

## **A Behavioral Approach to Society and Culture: A Search for New Classifications in South Levantine Bronze Age Archaeology**

### **Introduction**

The concepts of culture and society have historically received ambiguous definitions and have been loosely applied in the science of archaeology. Society, ethnicity, culture, and archaeological culture are variously used in treatments of archaeological materials when referring to the peoples who produced and used them. The difficulty in separating these concepts, which overlap in modern life as they probably did in ancient life (Jones 1997), causes particular trepidation on the part of archaeologists in making assumptions relating to cognitive phenomena such as 'culture' and 'ethnicity' (See Hodder 1982). In this instance cognitive phenomena relate to the decisions people in ancient societies made leading to the apprehension, maintenance and use of their material culture. Unfortunately the relative silence on cognitive phenomena may lead to inappropriate groupings of sites, which properly belong to discrete cultures or societies.

Archaeological sites are grouped into cultural horizons on the basis of two important criteria: 1) typological attributes, and 2) chronological attributes. Broad classifications of material culture attributes, including animal and plant remains are usually lacking. It is therefore common to encounter sites of the same period grouped into one material culture representing an ancient society, even if the material culture attributes between the relevant sites differ in most respects other than their ceramic typologies (Klejn 1982). The use of ceramic typologies to group sites is particularly prevalent in the archaeology of the Levant (See Albright 1932; Cole 1984; Kenyon 1960). The maintenance of this tradition has meant that sites belonging to different societies, cultures, or ethnicities, which share typological attributes, are seen as belonging to the same society or culture. Groupings described by chronological periods such as the Middle Bronze Age of the Levant, are sometimes clarified by terms like archaeological culture, which is defined by the contemporaneity of its typological attributes. This limits the behavioral or cognitive aspect implied by the term culture, society, or eth-

nicity, whilst emphasizing the purely material component in societies and cultures. The use of the term material culture is essentially correct, but it restricts our discussions and understanding as archaeologists of behavioral and cognitive phenomena. Moreover, it encourages the grouping of sites on the basis of typological attributes alone, and discourages closer analyses involving assemblage composition and spatial patterning.

The study of assemblage composition relating to suites of data, and the use of space, offer important clues relating to behavior, and hence the cognitive processes of people, using the material. Investigation of these features in concrete sets of data provides a critical tool for understanding social variability and cultural change through time and space. Moreover it helps to link material culture to groups of people through observed phenomena relating to behavior.

The traditional emphasis on typology and chronology in the study of the Bronze Age south Levantine culture and society means that established groupings of material culture are particularly amenable to revision. The Early Bronze - Middle Bronze Age interface in the southern Levant has been a poorly understood transition until recently because it involved assumptions of cultural change, based primarily on typological data and shifts in settlement patterns. The apparently sudden abandonment of south Jordan at the conclusion of the Early Bronze Age in the late third millennium BCE is particularly puzzling. The use of investigative tools, which emphasize behavioral and cognitive aspects of culture and society, are expected to clarify both the transition of the Early to Middle Bronze Age, as well as the multiple groups, societies, and cultures comprising these two chronological periods. The transition and cultural setting in marginal areas of the southern Levant are given particular attention and provides a model for this study. Although a close analysis of individual, behavioral traits as they occur at each site is beyond the scope of this paper, useful generalizations may be advanced.

**The Bronze Age in the Southern Levant**

*The Early Bronze Age:* The Bronze Age in the southern Levant is characterized by the first serious attempts at urbanization witnessed in the region (Falconer 1994; Joffe 1993). These attempts occurred contemporaneously but on a significantly smaller scale to those experienced in Egypt and Mesopotamia (Falconer 1987b; Falconer and Savage 1995). The preceding Chalcolithic and Neolithic periods witnessed the experiments and ultimate consolidations of agricultural strategy and exploitation of secondary products (Bar-Yosef and Khazanov 1992), taking some 4500 years (TABLE 1).

