983 The Syrian and Lebanese Topographical Data in the Story of Sinuhe. *Chronique D'Égypte* 58: 38-59.
- Greenberg, R.
- 1990a Tel Na`Ama. *Excavations and Surveys in Israel 1988/89* 7-8: 138-40.
- 1990b The Settlement of the Hula Valley in the Urban Phase of the Early Bronze Age. Pp. 127-31 (Hebrew; p. 105^{*}-106^{*} English summary) in *Eretz Israel XXI* (Amiran volume). Jerusalem: Israel Exploration Society.
- 1992a The Ramat Ha-Nadiv Tumulus Field: Preliminary Report. *Israel Exploration Journal* 42(3-4): 129-52.
- 1992b Two Early Bronze Age Cylinder Seal Impressions from Tel Dan. Pp. 48-50 (Hebrew; p. 147^{*} English summary) in *Eretz Israel 23 (Biran Volume)*. Jerusalem.
- 1993 Beit Mirsim, Tell. P. 180 in *The New Encyclopedia of Archaeological Excavations in the Holy Land*, eds E. Stern, A. Lewinson-Gilboa and J. Aviram. Jerusalem: Israel Exploration Society.
- 1996a The Early Bronze Age Levels. Pp. 85-160 in *Dan I: A Chronicle of the Excavations, the Pottery Neolithic, the Early Bronze Age and the Middle Bronze Age Tombs*, eds. A. Biran, D. Ilan and R. Greenberg. Annual of the Nelson Glueck School of Biblical Archaeology, Hebrew Union College - Jewish Institute of Religion. Jerusalem.
- 1996b *The Hula Valley from the Beginning of the Early Bronze Age to the End of the Middle Bronze Age Iia: A Study in Regional Archaeology* (Unpublished Ph.D. dissertation submitted to the Hebrew University). Jerusalem. 271 pp (Hebrew; English abstract).
- 1997 Area A: The Early Bronze Age. Pp. 17-24 in *Hazor V: An Account of the Fifth Season of Excavations, 1968*, eds. A. Ben-Tor and R. Bonfil. Jerusalem: Israel Exploration Society.
- Greenberg, R., Horwitz, L. K., Lernau, O., Mienis, H. K., Khalaily, H., and Marder, O.
- 1998 A Sounding at Tel Na`ama in the Hula Valley. *Atiqot* 35: 9-35.
- Greenberg, R., and Porat, N.
- 1996 A Third Millennium Levantine Pottery Production Center: Typology, Petrography, and Provenance of the Metallic Ware of Northern Israel and Adjacent Regions. *Bulletin of the American Schools of Oriental Research* 301: 5-24.
- Griffith, F. L.
- 1890 The Hieratic Papyri of Kahun. Pp. 45-46 in *Kahun, Gurob and Hawara*, principal author W. F. Petrie. London: Kegan, Paul, Trench, Trübner & Co.
- Grigson, C.
- 1987 Shiqmim: Pastoralism and Other Aspects of Animal Management in the Chalcolithic of the Northern Negev. Pp. 219-41 in *Shiqmim I* (Studies concerning Chalcolithic societies in the northern Negev Desert, Israel (1982-1984)), ed. T. E. Levy. BAR International Series, no. 356i. Oxford.

- 1993 The Earliest Domestic Horses in the Levant?—New Finds from the Fourth Millennium of the Negev. *Journal of Archaeological Science* 20: 645-55.
- 1995 Plough and Pature in the Early Economy of the Southern Levant. Pp. 245-68 in *The Archaeology of Society in the Holy Land*, ed. T. E. Levy. Leicester University Press.
- Guichard, M.
- 1993 Flotte Crétoise sur L'Euphrate? *Nouvelles Assyriologiques Brèves et Utilitaires* 2: 44-45.
- Guiges, P.
- 1937 Lébé`a, Kafer-Garra, Qrayé: Nécropoles de la Région Sidonienne. *Bulletin Du Musée de Beyrouth* 1: 35-76.
- 1939 Lébé`a, Kafer-Garra, Qrayé: Nécropoles de la Région Sidonienne (Suite). *Bulletin Du Musée de Beyrouth* 3: 53-63.
- Guy, P., and Engberg, R. M.
- 1938 *Megiddo Tombs*. Oriental Institute Publications, vol. 33. Chicago, Illinois: University of Chicago Press.
- Habachi, L.
- 1972 *The Second Stela of Kamose and His Struggle Against the Hyksos Ruler and His Capital*. Abhandlungen des Deutschen Archäologischen Instituts Kairo Ägyptologische Reihe. Glückstadt: Verlag J.J. Augustin.
- Hadas, G.
- 1992 Stone Anchors from the Dead Sea. *`Atiqot* 21: 55-57.
- 1993 A Stone Anchor from the Dead Sea. *International Journal of Nautical Archaeology* 22(1): 89-90.
- Haiman, M.
- 1986 *Map of Har Hamran-Southwest (198)*. Jerusalem: Israel Department of Antiquities and Museums; Archaeological Survey of Israel. 244 pp (Hebrew); 129^{*} pp (English).
- 1991 *Map of Mitzpé Ramon-Southwest (200)*. Jerusalem: Israel Antiquities Authority; Archaeological Survey of Israel. 144 pp (Hebrew); 107^{*} pp (English).
- 1993 *Map of Har Hamran-Southeast (199)*. Jerusalem: Israel Antiquities Authority; Archaeological Survey of Israel. 131 pp (Hebrew); 78^{*} pp (English).
- 1996 Early Bronze Age IV Settlement Pattern of the Negev and Sinai Deserts: View from Small Marginal Temporary Sites. *Bulletin of the American Schools of Oriental Research* 303: 1-32.
- Haldane, C.
- 1984 A Fourth Boat from Dashur. *American Journal of Archaeology* 88: 389.
- 1992a "A Pharaoh's Fleet:" Early Dynastic Hulls from Abydos. *The INA Quarterly* 19(2): 12-13.
- 1992b The Lisht Timbers: A Report on Their Significance (Appendix). Pp. 102-12 in *The South Cemeteries of Lisht*, Vol. 3. *The Pyramid Complex of Senwosret III*, D.

- Arnold. Publications of the Metropolitan Museum of Art Egyptian Expedition, vol. 25. New York.
- 1993 Direct Evidence for Organic Cargoes in the Late Bronze Age. *World Archaeology* 24(3): 348-60.
- 1997 Review of Egypt, the Aegean and the Levant: Interconnections in the Second Millennium BC, W. Vivian Davies and Louise Schofield (Eds). *International Journal of Nautical Archaeology* 26(2): 175-76.
- Haldane, D.
- 1993 At the Crossroads of History: Nautical Archaeology in Syria. *The INA Quarterly* 20(3): 7-11.
- Hall, K. R.
- 1985 *Maritime Trade and State Development in Early Southeast Asia*. Honolulu: University of Hawaii Press.
- Hallo, W. W., and Tadmor, H.
- 1977 A Lawsuit from Hazor. *Israel Exploration Journal* 27(1): 1-11.
- Hallote, R. S.
- 1995 Mortuary Archaeology and the Middle Bronze Age Southern Levant. *Journal of Mediterranean Archaeology* 8(1): 93-122.
- Hanauer, R. J.
- 1903a The Traditional "Harbour of Solomon" and the Crusading Castle at Jaffa. *Palestine Exploration Fund Quarterly Statement*, July, 258-64.
- 1903b The Traditional "Harbour of Solomon" at Jaffa. *Palestine Exploration Fund Quarterly Statement*, October, 355-56.
- Har-el, M.
- 1977 The Valley of the Craftsman (Ge' Haharashim). *Palestine Exploration Quarterly* 109: 75-86.
- 1981 Orientation in Biblical Lands. *Biblical Archaeologist* 44: 19-20.
- Harif, A.
- 1978 Coastal Buildings of Foreign Origin in Second Millennium B.C. Palestine. *Palestine Exploration Quarterly* 110: 101-06.
- Harrison, T. P.
- 1993 Economics with an Entrepreneurial Spirit: Early Bronze Age Trade with Late Predynastic Egypt. *Biblical Archaeologist* 56(2): 81-93.
- Hartal, M.
- 1989 *Northern Golan Heights: The Archaeological Survey as a Source of Regional History*. Qatzrin: Israel Department of Antiquities.
- Hassan, F. A.
- 1980 Radiocarbon Chronology of Archaic Egypt. *Journal of Near Eastern Studies* 39(3): 203-07.
- 1988 The Predynastic of Egypt. *Journal of World Prehistory* 2(2): 135-85.

- 1997 The Dynamics of a Riverine Civilization: A Geoarchaeological Perspective on the Nile Valley, Egypt. *World Archaeology* 29(1): 51-74.
- Hassan, F. A., and Robinson, S. W.
- 1987 High-Precision Radiocarbon Chronology of Ancient Egypt, and Comparisons with Nubia, Palestine and Mesopotamia. *Antiquity* 61: 119-35.
- Hassan, S.
- 1955 The Causeway of Wnis at Sakkara. *Zeitschrift Für Ägyptische Sprache und Altertumskunde* 80: 136-39.
- Hauptmann, A.
- 1989 The Earliest Periods of Copper Metallurgy in Feinan, Jordan. Pp. 119-35 in *Old World Archaeometallurgy: Proceedings of the International Symposium "Old World Archaeometallurgy", Heidelberg 1987*, eds. A. Hauptmann, E. Pernicka and G. A. Wagner. Bochum: Selbstverlag des Deutschen Bergbau-Museums.
- 1990 The Copper Ore Deposit of Feinan, Wadi Araba: Early Mining and Metallurgy. Pp. 53-62 in *The Near East in Antiquity, Vol. I* (German contributions to the archaeology of Jordan, Palestine, Syria, Lebanon and Egypt), ed. S. Kerner. Amman: Al Kutba; Goethe-Institut.
- Hauptmann, A., Begemann, F., Heitkemper, E., Pernicka, E., and Schmitt-Strecker, S.
- 1992 Early Copper Produced at Feinan, Wadi Araba, Jordan: The Composition of Ores and Copper. *Archeomaterials* 6: 1-33.
- Hauptmann, A., and Weisgerber, G.
- 1992 Periods of Ore Exploitation and Metal Production in the Area of Feinan, Wadi Araba, Jordan. Pp. 61-66 in *Studies in the History and Archaeology of Jordan IV*, eds. M. Zaghoul, K. `Amr, F. Zayadine and R. Nabeel.
- Hauptmann, A., Weisgerber, G., and Knauf, E.
- 1985 Archäometallurgische und Bergbauarchäologische Untersuchungen Im Gebiet von Feinan, Wadi Arabah (Jordanien). *Der Anschnitt* 37(5-6): 163-95.
- Hayes, W. C.
- 1949 Career of the Great Steward Henenu Under Nebhepetre Mentuhotpe. *Journal of Egyptian Archaeology* 35: 43-49.
- 1953 *The Scepter of Egypt*, Vol. 1. *From the Earliest Times to the End of the Middle Kingdom* (A background for the study of the Egyptian antiquities in the Metropolitan Museum of Art). New York: The Metropolitan Museum of Art.
- 1964 *Most Ancient Egypt*. Chicago: The University of Chicago Press.
- 1971 The Middle Kingdom in Egypt: Internal History from the Rise of the Heracleopolitans to the Death of Ammenemes III. Pp. 464-531 in *The Cambridge Ancient History*, Vol. 1, part 2. *Early History of the Middle East*, eds. I. Edwards, C. Gadd and N. Hammond. Cambridge: Cambridge University Press.
- 1973 Egypt: From the Death of Ammenemes III to Seqenenre II. Pp. 42-76 in *The Cambridge Ancient History*, Vol. 2, part 1. *History of the Middle East and the*

- Aegean Region c. 1800-1380 B.C.*, eds. I. Edwards, C. Gadd, N. Hammond and E. Sollberger. Cambridge: Cambridge University Press.
- Healey, J. F.
 1990 *The Early Alphabet*. Reading the past. London: British Museum Press.
- Hedges, R.
 1983 The Accelerator Technique for C14 Measurement : It Implications for Radiocarbon Dating. Pp. 42-50 in *Archaeology, Dendrochronology and the Radiocarbon Calibration Curve*, ed. B. Ottaway. Department of Archaeology, Occasional Papers, no. 9. University of Edinburgh.
 1991 AMS Dating: Present Status and Potential Applications. *Quaternary Proceedings* 1: 5-10.
- Hedges, R., Housley, R., Bronk, C., and van Klinken, G.
 1990 Radiocarbon Dates from the Oxford AMS System: Archaeometry Datelist 11. *Archaeometry* 32(2): 211-37.
- Hedges, R., Pettit, P., Ramsey, C. B., and van Klinken, G.
 1997 Radiocarbon Dates from the Oxford AMS System: Archaeometry Datelist 23. *Archaeometry* 39(1): 247-62.
- Helck, W.
 1989 Ein Ausgreifen Des Mittleren Reiches in Den Zypriotischen Raum? *Göttinger Miszellen* 109: 27-30.
- Held, S. O.
 1989 Colonization Cycles on Cyprus 1: The Biogeographic and Paleontological Foundations of Early Prehistoric Settlement. *Report of the Department of Antiquities of Cyprus*: 7-28.
 1992 Colonization and Extinction on Early Prehistoric Cyprus. Pp. 104-64 in *Acta Cypria, Part 2*, ed. P. Åström. Acts of an international congress on Cypriote archaeology held in Göteborg on 22-24 August, 1991. Studies in Mediterranean Archaeology and Literature, pocket book, no. 120. Paul Åströms Förlag.
 1993 Insularity as a Modifier of Cultural Change: The Case of Prehistoric Cyprus. *Bulletin of the American Schools of Oriental Research* 292: 25-33.
- Hellwing, S. and Gophna, R.
 1984 The Animal Remains from the Early and Middle Bronze Ages at Tel Aphek and Tel Dalit: A Comparative Study. *Tel Aviv* 11: 49-59.
- Helms, M. W.
 1988 *Ulysses' Sail: An Ethnographic Odyssey of Power, Knowledge, and Geographical Distance*. Princeton: Princeton University Press. 297.
- Helms, S. W.
 1981 *Jawa: Lost City of the Black Desert*. Ithaca, New York: Cornell University Press.

- 1987a A Note on EB IV Symbols from Palestine/TransJordan. *Akkadica* 52: 32-34.
- 1987b A Note on Some 4th Millennium Stamp Seal Impressions from Jordan. *Akkadica* 52: 29-31.
- 1987c Jawa, Tell Um Hammad and the EBI/Late Chalcolithic Landscape. *Levant* 19: 49-81.
- 1989a Jawa at the Beginning of the Middle Bronze Age. *Levant* 21: 141-68.
- 1989b Um Hammad. Pp. 581-89 in *Archaeology of Jordan II.2, Field Reports, Sties L-Z*, eds D. Homès-Fredericq and J. Hennessy. *Akkadica Supplementum*. Leuven: Peeters.
- 1991 Stratigraphy. Pp. 19-55 in *Excavations at Jawa, 1972-1986: Stratigraphy, Pottery and Other Finds*, ed. A. Betts. Edinburgh University Press.
- Heltzer, M.
- 1989 The Trade of Crete and Cyprus with Syria and Mesopotamia and Their Eastern Tin Sources in the XVIII-XVII Century B.C. *Minos* 24: 7-27.
- Hennessy, J., Edwards, P., Walmsley, A., Bourke, S., and Tidmarsh, J.
- 1989 Pella. Pp. 406-41 in *Archaeology of Jordan II.2, Field Reports, Sties L-Z*, eds D. Homès-Fredericq and J. Hennessy. *Akkadica Supplementum*. Leuven: Peeters.
- Hennessy, J., and Millett, A.
- 1963 Spectrographic Analysis of the Foreign Pottery from the Royal Tombs of Abydos and Early Bronze Age Pottery Palestine. *Archaeometry* 6: 10-17.
- Hennessy, J.
- 1967 *The Foreign Relations of Palestine During the Early Bronze Age*. London: Quaritch.
- Henschel-Simon, E.
- 1937 The *Toggle-Pins* in the Palestine Archaeological Museum. *Quarterly of the Department of Antiquities of Palestine* 6: 169-209.
- Herscher, E.
- 1975 New Light from Lapithos. Pp. 39-60 in *The Archaeology of Cyprus: Recent Developments*, ed. N. Robertson. Park Ridge, New Jersey: Noyes Press.
- 1979 Cretan and Cypriote Ceramic Techniques in the Late Third Millennium B.C. Pp. 1-7 in *Acts of the International Archaeological Symposium "The Relations Between Cyprus and Crete, Ca. 2000-500 B.C."* Nicosia 16-22 April 1978. Nicosia: Department of Antiquities, Cyprus.
- 1988 Kition in the Middle Bronze Age: The Tombs at Larnaca-Ayios Prodromos. *Report of the Department of Antiquities of Cyprus*: 141-66.
- Hershman, D.
- 1990 Early and Middle Bronze Age Lithic Assemblages. Pp. 13-20 (Hebrew; p. VII-VIII English summary) in *Excavations at Kabri, Vol. 4. Preliminary Report of 1989 Season*, eds A. Kempinski and W.-D. Niemeier. Tel Aviv: Tel Kabri Expedition; Tel Aviv University.
- Herzog, Z.

- 1993 Gerisa. Pp. 480-84 in *The New Encyclopedia of Archaeological Excavations in the Holy Land*, eds E. Stern, A. Lewinson-Gilboa and J. Aviram. Jerusalem: Israel Exploration Society.
- Hess, O.
- 1980 A Middle Bronze Age I Burial Cave at Fureidis. *Atiqot* 14: 34-36.
- 1990 Finds from a Cemetery in Nahal Tavor. *Atiqot* 10: 157-59 (Hebrew; English summary).
- Hestrin, R., and Tadmor, M.
- 1963 A Hoard of Tools and Weapons from Kfar Monash. *Israel Exploration Journal* 13(4): 265-88.
- Hirschfeld, Y.
- 1985 *Map of Herodian (108/2)*. Jerusalem: Israel Department of Antiquities and Museums; Archaeological Survey of Israel. 128 pp (Hebrew); 60^{*} pp (English).
- 1994 The Anchor Church at the Summit of Mt. Berenice, Tiberius. *Biblical Archaeologist* 57(3): 122-33.
- Hirth, K. G.
- 1978 Interregional Trade and the Formation of Prehistoric Gateway Communities. *American Antiquity* 43: 35-45.
- Hizmi, H.
- 1993 Southern Part of the Map of Beit Sira (Sites 103-140). In *Archaeological Survey of the Hill Country of Benjamin*, eds. I. Magen and I. Finkelstein. Jerusalem: Israel Antiquity Authority Publications. 97-131 (Hebrew with English summary).
- Hoch, J. E.
- 1990 The Byblos Syllabary: Bridging the Gap Between Egyptian Hieroglyphs and Semitic Alphabets. *Journal of the Society for the Study of Egyptian Antiquities* 20: 115-24.
- 1994 *Semitic Words in Egyptian Texts of the New Kingdom and Third Intermediate Period*. Princeton: Princeton University Press.
- 1995 Egyptian Hieratic Writing in the Byblos Pseudo-Hieroglyphic Stele L. *Journal of the American Research Center in Egypt* 32: 59-65.
- Hodder, I.
- 1974 Regression Analysis of Some Trade and Marketing Patterns. *World Archaeology* 6(2 October): 172-89.
- Hodjash, S. I., and Berlev, O. D.
- 1980 A Market-Scene in the Mastaba of D d -m-`Nh (Tp-m-`Nh). *Altorientalische Forschungen* 7: 31-49.
- Hoffman, M. A.
- 1993 [1979] *Egypt Before the Pharaohs: The Prehistoric Foundations of Egyptian Civilization*. New York: Barnes & Noble Books.
- Hoftijzer, J., and Van Soldt, W. H.

- 1998 Appendix: Texts from Ugarit Pertaining to Seafaring. Pp. 333-44 in *Seagoing Ships and Seamanship in the Bronze Age Levant*, by S. Wachsmann. College Station: Texas A & M University Press.
- Holladay, J. S., Jr.
- 1982 *Cities of the Delta*, Vol. 3. *Tell el-Maskhuta*. American Research Center Reports. Malibu: Undena.
- 1997 The Eastern Nile Delta During the Hyksos and Pre-Hyksos Periods: Toward a Systemic/Socioeconomic Understanding. Pp. 183-226 in *The Hyksos: New Historical and Archaeological Perspectives*, ed. E. Oren. University Museum Monograph. 8 University Museum Symposium Series. Philadelphia: University of Pennsylvania Museum.
- Homès-Fredericq, D., and Hennessy, J., eds
- 1989 *Archaeology of Jordan*. 2 vols. Akkadica Supplementum. Leuven: Peeters.
- Homer
- 1919 *Odyssey*, trans. A. Murrariy. Loeb Classical Library. Cambridge, Mass.: Harvard University Press.
- Hopkins, D. C.
- 1987 Life on the Land: The Subsistence Struggles of Early Israel. *Biblical Archaeologist* 50(3): 178-91.
- Horn, S. H.
- 1963 Byblos in Ancient Records. *Andrews University Seminary Studies* 1: 52-61.
- Horowitz, A.
- 1987 Geology of the Region. Pp. 7-8 in *Excavations at Kabri*, Vol. 1. *Preliminary Report of 1986 Season*, ed. A. Kempinski. Tel Aviv: Tel Kabri Expedition; Tel Aviv University.
- Horowitz, A.
- 1979 *The Quaternary of Israel*. New York: Academic Press.
- 1988 Palynology. Pp. 261-78 in *Benchmarks in Time and Culture: An Introduction to Palestinian Archaeology Dedicated to Joseph A. Callaway*, eds. J. F. Drinkard, Jr., G. L. Mattingly and J. M. Miller. Archaeological and Biblical studies, no. 1. Atlanta: Scholars Press.
- Horowitz, W.
- 1996 The Cuneiform Tablets at Tel Hazor. *Israel Exploration Journal* 46(3-4): 268-69.
- 1997 A Combined Multiplication Table on a Prism Fragment from Hazor. *Israel Exploration Journal* 47(3-4): 21-33.
- Horowitz, W., and Shaffer, A.
- 1992a An Administrative Tablet from Hazor: A Preliminary Edition. *Israel Exploration Journal* 42(1-2): 21-33.
- 1992b A Fragment of a Letter from Hazor. *Israel Exploration Journal* 42(3-4): 165-67.
- Horowitz, L. K.

- 1987 Animal Offerings from Two Bronze Age Tombs. *Israel Exploration Journal* 37(4): 251-55.
- 1989a Diachronic Changes in Rural Husbandry Practices in Bronze Age Settlements from the Refaim Valley, Israel. *Palestine Exploration Quarterly* 121: 44-54.
- 1989b Sedentism in the Early Bronze IV: A Faunal Perspective. *Bulletin of the American Schools of Oriental Research* 275: 15-25.
- 1996 Fauna from Tel Sasa, 1980. *Atiqot* 28: 59-61.
- Horwitz, L. K., Hellwing, S., and Tchernov, E.
- 1996 Patterns of Animal Exploitation at Early Bronze Age Tel Dalit. Pp. 193-216 in *Excavations at Tel Dalit: An Early Bronze Age Walled Town in Central Israel*, ed. R. Gophna. Tel Aviv: Ramot Publishing House, Tel Aviv University.
- Horwitz, L. K., and Tchernov, E.
- 1989 Animal Exploitation in the Early Bronze Age of the Southern Levant: An Overview. Pp. 279-96 in *L'urbanisation de la Palestine À l'Âge Du Bronze Ancien: Bilan et Perspectives Des Recherches Actuelles, Actes Du Colloque d'Emmaüs (20-24 Octobre 1986)*, ed. P. de Miroschedji. BAR International Series. Oxford.
- Housley, R. A.
- 1994 Eastern Mediterranean Chronologies: The Oxford AMS Contribution. Pp. 55-73 in *Late Quarternary Chronology and Paleoclimates of the Eastern Mediterranean*, O. Bar-Yosef and R. Kra. Radiocarbon.
- Huber, P. J.
- 1987 Astronomical Evidence for the Long and Against the Middle and Short Chronologies. Pp. 5-17 in *High Middle or Low?* ed. P. Åström. Acts of an international colloquium on absolute chronology held at the University of Gothenberg, 20-22 August 1987, Part 1. Gothenberg.
- Huber, P. J., Sachs, A., Stohl, M., Whiting, R. M., Leichty, E., Walker, C. B. F., and van Driel, G.
- 1982 *Astronomical Dating of Babylon I and Ur III*. Occasional papers on the Ancient Near East, vol. 1, no. 4. Malibu: Undena Publications.
- Hughes, G. R.
- 1963 Serra East: The University of Chicago Excavations, 1961-62. *Kush* 11: 121-30.
- Ibrahim, M. M.
- 1972 Archaeological Excavations at Sahab, 1972. *Annual of the Department of Antiquities of Jordan* 17: 23-36.
- Ibrahim, M., Sauer, J. A., and Yassine, K.
- 1976 The East Jordan Survey, 1975. *Bulletin of the American Schools of Oriental Research* 222: 41-66.
- Ilan, D.
- 1991a *Mortuary Practices at Tel Dan in the Middle Bronze Age: Material Culture, Society and Ideology* (Unpublished master's thesis submitted to the Institute of Archaeology, The Hebrew University). Jerusalem.