The Early Bronze Age, comprising a series of phases termed EB Ia/b, EB II, EB III and EB IV, represents a profound social transformation ultimately leading to greater complexity. The social changes are characterized by varying economic strategies and settlement behavior. The period begins with small unfortified villages in the EB I, progressing to larger, fortified and densely populated centers in EB II and EB III (Philip 2001), and ending in small rural villages and campsites, practicing agriculture or pastoralism, or a mixture of both in EB IV (Dever 1998; Palumbo 2001).

Settlement of the southern Levant during the Early Bronze Age extends to all environmental zones, particularly during EB II and EB III (Beit-Arieh 1983; Gophna 1998). These patterns are significantly altered during

EB IV when all large sedentary towns and some smaller villages are abandoned (Finkelstein 1995; Palumbo 2001). Economic strategy becomes increasingly focused on pastoralism, seasonal sites are common, and a newly associated material culture emerges. The latter was for many years thought to have been exogenously derived (see below). A small number of sedentary, agricultural villages are newly founded and occupied in EB IV, these being primarily restricted to Transjordan (Dever 1998). The EB IV sedentary villages are best exemplified by Tall Abū an-Ni‘āj (Falconer and Magness-Gardiner 1989), Tall Iktānū (Prag 1989) and Bāb adh-Dhrā‘ (Schaub and Rast 1984), all located in the east Jordan Valley. The fortified site of Khirbat Iskandar (Richard 1987), whose foundations predate EB IV, arguably remains as the only potentially urban settlement in the southern Levant during this period (c.f. Dever 1998). By contrast the area west of the Jordan River is dominated by small, non-sedentary sites and isolated cemeteries, with particularly concentrated settlement in the arid Negev Desert (Cohen 2000; Dever 1980; Palumbo 2001). The Negev region does not witness comparable levels of human activity until the Byzantine period. A small agricultural village in the Refaim Valley south-west of Jerusalem is the only excavated EB IV sedentary settlement west of the Jordan River (Edelstein *et al.* 1998). The Negev settlements exemplify a pronounced shift in both settlement and subsistence strategy, which marks a departure from the urban EB II/III period, particularly west of the Jordan River. The break with the preceding EB III period is emphasized by a lesser proportion of sites showing continuity between EB III and EB IV compared to greater continuity between EB IV and MB II (Ilan 1998).

The Early Bronze Age is increasingly being seen as an urban experiment in a largely rural landscape (Falconer 1987a). Flux in urban or rural life along with both sedentary and seasonal activity depends on the social negotiation of the environment and the prevailing political climate (Dever 1992; 1998; Finkelstein 1989; Joffe 1993; Palumbo 2001; Philip 2001).

*The Middle Bronze Age:* The Middle Bronze Age (Albright’s MB IIA, MB IIB and MB IIC) of the southern Levant is a period spanning approximately five hundred years from 2000 BCE to 1500 BCE (Dever 1987; Gerstenblith 1983). Importantly, at least one modern scholar has remarked that the Middle Bronze Age is not a culture but a period of time (Ilan 1998). The period is characterized by a return to larger, fortified town life abandoned at the conclusion of the Early Bronze III period (Falconer 2001; Mazar 1990). The Middle Bronze Age is often described as an urban phase, the comparatively high density of population in the Palestinian region not witnessed again until substantially later, during Roman times (Bro-

**TABLE 1.** Chronological Periods of the southern Levant.

Middle Bronze IIC	1650-1500 BCE
Middle Bronze IIB	1800-1650 BCE
Middle Bronze IIA	2000-1800 BCE
Early Bronze IV	2300-2000 BCE
Early Bronze II/III	2800-2300 BCE
Early Bronze I	3500-2800 BCE
Chalcolithic	4500-3500 BCE
Neolithic	9000-4500 BCE

shi and Gophna 1986). This is also a period of extensive urbanism and trade in the rest of the eastern Mediterranean. By the end of the Middle Bronze IIC practically all towns and cities were heavily fortified (Mazar 1990). The names of a number of important south Levantine towns appear in the archives of foreign powers. The Ebla and Mari archives make special reference to Hazor, whilst the Egyptian Execration Texts list several comparatively large south Levantine towns destroyed in the late MB II. In the Late Bronze Age references are made to the same towns in the Amarna archives (Dever 1987, 1976; Falconer 2001; Gerstenblith 1983; Ilan 1998).

The archival references, coupled with artifactual evidence linking the southern Levant with Syria and Egypt in particular, suggest that towns like Hazor, Shechem, Megiddo, and Aphek (FIG. 1) all participated in a trading network that spanned the Tigris-Euphrates nexus, Southern Anatolia, the Lebanon, Egypt, and finally the Levant itself. These urban centers enjoyed a fair amount of prosperity, judging by the high concentration of luxury items and imports. Indeed Cypriot vessels in high quantities find their way into many Middle Bronze assemblages by the end of this period (Dever 1987; Gerstenblith 1983).

The material culture of the Middle Bronze Age is principally distinguished from the preceding Early Bronze Age by its pottery, architecture, and metal objects. Middle Bronze Age pottery is typically striking for its morphological and stylistic break with the Early Bronze period. Early Bronze Age pottery is cruder, characterized by a preference for ledge handles and by its incised decoration. Morphologically the vessels tend towards a squat shape, particularly in EB IV. The vast majority of Early Bronze Age pottery is either turned on a slow wheel or is hand built (Dever 1998; Richard 1987). By contrast Middle Bronze Age pottery follows a gradual development allowing for generally narrower shapes with greater elaboration of both base and rim forms (Cole 1984). In addition the Middle Bronze II repertoire is commonly represented by at least some vessels bearing painted motifs, a feature thought to have originated in Syria (Beck 2000; Gerstenblith 1983). The introduction of the fast-wheel had immediate effects on the character of the pottery. The potter was afforded greater flexibility in forming and designing. Additionally, increased speed and accuracy in production led to augmented output and standardization (Ilan 1998; Dever 1987; Gerstenblith 1983).

Further developments in the material culture of the Middle Bronze Age are marked by the emergence of extensive fortifications, which are characterized by sloping earthen ramparts in MB IIA. In MB IIB/C these fortifications are improved with the addition of lime coated glacis and impressive multiple-chambered gateways (Kempinski 1992). New metal objects such as duckbill axes, daggers

and swords with elaborated hafts make their way into the repertoire during this period. The emergence of the Proto-Canaanite script is witnessed, whilst official correspondences were conducted in Akkadian (Dever 1987; Gerstenblith 1983; Ilan 1998; Mazar 1990).

The differences between the material cultures of the Early and Middle Bronze Ages, led many early archaeologists to the conclusion that the new Early Bronze IV and subsequent Middle Bronze Age materials were brought in by successive migratory waves of invading Amorites from the north, who overran the local inhabitants and established new cultures during both EB IV and MB IIA (Albright 1949, 1932; Kenyon 1960; Tufnell 1958). This impression was particularly galvanized by the extensive abandonment of EB III towns, the subsequent ruralization of the landscape during EB IV, and a resettlement of permanent agricultural villages in well-watered lowlands during the MB IIA (Broshi and Gophna 1986; Gophna and Portugali 1988; Palumbo 2001).

Admittedly the stylistic and morphological similarities of much of the material culture excavated from Canaan and Syria are great (Dever 1987; Gerstenblith 1983; Ilan 1998; Kenyon 1970; Mazar 1990), and it took many years before scholars turned away from the persistent migration-invasion model (Dever 1980; Prag 1974). Migration as a sole explanatory agent responsible for the change in the material culture of the southern Levant has substantially diminished in stature and appeal because of its inferiority to socio-economic explanatory models (Palumbo 2001). Typological evidence supporting a local genesis and continuity in some classes of vessel, together with the persistent occupation and reuse of both sites and tombs during both EB IV and MB II shows that substantial continuity in local population existed (Finkelstein 1991; Ilan 1998). Whilst strong ceramic and possibly cultural connections existed between Canaan and Syria, these connections cannot be associated invasion or migration on a grand scale. In other words, it is now assumed that the transmission of both material culture and social organization must be a complex result of both external and internal forces (Dever 1987; Gerstenblith 1983; Ilan 1998; Tubb 1983). The explanation for social and cultural change is sought in social forces adapting to a changing environmental and political landscape.