- 1991b 'Stepped-Rim' Juglets from Tel Dan and the 'MB I-II (MB IIA-B) Transitional Period.' *Israel Exploration Journal* 41: 229-38.
- 1992 A Middle Bronze Age Offering Deposit from Tel Dan and the Politics of Cultic Giving. *Tel Aviv* 19(2): 247-66.
- 1995a The Dawn of Internationalism - the Middle Bronze Age. Pp. 297-319 in *The Archaeology of Society in the Holy Land*, ed. T. E. Levy. Leicester University Press.
- 1995b Mortuary Practice at Tel Dan in the Middle Bronze Age: A Reflection of Canaanite Society and Ideology. Pp. 117-39 in *The Archaeology of Death in the Ancient Near East*, eds. S. Campbell and A. Green. Oxbow Monographs, no. 51. Oxford: Oxbow Books.
- 1996a Middle Bronze Age Painted Pottery from Tel Dan. *Levant* 28: 157-72.
- 1996b The Middle Bronze Age Tombs. Pp. 163-329 in *Dan I: A Chronicle of the Excavations, the Pottery Neolithic, the Early Bronze Age and the Middle Bronze Age Tombs*, eds. A. Biran, D. Ilan and R. Greenberg. Annual of the Nelson Glueck School of Biblical Archaeology, Hebrew Union College - Jewish Institute of Religion. Jerusalem.
- Ilan, D., Vandiver, P., and Spaer, M.
- 1993 An Early Glass Bead from Tel Dan. *Israel Exploration Journal* 43: 230-34.
- Ilan, O., and Sebbane, M.
- 1989 Metallurgy, Trade and the Urbanization of Southern Canaan in the Chalcolithic and Early Bronze Age. Pp. 139-62 in *L'urbanisation de la Palestine À l'Âge Du Bronze Ancien: Bilan et Perspectives Des Recherches Actuelles, Actes Du Colloque d'Emmaüs (20-24 Octobre 1986)*, ed. P. de Miroschedji. BAR International Series. Oxford.
- Ilani, S., and Rosenfeld, A.
- 1994 Ore Source of Arsenic Copper Tools from Israel During Chalcolithic and Early Bronze Ages. *Terra Nova* 6: 177-79.
- Ilani, S., Rosenfeld, A., and Dvorchek, M.
- 1997 The Chemical Composition of Bronze from Canaan in the Middle Bronze Age. *Archaeology and Natural Sciences Bulletin* 5: 43-53 (Hebrew).
- Illife, J.
- 1936 Pottery from Ras el Ain. *Quarterly of the Department of Antiquities of Palestine* 5: 113-26.
- Inbar, M., and Sivan, D.
- 1984 Paleo-Urban Development and Late Quaternary Environmental Change in the Akko Area. *Paléorient* 9: 85-91.
- Inman, D. L.
- 1978 The Impact of Coastal Structures on Shorelines. Pp. 2265-72 in *Coastal Zone 78*. Symposium on technical, environmental, socioeconomic and regulatory aspects of

- coastal zone management, held in San Francisco, California, March 14-16, 1978. American Society of Engineers.
- Irwin, G.
- 1989 Against, Across and Down the Wind: A Case for the Systematic Exploration of the Remote Pacific. *Journal of the Polynesian Society* 98: 167-206.
- 1992 *The Prehistoric Exploration and Colonisation of the Pacific*. Cambridge: Cambridge University Press.
- Jacobs, P. F.
- 1996 A Cosmetic Palette from Early Bronze III at Tell Halif. Pp. 123-34 in *Retrieving the Past: Essays in Archaeological Research and Methodology in Honor of Gus W. Van Beek*, ed. J. D. Seger. Cobb Institute of Archaeology; Mississippi State University.
- Jenkins, N.
- 1980 *The Boat Beneath the Pyramid: King Cheops' Royal Ship*. London: Thames and Hudson.
- Jidejian, N.
- 1971 *Byblos Through the Ages*. Beirut: Dar el-Machreq Publishers.
- Jobling, W. J.
- 1989 `Aqaba - Ma`an Archaeological and Epigraphical Survey. Pp. 16-24 in *Archaeology of Jordan II.1, Surveys and Sites A-K*, eds D. Homès-Fredericq and J. Hennessy. Akkadica Supplementum. Leuven: Peeters.
- Joffe, A. H.
- 1991 Early Bronze I and the Evolution of Social Complexity in the Southern Levant. *Journal of Mediterranean Archaeology* 4(1): 3-58.
- 1993 *Settlement and Society in the Early Bronze Age I and II: Complementarity and Contradiction in a Small-Scale Complex Society*. Sheffield: Sheffield Academic Press.
- Joffe, A. H., and Dessel, J.
- 1995 Redefining Chronology and Terminology for the Chalcolithic of the Southern Levant. *Current Anthropology* 36(3): 507-18.
- Johns, C. N.
- 1993 `Atlit. Pp. 112-17 in *The New Encyclopedia of Archaeological Excavations in the Holy Land*, eds E. Stern, A. Lewinson-Gilboa and J. Aviram. Jerusalem: Israel Exploration Society.
- Johnson, P.
- 1982 The Middle Cypriote Pottery Found in Palestine. *Opuscula Atheniensia* 14: 49-72.
- Kalin, R., McCormac, F., Damon, P., Eastoe, C., and Long, A.
- 1995 Intercomparison of High-Precision ¹⁴C Measurements at the University of Arizona and the Queen's University of Belfast Radiocarbon Laboratories. *Radiocarbon* 37(1): 33-38.

- Kamp, K. A., and Yoffee, N.
- 1980 Ethnicity in Ancient Western Asia During the Early Second Millennium B.C.: Archaeological Assessments and Ethnoarchaeological Prospectives. *Bulletin of the American Schools of Oriental Research* 237: 85-104.
- Kantor, H. J.
- 1947 The Aegean and the Orient in the Second Millennium B.C. *American Journal of Archaeology* 51: 1-103.
- 1992 The Relative Chronology of Egypt and Its Foreign Correlations Before the First Intermediate Period. Pp. 3-21 in *Chronologies in Old World Archaeology*, ed. R. W. Ehrich. 3rd ed. Chicago: University of Chicago Press.
- Kaplan, H.
- 1975 The Tomb at Kinneret and the Date of the Alaça Royal Tombs. *Haaretz Museum Yearbook* 17-18: 16-22.
- Kaplan, J.
- 1959 The Connections of the Palestinian Chalcolithic Culture with Prehistoric Egypt. *Israel Exploration Journal* 9: 134-36.
- 1971 Mesopotamian Elements in the MB II Culuture of Palestine. *Journal of Near Eastern Studies* 30: 293-307.
- 1975 Further Aspects of the Middle Bronze Age II Fortifications in Palestine. *Zeitschrift Des Deutschen Palästina-Vereins* 91: 1-17.
- 1993a Fejja. Pp. 444-45 in *The New Encyclopedia of Archaeological Excavations in the Holy Land*, eds E. Stern, A. Lewinson-Gilboa and J. Aviram. Jerusalem: Israel Exploration Society.
- 1993b Yavneh Yam. Pp. 1504-06 in *The New Encyclopedia of Archaeological Excavations in the Holy Land*, eds E. Stern, A. Lewinson-Gilboa and J. Aviram. Jerusalem: Israel Exploration Society.
- Kaplan, J., and Ritter-Kaplan, H.
- 1993a Jaffa. Pp. 655-59 in *The New Encyclopedia of Archaeological Excavations in the Holy Land*, eds E. Stern, A. Lewinson-Gilboa and J. Aviram. Jerusalem: Israel Exploration Society.
- 1993b Tel Aviv. Pp. 1451-57 in *The New Encyclopedia of Archaeological Excavations in the Holy Land*, eds E. Stern, A. Lewinson-Gilboa and J. Aviram. Jerusalem: Israel Exploration Society.
- Kaplan, M.
- 1980 *The Origin and Distribution of Tell el Yahudiyeh Ware*. Studies in Mediterranean Archaeology, vol. 62. Göthberg.
- Kaplan, M., Harbottle, G., and Sayre, E.
- 1982 Multi-Disciplinary Analyses of Tell el-Yahudiyeh Ware. *Archaeometry* 24(2): 127-42.
- Karageorghis, V.

- 1982 *Cyprus from the Stone Age to the Romans*. London: Thames & Hudson.
- Karmon, Y.
- 1971 *Israel: A Regional Geography*. London: John Wiley & Sons Ltd.
- 1990 The History of the Hula Valley. Pp. 37-63 (Hebrew) in *The Hula Valley and Its Environs*. Ariel, no. s. Jerusalem.
- Katzev, M. L.
- 1990 An Analysis of the Experimental Voyages of Kyrenia II. Pp. 245-56 in *2nd International Symposium on Ship Construction in Antiquity, Proceedings*, ed. H. Tzalas. Tropis II. Piraeus: Hellenic Institute for the Preservation of Nautical Tradition.
- Keel, O.
- 1989 Die Ω-Gruppe: Ein Mittelbronzezeitlicher Stempelsiegel-Typ mit Erhabenem Relief Aus Anatolien-Nordsyrien und Palästina. Pp. 39-87 in *Studien zu Den Stempelsiegeln Aus Palästina/Israel II*, eds. O. Keel, H. Keel-Leu and S. Schroer. Orbis Biblicus et Orientalis, no. 88. Universitätsverlag: Friburg.
- Kelso, J. L.
- 1968 The Excavation of Bethel (1934-1960). *Annual of the American Schools of Oriental Research* 39.
- Kemp, B. J.
- 1983 Old Kingdom, Middle Kingdom and the Second Intermediate Period c. 2686-1552 BC. Pp. 71-182 in *Ancient Egypt: A Social History*. Cambridge: Cambridge University Press.
- 1989 *Ancient Egypt: Anatomy of a Civilization*. London: Routledge.
- Kemp, B. J., and Merrillees, R. S.
- 1980 *Minoan Pottery in Second Millenium Egypt*. Mainz am Rhein: Philipp von Zabern.
- Kempinski, A.
- 1984 The Local Pottery. Pp. 55-58 in *Excavations at Tel Mevorakh (1973-1976), Part Two: The Bronze Age*, ed. E. Stern. Qedem, vol. 18. Jerusalem: The Institute of Archaeology. The Hebrew University.
- Kempinski, A.
- 1985 Arad = URUDU? *Beer Sheva* 2: 137-40 (Hebrew; English abstract, p. 42^{*} -43^{*}).
- 1986 Kabri and Its Surroundings During the Middle Bronze Age II (2000-1600 B.C.E.). Pp. 66-77 (Hebrew) in *Qadmoniyot Galil HaMaaravi [The Western Galilee Antiquities]*, ed. M. Yedaya. Ministry of Defense/Asher Regional Council. Tel Aviv.
- 1987a
- (ed.) History of the Site and the Region. Pp. 14-20 in *Excavations at Kabri, Vol. 1. Preliminary Report of 1986 Season*. Tel Aviv: Tel Kabri Expedition; Tel Aviv University.
- 1987b

- (ed.) *Excavations at Kabri*, Vol. 1. *Preliminary Report of 1986 Season*. Tel Aviv: Tel Kabri Expedition; Tel Aviv University.
- 1989a *Megiddo, a City-State and Royal Centre in North Israel*. Materialien zur Allgemeinen und Vergleichender Archäologie, vol. 40. München: Verlag C.H. Beck.
- 1989b The Middle Bronze Age. Pp. 5-87 (Hebrew) in *The Archaeology of Ancient Israel in the Biblical Period*. Tel Aviv: The Open University.
- 1989c Urbanization and Metallurgy in Southern Canaan. Pp. 163-68 in *L'urbanisation de la Palestine À l'Âge Du Bronze Ancien: Bilan et Perspectives Des Recherches Actuelles, Actes Du Colloque d'Emmaüs (20-24 Octobre 1986)*, ed. P. de Miroschedji. BAR International Series. Oxford.
- 1989d Notes on the History, Stratigraphy and Sequence of Tombs. Pp. 1-5 (Hebrew; p. I-III English summary) in *Excavations at Kabri*, Vol. 3. *Preliminary Report of 1988 Season*. Tel Aviv: Tel Kabri Expedition; Tel Aviv University.
- 1989e Some Samples of Pottery from Tomb 498. Pp. 31-35 (Hebrew; pp. X-XI English summary) in *Excavations at Kabri*, Vol. 3. *Preliminary Report of 1988 Season*. Tel Aviv: Tel Kabri Expedition; Tel Aviv University.
- 1990a The Stratigraphy, Sequence of Tombs and Chronology. Pp. 1-4 (Hebrew; p. IV-V English summary) in *Excavations at Kabri*, Vol. 4. *Preliminary Report of 1989 Season*, eds A. Kempinski and W.-D. Niemeier. Tel Aviv: Tel Kabri Expedition; Tel Aviv University.
- 1990b Tomb 984 in Area B. Pp. 32-38 (Hebrew; p. XII-XIII English summary) in *Excavations at Kabri*, Vol. 4. *Preliminary Report of 1989 Season*, eds A. Kempinski and W.-D. Niemeier. Tel Aviv: Tel Kabri Expedition; Tel Aviv University.
- 1991a The Beginning of the Renewed Urbanization in the Northern Akko Valley During the Middle Bronze IIA Period. *Michmanim* 5: 21-34 (Hebrew; English abstract pp. 36-37^{*}).
- 1991b The Earthen Rampart and Fortification. Pp. 24-25 (Hebrew; English summary p. 8^{*} - 9^{*}) in *Excavations at Kabri*, Vol. 5. *Preliminary Report of 1990 Season*, eds. A. Kempinski and W.-D. Niemeier. Tel Aviv: Tel Kabri Expedition; Tel Aviv University.
- 1991c A Seal Impression KAB4626 from Building 1057. Pp. 6-7 (Hebrew; English summary, pp. 4^{*} - 5^{*}) in *Excavations at Kabri*, Vol. 5. *Preliminary Report of 1990 Season*, eds. A. Kempinski and W.-D. Niemeier. Tel Aviv: Tel Kabri Expedition; Tel Aviv University.
- 1992a Dan and Kabri - a Note on the Planning of Two Cities. Pp. 76-81 (Hebrew; p. 149^{*} English summary) in *Eretz Israel* 23 (*Biran Volume*). Jerusalem.
- 1992b Middle and Late Bronze Age Fortifications. Pp. 127-42 in *The Architecture of Ancient Israel from the Prehistoric to the Persian Periods*, eds. A. Kempinski and R. Reich. Jerusalem: Israel Exploration Society.

- 1992c The Middle Bronze Age. Pp. 159-210 in *The Archaeology of Ancient Israel*, ed. A. Ben-Tor. New Haven: Yale University Press.
- 1992d Reflections on the Role of the Egyptians in the Shefelah of Palestine in Light of Recent Soundings at Tel Erani. Pp. 419-26 in *The Nile Delta in Transition: 4th - 3rd Millennium B.C.* (Proceedings of the seminar held in Cairo, 21-24 October 1990, at the Netherlands Institute of Archaeology and Arabic Studies), ed. E. C. Van Den Brink. Tel Aviv.
- 1992e Urbanization and Town Plans in the Middle Bronze Age II. Pp. 121-26 in *The Architecture of Ancient Israel from the Prehistoric to the Persian Periods*, eds. A. Kempinski and R. Reich. Jerusalem: Israel Exploration Society.
- 1993a 'Ajjul, Tell El-. Pp. 52-53 in *The New Encyclopedia of Archaeological Excavations in the Holy Land*, eds E. Stern, A. Lewinson-Gilboa and J. Aviram. Jerusalem: Israel Exploration Society.
- 1993b Kabri. Pp. 839-41 in *The New Encyclopedia of Archaeological Excavations in the Holy Land*, eds E. Stern, A. Lewinson-Gilboa and J. Aviram. Jerusalem: Israel Exploration Society.
- 1993c A Syrian Cylinder Seal from Tomb 984 at Tel Kabri. Pp. 333-38 in *Aspects of Art and Iconography: Anatolia and Its Neighbours, Studies in Honor of Nimet Özgüç*. Ankara: Türk Tarih Kürümü.
- 1994 Kabri 1986-1993: Excavation Methods and Publication. Pp. 1-4 (Hebrew; * 1- * 4 English summary) in *Excavations at Kabri, Vol. 7-8. Preliminary Report of 1992-1993 Seasons*, eds. A. Kempinski and W.-D. Niemeier. Tel Aviv: Tel Kabri Expedition; Tel Aviv University.
- Kempinski, A., and Gilead, I.
- 1991 New Excavations at Tel Erani: A Preliminary Report of the 1985-1988 Seasons. *Tel Aviv* 18: 164-91.
- Kempinski, A., and Niemeier, W.-D.
- 1992 *Excavations at Kabri, Vol. 6. Preliminary Report of 1991 Season*. Tel Aviv: Tel Kabri Expedition; Tel Aviv University.
- 1993 Kabri, 1993. *Israel Exploration Journal* 43: 256-59.
- Kempinski, A., and Reich, R., eds.
- 1992 *The Architecture of Ancient Israel from the Prehistoric to the Persian Periods*. Jerusalem: Israel Exploration Society.
- Kenyon, K. M.
- 1958 Some Notes on the Early and Middle Bronze Age Strata of Megiddo. Pp. 51*-60* in *Eretz Israel 5 (Benjamin Mazar Volume)*. Jerusalem: Israel Exploration Society.
- 1965 *Excavations at Jericho, Vol. 2. The Tombs Excavated in 1955-1958*. London: British School of Archaeology in Jerusalem; Harrison Press.
- 1966 *Amorites and Canaanites*. The Schweich Lectures of the British Academy. London: The British Academy; Oxford University Press

- 1969 The Middle and Late Bronze Age Strata at Megiddo. *Levant* 1: 25-60.
- 1974 *Digging up Jerusalem*. New York: Praeger Publications.
- 1979 [1960] *Archaeology of the Holy Land*. 4th ed. London: Ernest Benn Limited.
- Khalidi, W., ed.
- 1992 *All That Remains: The Palestinian Villages Occupied and Depopulated by Israel in 1948*. Washington, D.C.: Institute for Palestine Studies.
- Khalil, L.
- 1984 Metallurgical Analyses of Some Weapons from Tell el-`Ajjul. *Levant* 16: 167-70.
- Killebrew, A. E.
- 1986 In *Tel Miqne - Ekron*, ed. S. Gitin, principal investigators T. Dothan and S. Gitin, contribution by B. Hesse and P. Wapnish. Jerusalem.
- Kingsley, S. A.
- 1996 Stereotypes in the Identification of East Mediterranean Stone Anchors. Pp. 87-94 in *The Ancient Harbour and Anchorage at Dor, Israel, Results of Underwater Surveys 1976-1991*, eds. S. A. Kingsley and K. Raveh. BAR International Series, no. 626. Oxford: Tempus Reparatum.
- Kingsley, S. A., and Raveh, K.
- 1996 *The Ancient Harbour and Anchorage at Dor, Israel, Results of Underwater Surveys 1976-1991*. BAR International Series, no. 626. Oxford: Tempus Reparatum.
- Kirkbride, D.
- 1965 Appendix E: Scarabs. In *Excavations at Jericho, Vol. 2*, by K. M. Kenyon. London: British School of Archaeology in Jerusalem; Harrison Press.
- Kirtland, L.
- 1985 Ancient Sea-Anchors? *Mariner's Mirror* 71: 321-24.
- Kishon, V., and Helwing, S.
- 1990 Animal Bones in Area D. Pp. 47-50 (Hebrew; p. XV English summary) in *Excavations at Kabri, Vol. 4. Preliminary Report of 1989 Season*, eds A. Kempinski and W.-D. Niemeier. Tel Aviv: Tel Kabri Expedition; Tel Aviv University.
- Kislev, M., Artzy, M., and Marcus, E.
- 1993 Import of Aegean Food Plant to a Middle Bronze IIA Coastal Site in Israel. *Levant* 25: 145-54.
- Kitchen, K.
- 1967 Byblos, Egypt, and Mari in the Early Second Millennium, B.C. *Orientalia* 36: 39-54.
- 1987 The Basics of Egyptian Chronology in Relation to the Bronze Age. Pp. 37-55 in *High Middle or Low?* 138 pp, ed. P. Åström. Acts of an international colloquium on absolute chronology held at the University of Gothenberg, 20-22 August 1987, Part 1. Gothenberg.

- 1989 Supplementary Notes on 'The Basics of Egyptian Chronology.' Pp. 152-59 in *High Middle or Low?* vol. pt. 3, ed. P. Åström. Acts of an international colloquium on absolute chronology held at the University of Gothenberg, 20-22 August 1987. Gothenberg.
- Klawans, H. L.
- 1988 *Toscanini's Fumble and Other Tales of Clinical Neurology*. London: The Bodley Head.
- Klein, M.
- 1987 Dynamics of the Morphological Changes in the Openings of the Bardawil Lagoon. Pp. 263-73 (Hebrew) in *Sinai*, eds. G. Gvirtzman, A. Shmueli, Y. Gradus, I. Beit-Arieh and M. Har-El. Eretz geographic research and publications. Tel Aviv: Ministry of Defence.
- Kletter, R., and Rapuano, Y.
- 1996 Khirbet Ibreiktas. *Excavations and Surveys in Israel* 16: 79.
- 1998 A Roman Well at Khirbet Ibreiktas. *Atiqot* 35: 43-59.
- Klug, S., and Beck, K.-G.
- 1985 Preliminary Report on the Human Skeletal Remains from Maadi and Wadi Digla. *Mitteilungen Des Deutschen Archäologischen Instituts Abteilung Kairo* 41: 99-107.
- Knapp, A. B.
- 1990 Production, Location, and Integration in Bronze Age Cyprus. *Current Anthropology* 31(2 April): 147-76.
- 1991 Spice, Drugs, Grain, and Grog: Organic Goods in Bronze Age East Mediterranean Trade. Pp. 21-68 in *Bronze Age Trade in the Mediterranean*, ed. N. Gale. Studies in Mediterranean Archaeology, no. 90. Jonsered: Paul Åströms Forlag.
- 1992 (ed.) *Archaeology, Annales and Ethnohistory*. Cambridge: Cambridge University Press.
- 1993 *Society and Polity at Bronze Age Pella: An Annales Perspective*. JSOT/ASOR Monograph Series, no. 6. Sheffield: Sheffield Academic Press.
- 1994 Emergence, Development and Decline on Bronze Age Cyprus. Pp. 271-304 in *Development and Decline in the Mediterranean Bronze Age*, eds. C. Mathers and S. Stoddart. Sheffield Archaeological Monographs, no. 8. Sheffield: J.R. Collis Publications.
- Knapp, A. B., Held, S. O., Zangger, E., and Johnson, I.
- 1992 The Sydney Cyprus Survey Project (SCSP) - First Preliminary Season (1992). *Report of the Department of Antiquities of Cyprus*: 319-36.
- Knudstad, J.
- 1966 Serra East and Dorginart. *Kush* 14: 165-86.
- Kochavi, M.
- 1972