#### **Settlement in the Southern Levant During the Middle Bronze Age; The Marginal Zones**

The great majority of settlement in the southern Levant during the Middle Bronze Age is concentrated in the northern reaches of the Coastal Plain and Jordan Valley (Broshi and Gophna 1986). Marginal areas such as the Negev Desert and the Dead Sea Plain in the south were largely abandoned at the conclusion of the preceding EB IV period. However, understanding the abandonment of



1. The Southern Levant during the Middle Bronze Age.

the marginal zones at the end of the third millennium BCE has proved difficult, primarily as a result of limited work in these areas until recently. This applies in particular to south Jordan.

Exploration in south Jordan began with the pioneering work of W.F. Albright (1924). Subsequently, serious reconnaissance was undertaken by Nelson Glueck (1935, 1939). More recently, surveys of southern Jordan, including the Kerak Plateau and the Dead Sea Basin down to the Gulf of 'Aqaba (FIG. 1) were conducted by a host of other scholars (Ibrahim *et al.* 1976; Kaliff and Holmgren 1995; 'Amr *et al.* 1996; Macdonald 1992; Miller 1979; Rast and Schaub 1974; Worschech 1985). Together, these surveys were conducted over the course of more than seventy years. The emerging settlement pattern gleaned from this work points to substantial human activity in the region prior to the MB II, and after the Roman period (Falconer 2001; Glueck 1970; Miller 1991).

Middle Bronze Age remains are reported from a number of sites on the Karak Plateau (Brown 1991; Miller 1979; 1991; Worschech and Ninow 1999). It is unclear whether these remains are unequivocally MB II (Berelov 2001b), but it seems certain that they represent a minimal presence during this period. In the Dead Sea Basin the settlement pattern shows substantial occupation during the Early Bronze I, II, III and IV (Rast and Schaub 1974). This was subsequently confirmed by the excavations of the site and cemetery of Bāb adh-Dhrā' and the sites of Khanazir and Numayra (Rast and Schaub 1978, 1989; Schaub and Rast 1984). The Wādī 'Arabah survey team (MacDonald 1992) reported a possible 20 locations with MB II material, but again this was uncertain and constituted a minimal presence. Middle Bronze Age remains east of the Jordan River are concentrated in the north Jordan Valley and Jordanian Plateau. This settlement pattern is attributed to economic integration in the larger Middle Bronze Age economy focused on the Mediterranean coast and Syria (Falconer 2001).

In the late 1980s work began on the Byzantine monastery of St. Lot at Dayr 'Ayn'Abāṭa. The site is situated on the eastern slopes of the Jordanian Rift above the modern town of Ghawr aṣ-Ṣāfi, which lies in the southern Dead Sea Plain. The excavators uncovered Early Bronze Age cave burials and an extensive arrangement of cairn tombs dating to the MB II (Politis 1990). At approximately the same time, in 1989, Australian hydrogeologist Philip Macumber discovered Zahrāt adh-Dhrā' 1, a twelve hectare site 1.5 kilometers to the north-east of Bāb adh-Dhrā'. A subsequent survey by a La Trobe University team established the date of the site as MB II (Edwards *et al.* 1998). The discovery of the two Middle Bronze Age sites altered the established settlement pattern for this period. In addition these sites provided an opportunity to study the reasons for changes to the settlement pattern

and the specifics of the new settlement in the region.

### Research Focus

Profound changes to the material culture and settlement patterns in the southern Levant at the beginning of the second millennium BCE raise questions relating directly to society and culture. The role of new cultures influencing the design, maintenance, and use of material culture during the Middle Bronze Age is generally inferred from three variables: a) the presence of chronologically and hence typologically significant attributes; b) the comparative lack of these attributes in earlier assemblages, and c) the foreign origin of these attributes. Most importantly the emergence of a new material culture at the beginning of the Middle Bronze Age is interpreted as a monolithic and homogenous culture applicable to the entire southern Levant. The study of sites from the late third and early second millenniums BCE in different environmental contexts forms the background to two major research questions:

- . Do the Early Bronze IV and Middle Bronze II periods represent homogeneous cultures and societies respectively from a behavioral and cognitive perspective?
- . Is there continuity between the Early Bronze IV and the Middle Bronze II periods, as inferred from behavioral and cognitive indicators?