- (ed.) The Land of Judah. Pp. 19-91 in *Judea, Samaria and the Golan: Archaeological Survey 1967-1968*. Jerusalem: The archaeological survey of Israel; Carta.
- 1973 A Built Shaft-Tomb of the Middle Bronze Age I at Degania A. *Qadmoniot* 4(2): 50-53 (Hebrew).
- 1975 The First Two Seasons of Excavations at Aphek-Antipatris. *Tel Aviv* 2: 17-42.
- 1989a *Aphek - Antipatris: Five Thousand Years of History*. Tel Aviv: Hakibbutz Hameuchad Publishing House; Israel Exploration Society. 138 pp (Hebrew).
- 1989b The Land of Geshur Project: Regional Archaeology of the Southern Golan (1987-1988 Seasons). *Israel Exploration Journal* 39(1-2): 1-17.
- 1989c Urbanization and Re-Urbanization: Early Bronze Age, Middle Bronze Age and the Period in-Between Them. Pp. 257-59 in *L'urbanisation de la Palestine À l'Âge Du Bronze Ancien: Bilan et Perspectives Des Recherches Actuelles, Actes Du Colloque d'Emmaüs (20-24 Octobre 1986)*, ed. P. de Miroschedji. BAR International Series. Oxford.
- 1990 The History of Afeq-Antipatris in Light of Archaeological Findings and Historical Documents. Pp. 211-32 (Hebrew) in *HaSharon: Between Yarkon and Karmel*, eds D. Grossman, A. Degani and A. Shmueli. Eretz: geographical research and publications. Tel Aviv: Ministry of Defence Publishing House.
- 1992 Some Connections Between the Aegean and the Levant in the Second Millennium BC: A View from the East. Pp. 7-15 in *Greece Between East & West: 10-8th Centuries BC*. Papers of the meeting at the Institute of Fine Arts, New York University, March 15-16, 1990. Mainz am Rhein: Philipp von Zabern.
- 1993 Tel Zeror. Pp. 1524-26 in *The New Encyclopedia of Archaeological Excavations in the Holy Land*, eds E. Stern, A. Lewinson-Gilboa and J. Aviram. Jerusalem: Israel Exploration Society.
- Kochavi, M., Beck, P., and Gophna, R.
- 1979 Aphek-Antipatris, Tel Poleg, Tel Zeror and Tel Burga: Four Fortified Sites of the Middle Bronze Age IIA in the Sharon Plain. *Zeitschrift Des Deutschen Palästina-Vereins* 95: 121-65.
- Kochavi, M., and Beit-Arieh, I.
- 1994 *Map of Rosh Ha-'Ayin (78)*. Jerusalem: Israel Antiquities Authority; Archaeological Survey of Israel. 127 pp (Hebrew); 80^{*} pp (English).
- Koenig, Y.
- 1990 Les Textes d'Envoûtement de Mirgissa. *Revue D'Égyptologie* 41: 101-25.
- Kohl, P. L.
- 1987 The Use and Abuse of World Systems Theory: The Case of the Pristine West Asian State. *Advances in Archaeological Method and Theory* 11: 1-35.
- Korfmann, M.
- 1995 Troia: A Residential City and Trading City at the Dardanelles. Pp. 173-83 in *Politeia: Society and State in the Aegean Bronze Age*, eds R. L. Laffineur and W.-

- D. Niemeier. Proceedings of the 5th international Aegean /5^e Rencontre égéenne internationale University of Heidelberg, Archäologisches Institut 10-13 April 1994. Aegaeum, Annales d'archaéologie égéenne de l'Université de Liège et UT-PASP, no. 12. Liège: Université de Liège.
- Kotter, W. R.
 1986 *Spatial Aspects of the Urban Development of Palestine During the Middle Bronze Age*. Ann Arbor: University Microfilms International.
- Köhler, C.
 1992 Problems and Priorities in the Study of Pre- and Early Dynastic Pottery. Pp. 7-15 in *Ateliers de Potiers et Productions Céramique en Égypte*. Cahiers de la Céramique Égyptienne, no. 3. Cairo: L'Institut Français d'Archéologie Oriental.
 1995 The State of Research on Late Predynastic Egypt: New Evidence for the Development of the Pharaonic State? *Göttinger Miszellen* 147: 79-91.
- Köhler, C.
 1992 The Pre- and Early Dynastic Pottery of Tell el-Fara'in (Buto). Pp. 11-22 in *The Nile Delta in Transition: 4th - 3rd Millennium B.C.* (Proceedings of the seminar held in Cairo, 21-24 October 1990, at the Netherlands Institute of Archaeology and Arabic Studies), ed. E. C. Van den Brink. Tel Aviv.
- Kroeper, K.
 1986-87 The Ceramic of the Pre/Early Dynastic Cemetery of Minshat Abu Omar. *Bulletin of the Egyptological Seminar* 8: 73-94.
 1989 Palestinian Ceramic Imports in Pre- and Protohistoric Egypt. Pp. 407-22 in *L'urbanisation de la Palestine À l'Âge Du Bronze Ancien: Bilan et Perspectives Des Recherches Actuelles, Actes Du Colloque d'Emmaüs (20-24 Octobre 1986)*, ed. P. de Miroschedji. BAR International Series. Oxford.
- Kroll, H.
 1989 Die Pflanzenfunde von Maadi. Pp. 129-36 in *Maadi III: The Non-Lithic Small Finds and the Structural Remains of the Predynastic Settlement*, eds. I. Rizkana and J. Seeher. Archäologische Veröffentlichungen, no. 80. Mainz am Rhein: Philipp von Zabern.
- Krzyszkowska, O. H.
 1984 Ivory from Hippopotamus Tusk in the Aegean Bronze Age. *Antiquity* 58: 123-25.
 1988 Ivory in Aegean Bronze Age: Elephant Tusk or Hippopotamus Ivory? *Annual of the British School at Athens* 83: 210-34.
- Kuschke, A.
 1978 Preliminary Remarks on an Archaeological Survey in the Northern Bīqā'. *Bulletin Du Musée de Beyrouth* 30: 43-46.
- Labat, R.
 1963 *Manuel d'Épigraphie Akkadienne*. 4th ed. Paris: Imprimerie Nationale.

Laffineur, R.

- 1988 Reflexions sur le Tresor de Tod. Aegaeum, Annales d'archaéologie égéenne de l'Université de Liège, no. 2. Liège: Université de Liège.

Laffineur, R., and Basch, L., eds.

- 1991 *Thalassa: L'Egee Prehistorique et la Mer* (Actes de la troisième Rencontre égéenne internationale de l'Université de Liège, Station de recherches sous-marine et océanographiques (StaReSo), Calvi, Corse (23-25 Avril, 1990)). Aegaeum, Annales d'archaéologie égéenne de l'Université de Liège, no. 7. Liège: Université de Liège.

Laffineur, R., and Betancourt, P. P., eds.

- 1997 *TEXNH: Craftsmen, Craftswomen and Craftsmanship in the Aegean Bronze Age*. Proceedings of the 6th International conference/ 6^e Rencontre égéenne internationale, Philadelphia, Temple University, 18-21 April 1996. Aegaeum, Annales d'archaéologie égéenne de l'Université de Liège et UT-PASP, no. 16. Liège: Université de Liège.

Lambeck, K.

- 1996 Sea-Level Change and Shoreline Evolution in Aegean Greece Since Upper Paleolithic Time. *Antiquity* 70(269): 588-611.

Lambrou-Phillipson, C.

- 1990 *Hellenorientalia. The Near Eastern Presence in the Bronze Age Aegean, Ca. 3000-1100 B.C. Interconnections Based on the Material Record and the Written Evidence Plus Orientalia. A Catalogue of Egyptian, Mesopotamian, Mitannian, Syro-Palestinian, Cypriot and Asia Minor Objects from the Bronze Age Aegean*. Studies in Mediterranean Archaeology Pocket Book, no. 95. Göteborg: Paul Åström Förlag.
- 1991 Seafaring in the Bronze Age Mediterranean: The Parameters Involved in Maritime Travel. Pp. 11-20 in *Thalassa: L'Egee Prehistorique et la Mer* (Actes de la troisième Rencontre égéenne internationale de l'Université de Liège, Station de recherches sous-marine et océanographiques (StaReSo), Calvi, Corse (23-25 Avril, 1990)), eds. R. Laffineur and L. Basch. Aegaeum, Annales d'archaéologie égéenne de l'Université de Liège, no. 7. Liège: Université de Liège.

Lamon, R. S., and Shipton, G. M.

- 1939 *Megiddo I: Seasons 1925-34. Strata I-IV*. Oriental Institute Publications, no. 42. Chicago: University of Chicago Press.

Landsberger, B., and Tadmor, H.

- 1964 Fragments of Clay Liver Models from Hazor. *Israel Exploration Journal* 14(4): 201-18.

Lapp, N. L.

- 1989 Cylinder Seals and Impressions of the Third Millennium B.C. from the Dead Sea Plain. *Bulletin of the American Schools of Oriental Studies* 273: 1-15.
- 1995 Some Early Bronze Age Seal Impressions from the Dead Sea Plain and Their Implications for Contacts in the East Mediterranean. Pp. 43-51 in *Trade, Contact,*

and the Movement of People in the Eastern Mediterranean: Studies in Honour of J. Basil Hennessey, eds. S. J. Bourke and J.-P. Descoeudres. Mediterranean Archaeological Supplement, no. 3. Sydney: Meditarch.

Largacha, A. P.

- 1993 Relations Between Egypt and Mesopotamia at the End of the Fourth Millennium. *Göttinger Miszellen* 137: 59-76.

Larsen, M. T.

- 1977 Partnerships in the Old Assyrian Trade. *Iraq* 39: 119-45.
1987 Commercial Networks in the Ancient Near East. Pp. 47-56 in *Centre and Periphery in the Ancient World*, eds. M. Rowlands, M. Larsen and K. Kristiansen. New Directions in Archaeology. Cambridge: Cambridge University Press.

[Lawrence, T. E.]

- 1919 *A Brief Record of the Advance of the Egyptian Expeditionary Force Under the Command of General Sir Edmund H.H. Allenby, G.C.B., G.C.M.G., July 1917 to October 1918*. 2nd ed. London: His Majesty's Stationary Office.

Lemche, N. P.

- 1991 *The Canaanites and Their Land: The Tradition of the Canaanites*. Journal for the study of the Old Testament supplement series, no. 110. Sheffield Academic Press.

Lender, Y.

- 1990 *Map of Har Nafha (196)*. Jerusalem: Israel Antiquities Authority; Archaeological Survey of Israel. 220 pp (Hebrew); 117^{*} pp (English).

Lernau, O.

- 1996 Appendix: Fish Bones from the Nahal Qanah Cave. Pp. 200-01 in *The Nahal Qanah Cave: Earliest Gold in the Southern Levant*, ed. A. Gopher. Monograph series of the Institute of Archaeology, no. 12. Tel Aviv: Institute of Archaeology of Tel Aviv University.

Levy, T. E.

- 1987
(ed.) *Shiqmim I* (Studies concerning Chalcolithic societies in the Northern Negev Desert, Israel (1982-1984)). BAR International Series, no. 356. Oxford: B.A.R.
1992 Radiocarbon Chronology of the Beersheva Culture and Predynastic Egypt. Pp. 345-356 in *The Nile Delta in Transition: 4th - 3rd Millennium B.C.* (Proceedings of the seminar held in Cairo, 21-24 October 1990, at the Netherlands Institute of Archaeology and Arabic Studies), ed. E. C. Van Den Brink. Tel Aviv.
1995 Cult, Metallurgy and Rank Societies - Chalcolithic Period (Ca. 4500-3500 BCE). Pp. 226-243 in *The Archaeology of Society in the Holy Land*, ed. T. E. Levy. Leicester University Press.

Levy, T. E., and Alon, D.

- 1982 The Chalcolithic Mortuary Sites Near Me'ad Aluf, Northern Negev Desert: A Preliminary Study. *Bulletin of the American Schools of Oriental Research* 248: 37-59.
- 1992 A Corpus of Ivories from Shiqmim. Pp. 65-71 (Hebrew; p. 148^{*} English summary) in *Eretz Israel* 23 (*Biran Volume*). Jerusalem.
- Levy, T. E., Alon, D., Grigson, C., Holl, A., Goldberg, P., Rowan, Y., and Smith, P.
- 1991 Subterranean Negev Settlement. *National Geographic Research and Exploration* 7(4): 394-413.
- Levy, T. E., Alon, D., Smith, P., Yekutieli, Y., Rowan, Y., Goldberg, P., Porat, N., Van den Brink, E. C., Witten, A. J., Golden, J., Grigson, C., Kansa, E., Dawson, L., Holl, A., Moreno, J., and Kersel, M.
- 1997 Egyptian-Canaanite Interaction at Nahal Tillah (Ca. 4500-3000 B.C.E.): An Interim Report on the 1994-1995 Excavations. *Bulletin of the American Schools of Oriental Research* 307: 1-51.
- Levy, T. E., and Holl, A. F. C.
- 1995 Social Change and the Archaeology of the Holy Land. Pp. 2-8 in *The Archaeology of Society in the Holy Land*, ed. T. E. Levy. Leicester University Press.
- Levy, T. E., and Shalev, S.
- 1989 Prehistoric Metalworking in the Southern Levant: Archaeometallurgical and Social Perspectives. *World Archaeology* 20(3): 15-36.
- Levy, T. E., Van den Brink, E. C., Goren, Y., and Alon, D.
- 1995 New Light on King Narmer and the Protodynastic Egyptian Presence in Canaan. *Biblical Archaeologist* 58(1): 26-35.
- Levy, Y.
- 1993 Rishon Le-Ziyyon Sand Dunes. *Hadashot Arkheologiyot* 100: 49-50.
- Lev-Yadun, S.
- 1987 Dendrochronology and Related Studies - a Review. *Mitekufat Haeven, Journal of the Israel Prehistoric Society* 20: 7^{*}-36^{*}.
- 1992 The Origin of the Cedar Beams from Al-Aqsa Mosque: Botanical, Historical and Archaeological Evidence. *Levant* 24: 201-08.
- Lev-Yadun, S., Artzy, M., Marcus, E., and Stidsing, R.
- 1996 Wood Remains from Tel Nami, a Middle Bronze IIA and Late Bronze IIB Port, Local Exploitation and Levantine Cedar Trade. *Economic Botany* 50(3): 310-17.
- Lev-Yadun, S., and Gophna, R.
- 1992 Exportation of Plant Products from Canaan to Egypt in the Early Bronze Age I: A Rejoinder to William A. Ward. *Bulletin of the American Schools of Oriental Research* 287: 89-90.
- Lev-Yadun, S., Herzog, Z., and Tsuk, T.
- 1995 Conifer Beams of *Juniperus Phoenicea* Found in the Well of Tel Beer-Sheva. *Tel Aviv* 22(1): 128-35.

Lev-Yadun, S., Lipschitz N., and Waisel, Y.

- 1983 Ring Analysis of Cedrus Libani Beams from the Roof of El-Aqsa Mosque. Pp. 92-96 (Hebrew; English abstract, pp. 4^{*} -5^{*} in *Eretz Israel 17 (Brawer Volume)*).

Lichtheim, M.

- 1973 *Ancient Egyptian Literature*, Vol. 1. *The Old and Middle Kingdoms*. Berkeley: University of California Press.
- 1976 *Ancient Egyptian Literature*, Vol. 2. *The New Kingdom*. Berkeley: University of California Press.

Lilyquist, C.

- 1993 Granulation and Glass: Chronological and Stylistic Investigations at Selected Sites, Ca. 2500-1400 B.C.E. *Bulletin of the American Schools of Oriental Research* 290-291: 29-94.

Limet, H.

- 1985 Les Relations Entre Mari et la Côte Méditerranéenne Sous le Règne de Zimri-Lim. Pp. 13-20 in *Phoenicia and Its Neighbours*, eds. E. Gubel and E. Lipi*ski. *Studia Phoenicia*, no. 3. Leuven: Uitgeverij Peeters.

Linder, E., and Raban, A.

- 1975 *Marine Archaeology*. Cassell's Introducing Archaeology Series, no. 7. London: Cassell.

Lipschitz, N.

- 1987a Olives in Ancient Israel in View of Dendroarchaeological Investigations. Pp. 139-45 in *Olive Oil in Antiquity: Israel and Neighbouring Countries from the Neolithic to the Early Arab Period - Conference 1987, Haifa*, eds M. Heltzer and D. Eitam. Haifa: University of Haifa.
- 1987b Dendroarchaeology. Pp. 70-72 (Hebrew) in *Excavations at Kabri*, Vol. 1. *Preliminary Report of 1986 Season*, ed. A. Kempinski. Tel Aviv: Tel Kabri Expedition; Tel Aviv University.
- 1988 Dendroarchaeological Investigations 1986-7 Seasons. Pp. 59-61 in *Excavations at Kabri* (Hebrew with English summaries), ed. A. Kempinski. Tel Aviv: Tel Kabri Expedition; Tel Aviv University.
- 1989 Plant Economy and Diet in the Early Bronze Age in Israel: A Summary of Present Research. Pp. 269-77 in *L'urbanisation de la Palestine À l'Âge Du Bronze Ancien: Bilan et Perspectives Des Recherches Actuelles, Actes Du Colloque d'Emmaüs (20-24 Octobre 1986)*, ed. P. de Miroschedji. BAR International Series. Oxford.
- 1992a Dendroarchaeological Investigation - 1988-90 Season. Pp. 25-32 in *Excavations at Kabri*, Vol. 6. *Preliminary Report of 1991 Season*, eds A. Kempinski and W.-D. Niemeier. Tel Aviv: Tel Kabri Expedition; Tel Aviv University.

- 1992b Levant Trees and Tree Products. *Bulletin on Sumerian Agriculture* 6: 33-46.
- 1994 The Paleobotanical Remains from Tel Kabri. Pp. 55- 63 in *Excavations at Kabri*, Vol. 7-8. *Preliminary Report of 1992-1993 Seasons*, eds. A. Kempinski and W.-D. Niemeier. Tel Aviv: Tel Kabri Expedition; Tel Aviv University.
- Liphschitz, N., and Biger, G.
- 1995 The Timber Trade in Ancient Palestine. *Tel Aviv* 22: 121-27.
- Liphschitz, N., Bonani, G., and Van den Brink, E. C.
- 1997 Timber Analysis and ¹⁴C Dating of Wooden Egyptian Cylinder Seals from the Israel Museum Collection, Jerusalem. *Göttinger Miszellen* 158: 33-41.
- Lipke, P.
- 1984 *The Royal Ship of Cheops*. National Maritime Museum, Greenwich, Archaeological Series, no. 9. Oxford.
- Litton, C., and Buck, C.
- 1995 Review Article: The Bayesian Approach to the Interpretation of Archaeological Data. *Archaeometry* 37(1): 1-24.
- Loud, G.
- 1948 *Megiddo II: Seasons of 1935-39*. Oriental Institute Publications, no. 62. Chicago: University of Chicago Press. 2 vols.
- Lucas, A., and Harris, J.
- 1989 [1962] *Ancient Egyptian Materials and Industries*. London: Hystories & Mysteries of Man, Ltd.
- Luft, U.
- 1992 Remarks of a Philologist on Egyptian Chronology. *Ägypten und Levante* 3: 109-14.
- Mabry, J., and Palumbo, G.
- 1989 Wadi Yabis Survey, 1987. Pp. 91-97 in *Archaeology of Jordan II.1, Surveys and Sites A-K*, eds D. Homès-Fredericq and J. Hennessy. Akkadica Supplementum. Leuven: Peeters.
- Macalister, R. S.
- 1912 *The Excavation of Gezer 1902-1905, 1907-1909*. London: John Murray.
- Macalister, R. S., and Duncan, J.
- 1926 *Excavations on the Hill of Ophel, Jerusalem 1923-5*. Palestine Exploration Fund Annual, no. 4. London.
- MacGillivray, J.
- 1995 A Minoan Cup at Tell el-Dab`A. *Ägypten und Levante* 5.
- Maeir, A. M.
- 1989 A Note on a Little-Known Egyptian Statue from Jerusalem. *Göttinger Miszellen* 110: 35-40.

- 1997a *The Material Culture of the Central Jordan Valley During the Middle Bronze II Period: Pottery and Settlement Pattern* (Unpublished Ph.d. dissertation). Jerusalem: Hebrew University. 2 vols.
- 1997b Tomb 1181: A Multiple-Interment Burial Cave of the Transitional Middle Bronze IIA-B. Pp. 295-340 in *Hazor V: An Account of the Fifth Season of Excavations, 1968*, eds. A. Ben-Tor and R. Bonfil. Jerusalem: Israel Exploration Society; Hebrew University.
- Maeir, A. M., and Garfinkel, Y.
- 1992 Bone and Metal Straw-Tip Beer-Strainers from the Ancient Near East. *Levant* 24: 218-23.
- Maeir, A. M., Yellin, J., and Goren, Y.
- 1992 A Re-Evaluation of the Red and Black Bowl from Parker's Excavations in Jerusalem. *Oxford Journal of Archaeology* 11: 39-53.
- Magness-Gardiner, B.
- 1996 Total Retrieval and Ceramic Analysis: A Case Study from the Levant. Pp. 179-92 in *Retrieving the Past: Essays in Archaeological Research and Methodology in Honor of Gus W. Van Beek*, ed. J. D. Seger. Cobb Institute of Archaeology; Mississippi State University.
- 1997 The Middle Bronze Age of Transjordan. Pp. 303-26 in *The Hyksos: New Historical and Archaeological Perspectives*, ed. E. Oren. University Museum Monograph. 8 University Museum Symposium Series. Philadelphia: University of Pennsylvania Museum.
- Magness-Gardiner, B., and Falconer, S. E.
- 1994 Community, Polity, and Temple in a Middle Bronze Age Levantine Village. *Journal of Mediterranean Archaeology* 7(2 December): 127-64.
- Maguire, L. C.
- 1987 The Cypriot Pottery. Pp. 44-51 in *Excavations at Kabri, Vol. 1. Preliminary Report of 1989 Season*, ed. A. Kempinski. Tel Aviv: Tel Kabri Expedition; Tel Aviv University.
- 1990 *The Circulation of Cypriot Pottery in the Middle Bronze Age* (Unpublished Ph.d. dissertation). University of Edinburgh.
- 1992 A Cautious Approach to the Middle Bronze Age Chronology of Cyprus. *Ägypten und Levante* 3: 115-20.
- 1995 Tell el-Dab'a: The Cypriot Connection. Pp. 54-65 in *Egypt, the Aegean and the Levant: Interconnections in the Second Millennium BC*, eds. W. V. Davies and L. Schofield. London: British Museum Press.
- Maier, J.
- 1986 Investigations Into Nahariya's Past and Environment. Pp. 335-39 (Hebrew) in *Qadmoniyot Galil HaMaaravi [The Western Galilee Antiquities]*, ed. M. Yedaya. Ministry of Defense/Asher Regional Council. Tel Aviv.

Maisler, B., (Mazar)

- 1939 Tell Kurdane (Aphek ?) in the Plain of Acre. *Bulletin of the Israel Exploration Society* 6: 151-58 (Hebrew).

Majer, J.

- 1992 The Eastern Desert and Egyptian Prehistory. Pp. 227-34 in *The Followers of Horus: Studies Dedicated to Michael Allen Hoffman*, eds. R. Friedman and B. Adams. Egyptian Studies Association Publication, no. 2. Oxford: Oxbow Books.

Malamat, A.

- 1970 Northern Canaan in the Mari Texts. Pp. 164-77 in *Near Eastern Archaeology in the Twentieth Century: Essays in Honor of Nelson Glueck*, ed. J. A. Sanders. Garden City, N.Y.: Doubleday.
- 1971 Syro-Palestinian Destinations in a Mari Tin Inventory. *Israel Exploration Journal* 21(1): 31-38.
- 1984 *Mari and the Early Israelite Experience*. The Schweich Lectures of the British Academy. Oxford: Oxford University Press.
- 1998a The Cultural Impact of the West (Syria-Palestine) on Mesopotamia in the Old Babylonian Period. Pp. 13-23 (originally published in *Alt-Orientalische Forschungen*, 24 (1997), pp. 312-19) in *Mari and the Bible*. Studies in the History and Culture of the Ancient Near East, vol. XII. Leiden: Brill.
- 1998b Hazor Once Again in New Mari Documents. Pp. 41-50 (originally published in M. Lebeau et P. Talon (eds.), *Reflets des deux fleuves: volume de mélanges offert à André Finet*, Peeters, Leuven (1989), 117-18) in *Mari and the Bible*. Studies in the History and Culture of the Ancient Near East, vol. XII. Leiden: Brill.
- 1998c Introductory Essay - Mari and the Bible: A Comparative Perspective. Pp. 1-10 in *Mari and the Bible*. Studies in the History and Culture of the Ancient Near East, vol. XII. Leiden: Brill.
- 1998d Mari and Hazor: The Implications for the Middle Bronze Age Chronology. Pp. 51-55 (originally published in *Ägypten und Levante* 3 (1992), pp. 121-23) in *Mari and the Bible*. Studies in the History and Culture of the Ancient Near East, vol. XII. Leiden: Brill.
- 1998e Mari and Hazor: Trade Relations in the Old Babylonian Period. Pp. 45-50 (originally published in *Biblical Archaeology Today, 1990*, Jerusalem, 1993, Pre-Congress Symposium, Supplement, pp. 66-70) in *Mari and the Bible*. Studies in the History and Culture of the Ancient Near East, vol. XII. Leiden: Brill.
- 1998f Mari and Its Relations with the Eastern Mediterranean. Pp. 33-40 in *Mari and the Bible*. Studies in the History and Culture of the Ancient Near East, vol. XII. Leiden: Brill.
- 1998g *Mari and the Bible*. Studies in the History and Culture of the Ancient Near East, vol. XII. Leiden: Brill.

Malek, J.

- 1992 The Annals of Amenemhet II. *Egyptian Archaeology* 2: 18.
- 1996 The Egyptian Text on the Seal Impression from Alalakh (Tell Atchana). *Levant* 28: 173-76.
- Malek, J., and Quirke, S.
- 1992 Memphis, 1991: Epigraphy. *Journal of Egyptian Archaeology* 78: 13-18.
- Mallet, J.
- 1987 *Tell el-Fâr `Ah II: Le Bronze Moyen*. Éditions Reserche sur les Civilizations. Paris. 2 vol.: Text and Plates.
- Mallowan, M.
- 1939 Phoenician Carrying Trade, Syria. *Antiquity* 13. 86-87.
- Manniche, L.
- 1989 *An Ancient Egyptian Herbal*. London: British Museum Press.
- Manning, S. W.
- 1991 Approximate Calendar Date for the First Human Settlement of Cyprus? *Antiquity* 65: 870-78.
- 1993 No Way to Run a Railway. *Antiquity* 67: 928-30.
- 1995 *The Absolute Chronology of the Aegean Early Bronze Age: Archaeology, Radiocarbon and History*. Monographs in Mediterranean Archaeology, no. 1. Sheffield: Sheffield Academic Press.
- Manning, S. W., and Swiny, S.
- 1994 Sotira Kaminoudha and the Chronology of the Early Bronze Age in Cyprus. *Oxford Journal of Archaeology* 13(2 July): 149-72.
- Manning, S. W., and Weninger, B.
- 1992 A Light in the Dark: Archaeological Wiggle Matching and the Absolute Chronology of the Close of the Aegean Late Bronze Age. *Antiquity* 66: 636-63.
- Mantzourani, E., and Theodorou, A.
- 1989 An Attempt to Deleneante the Sea-Routes Between Crete and Cyprus During the Bronze Age. Pp. 38-55 in *Proceedings of an International Symposium *The Civilizations of the Aegean and Their Diffusion in Cyprus and the Eastern Mediterranean, 2000-600 B.C.* 18-24 September 1989*, ed. V. Karageorghis. Laranaca: Pierides Foundation.
- Al-Maqdassi, M.
- 1993 Chronique Archéologique. *Syria* 70: 443-560.
- Marcus, E. S.
- 1991 *Tel Nami: A Study of a Middle Bronze IIA Period Coastal Settlement* (Unpublished master's thesis). University of Haifa.
- 1995a A Petrographic Analysis of Storage Jars from Tel Nami, Israel: Ceramic Production and Trade Networks of the Middle Bronze IIa Period (CA. 2000-1750, BC). Pp. 597-603 in *Materials Research in Art and Archaeology IV*, eds. P. B. Vandiver, J. R.

- Druzik, J. L. Galvan Madrid, I. C. Freestone and G. S. Wheeler. Materials Research Society Symposium Proceedings, no. 352. Pittsburgh: Materials Research Society.
- 1995b Review of Alexander H. Joffe, Settlement and Society in the Early Bronze Age I and II: Complementarity and Contradiction in a Small-Scale Complex Society. *Antiquity* 69(266). 1068-1070.
- 1995c Tirat HaCarmel (B). *Excavations and Surveys in Israel* 14: 52-53.
- Marcus, E. S., and Artzy, M.
- 1995 A Loomweight from Tel Nami with a Scarab Seal Impression. *Israel Exploration Journal* 45(2-3): 136-49.
- Marder, O., Braun, E., and Milevski, I.
- 1995 The Flint Assemblage of Lower Horvat `Illin: Some Technical and Economic Considerations. *`Atiqot* 27: 63-93.
- Marfoe, L.
- 1979 The Integrative Transformation: Patterns of Sociopolitical Organization in Southern Syria. *Bulletin of the American Schools of Oriental Research* 234: 1-42.
- 1987 Cedar Forest to Silver Mountain: Social Change and the Development of Long-Distance Trade in Early Near Eastern Societies. Pp. 25-35 in *Centre and Periphery in the Ancient World*, eds. M. Rowlands, M. Larsen and K. Kristiansen. New Directions in Archaeology. Cambridge: Cambridge University Press.
- Mark, S.
- 1997 *From Egypt to Mesopotamia: A Study of Predynastic Trade Routes*. Studies in Nautical Archaeology, no. 4. College Station: Texas A & M University Press.
- Martin, G. T.
- 1998 A Much-Published Byblite Cylinder Seal. Pp. 173-82 in *Ancient Egyptian and Mediterranean Studies in Memory of William A. Ward*, ed. L. H. Lesko. Providence: Department of Egyptology, Brown University.
- Mathers, C., and Stoddart, S., eds.
- 1994 *Development and Decline in the Mediterranean Bronze Age*. Sheffield Archaeological Monographs, no. 8. Sheffield: J.R. Collis Publications.
- Matthäus, H.
- 1995 Representations of Keftiu in Egyptian Tombs and the Absolute Chronology of the Aegean Late Bronze Age. *Bulletin of the Institute of Classical Studies* 40: 177-94.
- Matthiae, P.
- 1982 Die Fürstengräber Des Palastes Q in Ebla. *Antike Welt* 13: 3-14.
- 1985 Ebla Recovered. Pp. 134-39 in *Ebla to Damascus: Art and Archaeology of Ancient Syria* (An exhibition from the Directorate-General of Antiquities and Museums, Syrian Arab Republic), ed. H. Weiss. Washington, D.C.: Smithsonian Institution.
- 1989 Jugs of the North-Syrian/Cilician and Levantine Painted Wares from the Middle Bronze II Royal Tombs at Ebla. Pp. 303-13 in *Anatolia and the Ancient Near East*:

- Studies in Honor of Tahsin Özgüç*, eds. K. Emre, M. Mellink, B. Hrouda and N. Özgüç. Ankara.
- 1997 Ebla and Syria in the Middle Bronze Age. Pp. 379-414 in *The Hyksos: New Historical and Archaeological Perspectives*, ed. E. Oren. University Museum Monograph. 8 University Museum Symposium Series. Philadelphia: University of Pennsylvania Museum.
- Maxwell-Hyslop, K.
- 1995 A Note on the Anatolia Connections of the Tôd Treasure. *Anatolian Studies* 45: 243-50.
- Maxwell-Hyslop, R.
- 1949 Western Asiatic Shaft-Hole Axes. *Iraq* 11: 90-130.
- Mayer, L.
- 1926 A Bronze Age Deposit from a Cave Near Neby Rubin (Jaffa District). *Palestine Museum Bulletin* 2: 2-7.
- Mazar, A.
- 1980 *Excavations at Tell Qasile, Part One. The Philistine Sanctuary: Architecture and Cult Objects*. Qedem, vol. 12. Jerusalem: The Institute of Archaeology, The Hebrew University of Jerusalem.
- 1992 Temples of the Middle and Late Bronze Ages and the Iron Age. Pp. 161-87 in *The Architecture of Ancient Israel from the Prehistoric to the Persian Periods*, eds. A. Kempinski and R. Reich. Jerusalem: Israel Exploration Society.
- 1993 Beth Shean. Pp. 214-23 in *The New Encyclopedia of Archaeological Excavations in the Holy Land*, eds E. Stern, A. Lewinson-Gilboa and J. Aviram. Jerusalem: Israel Exploration Society.
- Mazar, E.
- 1993 Achzib, Recent Investigations. Pp. 35-36 in *The New Encyclopedia of Archaeological Excavations in the Holy Land*, eds E. Stern, A. Lewinson-Gilboa and J. Aviram. Jerusalem: Israel Exploration Society.
- Mazzoni, S.
- 1985 Elements of the Ceramic Culture of Early Syrian Ebla in Comparison with Syro-Palestinian EBIV. *Bulletin of the American Schools of Oriental Research* 257: 1-18.
- 1987 The Diffusion of the Palestinian Combed Jars. Pp. 145-58 in *Studies in the History and Archaeology of Palestine II* (Proceedings of the first international symposium on Palestine antiquities). Aleppo University Press.
- McClellan, T. L., and Porter, A.
- 1995 Jawa and North Syria. Pp. 497-65 in *Studies in the History and Archaeology of Jordan V*.
- McGovern, P. E.

- 1997 A Ceramic Sequence for Northern Jordan: An Archaeological and Chemical Perspective. Pp. 421-25 in *Studies in the History and Archaeology of Jordan VI*, eds. G. Bisheh, M. Zaghloul and I. Kehrberg.
- McGovern, P. E., Bourriau, J., Harbottle, G., and Allen, S. J.
- 1994 The Archaeological Origin of the Dolphin Vase as Determined by Neutron Activation Analysis. *Bulletin of the American Schools of Oriental Research* 296: 31-43.
- McGovern, P. E., and Harbottle, G.
- 1997 *Hyksos* Trade Between Tell el-Dab'a (Avaris) and the Levant: A Neutron Activation Study of the Canaanite Jar. Pp. 141-57 in *The Hyksos: New Historical and Archaeological Perspectives*, ed. E. Oren. University Museum Monograph. 8 University Museum Symposium Series. Philadelphia: University of Pennsylvania Museum.
- McGovern, P. E., Hartung, U., Badler, V., Glusker, D. L., and Exner, L. J.
- 1997 The Beginings of Winemaking and Viniculture in the Ancient Near East and Egypt. *Expedition* 39(1): 3-21.
- McGrail, S.
- 1988 Assessing the Performance of an Ancient Boat**the Hasholme Logboat. *Oxford Journal of Archaeology* 7(1): 35-46.
- 1989 The Shipment of Traded Goods and of Ballast in Antiquity. *Oxford Journal of Archaeology* 8(3): 353-58.
- 1990 The Theoretical Performance of a Hypothetical Reconstruction of the Clapton Logboat. *International Journal of Nautical Archaeology* 19(2): 129-33.
- 1991 Early Sea Voyages. *International Journal of Nautical Archaeology* 20(2): 85-93.
- Mediterranean Pilot*
- 1976 United Kingdom: Hydrographer of the Navy.
- Meiggs, R.
- 1982 *Trees and Timber in the Ancient Mediterranean World*. Oxford: Clarendon Press.
- Melamed, Y.
- 1996 Dry and Charred Grains from 'Afula - a Taphonomic Approach. *'Atiqot* 30: 69-70.
- Mellink, M.
- 1991 Anatolian Contact with Chalcolithic Cyprus. *Bulletin of the American Schools of Oriental Research* 282/283: 167-75.
- 1993 The Anatolian South Coast in the Early Bronze Age: The Cilician Perspective. Pp. 495-508 in *Between the Rivers and the Mountains: Archeologica Anatolica et Mesopotamica Alba Palmieri Dedicata*, eds. M. Frangipane, H. Hauptman, M. Liverani, P. Matthiae and M. Mellink. Roma: Dipartimento di scienze storico archeologiche e antropologiche dell'antichà, Università di Roma.
- Mellink, M. J.

- 1992 Anatolian Chronology. Pp. 207-20 in *Chronologies in Old World Archaeology*, ed. R. W. Ehrich. 3rd ed. Chicago: University of Chicago Press.
- Mendenhall, G. E.
- 1985 *The Syllabic Inscriptions from Byblos*. American University of Beirut.
- 1988 The Syro-Palestinian Origins of Pre-Islamic Arabic. Pp. 215-24 in *Studies in the History and Archaeology of Palestine III* (Proceedings of the first international symposium on Palestine antiquities). Aleppo University Press.
- 1992 The Amorite Migrations. Pp. 233-41 in *Mari in Retrospect: Fifty Years of Mari and Mari Studies*, ed. G. D. Young. Winona Lake, Indiana: Eisenbrauns.
- Menu, M.
- 1994 Analyse Du Trésor de Tôd. *Bulletin de la Societe Française d'Égypte* 130: 29-45.
- Merhav, R.
- 1993 Scepters of the Divine from the Cave of the Treasure at Nahal Mishmar. Pp. 21-42 in *Studies in the Archaeology and History of Ancient Israel in Honour of Moshe Dothan*, eds. M. Heltzer, A. Segal and D. Kaufman. Haifa: Haifa University Press.
- Merrillees, R.
- 1968 *The Cypriot Bronze Age Pottery Found in Egypt*. Studies in Mediterranean Archaeology, vol. 18. Göthberg.
- 1973 Syrian Pottery from Middle Kingdom Egypt. *Australian Journal of Biblical Archaeology* 2(3): 51-59.
- 1974 *Trade and Transcendence in the Bronze Age Levant*. Studies in Mediterranean Archaeology, vol. 39. Göthberg.
- 1979 Cyprus, the Cyclades and Crete in the Early to Middle Bronze Ages. Pp. 8-55 in *Acts of the International Archaeological Symposium "The Relations Between Cyprus and Crete, Ca. 2000-500 B.C.," Nicosia 16-22 April 1978*. Nicosia: Department of Antiquities, Cyprus.
- Merrillees, R., and Tubb, J.
- 1979 A Syro/Cilician Jug from Middle Bronze Age Cyprus. *Report of the Department of Antiquities of Cyprus*: 223-28.
- Metzger, M. C.
- 1984 Faunal and Floral Remains at Tell el-Hayyat: Preliminary Results. *Bulletin of the American Schools of Oriental Research* 255: 68-70.
- Meyerhof, E. L.
- 1989 *The Bronze Age Necropolis at Kibbutz Hazorea, Israel*. BAR International Series. Oxford.
- Mienis, H. K.
- 1984 Appendix Four: Notes on Shells from the Bronze Age Strata from Tel Mevorakh. Pp. 106-07 in *Excavations at Tel Mevorakh (1973-1976), Part Two: The Bronze*

Age, ed. E. Stern. Qedem, vol. 18. Jerusalem: The Institute of Archaeology, The Hebrew University.

Millard, A.

- 1973 Cypriote Copper in Babylonia, c.1745 B.C. *Journal of Cuneiform Studies* 25: 211-14.
- 1979 The Ugaritic and Canaanite Alphabets - Some Notes. *Ugarit-Forschungen* 11: 613-16.
- 1986 The Infancy of the Alphabet. *World Archaeology* 17(3): 390-98.
- 1992 Review of Benjamin Sass, The Genesis of the Alphabet and Its Development in the Second Millennium B.C. *Bibliotheca Orientalis* 49(5-6 September-November): 691-95.

Millet, N.

- 1987 The First Appearance of the Loose-Footed Squaresail Rig in the Mediterranean. *Journal of the Society for the Study of Egyptian Antiquities* 17(3): 90-91.

Mills, J., and White, R.

- 1989 The Identity of the Resins from the Late Bronze Age Shipwreck at Ulu Burun (Ka*). *Archaeometry* 31(1): 37-44.

Miron, E.

- 1986-87 Canaanite Battle Axes from the Middle Bronze Age. *Israel - People and Land* 4(22): 65-76.
- 1987 Area C1: Stratigraphy and Architecture. Pp. 28-37 in *Excavations at Kabri*, Vol. 1. *Preliminary Report of 1986 Season*, ed. A. Kempinski. Tel Aviv: Tel Kabri Expedition; Tel Aviv University.
- 1988 Area C2: Stratigraphy, Architecture and the Ceramic Assemblage. Pp. 15-29 (Hebrew; pp. iv-vi English summary) in *Excavations at Kabri*, ed. A. Kempinski. Tel Aviv: Tel Kabri Expedition; Tel Aviv University.
- 1989 Area C2. Pp. 24-30 (Hebrew; pp. vii-x English summary) in *Excavations at Kabri*, Vol. 3. *Preliminary Report of 1988 Season*, ed. A. Kempinski. Tel Aviv: Tel Kabri Expedition; Tel Aviv University.
- 1992 *Axes and Adzes from Canaan*. Prähistorische bronzefunde. Stuttgart: Franz Steiner.

Montet, P.

- 1954 Notes et Documents Pour Servir a l'Histoire Des Relations Entre l'Ancienne Égypte et la Syrie. *Kêmi* 13: 63-76.

Moorey, P.

- 1987 On Tracking Cultural Transfers in Prehistory: The Case of Egypt and Lower Mesopotamia in the Fourth Millennium BC. Pp. 36-46 in *Centre and Periphery in the Ancient World*, eds. M. Rowlands, M. Larsen and K. Kristiansen. New Directions in Archaeology. Cambridge: Cambridge University Press.

- 1988 The Chalcolithic Hoard from Nahal Mishmar, Israel, in Context. *World Archaeology* 20(2): 171-89.
- 1990 From Gulf to Delta in the Fourth Millennium BCE: The Syrian Connection. Pp. 62^{*} - 69^{*} in *Eretz Israel 21 (Amiran Volume)*. Jerusalem.
- 1994 *Ancient Mesopotamian Materials and Industries: The Archaeological Evidence*. Oxford: Clarendon Press.
- 1995 From Gulf to Delta, c. 3500-3000 B.C.: Evidence and Interpretation. Pp. 3-23 in *From Gulf to Delta and Beyond*, series editor S. Ahituv. Beer Sheva: Studies by the Department of Bible and Ancient Near East, vol. 8. Beer Sheva: Ben Gurion University of the Negev Press.
- Moorey, P., and Schweizer, F.
- 1972 Copper and Copper Alloys in Ancient Iraq, Syria, and Palestine: Some New Analyses. *Archaeometry* 14(2): 177-98.
- Mozel, I.
- 1979 A Male Partner for the Gilat Woman? *Tel Aviv* 6: 26-27.
- Muhly, J. D.
- 1976 *Copper and Tin: The Distribution of Mineral Resources and the Nature of the Metals Trade in the Bronze Age*. Hamden, Connecticut: Archon Books.
- Murnane, W. J.
- 1990 *The Road to Kadesh: A Historical Interpretation of the Battle Reliefs of King Sety I at Karnak*. 2nd ed. Studies in Ancient Oriental Civilization, no. 42. Chicago: The Oriental Institute of the University of Chicago.
- Murray, W. M.
- 1987 Do Modern Winds Equal Ancient Winds? *Mediterranean Historical Review* 2: 139-67.
- 1995 Ancient Sailing Winds in the Eastern Mediterranean: The Case for Cyprus. Pp. 33-44 in *Cyprus and the Sea: Proceedings of the International Symposium*, eds. V. Karageorghis and D. Michaelides. Nicosia: University of Cyprus.
- Müller, H. W.
- 1987 *Der Waffenfund von Balâta-Sichem und Die Sichelschwerten*. Bayerische Akademie der Wissenschaften. München.
- Na'aman, N.
- 1982 Eretz-Israel in the Canaanite Period. In *The History of Eretz-Israel*, Vol. 1. *Introduction to the Early Periods*, ed. I. Efel. Jerusalem: Keter.
- 1994 The Canaanites and Their Land: A Rejoinder. *Ugarit-Forschungen* 26: 397-418.
- Najjar, M.
- 1992 The Jordan Valey (East Bank) During the Middle Bronze Age in the Light of New Excavations. Pp. 149-53 in *Studies in the History and Archaeology of Jordan IV*, eds. M. Zaghoul, K. `Amr, F. Zayadine and R. Nabeel.
- Naveh, J.

- 1982 *Early History of the Alphabet*. Jerusalem: Magness Press.
- Neeman, Y.
- 1990 *Map of Ma`Anit (54), 15-20*. Archaeological Survey of Israel. Jerusalem: Israel Antiquities Authority. 81 pp (Hebrew; 48 pp English).
- Neeman, Y., Boshnino, A., and Porath, Y.
- 1991 Horvat Shefi. *Excavations and Surveys in Israel* 9: 32-33.
- Negbi, O.
- 1965 Giv`at Yesha`Ayahu. *Hadashot Arkheologiyot* 13: 5-6 (Hebrew).
- 1972 Contacts Between Byblos and Cyprus at the End of the Third Millennium, BC. *Levant* 4: 98-110.
- 1976 *Canaanite Gods in Metal: An Archaeological Study of Ancient Syro-Palestinian Figurines*. Publications of the Institute of Archeology, no. 5. Tel Aviv: Tel Aviv University.
- Negbi, O., and Moskowitz, S.
- 1966 The "Foundation Deposits" or "Offering Deposits" of Byblos. *Bulletin of the American Schools of Oriental Research* 184: 21-26.
- Nelson, H. H.
- 1934 Fragments of Egyptian Old Kingdom Stone Vases from Byblos. *Berytus* 1: 19-22.
- Newberry, P. E.
- 1893 *Beni Hasan I*. Archaeological Survey of Egypt. London: Egyptian Exploration Fund.
- 1938 Three Old Kingdom Travellers to Byblos and Pwenet. *Journal of Egyptian Archaeology* 24: 182-84.
- Nibbi, A.
- 1992 A Group of Stone Anchors from Mirgissa on the Upper Nile. *International Journal of Nautical Archaeology* 21(3): 259-67.
- Niemeier, B., and Niemeier, W.-D.
- 1992 The Fragments of a Minoan Wall Painting from Locus 723. Pp. 8^{*}-11^{*} in *Excavations at Kabri*, Vol. 6. *Preliminary Report of 1991 Season*, eds A. Kempinski and W.-D. Niemeier. Tel Aviv: Tel Kabri Expedition; Tel Aviv University.
- Niemeier, W.-D., Cornale, P., Rosano, P., and Tagliapietra, M.
- 1991 Area D: The Minoan Plaster Floor and Wall Painting in Room 611. Pp. 24^{*}-26^{*} in *Excavations at Kabri*, Vol. 5. *Preliminary Report of 1990 Season*, eds A. Kempinski and W.-D. Niemeier. Tel Aviv: Tel Kabri Expedition; Tel Aviv University.
- Niemeier, W.-D.
- 1995 Tel Kabri: Aegean Fresco Paintings in a Canaanite Palace. Pp. 1-15 in *Recent Excavations in Israel: A View to the West*, ed. S. Gitin. American Institute of Archaeology Colloquia and Conference Papers, no. 1.
- Nir, D.
- 1959 Artificial Outlets of the Mount Carmel Valleys Through the Coastal "Kurkar" Ridge. *Israel Exploration Journal* 9: 46-54.

- Nir, Y.
- 1982 Offshore Artificial Structures and Their Influence on the Israel and Sinai Mediterranean Beaches. Pp. 1837-56 in *Proceedings of the Eighteenth Coastal Engineering Conference ASCE/Cape Town, South Africa/Nov. 14-19, 1982*.
 - 1986-87 Mediterranean Beaches. *Mad'A* 30(5-6): 248-65 (Hebrew).
 - 1988 *Sedimentological Aspects of the Israel and Sinai Mediterranean Coasts*. Jerusalem: Ministry of Energy and Infrastructure; Geological Survey of Israel, August.
- Nissenbaum, A., Serban, A., Amiran, R., and Ilan, O.
- 1984 Dead Sea Asphalt from the Excavations in Tel Arad and Small Tel Malhata. *Paléorient* 10(1): 157-61.
- Noy, T.
- 1993 Nahal Oren. Pp. 1166-70 in *The New Encyclopedia of Archaeological Excavations in the Holy Land*, eds E. Stern, A. Lewinson-Gilboa and J. Aviram. Jerusalem: Israel Exploration Society.
- Oates, J., ed.
- 1993 *World Archaeology* 24(3). (Issue on ancient trade.)
- Ochsenschlager, E.
- 1992 Ethnographic Evidence for Wood, Boats, Bitumen and Reeds in Southern Iraq, Ethnoarchaeology at al-Hilba. *Bulletin on Sumerian Agriculture* 6: 47-78.
- O'Connor, D.
- 1985 The Chronology of Scarabs of the Middle Kingdom and the Second Intermediate Period. *Journal of the Society for the Study of Egyptian Antiquities* 15: 1-41.
 - 1991 Boat Graves and Pyramid Origins. *Expedition* 33(3): 5-17.
 - 1992 Newsbriefs: Egyptian Fleet Found. *Archaeology* 45(5 September-October): 24.
 - 1996 Egypt and Greece: The Bronze Age Evidence. Pp. 49-61 in *Black Athena Revisited*, eds M. R. Lefkowitz and G. M. Rogers. Chapel Hill: University of North Carolina Press.
 - 1997 The Hyksos Period in Egypt. Pp. 45-67 in *The Hyksos: New Historical and Archaeological Perspectives*, ed. E. Oren. University Museum Monograph. 8 University Museum Symposium Series. Philadelphia: University of Pennsylvania Museum.
- Ofer, A.
- 1993a Hebron. Pp. 606-09 in *The New Encyclopedia of Archaeological Excavations in the Holy Land*, eds E. Stern, A. Lewinson-Gilboa and J. Aviram. Jerusalem: Israel Exploration Society.