Two Middle Bronze Age sites and two Early Bronze IV sites, covering three settlement zones, are chosen for this study. A number of key indicators relating to assemblage composition from a suite of data, and the use of space, are used to infer behavioral patterns at the four sites. A comparison of patterns follows, leading to concrete statements relevant to the similarities and differences in behavior across time and space.

Strong similarities in behavior between the two Middle Bronze Age sites leads to the meaningful assumption that the two sites belong to the same society or culture, refuting the null hypothesis that contemporary sites lack behavioral similarities. Likewise, strong similarities between the two Early Bronze IV sites also indicate shared social or cultural traits. On the other hand, a lack of behavioral similarities between contemporary sites leads to the assumption that typological similarities mask fundamental behavioral differences between sites, pointing to the absence of a homogeneous society or culture during these periods. The latter contention would support the null hypothesis. An important assumption is that behavioral and cognitive differences may reflect social and cultural differences.

### Methodology

Following the basic methodological principles outlined by M.B. Schiffer (1987) it is assumed that careful study of activity loci in conjunction with formation processes

yields reasonably accurate information on behavior. Distinction is made between de facto, primary, and secondary refuse where possible. These are defined as follows:

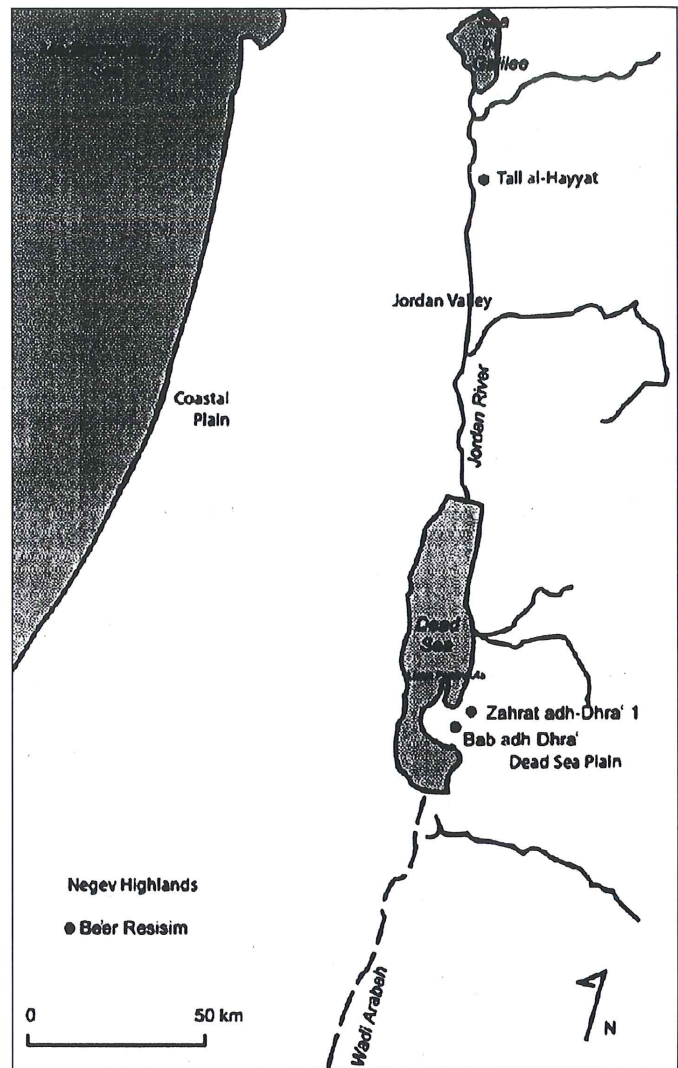
- \_ De Facto Refuse: Usable items left behind at time of abandonment.
- \_ Primary Refuse: Non-usable items left in their original locus of consumption.
- \_ Secondary Refuse: Non-usable material deposited away from original locus of consumption.

These distinctions are emphasized due to a need to distinguish between activity areas on the one hand, and middens on the other. Most importantly, behavior as interpreted from the archaeological record is seen as the material remains of repeated and conflated events, and not a synchronic or 'systemic inventory' (Schiffer 1976). Restorable cookpots on floors are not interpreted as being contemporary with the rest of the floor assemblage in representing synchronic individual episodes. Nevertheless, it is assumed that repeated behavior or activities such as cooking in a designated area represents a sustained practice.