- 1993b Judean Hills Survey. Pp. 815-16 in *The New Encyclopedia of Archaeological Excavations in the Holy Land*, eds E. Stern, A. Lewinson-Gilboa and J. Aviram. Jerusalem: Israel Exploration Society.
- 1994 'All the Hill Country of Judah': From a Settlement Fringe to a Prosperous Monarchy. Pp. 92-121 in *From Nomadism to Monarchy: Archaeological and Historical Aspects of Early Israel*, eds I. Finkelstein and N. Na'aman. Jerusalem: Yad Izhak Ben-Zvi; Israel Exploration Society.
- Olami, Y.
- 1969 Archaeological Survey of Israel-Carmel Region. *Hadashot Archaeologiyot* 30: 13-14 (Hebrew).
- 1981 *Daliya Map*. Archaeological Survey of Israel, vol. 31. Jerusalem: Archaeological Survey of Israel. 101 pp. (Hebrew); 23 pp. (in English).
- 1984 *Prehistoric Carmel*. Haifa: Israel Exploration Society; Moshe Stekelis Museum.
- O'Mara, P. P.
- 1997 Manetho and the Turin Canon: A Comparison of Regnal Years. *Göttinger Miszellen* 158: 49-61.
- Or (Ordentlich), E., Ayalon, E., Shacham, Z., Feder, S., and Shalev, S.
- 1986 *Archaeological Sites in Tel Aviv - Jaffa and Its Vicinity*. Tel Aviv: Eretz Israel Museum.
- Oren, E. D.
- 1971 A Middle Bronze Age I Warrior Tomb at Beth-Shean. *Zeitschrift Des Deutschen Palästina-Vereins* 87: 109-39.
- 1973b *The Northern Cemetery of Beth Shean*. Leiden: E.J. Brill.
- 1973b The Overland Route Between Egypt and Canaan in the Early Bronze Age. *Israel Exploration Journal* 23(4): 198-205.
- 1975 The Pottery from the Achzib Defence System, Area D: 1963 and 1964 Seasons. *Israel Exploration Journal* 25: 211-25.
- 1987a Northern Sinai Before the Classical Period: History and Archaeology. Pp. 627-46 in *Sinai*, eds G. Gvirtzman, A. Shmueli, Y. Gradus, I. Beit-Arieh and M. Har-El. Eretz geographic research and publications. Tel Aviv: Ministry of Defence.
- 1987b The "Ways of Horus" in North Sinai. Pp. 69-119 in *Egypt, Israel, Sinai: Archaeological and Historical Relationships in the Biblical Period*, ed. A. Rainey. Tel Aviv University. Tel Aviv.
- 1989 Early Bronze Age Settlement in Northern Sinai: A Model for Egypto-Canaanite Interconnections. Pp. 389-405 in *L'urbanisation de la Palestine À l'Âge Du Bronze Ancien: Bilan et Perspectives Des Recherches Actuelles, Actes Du Colloque d'Emmaüs (20-24 Octobre 1986)*, ed. P. de Miroschedji. BAR International Series. Oxford.

- 1992 Palaces and Patrician Houses of the Middle and Late Bronze Ages. Pp. 105-20 in *The Architecture of Ancient Israel from the Prehistoric to the Persian Periods*, eds. A. Kempinski and R. Reich. Jerusalem: Israel Exploration Society.
- 1993 Northern Sinai. Pp. 1386-96 in *The New Encyclopedia of Archaeological Excavations in the Holy Land*, eds E. Stern, A. Lewinson-Gilboa and J. Aviram. Jerusalem: Israel Exploration Society.
- 1997 The *Kingdom of Sharuhen* and the Hyksos Kingdom. Pp. 253-83 in *The Hyksos: New Historical and Archaeological Perspectives*, ed. E. Oren. University Museum Monograph. 8 University Museum Symposium Series. Philadelphia: University of Pennsylvania Museum.
- 1997
(ed.) *The Hyksos: New Historical and Archaeological Perspectives*. University Museum Monograph. 8 University Museum Symposium Series. Philadelphia: University of Pennsylvania Museum.
- Oren, E., and Yekutieli, Y.
- 1992 Taur Ikhbeineh: Earliest Evidence for Egyptian Interconnections, collaborators R. Gophna, Y. Goren, I. Gilead and O. Marder. Pp. 361-84 in *The Nile Delta in Transition: 4th - 3rd Millennium B.C.* (Proceedings of the seminar held in Cairo, 21-24 October 1990, at the Netherlands Institute of Archaeology and Arabic Studies), ed. E. C. Van Den Brink. Tel Aviv.
- Oren, E. D., and Gilead, I.
- 1981 Chalcolithic Sites in Northeastern Sinai. *Tel Aviv* 8: 25-44.
- Oren, E. D., and Yekutieli, Y.
- 1990 North Sinai During the MB I Period - Pastoral Nomadism and Sedentary Settlement. Pp. 6-22 (Hebrew; English summary, p. 101^{*} in *Eretz Israel* 21 (Amiran Volume). Jerusalem.
- Orni, E., and Efrat, E.
- 1971 *Geography of Israel*. Third revised ed. Jerusalem: Israel Universities Press.
- Ory, J.
- 1936 Excavations at Ras el `Ain. *Quarterly of the Department of Antiquities of Palestine* 5: 111-12.
- 1938 Excavations at Ras el `Ain II. *Quarterly of the Department of Antiquities of Palestine* 6: 99-120.
- 1946 A Middle Bronze Age Tomb at El-Jisr. *Quarterly of the Department of Antiquities of Palestine* 12: 31-42.
- 1948 A Bronze-Age Cemetery at Dhahrat el Humraiya. *Quarterly of the Department of Antiquities of Palestine* 13: 75-89.
- Özguç, T.

- 1994 A Boat-Shaped Cult-Vessel from the Karum of Kanish. Pp. 369-75 in *Cinquante-Deux Reflexions sur le Proche-Orient Ancien Offertes en Hommage À Léon De Meyer*, eds. H. Gasche, M. Tanret, C. Janssen and A. DeGraeve. Mesopotamian History and Environment Occasional Publications, no. 2. Leuven: Peeters.
- Paley, S. M., and Porath, Y.
- 1993 Hefer, Tel. Pp. 609-14 in *The New Encyclopedia of Archaeological Excavations in the Holy Land*, eds E. Stern, A. Lewinson-Gilboa and J. Aviram. Jerusalem: Israel Exploration Society.
- 1997 Early Middle Bronze Age IIA Remains at Tel el-Ifshar, Israel: A Preliminary Report. Pp. 369-78 in *The Hyksos: New Historical and Archaeological Perspectives*, ed. E. Oren. University Museum Monograph. 8 University Museum Symposium Series. Philadelphia: University of Pennsylvania Museum.
- Palumbo, G.
- 1991 *The Early Bronze Age IV in the Southern Levant: Settlement Patterns, Economy, and Material Culture of a 'Dark Age.'* Contributi e materiali di archeologia orientale, no. 3. Università degli studi di Roma *La Sapienza*: Roma.
- Parker, A.
- 1992 *Ancient Shipwrecks of the Mediterranean and the Roman Provinces.* BAR International Series, no. 580. Oxford: Tempus Reparatum.
- Parkinson, R.
- 1991 *Voices from Ancient Egypt: An Anthology of Middle Kingdom Writings.* London: British Museum Press.
- Parr, P. J.
- 1958 Palestine and Anatolia: A Further Note. *Bulletin of the Institute of Archaeology, London* 1: 21-23.
- 1968 The Origin of Rampart Fortifications of Middle Bronze Age Palestine and Syria. *Zeitschrift Des Deutschen Palästina-Vereins* 84: 18-45.
- 1973 The Origin of the Canaanite Jar. Pp. 173-81 in *Archaeological Theory and Practice*, ed. D. Strong. London: Seminar Press.
- Patch, D. C., and Haldane, C. W.
- 1990 *The Pharaoh's Boat at the Carnegie.* The Carnegie Series on Egypt. Pittsburgh: The Carnegie Museum of Natural History.
- Patrich, J.
- 1995 *Map of Deir Mar Saba (109/7).* Jerusalem: Israel Antiquities Authority; Staff Officer of Archaeology, Civil Administration in Judea and Samaria. 195 pp (Hebrew); 103^{*} pp (English).
- Peachey, C.

- 1997 Uluburun Shipwreck Project: Conservation and Research 1996-1997. *The INA Quarterly* 24(3): 12-17.
- Pearson, G., and Stuiver, M.
- 1993 High-Precision Bidecadal Calibration of the Radiocarbon Time Scale, 500-2500 BC. *Radiocarbon* 35(1): 25-34.
- Peilstöcker, M., and Garfinkle, S.
- 1992 Area F: Architecture, Stratigraphy and the Pottery. Pp. 23-24 (Hebrew; 5^{*} -6^{*} English summary) in *Excavations at Kabri*, Vol. 6. *Preliminary Report of 1991 Season*, eds. A. Kempinski and W.-D. Niemeier. Tel Aviv: Tel Kabri Expedition; Tel Aviv University.
- Peltenburg, E.
- 1995 Kissonerga in Cyprus and the Appearance of Faience in the East Mediterranean. Pp. 31-41 in *Trade, Contact, and the Movement of People in the Eastern Mediterranean: Studies in Honour of J. Basil Hennessey*, eds. S. J. Bourke and J.-P. Descoeudres. Mediterranean Archaeological Supplement, no. 3. Sydney: Meditarch.
- 1996 From Isolation to State Formation in Cyprus, c. 3500-1500 B.C. Pp. 17-43 in *The Development of the Cypriot Economy: From the Prehistoric Period to the Present Day*, eds. V. Karageorghis and D. Michaelides. Nicosia: University of Cyprus.
- Peltenburg, E., Bolger, D., Campbell, S., Murray, M. A., and Tipping, R.
- 1996 Jerablus-Tahtani, Syria, 1995: Preliminary Report. *Levant* 28: 1-28.
- Peltenburg, E., Campbell, S., Croft, P., Lunt, D., Murray, M. A., and Watt, M. E.
- 1995 Jerablus-Tahtani, Syria, 1992-4: Preliminary Report. *Levant* 27: 1-28.
- Perlman, I., and Yellin, J.
- 1980 The Provenience of Obsidian from Neolithic Sites in Israel. *Israel Exploration Journal* 30(1-2): 83-88.
- Pernicka, E., and Hauptmann, A.
- 1989 Chemische und Mineralogische Analyse Einiger Erz - und Kupferfunde von Maadi. Pp. 137-41 in *Maadi III: The Non-Lithic Small Finds and the Structural Remains of the Predynastic Settlement*, eds. I. Rizkana and J. Seeher. Archäologische Veröffentlichungen, no. 80. Mainz am Rhein: Philipp von Zabern.
- Perrot, J.
- 1959 Statuettes en Ivoire et Autres Objets en Ivoire et en Os Provenant Des Gisements Préhistorique de la Région de Béersheba. *Syria* 36: 8-19.
- 1961 Une Tombe À Ossuaires Du IV^e Millénaire À Azor Près de Tel Aviv: Rapport Préliminaire. *Atiqot* 3: 1-83.
- Petrie, W. F.
- 1891 *Illahun, Kahun, and Gurob*. London: David Nutt.
- 1931 *Ancient Gaza I: Tell el Ajjul*. London: British School of Archaeology; Bernard Quartrich.

- 1932 *Ancient Gaza II: Tell el Ajjul*. London: British School of Archaeology; Bernard Quatrich.
- 1933 *Ancient Gaza III: Tell el Ajjul*. London: British School of Archaeology; Bernard Quatrich.
- 1934 *Ancient Gaza IV: Tell el Ajjul*. London: British School of Archaeology; Bernard Quatrich.
- Philip, G.
- 1988 Hoards of the Early and Middle Bronze Ages in the Levant. *World Archaeology* 20(2): 190-208.
- 1989 *Metal Weapons of the Early and Middle Bronze Ages in Syria-Palestine*. BAR International Series, no. 526. Oxford. 2 vols.
- 1991a Cypriot Bronzework in the Levantine World: Conservatism, Innovation and Social Change. *Journal of Mediterranean Archaeology* 4(1): 59-107.
- 1991b Tin, Arsenic, Lead: Alloying Practices in Syria-Palestine Around 2000 B.C. *Levant* 23: 93-104.
- 1995a The Same but Different: A Comparison of Middle Bronze Age Metalwork from Jericho and Tall Ad-Dab`A. Pp. 523-30 in *Studies in the History and Archaeology of Jordan V*.
- 1995b Tell el-Dab`a Metalwork: Patterns and Purpose. Pp. 66-83 in *Egypt, the Aegean and the Levant: Interconnections in the Second Millennium BC*, eds. W. V. Davies and L. Schofield. London: British Museum Press.
- 1995c Warrior Burials in the Ancient Near Eastern Bronze Age: The Evidence from Mesopotamia, Western Iran and Syria-Palestine. Pp. 140-54 in *The Archaeology of Death in the Ancient Near East*, eds. S. Campbell and A. Green. Oxbow Monographs, no. 51. Oxford: Oxbow.
- Philip, G., and Rehren, T.
- 1996 Fourth Millennium BC Silver from Tell Esh-Shuna, Jordan: Archaeometallurgical Investigation and Some Thoughts on Ceramic Skeuomorphs. *Oxford Journal of Archaeology* 15(2): 129-50.
- Philip, G., and Williams-Thorpe, O.
- 1993 A Provenance Study of Jordanian Basalt Vessels of the Chalcolithic and Early Bronze Age I Periods. *Paléorient* 19(2): 51-63.
- Phillips, J.
- 1991 Egypt and the Aegean During the Middle Kingdom. Pp. 319-33 in *Akten Des Vierten Internationalen Ägyptologen Kongresses München 1985*, ed. S. Schoske. Studien zur Altägyptischen Kultur Beihefte. Hamburg: Helmut Buske Verlag.
- Pierrat, G.
- 1994 À Propos de la Date et de l'Origine Du Trésor de Tôd. *Bulletin de la Societe Française d'Égypte* 130: 18-27.
- Pilcher, J.

- 1991 Radiocarbon Dating for the Quarternary Scientist. *Quarternary Proceedings* 1: 27-33.
- Pinnock, F.
- 1990 Patterns of Trade at Ebla in the Third Millennium B.C. *Annales Archéologiques Arabes Syriennes* 40: 39-49.
- Porada, E.
- 1966 Les Cylindres de la Jarre Montet. *Syria* 43: 243-58.
- 1982 Remarks on the Tôd Treasure in Egypt. Pp. 285-303 in *Societies and Languages of the Ancient Near East: Studies in Honour of I.M. Diakonoff*, ed. M. Dandamayev. Warminster: Aris & Phillips Ltd.
- 1983 Syrian Seal from East Karnak. *Journal of the Society for the Study of Egyptian Antiquities* 13: 237-40.
- 1984 The Cylinder Seal from Tell el-Dab`A. *American Journal of Archaeology* 88: 485-88.
- 1995 Discussion, ed. M. H. Wiener. *Ägypten und Levante* 5: 126-27.
- Porat, N.
- 1986-87 Local Industry of Egyptian Pottery in Southern Palestine During the Early Bronze I Period. *Bulletin of the Egyptological Seminar* 8: 109-29.
- 1989a *Composition of Pottery-Application to the Study of the Interrelations Between Canaan and Egypt During the 3rd Millennium B.C.* (Phd. dissertation submitted to the Hebrew University of Jerusalem).
- 1989b Petrography of Pottery from Southern Israel and Sinai. Pp. 169-88 in *L'urbanisation de la Palestine À l'Âge Du Bronze Ancien: Bilan et Perspectives Des Recherches Actuelles, Actes Du Colloque d'Emmaüs (20-24 Octobre 1986)*, ed. P. de Miroschedji. BAR International Series. Oxford.
- 1992 An Egyptian Colony in Southern Palestine During the Late Predynastic - Early Dynastic Period. Pp. 433-40 in *The Nile Delta in Transition: 4th - 3rd Millennium B.C.* (Proceedings of the seminar held in Cairo, 21-24 October 1990, at the Netherlands Institute of Archaeology and Arabic Studies), ed. E. C. Van Den Brink. Tel Aviv.
- Porat, N., and Seeher, J.
- 1988 Petrographic Analysis of Pottery and Basalt from Predynastic Maadi. *Mitteilungen Des Deutschen Archäologischen Instituts Abteilung Kairo* 44: 215-28.
- Porath, Y., and Paley, S.
- In preparation A Pottery Group from Early MB IIA at Tel el-Ifshar.
- Porath, Y.
- 1985a The Geographical Makeup. Pp. 19-24 in *Qadmoniyot Emek-Hefer [The History and Archaeology of Emek-Hefer]* (Hebrew), eds. Y. Porath, S. Dar and S. Appelbaum. Tel Aviv: Hakibbutz Hameuchad.

- 1985b "Michmoret" Minat Abu Zabura. Pp. 126-37 in *Qadmoniyot Emek-Hefer [The History and Archaeology of Emek-Hefer]* (Hebrew), eds. Y. Porath, S. Dar and S. Appelbaum. Tel Aviv: Hakibbutz Hameuchad.
- 1985c The Soils. Pp. 25-33 in *Qadmoniyot Emek-Hefer [The History and Archaeology of Emek-Hefer]* (Hebrew), eds. Y. Porath, S. Dar and S. Appelbaum. Tel Aviv: Hakibbutz Hameuchad.
- 1985d T. Hefer: T. el Ifshar. Pp. 163-75 (Hebrew) in *Qadmoniyot Emek-Hefer [The History and Archaeology of Emek-Hefer]* (Hebrew), eds. Y. Porath, S. Dar and S. Appelbaum. Tel Aviv: Hakibbutz Hameuchad.
- 1991 Tel Hefer/Ifshar - a Site from the Beginning of the Middle Bronze IIA Period in the Sharon Plain. *Michmanim* 5: 11-20 (Hebrew; English abstract p. 36^{*}).
- 1992 Domestic Architecture of the Chalcolithic Period. Pp. 40-48 in *The Architecture of Ancient Israel from the Prehistoric to the Persian Periods*, eds. A. Kempinski and R. Reich. Jerusalem: Israel Exploration Society.
- Porath, Y., Dar, S., and Appelbaum, S.
- 1985 *Qadmoniyot Emek-Hefer [The History and Archaeology of Emek-Hefer]* (Hebrew). Tel Aviv: Hakibbutz Hameuchad.
- Porath, Y., and Paley, S.
- 1991 Tel Hefer - 1989. *Excavations and Surveys in Israel* 1989/1990 9: 135-36.
- 1993 Tel Hefer - 1990. *Excavations and Surveys in Israel* 12: 32-34.
- Porath, Y., Paley, S. M., and Stieglitz, R. R.
- 1993 Mikhmoret, Tel. Pp. 1043-46 in *The New Encyclopedia of Archaeological Excavations in the Holy Land*, eds E. Stern, A. Lewinson-Gilboa and J. Aviram. Jerusalem: Israel Exploration Society.
- Portugali, Y.
- 1982 A Field Methodology for Regional Archaeology (The Jezreel Valley Survey, 1981). *Tel Aviv* 9: 170-88.
- Portugali, Y., and Gophna, R.
- 1993 Crisis, Progress and Urbanization: The Transition from Early Bronze I to Early Bronze II in Palestine. *Tel Aviv* 20(2): 164-86.
- Posener, G.
- 1940 *Princes et Pays d'Asie et de Nubie: Textes Hiératiques sur Des Figurines d'Envoûtement Du Moyen Empire*. Brussels.
- 1971 Syria and Palestine: Relations with Egypt. Pp. 532-58 in *The Cambridge Ancient History*, Vol. 1, part 2. *Early History of the Middle East*, eds. I. Edwards, C. Gadd and N. Hammond. Cambridge: Cambridge University Press.
- Posener, G.
- 1966 Les Textes d'Envoûtement de Mirgissa. *Syria* 43: 277-87.

- 1982 A New Royal Inscription of the XIIth Dynasty. *Journal of the Society for the Study of Egyptian Antiquities* 12: 7-8.
- Posener-Kriéger, P.
- 1969 Sur un Nom de Métal Égyptien. Pp. 419-26 in *Ugaritica VI: XXX^e Campagne de Fouilles a Ras Shamra (1968)*. Mission de Ras Shamra, vol. 17. Paris: Librairie Orientaliste Paul Geuthner.
- Postgate, J.
- 1992 *Early Mesopotamia: Society and Economy at the Dawn of History*. London: Routledge.
- Postgate, N., Wang, T., and Wilkinson, T.
- 1995 The Evidence for Early Writing: Utilitarian or Ceremonial? *Antiquity* 69(264): 459-80.
- Potts, D.
- 1986 Dilmun's Further Relations: The Syro-Anatolian Evidence from the Third and Second Millennia B.C. Pp. 389-98 in *Bahrain Through the Ages: The Archaeology*, eds. S. H. A. al-Khalifa and M. Rice. London: KPI Limited.
- Potts, D.
- 1990 *The Arabian Gulf in Antiquity, Volume 1: From Prehistory to the Fall of the Achaemenid Empire*. 2 vols. Oxford: Clarendon Press.
- Prag, K.
- 1974 The Intermediate Early Bronze - Middle Bronze Age: An Interpretation of the Evidence from Transjordan, Syria and Lebanon. *Levant* 6: 69-116.
- 1978 Silver in the Levant in the Fourth Millennium B.C. Pp. 36-45 in *Archaeology in the Levant: Essays for Kathleen Kenyon*, eds R. Moorey and P. Parr. Warminster: Aris & Phillips.
- 1984 Continuity and Migration in the South Levant in the Late Third Millennium: A Review of T.L. Thompson's and Some Other Views. *Palestine Exploration Quarterly* 116: 58-68.
- 1986a Byblos and Egypt in the Fourth Millennium B.C. *Levant* 18: 59-74.
- 1986b The Intermediate Early Bronze - Middle Bronze Sequences at Jericho and Tell Iktanu Reviewed. *Bulletin of the American Schools of Oriental Research* 264: 61-72.
- 1991 An Early Middle Bronze Age Burial in Jerusalem. *Palestine Exploration Quarterly* 123: 129-32.
- Prausnitz, M.
- 1955 Ay and the Chronology of Troy. *Annual of the Institute of Archaeology, London* 11: 19-28.
- 1973 Achziv and Avdon: On the Planning of a Port and a Fortress City in the Plain of Acre. Pp. 219-23 (Hebrew; p. English summary) in *Eretz Israel 11 (Dunayevsky Volume)*. Jerusalem: Israel Exploration Society.

- 1975 The Planning of the Middle Bronze Age Town at Achzib and Its Defences. *Israel Exploration Journal* 25: 202-10.
- 1993a Achzib. Pp. 32-35 in *The New Encyclopedia of Archaeological Excavations in the Holy Land*, eds E. Stern, A. Lewinson-Gilboa and J. Aviram. Jerusalem: Israel Exploration Society.
- 1993b Bira. Pp. 262-63 in *The New Encyclopedia of Archaeological Excavations in the Holy Land*, eds E. Stern, A. Lewinson-Gilboa and J. Aviram. Jerusalem: Israel Exploration Society.
- Pritchard, J. B.
- 1963 *The Bronze Age Cemetery at Gibeon*. Museum Monographs. Philadelphia: The University Museum, University of Pennsylvania.
- Pritchard, J. B., ed.
- 1954 *Ancient Near East in Pictures*. Princeton: Princeton University Press.
- Pryor, J. H.
- 1988 *Geography, Technology and War: Studies in the Maritime History of the Mediterranean, 649-1571*. Cambridge: Cambridge University Press.
- Pulak, C.
- 1992 The Shipwreck at Ulu Burun, Turkey: 1992 Excavation Campaign. *INA Newsletter* 19(4): 4-11.
- 1993 The Shipwreck at Uluburun: 1993 Excavation Campaign. *The INA Quarterly* 20(4): 4-12.
- 1994 1994 Excavation at Uluburun: The Final Campaign. *The INA Quarterly* 21(4): 8-16.
- 1997 The Uluburun Shipwreck. Pp. 233-62 in *Res Maritimae: Cyprus and the Eastern Mediterranean from Prehistory to Late Antiquity*, eds. S. Swiny, R. L. Hohlfelder and H. W. Swiny. Proceedings of the second international symposium "Cities on the Sea", Nicosia, Cyprus, October 18-22, 1994. Cyprus American Archaeological Research Institute Monograph Series, vol. 1, no. 4. Atlanta: Scholars Press.
- Quirke, S.
- 1990 *The Administration of Egypt in the Late Middle Kingdom: The Hieratic Documents*. Surrey: SIA Publishing.
- Raban, A.
- 1973 Survival of Ancient Wrecks in Varying Conditions Off the Israel Coast. Pp. 29-40 in *Science Diving International*, eds N. Flemming. London.
- 1980 *The Commercial Jar in the Ancient Near East: Its Evidence for Interconnections Amongst the Biblical Lands* (Unpublished Phd. dissertation submitted to the Hebrew University). Jerusalem. 305 pp (Hebrew with English summary).
- 1981a Recent Maritime Archaeological Research in Israel. *International Journal of Nautical Archaeology* 10(4): 287-308.
- 1981b Sarid. *Hadashot Arkheologiyot* 77: 10.

- 1982 *Nahalal Map (16-23)*. Archaeological Survey of Israel. Jerusalem: Keter Press. 76 pp (Hebrew with English summaries).
- 1983a Recent Maritime Archaeological Research in Israel. *International Journal of Nautical Archaeology* 12(3): 229-51.
- 1983b Submerged Prehistoric Sites Off the Mediterranean Coast of Israel. Pp. 215-32 in *Quaternary Coastlines and Marine Archaeology: Towards the Prehistory of Land Bridges and Continental Shelves*, eds P. Masters and N. Flemming. London: Academic Press, Inc.
- 1985 The Ancient Harbours of Israel in Biblical Times. Pp. 11-44 in *Harbour Archaeology: Proceedings of the First International Workshop on Ancient Mediterranean Harbours, Caesarea Maritima 24-28.6.83*. 204 pp, ed. A. Raban. BAR International Series, no. 257. Oxford.
- 1986 Rock Cut Installations Along the Coast of the Western Galilee. Pp. 209-34 (Hebrew) in *Qadmoniyot Galil HaMaaravi [The Western Galilee Antiquities]*, ed. M. Yedaya. Ministry of Defense/Asher Regional Council. Tel Aviv.
- 1987 Alternated River Courses During the Bronze Age Along the Israeli Coastline. Pp. 173-89 in *Colloques Internationaux C.N.R.S. Déplacement Des Lignes de Rivage en Méditerranée*. Editions du C.N.R.S. Paris.
- 1991a Minoan and Canaanite Harbours. Pp. 129-46 in *Thalassa: L'Egee Préhistorique et la Mer* (Actes de la troisième Rencontre égéenne internationale de l'Université de Liège, Station de recherches sous-marine et océanographiques (StaReSo), Calvi, Corse (23-25 Avril, 1990)), eds. R. Laffinueur and L. Basch. Aegaeum, Annales d'archaéologie égéenne de l'Université de Liège, no. 7. Liège: Université de Liège.
- 1991b The Port City of Akko in MB II. *Michmanim* 5: 17*-34*.
- 1993a Marine Archaeology. Pp. 957-65 in *The New Encyclopedia of Archaeological Excavations in the Holy Land*, eds E. Stern, A. Lewinson-Gilboa and J. Aviram. Jerusalem: Israel Exploration Society.
- 1993b Maritime Atlit. Pp. 117-20 in *The New Encyclopedia of Archaeological Excavations in the Holy Land*, eds E. Stern, A. Lewinson-Gilboa and J. Aviram. Jerusalem: Israel Exploration Society.
- 1993c Maritime Caesarea. Pp. 286-91 in *The New Encyclopedia of Archaeological Excavations in the Holy Land*, eds E. Stern, A. Lewinson-Gilboa and J. Aviram. Jerusalem: Israel Exploration Society.
- 1993d Maritime Dor. Pp. 368-71 in *The New Encyclopedia of Archaeological Excavations in the Holy Land*, eds E. Stern, A. Lewinson-Gilboa and J. Aviram. Jerusalem: Israel Exploration Society.
- 1995a Dor-Yam: Maritime and Coastal Installations at Dor in Their Geomorphological and Stratigraphic Context. Pp. 285-354 in *Excavations at Dor, Final Report, Volume 1* (Stern, Ephraim (ed)). Qedem Reports, vol. 1. Jerusalem: The Institute of Archaeology of The Hebrew University; Israel Exploration Society.

- 1995b The Heritage of Ancient Harbour Engineering in Cyprus and the Levant. Pp. 139-89 in *Cyprus and the Sea: Proceedings of the International Symposium*, eds. V. Karageorghis and D. Michaelides. Nicosia: University of Cyprus.
- [Raban, A., Dothan, M., and Flemming, N.]
- 1977 Tel Nami. *Hadashot Archaeologiyot* 61-62: 21-22 (Hebrew).
- Raban, A., and Galili, E.
- 1985 Recent Maritime Archaeological Research in Israel - a Preliminary Report. *International Journal of Nautical Archaeology* 14: 321-56.
- Rainey, A. F.
- 1972 The World of Sinuhe. *Israel Oriental Studies* 2: 369-408.
- 1981 Toponymic Problems (Cont.). *Tel Aviv* 8: 146-51.
- 1994 Remarks on Donald Redford's Egypt, Canaan, and Israel in Ancient Times. *Bulletin of the American Schools of Oriental Research* 295: 81-85.
- Raveh, K., and Kingsley, S.
- 1993 Dor - Underwater Surveys. Pp. 371-72 in *The New Encyclopedia of Archaeological Excavations in the Holy Land*, eds E. Stern, A. Lewinson-Gilboa and J. Aviram. Jerusalem: Israel Exploration Society.
- Ravikovitch, S., Koyumdjisky, H., and Dan, Y.
- 1960 *Soils of the Yizreel Valley*. Supplement to the Journal of the Agricultural Research Station. Beth Dagan: Israel Government Printer. 41 pp (Hebrew; English abstract pp. III-XI).
- Redford, D. B.
- 1992 *Egypt, Canaan and Israel in Ancient Times*. Princeton: Princeton University Press.
- 1996 A Response to Anson Rainey's *Remarks on Donald Redford's Egypt, Canaan, and Israel in Ancient Times*. *Bulletin of the American Schools of Oriental Research* 301: 77-81.
- 1997 Textual Sources for the Hyksos Period. Pp. 1-44 in *The Hyksos: New Historical and Archaeological Perspectives*, ed. E. Oren. University Museum Monograph. 8 University Museum Symposium Series. Philadelphia: University of Pennsylvania Museum.
- Redmount, C. A.
- 1995 Pots and Peoples in the Egyptian Delta: Tell el-Maskhuta and the Hyksos. *Journal of Mediterranean Archaeology* 8(2): 61-89.
- Reese, D. S., Mienis, H. K., and Woodward, F. R.
- 1986 On the Trade of Shells and Fish from the Nile River. *Bulletin of the American Schools of Oriental Research* 264: 79-84.
- Reisner, G. A., and Smith, W. S.

- 1955 *A History of the Giza Necropolis, Volume II: The Tomb of Hetep-Heres, the Mother of Cheops*. Cambridge: Harvard University Press.
- Renfrew, C.
- 1975 Trade as Action at a Distance: Questions of Integration and Communication. In *Ancient Civilizations and Trade*. 3-59, eds. J. A. Sabloff and C. Lamberg-Karlovsky. Albuquerque: University of New Mexico.
- 1986 Introduction: Peer-Polity Interaction and Socio-Political Change. Pp. 1-18 in *Peer-Polity Interaction and Socio-Political Change*, eds. C. Renfrew and J. F. Cherry. Cambridge: Cambridge University Press.
- Renfrew, C., and Cherry, J. F., eds.
- 1986 Preface. Pp. vii-viii in *Peer-Polity Interaction and Socio-Political Change*. Cambridge: Cambridge University Press.
- Richard, S.
- 1980 Toward a Consensus of Opinion on the End of the Early Bronze Age in Palestine - Transjordan. *Bulletin of the American Schools of Oriental Research* 237: 5-34.
- Ritter-Kaplan, H.
- 1979 Tel Aviv, a Burial Cave in the Qirya. *Israel Exploration Journal* 29: 241.
- Rizkana, I., and Seeher, J.
- 1984 New Light on the Relation of Maadi to the Upper Egyptian Sequence. *Mitteilungen Des Deutschen Archäologischen Instituts Abteilung Kairo* 40: 237-52.
- 1987 *Maadi I: The Pottery of the Predynastic Settlement*. Archäologische Veröffentlichungen, no. 64. Mainz am Rhein: Philipp von Zabern.
- 1989 *Maadi III: The Non-Lithic Small Finds and the Structural Remains of the Predynastic Settlement*. Archäologische Veröffentlichungen, no. 80. Mainz am Rhein: Philipp von Zabern.
- Roaf, M.
- 1990 *Cultural Atlas of Mesopotamia*. New York: Facts on File.
- Roaf, M., and Galbraith, J.
- 1994 Pottery and p-Values: 'Seafaring Merchants of Ur?' Re-Examined. *Antiquity* 68: 770-83.
- Roberts, O. T.
- 1991 The Development of the Brail Into a Viable Sail Control for Aegean Boats of the Bronze Age. Pp. 55-60 in *Thalassa: L'Egee Préhistorique et la Mer* (Actes de la troisième Rencontre égéenne internationale de l'Université de Liège, Station de recherches sous-marine et océanographiques (StaReSo), Calvi, Corse (23-25 Avril, 1990)), eds. R. Laffinueur and L. Basch. Aegaeum, Annales d'archaéologie égéenne de l'Université de Liège, no. 7. Liège: Université de Liège.
- 1995 An Explanation of Ancient Windward Sailing**Some Other Considerations. *The International Journal of Nautical Archaeology* 24(4): 307-15.

Roll, I., and Ayalon, E.

- 1989 *Apollonia and Southern Sharon: Model of a Coastal City and Its Hinterland*. Tel Aviv: Hakubbutz Hameuchad Publishing House; Israel Exploration Society. 354 pp (Hebrew; English summary).

Ronen, A.

- 1995 Core, Periphery and Ideology in Aceramic Cyprus. *Quartär* 45-46: 177-206.

Ronen, A., and Olami, Y.

- 1978 'Atlit Map. Archaeological Survey of Israel, vol. 1. Jerusalem. (Hebrew; with English summary).

Rose, L. E.

- 1994 The Astronomical Evidence for Dating the End of the Middle Kingdom of Ancient Egypt to the Early Second Millennium: A Reassessment. *Journal of Near Eastern Studies* 53(4): 237-61.

Rosen, A. M.

- 1986 *Cities of Clay: The Geoarcheology of Israel*. Prehistoric archeology and ecology series. Chicago: University of Chicago.
- 1989 Environmental Change at the End of Early Bronze Age Palestine. Pp. 247-55 in *L'urbanisation de la Palestine À l'Âge Du Bronze Ancien: Bilan et Perspectives Des Recherches Actuelles, Actes Du Colloque d'Emmaüs (20-24 Octobre 1986)*, ed. P. de Miroschedji. BAR International Series. Oxford.

Rosen, S. A.

- 1983 Tabular Scraper Trade: A Model of Material Cultural Dispersion. *Bulletin of the American Schools of Oriental Research* 249: 79-86.
- 1984 The Adoption of Metallurgy in the Levant: A Lithic Perspective. *Current Anthropology* 25(4 August-September): 504-05.
- 1986 The Analysis of Trade and Craft Specialization in the Chalcolithic Period: Comparisons from Different Realms of Material Culture. *Michmanim* 3: 21-32.
- 1987 The Potentials of Lithic Analysis in the Chalcolithic of the Northern Negev. Pp. 295-312 in *Shiqmim I* (Studies concerning Chalcolithic societies in the northern Negev Desert, Israel (1982-1984)), ed. T. E. Levy. BAR International Series, no. 356i. Oxford.
- 1988 A Preliminary Note on the Egyptian Component of the Chipped Stone Assemblage from Tel Erani. *Israel Exploration Journal* 38(3): 105-16.
- 1989 The Analysis of Early Bronze Age Chipped Stone Industries: A Summary Statement. Pp. 199-222 in *L'urbanisation de la Palestine À l'Âge Du Bronze Ancien: Bilan et Perspectives Des Recherches Actuelles, Actes Du Colloque d'Emmaüs (20-24 Octobre 1986)*, ed. P. de Miroschedji. BAR International Series. Oxford.
- 1992 Nomads in Archaeology: A Response to Finkelstein and Perevolotsky. *Bulletin of the American Schools of Oriental Research* 287: 75-85.

- 1993 Metals, Rocks, Specialization, and the Beginning of Urbanism in the Northern Negev. Pp. 41-56 in *Biblical Archaeology Today 1990: Proceedings of the Second International Congress on Biblical Archaeology, Jerusalem, June 1990, Pre-Congress Symposium Supplement*, eds. A. Biran and J. Aviram. Jerusalem: Israel Exploration Society.
- 1994 *Map of Makhtesh Ramon (204)*. Jerusalem: Israel Antiquities Authority; Archaeological Survey of Israel. 135 pp (Hebrew); 79* pp (English).
- 1997 *Lithics After the Stone Age: A Handbook of Stone Tools from the Levant*. Walnut Creek, California: Altamira Press.
- Rosenberger, A.
- 1991 Loom Weights from Area D and C. Pp. 19-21 in *Excavations at Kabri*, Vol. 5. *Preliminary Report of 1990 Season*, eds. A. Kempinski and W.-D. Niemeier. Tel Aviv: Tel Kabri Expedition; Tel Aviv University.
- Ross, J. F.
- 1994 The Vounous Jars Revisited. *Bulletin of the American Schools of Oriental Research* 296: 15-30.
- Rothenberg, B., and Glass, J.
- 1992 The Beginnings and Development of Early Metallurgy from the Settlement and Chronology of the Western Arabah, from the Chalcolithic Period to Early Bronze Age IV. *Levant* 24: 141-57.
- Rowe, A.
- 1936 *A Catalogue of Egyptian Scarabs, Scaraboids, Seals and Amulets in the Palestine Archaeological Museum*. Cairo: Government of Palestine Department of Antiquities.
- 1939 Three New Stelae from the South-Eastern Desert. *Annales Du Service Des Antiquités de l'Égypte* 39: 187-94.
- Runnels, C., and Van Andel, T.
- 1988 Trade and the Origins of Agriculture in the Eastern Mediterranean. *Journal of Mediterranean Archaeology* 1: 83-109.
- Russell, K. W.
- 1988 *After Eden: The Behavioral Ecology of Early Food Production in the Near East and North Africa*. BAR International Series, no. 391. Oxford: British Archaeological Reports.
- Sadeh, A.
- 1991 The History and Archaeology of Yavne-Yam. Pp. 15-31 in *Yavne-Yam and Its Surroundings*, ed. M. Fischer. Kibbutz Palmahim Publications.
- Saghieh, M.
- 1983 *Byblos in the Third Millennium B.C.* Warminster: Aris & Phillips Ltd.
- Saidah, R.
- 1993-94 Beirut in the Bronze Age: The Kharji Tombs. *Berytus* 41: 137-210.

- Saltz, D. L.
- 1977 The Chronology of the Middle Cypriote Period. *Report of the Department of Antiquities of Cyprus*: 51-70.
- Sarpaki, A.
- 1990 'Small Fields or Big Fields?' That is the Question. Pp. 422-31 in *Thera and the Aegean World III*, eds. D. Hardy, J. Keller, Galanopoulos, N. C. Flemming and T. H. Druitt. London: The Thera Foundation.
- 1992 A Paleoethnobotanical Study of the West House, Akrotiri, Thera. *Annual of the British School in Athens* 87: 219-30.
- Sarpaki, A., and Jones, G.
- 1990 Ancient and Modern Cultivation of *Lathyrus Clymenum* in the Greek Islands. *Annual of the British School in Athens* 85: 363-68.
- Sass, B.
- 1988 *The Genesis of the Alphabet and Its Development in the Second Millennium B.C.* Wiesbaden: Otto Harrassowitz.
- 1989 The Egyptian Middle Kingdom System for Writing Foreign Names and the Beginning of the West-Semitic Alphabet. Pp. 44-50 (Hebrew; p. 195* English summary) in *Eretz Israel 20 (Yadin Memorial Volume)*. Jerusalem.
- Sasson, J. M.
- 1984a The Earliest Mention of the Name *Canaan*. *Biblical Archaeologist* 47(2): 90.
- 1984b Zimri-Lim Takes the Grand Tour. *Biblical Archaeologist* 47(4): 246-51.
- Säve-Söderbergh, T.
- 1946 *The Navy of the Eighteenth Egyptian Dynasty*. Uppsala Universitets Årsskrift, no. 6. Uppsala: A.-B. Lundequistska Bokhandeln.
- Sayed, A. M. A.
- 1977 Discovery of the Site of the 12th Dynasty Port at Wadi Gawasis on the Red Sea Shore. *Revue D'Égyptologie* 29: 140-78.
- 1978 The Recently Discovered Port on the Red Sea Shore. *Journal of Egyptian Archaeology* 64: 69-71.
- 1980 Observations on Recent Discoveries at Wâdi Gawâsîs. *Journal of Egyptian Archaeology* 66: 154-57.
- 1983 New Light on the Recently Discovered Port on the Red Sea Shore. *Chronique D'Égypte* 58: 23-37.
- Scandone-Matthiae, G.
- 1979 Vasi Iscritti Di Chefren e Pepi I Nel Palazzo Reale G Di Ebla. *Studi Eblaiti* 1(3-4): 33-43.
- 1982 Ebla und Aegypten Im Alten und Mittleren Reich. *Antike Welt* 13: 14-17.
- 1987 The Mace of Pharaoh Hotepibra and the Connections Between Egypt and Syria-Palestine in the XIIIth Dynasty. Pp. 49-58 in *Studies in the History and Archaeology*

- of *Palestine II* (Proceedings of the first international symposium on Palestine antiquities). Aleppo University Press.
- 1997 The Relations Between Ebla and Egypt. Pp. 415-27 in *The Hyksos: New Historical and Archaeological Perspectives*, ed. E. Oren. University Museum Monograph. 8 University Museum Symposium Series. Philadelphia: University of Pennsylvania Museum.
- Schaeffer, C. F.-A.
- 1949 *Ugaritica II: Nouvelles Études Relatives Aux Découvertes de Ras Shamra*. Mission de Ras Shamra, vol. 5. Paris: Librairie Orientaliste Paul Geuthner.
- 1978 *Ugaritica VII*. Mission de Ras Shamra, vol. 18. Leiden: Bibliotheque Archéologique et Historique, no. 99.
- Schaub, R. T., and Rast, W. E., eds.
- 1989 *Bâb Ehd-Dhrâ: Excavations in the Cemetery Directed by Paul W. Lapp (1965-67)*. Report of the Expedition to the Dead Sea Plain, Jordan, vol. 1. Winona Lake, IN: American Schools of Oriental Research.
- Scheftelowitz, N.
- 1990 Tombs 1045 and 1050 in Area B. Pp. 28-31 (Hebrew; pp. xi-xii English summary) in *Excavations at Kabri, Vol. 4. Preliminary Report of 1989 Season*, eds A. Kempinski and W.-D. Niemeier. Tel Aviv: Tel Kabri Expedition; Tel Aviv University.
- Schmandt-Besserat, D.
- 1978 The Earliest Precursor of Writing. *Scientific American* 238(6 June): 38-47.
- Schmidt, K.
- 1992 Tell el-Fara'in and el-Tell el-Iswid (South): The Lithic Industries from the Chalcolithic to the Early Old Kingdom. Pp. 31-40 in *The Nile Delta in Transition: 4th - 3rd Millennium B.C.* (Proceedings of the seminar held in Cairo, 21-24 October 1990, at the Netherlands Institute of Archaeology and Arabic Studies), ed. E. C. Van Den Brink. Tel Aviv.
- 1993 Comments on the Lithic Industry of the Buto-Maadi Culture in Lower Egypt. Pp. 267-79 in *Environmental Change and Human Culture in the Nile Basin and Northern Africa Until the Second Millennium B.C.*, eds. L. Krzyzanik, M. Kobusiewicz and J. Alexander. Poznan.
- Schorsch, D.
- 1992 Copper Ewers of Early Dynastic and Old Kingdom Egypt - an Investigation of the Art of Smithing in Antiquity. *Mitteilungen Des Deutschen Archäologischen Instituts Abteilung Kairo* 48: 145-59.
- Schulman, A. R.
- 1982 The Battle Scenes of the Middle Kingdom. *Journal of the Society for the Study of Egyptian Antiquities* 12(4 August): 165-83.

- 1983 On the Dating of the Egyptian Seal Impressions from 'En Besor. *Journal of the Society for the Study of Egyptian Antiquities* 12: 249-51.
- 1989 At the Fringe: Historiography and Historicity of the Relations of Egypt and Canaan in the Early Bronze Age I. Pp. 433-53 in *L'urbanisation de la Palestine À l'Âge Du Bronze Ancien: Bilan et Perspectives Des Recherches Actuelles, Actes Du Colloque d'Emmaüs (20-24 Octobre 1986)*, ed. P. de Miroschedji. BAR International Series. Oxford.
- 1990 An Enigmatic Egyptian Presence at Tel Dan. Pp. 235-44 in *Festschrift Jürgen von Beckerath*, eds. A. Eggebrecht and B. Schmitz. Zum 70 Geburtstag am 19 Februar 1990. Hildesheimer Ägyptologische Beiträge. Hildesheim: Gerstenberg Verlag.
- 1992 Still More Egyptian Seal Impressions from 'En Besor. Pp. 395-418 in *The Nile Delta in Transition: 4th - 3rd Millennium B.C.* (Proceedings of the seminar held in Cairo, 21-24 October 1990, at the Netherlands Institute of Archaeology and Arabic Studies), ed. E. C. Van Den Brink. Tel Aviv.
- 1994 The First Dynasty Egyptian Presence at 'En Besor in the Sinai. Pp. 241-44 in *For His Ka: Essays Offered in Memory of Klaus Baer*, ed. D. P. Silverman. Studies in Ancient Oriental Civilization, no. 55. Chicago: The Oriental Institute of the University of Chicago.
- Schumacher, G.
- 1889 Recent Discoveries in the Galilee. *Palestine Exploration Fund Quarterly*.
- 1908 *Tel el-Mutesellim*. I. Band. B. Tafeln.
- Scott, E. M., Baxter, M. S., Harkness, D. D., Cook, A., Tom C., and Gordon T.
- 1990 Radiocarbon: Present and Future Perspectives on Quality Assurance. *Antiquity* 64: 319-22.
- Scott, E. M., Harkness, D. D., Cook, G. T., Aitchison, T. C., and Baxter, M. S.
- 1991 Future Quality Assurance in ¹⁴C Dating. *Quaternary Proceedings* 1: 1-4.
- Sebbane, M., Ilan, O., Avner, U., and Ilan, D.
- 1993 The Dating of Early Bronze Age Settlements in the Negev and Sinai. *Tel Aviv* 20(1): 41-54.
- Seeden, H.
- 1986 Bronze Age Village Occupation at Busra, AUB Excavations on the Northwest Tell 1983-84. *Berytus* 34: 11-81.
- 1988 Busra 1983-84: Second Archaeological Report. *Damaszener Mitteilungen* 3: 387-411.
- Seeger, J. D.
- 1989 Some Provisional Correlations in EB III Stratigraphy in Southern Palestine. Pp. 117-35 in *L'urbanisation de la Palestine À l'Âge Du Bronze Ancien: Bilan et Perspectives Des Recherches Actuelles, Actes Du Colloque d'Emmaüs (20-24 Octobre 1986)*, ed. P. de Miroschedji. BAR International Series. Oxford.
- 1990 Tel Halif - 1987. *Excavations and Surveys in Israel 1988/89* 7-8: 69-71.

- Semple, E. C.
 1931 *The Geography of the Mediterranean Region: Its Relation to Ancient History*. New York: AMS Press.
- Sethe, K.
 1926 *Die Ächtung Feindlicher Fürsten, Völker und Dinge auf Altägyptischen Tongefäßsscherben Des Mittleren Reiches*. Berlin.
- Settgast, J.
 1969 Zu Ungewöhnlichen Darstellungen von Bogenschützen. *Mitteilungen Des Deutschen Archäologischen Instituts Abteilung Kairo* 25: 136-38.
- Shaffer, A.
 1970 Fragment of an Inscribed Envelope. Pp. 111-13 in *Gezer I: Preliminary Report of the 1964-66 Seasons*, W. G. Dever, H. D. Lance and G. E. Wright. Annual of the Hebrew Union College Biblical and Archaeological School in Jerusalem. Jerusalem: Keter Press.
 1988 Cuneiform Tablets from Palestine I: The Letter from Shechem. *Beer Sheva* 3: 163-69 (Hebrew; English abstract p. 13^{*}).
- Shaheen, A. e.-d. M.
 1990 EB III - MB I Axe in the Egyptian Private Middle Kingdom Tombs: An Assessment. *Göttinger Miszellen* 117-118: 203-17.
 1992 A Possible Synchronization of EB IV C / MB I Ceramic Ware in Syro-Palestinian and Egyptian Sites. *Göttinger Miszellen* 131: 101-09.
- Shalev, S.
 1988 Redating the 'Philistine Sword' at the British Museum: A Case Study in Typology and Technology. *Oxford Journal of Archaeology* 7(3): 303-11.
 1989 Middle Bronze Age Toggle Pins from Kabri. Pp. 42-45 (Hebrew; pp. XIII-XIV, English summary) in *Excavations at Kabri*, Vol. 3. *Preliminary Report of 1988 Season*, ed. A. Kempinski. Tel Aviv: Tel Kabri Expedition; Tel Aviv University.
 1991 Two Different Copper Industries in the Chalcolithic Culture of Israel. Pp. 413-24 in *Découverte Du Métal*, eds. C. Eluère and J.-P. Mohen. Paris: Picard.
 1993 The Earliest Gold Artifacts in the Southern Levant: Reconstruction of the Manufacturing Process. Pp. 287-93 in *Outils et Ateliers d'Orfèvres Des Temps Anciens*, ed. C. Eluère. Antiqués nationales mémoire, no. 2. Saint-Germain-en-Laye: Société des amis du Musée des Antiquités Nationales.
 1994 The Change in Metal Production from the Chalcolithic Period to the Early Bronze Age in Israel and Jordan. *Antiquity* 68: 630-37.
 1995 Metals in Ancient Israel: Archaeological Interpretation of Chemical Analysis. *Israel Journal of Chemistry* 35: 109-16.
 1996 Metallurgical and Metalographic Studies: The Copper Objects. Pp. 155-63 in *The Nahal Qanah Cave: Earliest Gold in the Southern Levant*, ed. A. Gopher.