Several key indicators were selected for study. These include architecture, ceramics, animal remains, botanical remains and environmental conditions. The size of settlement and population size is communicated by architectural plan. The use of space is inferred from a combination of the other features.

## Results

*The Sites and their Environments:* The four sites selected for the study consist of Zahrat adh-Dhrā' 1 and Tall al-Ḥayyāt from the Middle Bronze II period, and Be'er Resisim and Bāb adh-Dhrā' from the Early Bronze IV period. These sites represent three environmental zones (FIG. 2). Zahrat adh-Dhrā' 1 and Bāb adh-Dhrā' are located within 1.5 kilometers of one another in the Dead Sea Plain of Jordan (Edwards *et al* 2001; Rast and Schaub 1974). Environmental conditions associated with these sites are roughly comparable. Summers are extremely hot and dry, and winters are mild to warm with occasional rain. The area receives between 50-100mm of annual rainfall and thin soils overlie infertile substrates composed of gravels and the Dana Conglomerate. Both sites lie beside the Wādī adh-Dhrā', which conducted a stream from a perennial spring, the 'Ayn Dhrā', in ancient times (Edwards *et al* 2001). It has been suggested that moisture in the region declined steadily through the Early Bronze Age, making dry-farming increasingly precarious (Donahue 1985; Frumkin *et al.* 1994). Human exploitation of natural resources such as wood during the urban Early Bronze Age compounded subsistence difficulties (Fall *et al.* 1998). From this perspective farming may have been more difficult at Zahrat adh-Dhrā' 1 during MB II than at Bāb adh-Dhrā' during EB IV. Soft limestones, wadi clays,



2. Location of Zahrat adh-Dhrā', Tall al-Ḥayyāt, Bāb adh-Dhrā' and Be'er Resisim.

and limited wood materials were available (Baruch 1990).

Be'er Resisim lies within the semi-arid Negev desert. However, its elevated position in the Negev Highlands increases annual precipitation, making dry-farming possible. Alternative water supply comes in the form of a well, exploited from ancient times, the "Be'er Resisim". Climate is postulated to have been slightly wetter but comparable to current conditions. Summers are hot and dry, and winters are warm to mild with occasional rain and frost. Surrounding wadi banks and floors could be farmed for seasonal crops. Limestone, wadi clay, and limited wood were available (Cohen and Dever 1981).

Tall al-Ḥayyāt is located in the north Jordan Valley at 236 meters below sea level, on a terrace containing fertile alluvial soil, washed in by wadis to the east. The site is situated above the flood plain of the Jordan River. Tall al-Ḥayyāt receives 300mm of annual rainfall and does not suffer from the extreme temperatures of the Dead Sea

plain or the Negev highlands. Winters are rainy and mild and summers are hot and humid, making dry-farming extremely viable (Falconer 1995). Rich clays, pasturage and wood were available nearby (Fall *et al.* 1998).

*Behavioral and Cognitive Patterns:* The comparison of a number of features relating to behavior and the use of space at the four sites, showed considerable variation. TABLE 2 (below) summarizes a range of features including architectural style, size and use, and variables linked to daily life. These include the locus of trash disposal, relative proportion of vessel classes, diet and economy.

**Zahrat adh-Dhrā' 1:** Zahrat adh-Dhrā' 1 is characterized by unagglomerated but clustered, rectilinear architecture. There are no fortifications. The ceramic assemblage is predominantly MB IIA, with the possible presence of MB IIB. A maximum length of occupation is estimated at 275 years, with a population ranging from 50-75 inhabitants. Household ceramic repertoire is characterized by frequently restorable coarse ware, flat bottomed cookpots and smaller concentrations of jars. Serving vessels are not well represented and there is a total absence of painted vessels and handles, features commonly associated with Middle Bronze II assemblages.