- Monograph series of the Institute of Archaeology, no. 12. Tel Aviv: Institute of Archaeology of Tel Aviv University.
- 1997 Metal Objects from Hazor. Pp. 348-52 in *Hazor V: An Account of the Fifth Season of Excavations, 1968*, eds. A. Ben-Tor and R. Bonfil. Jerusalem: Israel Exploration Society; Hebrew University.
- forthcoming Metal Objects from Kabri. In *Excavations at Kabri I*, ed. A. Kempinski. Tel Aviv: Tel Aviv University.
- Shalev, S., Goren, Y., Levy, T., and Northover, J.
- 1992 A Chalcolithic Mace Head from the Negev, Israel: Technological Aspects and Cultural Implications. *Archaeometry* 34(1): 63-71.
- Shalev, S., and Northover, J.
- 1993a The Metallurgy of the Nahal Mishmar Hoard Reconsidered. *Archaeometry* 35(1): 35-41.
- 1993b Middle Bronze III Metal Objects. Pp. 287-93 in *Shiloh: The Archaeology of a Biblical Site*, eds. I. Finkelstein, S. Bunimovitz and Z. Lederman. Monograph Series of the Institute of Archaeology, Tel Aviv University. Tel Aviv.
- Sharvit, Y., and Galili, E.
- 1998 Nahal Hadera. *Hadashot Arkheologiyot* 108: 54-55.
- Shaw, I., and Jameson, R.
- 1993 Amethyst Mining in the Eastern Desert: A Preliminary Survey at Wadi el-Hudi. *Journal of Egyptian Archaeology* 79: 81-97.
- Shay, T.
- 1983 Burial Customs at Jericho in the Intermediate Bronze Age: A Componential Analysis. *Tel Aviv* 10(1): 26-37.
- Shenberg, C.
- 1985 Appendix: Analysis of Weapons by x-Ray Fluorescence Method. *Atiqot* 17: 112.
- Shepstone, H. J.
- 1937 Palestine's New Lighterage Ports. *Palestine Exploration Quarterly* 69: 263-67.
- Sherratt, A.
- 1993 'Who Are You Calling Peripheral?': Dependence and Independence in European Prehistory. Pp. 245-55 in *Trade and Exchange in Prehistoric Europe*, eds. C. Scarre and F. Healey. Oxbow Monographs, no. 33. Cambridge: Oxbow Books.
- 1997 Climatic Cycles and Behavioural Revolutions: The Emergence of Modern Humans and the Beginning of Farming. *Antiquity* 71: 271-87.
- Sherratt, A., and Sherratt, S.
- 1991 From Luxuries to Commodities: The Nature of Mediterranean Bronze Age Trading Systems. Pp. 351-86 in *Bronze Age Trade in the Mediterranean*, ed. N. Gale. Studies in Mediterranean Archaeology, no. 90. Jonsered: Paul Åströms Forlag.
- Shiloh, Y.

- 1984 *Excavations at the City of David I 1978-1982: Interim Report of the First 5 Seasons*. Qedem, vol. 19. Jerusalem: The Institute of Archaeology, The Hebrew University of Jerusalem.
- 1993 Jerusalem. Pp. 701-12 in *The New Encyclopedia of Archaeological Excavations in the Holy Land*, eds E. Stern, A. Lewinson-Gilboa and J. Aviram. Jerusalem: Israel Exploration Society.
- Shimron, A. E.
- 1985 The Petrography and Origin of Two Whetstones from the Tomb Near 'Enan. *Atiqot* 17: 83-89.
- Shoval, S., and Gaft, M.
- 1993 Appendix: Petrographic Determination of the Origin of a Clay Sealing Excavated at Tel Aphek. P. 673 in *Aspects of Art and Iconography: Anatolia and Its Neighbours, Studies in Honor of Nimet Özguç*. Ankara: Türk Tarih Kürümü.
- Sibella, P.
- 1995 The Ceramics. *The INA Quarterly* 22(2): 13-16.
- Simmons, A. H.
- 1996 Whose Myth? Archaeological Data, Interpretations, and Implications for the Human Association with Extinct Pleistocene Fauna at Akrotiri. *Journal of Mediterranean Archaeology* 9(1): 97-105.
- Simmons, A. H., and Wigand, P. E.
- 1994 Assessing the Radiocarbon Determinations from Akrotiri Aetokremnos, Cyprus. Pp. 247-64 in *Late Quaternary Chronology and Paleoclimates of the Eastern Mediterranean*, eds. O. Bar-Yosef and R. S. Kra. Tucson: Radiocarbon.
- Simpson, W. K.
- 1960 Papyrus Lythgoe: A Fragment of a Literary Text of the Middle Kingdom from El-Lisht. *Journal of Egyptian Archaeology* 46: 65-70.
- Simpson, W. K.
- 1963 *Papyrus Reisner I: The Records of a Building Project in the Reign of Sesostris I*. Boston: Boston Museum of Fine Arts.
- 1965 *Papyrus Reisner II: Accounts of the Dockyard Workshop at This in the Reign of Sesostris II*. Boston: Boston Museum of Fine Arts.
- Simpson, W. K., ed.
- 1973a The Satire on the Trades: The Instruction of Dua-Khety. Pp. 329-36 in *The Literature of Ancient Egypt: An Anthology of Stories, Instructions, and Poetry*. New ed. New Haven: Yale University Press.
- 1973b The Shipwrecked Sailor. Pp. 50-56 in *The Literature of Ancient Egypt: An Anthology of Stories, Instructions, and Poetry*. New ed. New Haven: Yale University Press.

- 1973c The Story of Sinuhe. Pp. 57-74 in *The Literature of Ancient Egypt: An Anthology of Stories, Instructions, and Poetry*. New ed. New Haven: Yale University Press.
- Singer-Avitz, L., and Levy, Y.
- 1992 An MB IIA Kiln at the Nahal Soreq Site (Appendix: petrographic analysis by Yuval Goren). *`Atiqot* 21: 9^{*}-14^{*}.
- 1993 An Middled Bronze Age IIA Tomb from Sha`Alevim. *`Atiqot* 22: 9^{*}-14^{*} (Hebrew; English summary p. 152).
- Sivan, D.
- 1981 *Paleogeography of Akko Area in the Holocene Period* (M.A. Thesis). Haifa: Haifa University. 103 pp (Hebrew).
- 1996 *Paleogeography of the Galilee Coastal Plain During the Quarternary*. Report GSI/18/96. Jerusalem: Geological Survey of Israel. 214 pp (Hebrew with extended English abstract).
- Smith, H.
- 1992 The Making of Egypt: A Review of the Influence of Susa and Sumer on Upper Egypt and Lower Nubia in the 4th Millennium B.C. Pp. 235-46 in *The Followers of Horus: Studies Dedicated to Michael Allen Hoffman*, eds. R. Friedman and B. Adams. Egyptian Studies Association Publication, no. 2. Oxford: Oxbow Books.
- Smith, P.
- 1995 People of the Holy Land from Prehistory to the Recent Past. Pp. 58-74 in *The Archaeology of Society in the Holy Land*, ed. T. E. Levy. Leicester University Press.
- Smith, R. H.
- 1962 *Excavations in the Cemetery at Khirbet Kufin Palestine*. Colt Archaeological Institute Monograph Series, no. 1. London: Bernard Quaritch Ltd.
- Smith, W. S.
- 1965 *Interconnections in the Ancient Near East: A Study of the Relationships Between the Arts of Egypt, the Aegean, and Western Asia*. New Haven: Yale University Press.
- 1971 The Old Kingdom in Egypt and the Beginning of the First Intermediate Period. Pp. 145-207 in *The Cambridge Ancient History*, Vol. 1, part 2. *Early History of the Middle East*, eds. I. Edwards, C. Gadd and N. Hammond. Cambridge: Cambridge University Press.
- Sneh, Y., and Klein, M.
- 1984 Holocene Sea Level Changes at the Coast of Dor, Southeast Mediterranean. *Science* 226(4676): 831-32.
- Sperber, D.
- 1976 Objects of Trade Between Palestine and Egypt in Roman Times. *Journal of the Economic and Social History of the Orient* 19: 113-47.
- 1986 *Nautica Talmudica*. Bar Ilan Studies in Near Eastern Languages and Culture. Leiden: E.J. Brill.
- Stager, L. E.

- 1990 Port Power: The Organization of Maritime Trade and Hinterland Production. Lecture at the international congress on Biblical Archaeology, Jerusalem, 24 June - 4 July 1990.
- Stager, L. E.
- 1985 The First Fruits of Civilization. Pp. 172-88 in *Palestine in the Bronze and Iron Ages, Papers in Honor of Olga Tufnell*, eds J. Tubb. Institute of Archaeology Occasional Publication, no. 11. London.
- 1990 Painted Pottery and Its Relationship to the Weaving Crafts During the Early Bronze Age I. Pp. 83^{*}-88^{*} in *Eretz Israel 21 (Amiran Volume)*. Jerusalem.
- 1991 When Canaanites and Philistines Ruled Ashkelon. *Biblical Archaeology Review* 17(2): 24-43.
- 1992 The Periodization of Palestine from Neolithic Through Early Bronze Times. Pp. 22-41 in *Chronologies in Old World Archaeology*, ed. R. W. Ehrich. 3rd ed. Chicago: University of Chicago Press.
- 1993 Ashkelon. Pp. 103-12 in *The New Encyclopedia of Archaeological Excavations in the Holy Land*, eds E. Stern, A. Lewinson-Gilboa and J. Aviram. Jerusalem: Israel Exploration Society.
- Stanley, D. J., and Galili, E.
- 1996 Sediment Dispersal Along Northern Israel Coast During the Holocene: Geological and Archaeological Evidence. *Marine Geology* 130: 11-17.
- Stanley Price, N.
- 1977a Colonization and Continuity in the Early Prehistory of Cyprus. *World Archaeology* 9(1): 26-41.
- 1977b Khirokitia and the Initial Settlement of Cyprus. *Levant* 9: 66-89.
- Stech, T., Muhly, J., and Maddin, R.
- 1985 Metallurgical Studies on Artifacts from the Tomb Near 'Enan. *Atiqot* 17: 75-82.
- Stefanski, Y.
- 1987 Safed, Jerusalem Street. *Excavations and Surveys in Israel* 1986 5: 94.
- Steffy, J. R.
- 1994 *Wooden Ship Building and the Interpretation of Shipwrecks*. College Station: Texas A & M University.
- Stein, D. L.
- 1984 Khabur Ware and Nuzi Ware: Their Origin, Relationship, and Significance. *Assur* 4(1). Monographic Journals of the Near East. Malibu: Undena Publications.
- Stepansky, Y.
- 1992 Rosh Pinna Map, Survey. *Excavations and Surveys in Israel*, 1991 10: 66-68.
- Stepansky, Y., Segal, D., and Carmi, I.
- 1996 The 1993 Sounding at Tel Sasa: Excavation Report and Radiometric Dating. *'Atiqot* 28: 63-76.

- Stern, E.
- 1992 *Dor - the Ruler of the Seas*. Jerusalem: The Bialik Institute; The Israel Exploration Society.
- 1993 Dor. Pp. 357-68 in *The New Encyclopedia of Archaeological Excavations in the Holy Land*, eds E. Stern, A. Lewinson-Gilboa and J. Aviram. Jerusalem: Israel Exploration Society.
- Stern, E., ed.
- 1984 *Excavations at Tel Mevorakh (1973-1976), Part Two: The Bronze Age*. Qedem, vol. 18. Jerusalem: The Institute of Archaeology. The Hebrew University.
- 1995a *Excavations at Dor, Final Report, Volume 1*. Qedem Reports, vol. 1. Jerusalem: The Institute of Archaeology of The Hebrew University; Israel Exploration Society.
- 1995b Historical Conclusions. Pp. 271-83 in *Excavations at Dor, Final Report, Volume 1*. Qedem Reports, vol. 1. Jerusalem: The Institute of Archaeology of The Hebrew University; Israel Exploration Society.
- 1995c Introduction. Pp. 1-12 in *Excavations at Dor, Final Report, Volume 1*. Qedem Reports, vol. 1. Jerusalem: The Institute of Archaeology of The Hebrew University; Israel Exploration Society.
- Stewart, J. R.
- 1962 The Tomb of the Seafarer at Karmi in Cyprus. *Opuscula Atheniensia* 4: 197-204.
- 1974 *Tell el `Ajjul: The Middle Bronze Age Remains*. Studies in Mediterranean Archaeology, vol. 38. Göthberg.
- Stos-Gale, Z., Gale, N., and Gilmore, G.
- 1984 Early Bronze Age Trojan Metal Sources and Anatolians in the Cyclades. *Oxford Journal of Archaeology* 3: 23-43.
- Stos-Gale, Z., and Macdonald, C.
- 1991 Sources of Metals and Trade in the Bronze Age Aegean. Pp. 249-88 in *Bronze Age Trade in the Mediterranean*, ed. N. Gale. Studies in Mediterranean Archaeology, no. 90. Jonsered: Paul Åströms Forlag.
- Strange, J.
- 1980 *Caphtor/Keftiu: A New Investigation*. Leiden: E.J. Brill.
- 1997 Tall al-Fukhar 1990-1991: A Preliminary Report. Pp. 399-406 in *Studies in the History and Archaeology of Jordan VI*, eds. G. Bisheh, M. Zaghloul and I. Kehrberg.
- Strommenger, E.
- 1980 *Habuba Kabira: Eine Stadt vor 5000 Jahren*. Mainz am Rhein: Philipp von Zabern.
- Stuiver, M., and Pearson, G.
- 1993 High-Precision Bidecadal Calibration of the Radiocarbon Time Scale, AD 1950-500 BC and 2500-6000 BC. *Radiocarbon* 35(1): 1-24.
- [Sukenik, E.

- 1944 Tell Jerishe. *Quarterly of the Department of Antiquities of Palestine* 10: 198-99.
- 1948 Archaeological Investigations at 'Afula. *Journal of the Palestine Oriental Society* 21: 1-79.
- Sürenhagen, D.
- 1986 The Dry Farming Belt: The Uruk Period and Subsequent Developments. Pp. 7-43 in *The Origins of Cities in Dry-Farming Syria and Mesopotamia in the Third Millennium b.C.*, ed. H. Weiss. Guilford, Connecticut: Four Quarters Publishing Co.
- Swiny, S.
- 1986 The Philia Culture and Its Foreign Relations. Pp. 29-44 in *Acts of the International Archaeological Symposium "Cyprus Between the Orient and the Occident" Nicosia, 8-14 September 1985*, ed. V. Karageorghis. Nicosia: Department of Antiquities.
- 1988 The Pleistocene Fauna of Cyprus and Recent Discoveries on the Akrotiri Peninsula. *Report of the Department of Antiquities of Cyprus*: 1-14.
- Tadmor, H.
- 1977 A Lexicographical Text from Hazor. *Israel Exploration Journal* 27(2-3): 98-102.
- Tadmor, M., Kedem, D., Begemann, F., Hauptmann, A., Pernicka, E., and Schmitt-Strecker, S.
- 1995 The Nahal Mishmar Hoard from the Judean Desert: Technology, Composition, and Provenance. *'Atiqot* 27: 95-148.
- Talbot, G.
- 1983 Appendix K: Beads and Pendants from the Tell and Tombs. Pp. 788-801 in *Excavations at Jericho, Vol. V*, by K. M. Kenyon and T. A. Holland. London: British School of Archaeology in Jerusalem.
- Tammuz, O.
- 1985 *The Sea as an Economic Factor: Aspects of the Maritime Connections of the Eastern Mediterranean Coastal Populace [Sic.], from the Amarna Age to the Decline of the Assyrian Empire, According to Written Documents* (Unpublished Master's thesis). Tel Aviv University: Tel Aviv. 204 pp (Hebrew).
- Taraqji, M. A.
- 1993 Chronique Archéologique: Tell Sakka. *Syria* 70: 453-56.
- Teissier, B.
- 1987 Glyptic Evidence for a Connection Between Iran, Syro-Palestine and Egypt in the Fourth and Third Millennia. *Iran* 25: 27-53.
- 1990 The Seal Impression Alalakh 194: A New Aspect of Egypto-Levantine Relations in the Middle Kingdom. *Levant* 22: 65-73.
- 1996 Egyptian Iconography on Syro-Palestinian Cylinder Seals of the Middle Bronze Age. *Orbis Biblicus et Orientalis*. Fribourg: University Press.
- Terrell, J.

- 1986 *Prehistory in the Pacific Islands: A Study of Variation in Language, Customs, and Human Biology*. Cambridge: Cambridge University Press.
- Thalmann, J.-P.
- 1991 L'âge Du Bronze À Tell `Arqa Bilan et Perspectives (1981-1991). *Berytus* 39: 21-38.
- Thompson, T. L.
- 1979 *The Settlement of Palestine in the Bronze Age*. Tübinger Atlas des Vorderen Orients, Series B, no. 34. Wiesbaden: Dr. Ludwig Reichert Verlag. 495.
- Thrane, H.
- 1978 *Sukas IV: A Middle Bronze Age Collective Grave on Tall Sukas*. Publications of the Carlsberg Expedition to Phoenicia, vol. 5. Copenhagen: The Royal Danish Academy of Sciences and Letters.
- Tobin, V. A.
- 1995 The Secret of Sinuhe. *Journal of the American Research Center in Egypt* 32: 161-78.
- Todd, I. A.
- 1986 The Foreign Relations of Cyprus in the Neolithic/Chalcolithic Periods: New Evidence from the Vasilikos Valley. Pp. 12-28 in *Acts of the International Archaeological Symposium "Cyprus Between the Orient and the Occident" Nicosia, 8-14 September 1985*, ed. V. Karageorghis. Nicosia: Department of Antiquities.
- 1988 The Middle Bronze Age in the Kalavassos Area. *Report of the Department of Antiquities of Cyprus*: 133-40.
- Toombs, L. E.
- 1976 The Stratification of Tell Balâtah (Shechem). *Bulletin of the American Schools of Oriental Research* 223: 57-59.
- Torrence, R.
- 1986 *Production and Exchange of Stone Tools: Prehistoric Obsidian in the Aegean*. New Studies in Archaeology. Cambridge: Cambridge University Press.
- Trigger, B.
- 1983 The Rise of Egyptian Civilization. Pp. 1-70 in *Ancient Egypt: A Social History*, B. Trigger, B. Kemp, D. O'Connor and A. Lloyd. Cambridge: Cambridge University Press.
- Trigger, B. G.
- 1987 Egypt: A Fledgling Nation. *Journal of the Society for the Study of Egyptian Antiquities* 17(1-2): 58-66.
- Trump, D. H.
- 1980 *The Prehistory of the Mediterranean*. London: A.Lane.
- Tsuk, T.
- 1990 The Kabri Springs and Its Function in Antiquity. Pp. 5-12 (Hebrew; pp. vi-vii English summary) in *Excavations at Kabri, Vol. 4. Preliminary Report of 1989*

- Season, eds A. Kempinski and W.-D. Niemeier. Tel Aviv: Tel Kabri Expedition; Tel Aviv University.
- Tsuk, T.
1992 Tel Gerisa - 1989/1990: The Water Supply System. *Excavations and Surveys in Israel* 1991 10: 122.
- Tubb, J. N.
1983 The MBIIA Period in Palestine: Its Relationship with Syria and Its Origin. *Levant* 15: 49-62.
- Tufnell, O., and Ward, W.
1966 Relations Between Byblos, Egypt and Mesopotamia at the End of the Third Millennium B.C. *Syria* 43: 165-241.
- Tufnell, O.
1962 The Courtyard Cemetery at Tell El-'Ajjul, Palestine: Excavations of 1931-1932, a Type Site Reconsidered. *Bulletin of the Institute of Archaeology London* 3: 1-37.
1969 The Pottery from Royal Tombs I-III at Byblos. *Berytus* 18: 5-33.
1980 A Review of the Contents of Cave 303 at Tell El-'Ajjul. *'Atiqot* 14: 37-48.
1984 *Studies on Scarab Seals II: Scarab Seals and Their Contribution to History in the Early Second Millennium b.C.* Warminster: Aris & Phillips Ltd.
1993 'Ajjul, Tell El-. Pp. 49-52 in *The New Encyclopedia of Archaeological Excavations in the Holy Land*, eds E. Stern, A. Lewinson-Gilboa and J. Aviram. Jerusalem: Israel Exploration Society.
- Tutunzic, S.
1989 Relations Between Late Predynastic Egypt and Palestine: Some Elements and Phenomena. Pp. 423-32 in *L'urbanisation de la Palestine À l'Âge Du Bronze Ancien: Bilan et Perspectives Des Recherches Actuelles, Actes Du Colloque d'Emmaüs (20-24 Octobre 1986)*, ed. P. de Miroschedji. BAR International Series. Oxford.
1993 A Consideration of Differences Between the Pottery Showing Palestinian Characteristics in the Maadian and Gerzean Cultures. *Journal of Egyptian Archaeology* 79: 33-55.
- Uphill, E.
1984 User and His Place in Egypto-Minoan History. *Bulletin of the Institute of Classical Studies* 31: 213.
- Ussishkin, D.
1980 The Ghassulian Shrine at En-Gedi. *Tel Aviv* 7: 1-44.
- Valla, F.
1995 The First Settled Societies - Natufian (12,500-10,200 BP). Pp. 169-87 in *The Archaeology of Society in the Holy Land*, ed. T. E. Levy. Leicester University Press.
- Van Andel, T. H., and Runnels, C. N.
1995 The Earliest Farmers in Europe. *Antiquity* 69: 481-500.

- Van Andel, T. H., and Schackleton, J. C.
 1982 Late Paleolithic and Mesolithic Coastlines of Greece and the Aegean World. *Journal of Field Archaeology* 9: 445-54.
- Van Den Brink, E. C.
 1982 *Tombs and Burial Customs at Tell el-Dab`A*. Beiträge zur Ägyptologie. Wien.
 1992 Preliminary Report on the Excavations at Tell Ibrahim Awad, Seasons 1988-1990. Pp. 43-68 in *The Nile Delta in Transition: 4th - 3rd Millennium B.C.* (Proceedings of the seminar held in Cairo, 21-24 October 1990, at the Netherlands Institute of Archaeology and Arabic Studies), ed. E. C. Van Den Brink. Tel Aviv.
 1993 Settlement Patterns in the Northeastern Nile Delta During the Fourth-Second Millennia B.C. Pp. 279-304 in *Environmental Change and Human Culture in the Nile Basin and Northern Africa Until the Second Millennium B.C.*, eds. L. Krzyzanik, M. Kobusiewicz and J. Alexander. Poznan.
- Van Den Brink, E. C., ed.
 1988 *The Archaeology of the Nile Delta: Problems and Priorities*. 325 pp (Proceedings of the seminar held in Cairo, 19-22 October 1986, on the occasion of the fifteenth anniversary of the Netherlands Institute of Archaeology and Arabic Studies in Cairo). Amsterdam: Netherlands Foundation for Archaeological Research in Egypt.
- Van Loon, M.
 1992 The Beginning of the Middle Bronze Age in Syria. *Ägypten und Levante* 3: 103-07.
- Van Seters, J.
 1964 A Date for the 'Admonitions' in the Second Intermediate Period. *Journal of Egyptian Archaeology* 50: 13-23.
- Vayda, A. P., and Rappaport, R. A.
 1963 Island Cultures. Pp. 133-42 in *Man's Place in the Island Ecosystem*, ed. F. R. Fosberg. Bishop Museum Press.
- Veenhof, K.
 1972 *Aspects of the Old Assyrian Trade and Its Terminology*. Leiden: E.J. Brill.
- Vickers, M., and Gill, D.
 1994 *Artful Crafts: Ancient Greek Silverware and Pottery*. Oxford: Clarendon Press.
- Villard, P.
 1986 Un Roi de Mari a Ugarit. *Ugarit-Forschungen* 18: 387-412.
- Vinson, S.
 1990 Ships in the Ancient Mediterranean. *Biblical Archaeologist* 53(1 March): 13-19.
 1993 The Earliest Representations of Brailed Sails. *Journal of the American Research Center in Egypt* 30: 133-50.
 1994 *Egyptian Boats and Ships*. Shire Egyptology Series, no. 20. Buckinghamshire: Shire Publications Ltd.

- von Bissing, F. W.
- 1905 Archai Aegyptiakai Korthai Iston. *Ephemerus Archaeologici*: 157-160.
- Von der Osten, H.
- 1927 The Ancient Settlement at Kürigen Kaleh in Asia Minor. *American Journal of Semitic Languages and Literatures* 43: 288-94.
- Von Der Way, T.
- 1986 Tell el-Fara'in - Buto (1. Bericht). *Mitteilungen Des Deutschen Archäologischen Instituts Abteilung Kairo* 42: 191-212.
- 1987 Tell el-Fara'in - Buto (2. Bericht). *Mitteilungen Des Deutschen Archäologischen Instituts Abteilung Kairo* 43: 241-57.
- 1988 Investigations Concerning the Early Periods in the Northern Delta of Egypt. Pp. 245-49 in *The Archaeology of the Nile Delta: Problems and Priorities* (Proceedings of the seminar held in Cairo, 19-22 October 1986, on the occasion of the fifteenth anniversary of the Netherlands Institute of Archaeology and Arabic Studies in Cairo), ed. E. C. Van Den Brink. Amsterdam: Netherlands Foundation for Archaeological Research in Egypt.
- 1991 Investigations Concerning the Pre- and Early Dynastic Periods in the Northern Delta of Egypt. Pp. 47-61 in *The Near East in Antiquity, Vol. II* (German contributions to the archaeology of Jordan, Palestine, Syria, Lebanon and Egypt), ed. S. Kerner. Amman: Al Kutba; Goethe-Institut; German Protestant Institute for Archaeology.
- 1992a Excavations at Tell el-Fara'in/Buto in 1987-1989. Pp. 1-8 in *The Nile Delta in Transition: 4th - 3rd Millennium B.C.* (Proceedings of the seminar held in Cairo, 21-24 October 1990, at the Netherlands Institute of Archaeology and Arabic Studies), ed. E. C. Van Den Brink. Tel Aviv.
- 1992b Indications of Architecture with Niches at Buto. Pp. 217-26 in *The Followers of Horus: Studies Dedicated to Michael Allen Hoffman*, eds. R. Friedman and B. Adams. Egyptian Studies Association Publication, no. 2. Oxford: Oxbow Books.
- Wachsmann, S.
- 1985 Shfifons - Early Bronze Age Anchor Shaped Cult Stones from the Sea of Galilee Region. *Thracia Pontica* 3: 395-403.
- 1995 The 1994 INA/CMS Joint Expedition to Tantura Lagoon. *The INA Quarterly* 22(2): 3-8.
- 1998 *Seagoing Ships and Seamanship in the Bronze Age Levant*. College Station: Texas A & M University Press.
- Wachsmann, S., and Raveh, K.
- 1984 A Concise Nautical History of Dor/Tantura. *International Journal of Nautical Archaeology* 13(3): 223-41.
- Waisel, Y., and Agami, M.
- 1990 The Vegetation of the Sharon Plain. Pp. 109-21 (Hebrew) in *HaSharon: Between Yarkon and Karmel*, eds D. Grossman, A. Degani and A. Shmueli. Eretz:

- geographical research and publications. Tel Aviv: Ministry of Defence Publishing House.
- Walberg, G.
- 1984 The Tod Treasure and Middle Minoan Absolute Chronology. *Opuscula Atheniensia* 15: 173-77.
- 1987 Middle Minoan Chronology: Relative and Absolute. Pp. 67-73 in *High Middle or Low?* 138 pp, ed. P. Åström. Acts of an international colloquium on absolute chronology held at the University of Gothenberg, 20-22 August 1987, Part 1. Gothenberg.
- 1991a The Finds at Tell el-Dab'a and Middle Minoan Chronology. *Ägypten und Levante* 2: 115-20.
- 1991b A Gold Pendant from Tell el-Dab'A. *Ägypten und Levante* 2: 111-14.
- Walberg, G.
- 1992 Cyprus and Crete, Ceramic Exchange. Pp. 386-93 in *Acta Cypria, Part 2*, ed. P. Åström. Acts of an international congress on Cypriote archaeology held in Göteborg on 22-24 August, 1991. Studies in Mediterranean Archaeology and Literature, pocket book, no. 120. Paul Åströms Förlag.
- Wapnish, P.
- 1995 Towards Establishing a Conceptual Basis for Animal Categories in Archaeology. Pp. 232-73 in *Methods in the Mediterranean: Historical and Archaeological Views on Texts and Archaeology*, ed. D. B. Small. Leiden: E.J. Brill.
- 1997 Middle Bronze Age Equid Burials at Tell Jemmeh and a Reexamination of a Purportedly "Hyksos" Practice. Pp. 335-67 in *The Hyksos: New Historical and Archaeological Perspectives*, ed. E. Oren. University Museum Monograph. 8 University Museum Symposium Series. Philadelphia: University of Pennsylvania Museum.
- Wapnish, P., and Hesse, B.
- 1988 Urbanization and the Organization of Animal Production at Tell Jemmeh in the Middle Bronze Age Levant. *Journal of Near Eastern Studies* 47(2): 81-94.
- Ward, W. A.
- 1961 Egypt and the East Mediterranean in the Early Second Millennium B.C. *Orientalia* 30: 22-45, 129-55.
- 1963 Egypt and the East Mediterranean from Predynastic Times to the End of the Old Kingdom. *Journal of the Economic and Social History of the Orient* 6: 1-57.
- 1964 Relations Between Egypt and Mesopotamia from Prehistoric Times to the End of the Middle Kingdom. *Journal of the Economic and Social History of the Orient* 7: 121-35.
- 1971 *Egypt and the East Mediterranean World 2200-1900 B.C.: Studies in Egyptian Foreign Relations During the First Intermediate Period*. Beirut: American University of Beirut.

- 1978a The Egyptian Objects. Pp. 83-87 in *The Pottery of Tyre*, P. M. Bikai. Warminster: Aris & Phillips, Ltd.
- 1978b *Studies on Scarab Seals I: Scarab Seals and Their Contribution to History in the Early Second Millennium b.C.* Warminster: Aris & Phillips Ltd.
- 1979 Remarks on Some Middle Kingdom Statuary Found at Ugarit. *Ugarit-Forschungen* 11: 799-806.
- 1987 Scarab Typology and Archaeological Context. *American Journal of Archaeology* 91: 507-32.
- 1991 Early Contacts Between Egypt, Canaan, and Sinai: Remarks on the Paper by Amnon Ben-Tor. *Bulletin of the American Schools of Oriental Research* 281: 11-26.
- 1992 The Present Status of Egyptian Chronology. *Bulletin of the American Schools of Oriental Research* 288: 53-66.
- 1993-94 Egyptian Objects from the Beirut Tombs. *Berytus* 41: 222.
- Ward, W. A., and Dever, W. G.
- 1994 *Studies on Scarab Seals III: Scarab Typology and Archaeological Context, an Essay on Middle Bronze Age Chronology.* San Antonio: Van Siclen Books.
- Warren, P.
- 1989 *The Aegean Civilizations. The Making of the Past.* New York: Peter Bedrick Books.
- 1995 Minoan Crete and Pharaonic Egypt. Pp. 1-18 in *Egypt, the Aegean and the Levant: Interconnections in the Second Millennium BC*, eds. W. V. Davies and L. Schofield. London: British Museum Press.
- Warren, P., and Hankey, V.
- 1989 *Aegean Bronze Age Chronology.* Bristol: Bristol Classical Press.
- Waterbolk, H.
- 1987 Working with Radiocarbon Dates in Southwestern Asia. Pp. 39-59 in *Chronologies in the Near East: Relative Chronologies and Absolute Chronology 16,000-4,000 BP*, eds. O. Aurenche, J. Evin and F. Hours. C.N.R.S. International Symposium, Lyon (France) 24-28 November 1986. BAR International Series, no. 379. Oxford: Maison de l'Orient Méditerranéen (C.N.R.S - Université Lumière - Lyon 2). 2 vols.
- 1994 Radiocarbon Dating Levantine Prehistory. Pp. 351-71 in *Late Quaternary Chronology and Paleoclimates of the Eastern Mediterranean*, eds. O. Bar-Yosef and R. S. Kra. Tucson: Radiocarbon.
- Watrous, L. V.
- 1992 *Kommos III: The Late Bronze Age Pottery.* Princeton: Princeton University Press.
- Wedde, M.
- 1997 The Intellectual Stowaway: On the Movement of Ideas Within Exchange Systems - a Minoan Case Study. Pp. 67-76 in *TEXNH: Craftsmen, Craftswomen and Craftsmanship in the Aegean Bronze Age*, eds. R. Laffinueur and P. P. Betancourt. Proceedings of the 6th International conference/ 6^e Rencontre égéenne internationale, Philadelphia, Temple University, 18-21 April 1996. Aegaeum,

Annales d'archaéologie égéenne de l'Université de Liège et UT-PASP, no. 16. Liège: Université de Liège.

Weinberg, S. S.

1973 Tel Anafa. *Israel Exploration Journal* 23: 113-17.

Weingarten, J.

1990 The Sealing Structure of Karahöyük and Some Administrative Links with Phaistos on Crete (with an Appendix on the Sealings from Uronarti Fort). *Oriens Antiquus* 29: 63-95.

1991 *The Transformation of Egyptian Taweret Into the Minoan Genius: A Study in Cultural Transmission in the Middle Bronze Age*. Studies in Mediterranean Archaeology, vol. 88. Göthberg: Paul Åströms Förlag.

1997 Another Look at Lerna: An EH IIB Trading Post? *Oxford Journal of Archaeology* 16(2): 147-66.

Weinstein, J. M.

1974 A Statuette of the Princess Sobeknefru at Tell Gezer. *Bulletin of the American Schools of Oriental Research* 213: 49-57.

1975 Egyptian Relations with Palestine in the Middle Kingdom. *Bulletin of the American Schools of Oriental Research* 217: 1-16.

1982 The Origin and Distribution of Tell el Yahudiyeh Ware by Maureen F. Kaplan (Review). *American Journal of Archaeology* 86: 450-52.

1984 Radiocarbon Dating in the Southern Levant. *Radiocarbon* 26(3): 297-366.

1992 The Chronology of Palestine in the Early Second Millennium B.C.E. *Bulletin of the American Schools of Oriental Research* 288: 27-46.

1996 A Wolf in Sheep's Clothing: How the High Chronology Became the Middle Chronology. *Bulletin of the American Schools of Oriental Research* 304: 55-63.

Weinstein, V., and Helving, S.

1988 Animal Bones: 1986-7 Seasons. Pp. 62-66 in *Excavations at Kabri* (Hebrew with English summaries), ed. A. Kempinski. Tel Aviv: Tel Kabri Expedition; Tel Aviv University.

Weissbrod, T.

1987 The Mineral Resources of Sinai. Pp. 287-96 (Hebrew) in *Sinai*, eds. G. Gvirtzman, A. Shmueli, Y. Gradus, I. Beit-Arieh and M. Har-El. Eretz geographic research and publications. Tel Aviv: Ministry of Defence.

Wenke, R. J.

1989 Egypt: Origins of Complex Societies. *Annual Review of Anthropology* 18: 129-55.

1991 The Evolution of Early Egypt Civilization: Issues and Evidence. *Journal of World Prehistory* 5(3): 279-329.

Wente, E. F., Jr.

- 1973 The Report of Wenamon. Pp. 142-55 in *The Literature of Ancient Egypt: An Anthology of Stories, Instructions, and Poetry*, ed. W. K. Simpson. New ed. New Haven: Yale University Press.
- Western, A., and McLeod, W.
- 1995 Woods Used in Egyptian Bows and Arrows. *Journal of Egyptian Archaeology* 81: 77-94.
- Whalen, N., and Schatte, K.
- 1997 Pleistocene Sites in Southern Yemen. *Arabian Archaeology and Epigraphy* 8. 1-10.
- White, D.
- 1986 1985 Excavations on Bate's Island, Marsa Matruh. *Journal of the American Research Center in Egypt* 23: 51-84.
- White, D., and White, A. P.
- 1996 Coastal Sites of Northeast Africa: The Case Against Bronze Age Ports. *Journal of the American Research Center in Egypt* 33: 11-30.
- Wiener, M. H.
- 1987 Trade and Rule in Palatial Crete. Pp. 261-66 in *The Function of the Minoan Palaces, Proceedings of the Fourth International Symposium at the Swedish Institute in Athens, 10-16 June, 1984*. 344 pp, R. Hägg and N. Marinatos. Skrifter Utgivna av Svenska institutet i Athen, 4^o, 35. Stockholm.
- Willcox, G.
- 1992 Timber and Trees: Ancient Exploitation in the Middle East: Evidence from Plant Remains. *Bulletin on Sumerian Agriculture* 6: 1-31.
- Williams, B.
- 1977 Aspects of Sealing and Glyptic in Egypt Before the New Kingdom. Pp. 135-40 in *Seals and Sealings in the Ancient Near East*, eds M. Gibson and R. D. Biggs. Bibliotheca Mesopotamica, vol. 6. Malibu: Undena.
- 1986 *Part 1: The A-Group Royal Cemetery at Qustul: Cemetery L*. In *Excavations Between Abu Simbel and the Sudan Frontier, Keith C. Seele, Director*. Oriental Institute Nubian Expedition, vol. 3. Chicago: The Oriental Institute.
- Williams-Thorpe, O.
- 1995 Obsidian in the Mediterranean and the Near East: A Provenancing Success Story (Review article). *Archaeometry* 37: 217-48.
- Williams-Thorpe, O., and Thorpe, R.
- 1993 Geochemistry and Trade of Eastern Mediterranean Millstones from the Neolithic to Roman Periods. *Journal of Archaeological Science* 20: 263-320.
- Wilson, D.
- 1994 Knossos Before the Palaces: An Overview of the Early Bronze Age (EM I-EM III). Pp. 23-55 in *Knossos: A Labyrinth of History* (Papers presented in honour of

- Sinclair Hood), eds. D. Evelyn, H. Hughes-Brock and N. Momigliano. Oxford: The British School of Athens.
- Wilson, J. A.
- 1950a Egyptian Historical Texts. Pp. 227-64 in *Ancient Near Eastern Texts Relating to the Old Testament*, ed. J. B. Pritchard. Princeton: Princeton University Press.
- 1950b Egyptian Myths, Tales, and Mortuary Texts. Pp. 3-36 in *Ancient Near Eastern Texts Relating to the Old Testament*, ed. J. B. Pritchard. Princeton: Princeton University Press.
- 1950c Egyptian Observations on Life and World Order. Pp. 431-34 in *Ancient Near Eastern Texts Relating to the Old Testament*, ed. J. B. Pritchard. Princeton: Princeton University Press.
- 1950d Egyptian Oracles and Prophecies. Pp. 441-49 in *Ancient Near Eastern Texts Relating to the Old Testament*, ed. J. B. Pritchard. Princeton: Princeton University Press.
- 1950e Egyptian Rituals and Incantations. Pp. 325-30 in *Ancient Near Eastern Texts Relating to the Old Testament*, ed. J. B. Pritchard. Princeton: Princeton University Press.
- Wolff, S.
- 1998 Tel Megadim (Tel Sahar). *Hadashot Arkheologiyot* 108: 31-33.
- Worschech, U.
- 1997 Egypt and Moab. *Biblical Archaeologist* 60(4): 229-36.
- Wotzka, H.-P.
- 1990 The Abuse of User: A Note on the Egyptian Statuette from Knossos. *Annual of the British School in Athens* 85: 449-53.
- Wreschner, E. E.
- 1977 Newe Yam - a Submerged Late-Neolithic Settlement Near Mount Carmel. Pp. 260^{*} - 271^{*} in *Eretz Israel 13 (Stekelis Memorial Volume)*.
- Wright, G. E.
- 1965 *Shechem: The Biography of a Biblical City*. London: Gerald Duckworth & Co.
- Wright, M.
- 1985 Contacts Between Egypt and Syro-Palestine During the Protodynastic Period. *Biblical Archaeologist* 48(4): 240-53.
- 1988 Contacts Between Egypt and Syro-Palestine During the Old Kingdom. *Biblical Archaeologist* 51(3): 143-61.
- Wunderlich, J.
- 1988 Investigations on the Development of the Western Nile Delta in Holocene Times. Pp. 251-57 in *The Archaeology of the Nile Delta: Problems and Priorities* (Proceedings of the seminar held in Cairo, 19-22 October 1986, on the occasion of the fifteenth anniversary of the Netherlands Institute of Archaeology and Arabic

Studies in Cairo), ed. E. C. Van Den Brink. Amsterdam: Netherlands Foundation for Archaeological Research in Egypt.

Yadin, Y.

- 1955 Hyksos Fortifications and the Battering Ram. *Bulletin of the American Schools of Oriental Research* 137: 23-32.
- 1967 Hazor. Pp. 245-63 in *Archaeology and Old Testament Study*, ed. D. W. Thomas. Jubilee volume for the Society for Old Testament study, 1917-1967. Oxford: Clarendon Press.
- 1972 *Hazor, the Head of All Those Kingdoms (Joshua II:10)*. The Schweich lectures of the British Academy 1970. London: Oxford University Press.
- 1973 The Tell Beit Mirsim G-F Alleged Fortifications. *Bulletin of the American Schools of Oriental Research* 212: 23-25.
- 1978 The Nature of the Settlements During the Middle Bronze IIA Period in Israel and the Problem of the Aphek Fortifications. *Zeitschrift Des Deutschen Palästina-Vereins* 94: 1-23.
- 1993 Hazor. Pp. 594-604 in *The New Encyclopedia of Archaeological Excavations in the Holy Land*, eds E. Stern, A. Lewinson-Gilboa and J. Aviram. Jerusalem: Israel Exploration Society.

Yadin, Y., Aharoni, Y., Amiran, R., Dothan, T., Dothan, M., Dunayevsky, I., and Perrot, J.

- 1961 *Hazor III-IV: An Account of the Third and Fourth Seasons of Excavations, 1957-1958 (Plates)*. Jerusalem: Magnes Press. 365 pls.

Yadin, Y., Aharoni, Y., Amiran, R., Dothan, T., Dunayevsky, I., and Perrot, J.

- 1958 *Hazor I: An Account of the First Season of Excavations, 1955*. Jerusalem: Magnes Press.
- 1960 *Hazor II: An Account of the Second Season of Excavations, 1956*. Jerusalem: Magness Press.

Yanai, E., and Horowitz, T.

- 1996 'En Esor. *Hadashot Arkheologiyot* 106: 70-71 (Hebrew).

Yeivin, Z.

- 1966 Ancient Tombs at HaGoshrim. *Yediot (Bulletin of the Israel Exploration Society)* 30(1-2): 98-109.

Yeivin, Z.

- 1962 Tombs at Kibbutz HaGoshrim. *Hadashot Arkheologiyot* 2: 7-8.

Yellin, J.

- 1984 Provenance of Selected LBA and MBA Pottery from Tel Mevorakh by Instrumental Neutron Activation Analysis. Pp. 87-100 in *Excavations at Tel Mevorakh (1973-1976), Part Two: The Bronze Age*, ed. E. Stern. Qedem, vol. 18. Jerusalem: The Institute of Archaeology. The Hebrew University.

Yellin, J., and Perlman, I.

- 1984 Provenance of Three Obsidian Finds from Tel Mevorakh. Pp. 101-05 in *Excavations at Tel Mevorakh (1973-1976), Part Two: The Bronze Age*, ed. E. Stern. Qedem, vol. 18. Jerusalem: The Institute of Archaeology. The Hebrew University.
- Yellin, J., Levy, T. E., and Rowan, Y. M.
- 1996 New Evidence on Prehistoric Trade Routes: The Obsidian Evidence from Gilat, Israel. *Journal of Field Archaeology* 23: 361-68.
- Yener, K., Sayre, E., Joel, E., Özbal, H., Barnes, I., and Brill, R.
- 1991 Stable Lead Isotope Studies of Central Taurus Ore Sources and Related Artifacts from Eastern Mediterranean Chalcolithic and Bronze Age Sites. *Journal of Archaeological Science* 18: 541-77.
- Yogev, O.
- 1977 Sasa. *Hadashot Arkheologiyot* 63-64: 12 (Hebrew).
- 1981 Sasa. *Hadashot Arkheologiyot* 76: 9 (Hebrew).
- 1985 A Middle Bronze Age Cemetery South of Tel Rehov. *Atiqot* 17: 90-113.
- 1993 Nahariya, Excavations on the Mound. Pp. 1088-90 in *The New Encyclopedia of Archaeological Excavations in the Holy Land*, eds E. Stern, A. Lewinson-Gilboa and J. Aviram. Jerusalem: Israel Exploration Society.
- Yon, M.
- 1992 The End of the Kingdom of Ugarit. Pp. 111-22 in *The Crisis Years: The 12th Century B.C. - from Beyond the Danube to the Tigris*, eds W. A. Ward and M. S. Joukowsky. Dubuque: Kendall/Hunt publishing company.
- Young, W. J.
- 1972 The Fabulous Gold of the Pactolus Valley. *Bulletin of the Museum of Fine Arts, Boston* 70(359): 5-13.
- Younger, J., G.
- 1989 Bronze Age Aegean Seals in Their Middle Period (Ca. 1725-1550 B.C.). Pp. 53-64 in *Transition: Le Monde Egeen Du Bronze Moyen Au Bronze Recent* (Actes de la deuxième Rencontre égéenne internationale de l'Université de Liège (18-2- Avril 1988)), ed. R. Laffineur. Aegaeum, Annales d'archaéologie égéenne de l'Université de Liège, no. 3. Liège: Université de Liège.
- Yule, P.
- 1987 Early and Middle Minoan Foreign Relations: The Evidence from Seals. *Studi Micenei Ed Egeo-Anatolici* 26: 161-77.
- Zackheim, O.
- 1997 *Provenance of Ochre from the Natufian Assemblages [Sic] of el-Wad, Eynan and Hayonim* (Unpublished master's thesis). University of Haifa. 124 pp (Hebrew; English abstract).
- Zarins, J.

- 1989 Ancient Egypt and the Red Sea Trade: The Case for Obsidian in the Predynastic and Archaic Periods. Pp. 339-68 in *Essays in Ancient Civilization Presented to Helene J. Kantor*, eds. A. J. Leonard and B. B. Williams. Studies in Ancient Oriental Civilization, no. 47. Chicago: The Oriental Institute of the University of Chicago.
- Zarzecki-Peleg, A.
- 1993 Decorated Bones of the Third Millennium B.C.E. from Palestine and Syria: Stylistic Emphasis. *Israel Exploration Journal* 43(1): 1-22.
- Zemer, A.
- 1977 *Storage Jars in Ancient Sea Trade*. Haifa: The National Maritime Museum.
- Zertal, A.
- 1992 *The Manasseh Hill Survey: The Shechem Syncline*. Haifa: Ministry of Defence; University of Haifa. 582 pp (Hebrew).
- 1993 The Mount Manasseh (Northern Samarian Hills) Survey. Pp. 1311-12 in *The New Encyclopedia of Archaeological Excavations in the Holy Land*, eds E. Stern, A. Lewinson-Gilboa and J. Aviram. Jerusalem: Israel Exploration Society.
- 1996 *The Manasseh Hill Country Survey II: The Eastern Valleys and the Fringes of the Desert*. Haifa: Ministry of Defence; University of Haifa. 808 pp (Hebrew).
- Zevulun, U.
- 1986-87a The Beginning of the Head-Shaped Goblets in Canaan. *Israel - People and Land* 4(22): 111-32.
- 1986-87b Notes on the Middle Bronze IIA Finds from Tel Qasile. *Israel - People and Land* 4(22): 34.
- 1990 Tell el-Yahudiyah Juglets from a Potter's Refuse Pit at Afula. Pp. 174-90 (Hebrew; p. 107* English summary) in *Eretz Israel 21 (Amiran Volume)*. Jerusalem.
- Ziffer, I.
- 1990 *At That Time the Canaanites Were in the Land: Daily Life in the Middle Bronze Age 2 2000-1550 B.C.E.* Tel Aviv: Eretz Israel Museum. 88 pp (english); 132 pp (hebrew).
- [Zigelman, A.]
- 1977 Tell Abu Shusha. *Hadashot Arkheologiyot* 61-62: 60-61.
- Zohar, I.
- 1994 *Exploitation of Marine Resources by the Neolithic Inhabitants of Atlit Yam, Israel: A Multivariate Analysis Based on Gray Triggerfish (Balistes Carolinensis) Remains* (Unpublished Master's thesis submitted to the University of Haifa). Hebrew with English abstract.
- Zohar, I., Dayan, T., Spanier, E., Galili, E., and Lernau, O.
- 1994 Exploitation of Grey Triggerfish (*Balistes Carolinensis*) by the Prehistoric Inhabitants of Atlit-Yam, Israel: A Preliminary Report. Pp. 231-37 in *Fish*

Exploitation in the Past: Proceedings of the 7th Meeting of the ICAZ Fish Remains Working Group, ed. W. Van Neer. Annales du Musée Royal de l'Afrique Centrale, Sciences Zoologiques, no. 274. Tervuren.

Zohar, M.

1992 Megalithic Cemeteries in the Levant. Pp. 43-63 in *Pastoralism in the Levant: Archaeological Materials in Anthropological Perspectives*, eds. O. Bar-Yosef and A. Khazanov. Monographs in World Archaeology, no. 10. Madison, Wisconsin: Prehistory Press.

Zori, N.

1962 An Archaeological Survey of the Beth Shean Valley. Pp. 135-98 in *The Beth Shean Valley: The 17th Archaeological Convention*. Jerusalem: Israel Exploration Society.

1977 *The Land of Issachar: Archaeological Survey*. Jerusalem: Israel Exploration Society.