Animal remains are restricted to domesticated sheep and goat, with one example of domesticated pig. Plant remains are dominated by annual crops, including legumes

and barley, although the presence of perennial fruit is attested by grape and fig. The great majority of all refuse occurs on the interior of structures. There is no evidence for cultic activity or trade (Edwards *et al.* 2001; 2002). However an extensive arrangement of cairn tombs at Dayr 'Ayn-'Abāta to the east of Ghawr aṣ-Ṣāfi (Politis 1995) may be linked to the site by its proximity and relatively contemporaneous typology (Berelev 2001b). The site most likely represents the occupation of both sedentary and seasonal peoples practicing both agriculture and herding.

**Tall al-Ḥayyāt:** Tall al-Ḥayyāt is characterized by its rectilinear mud brick architecture, congregating around a temple complex over five phases. There are no fortifications at the site. The ceramic assemblage spans the entire sequence of the Middle Bronze Age, including a foundational EB IV phase. Maximum length of occupation is estimated at 550 years with a maximum population of 150 inhabitants. Household ceramic repertoire is increasingly dominated by serving vessels in the later phases. Earlier phases are high in storage vessels. The assemblage is marked by the usual traits common to Middle Bronze II ceramics: predominantly wheel-made, presence of painted designs, and the use of looped handles. Animal remains are dominated by domesticated sheep and goat with high frequencies of pig in domestic areas. Plant remains show a heavy emphasis on perennial fruit crops, especially in later phases. The vast majority of refuse occurs in exterior

TABLE 2. Summary of features for Zahrat adh-Dhrā' 1, Tall al-Ḥayyāt, Bāb adh-Dhrā', and Be'er Resisim.

Site	Zahrat adh-Dhra' 1	Tall al-Hayyat	Bab adh-Dhra'	Be'er Resisim
Period	MB IIA-B	MB IIA-C	EB Ib-EB IV (EBIV Only)	EB IV
Size	12 ha	0.5 ha	5 ha	1 ha
Population	50-75	150	150	80
Production	Agriculture/Livestock/Cookpot - Local	Agriculture/Ceramics/Livestock - Local and Exchange	Agriculture/Ceramics?/Livestock - Local & Exchange	Livestock/Ceramics - Local
Buyer	Ceramics - Jars, small vessels	Ceramics - Fineware/Metal	Metal	Ceramics/Metal/Shell
Architecture	Rectilinear - Multiple Clusters	Rectilinear - Clustering with central focus	Rectilinear - Multiple Clusters	Curvilinear - Multiple Clusters
Public Buildings	Possible - Unexcavated	Temple	Sanctuary/Charnel House	None
Cult/Ritual	None	Temple	Charnel House/Tombs/Horned Altar	None
Roofed Living Quarters	Possible - putative roof slabs	Domestic Interior	Assumed	Sleeping Quarters
Enclosures	Walled/Unroofed	Walled/Unroofed	Partially Walled & Open	Open
Cooking	Interior/Courtyard - Fire pit	Interior/Enclosure - Tabun	Interior/Exterior	Courtyard
Discard	Interior/Courtyard	Interior/Courtyard/Exterior	Interior/Exterior	Exterior/Courtyard
Perennial Agriculture	Grape/Fig	Grape/Fig/Olive	Grape/Fig/Olive	None
Fauna	Sheep/Goat (1 Pig Bone)	Sheep/Goat/Pig/Cattle	Sheep/Goat	Sheep/Goat
Hunting	Limited Evidence	Limited Evidence	Present - Limited	Present
Sedentism	Limited to Early Occupation	Sedentary	Sedentary	Seasonal

contexts, including walled enclosures and alleys. Temple and domestic assemblages demonstrate distinct differences in their assemblages, which reflect both a centrally regulated economy and some social stratification. Trade is implied by the agricultural emphasis on tradable crops, including olives and grapes. A pottery kiln and the presence of vessels from Tall al-Ḥayyāt at nearby sites confirm this assumption (Falconer 1987b, 1995; Falconer and Magness-Gardiner 1984; Fall *et al.* 1998; Magness-Gardiner 1994). The site represents the remains of a sedentary farming community.

**Bāb adh-Dhrāʿ:** Bāb adh-Dhrāʿ EB IV is characterized by its rectilinear mud brick architecture. The EB IV settlement is situated to the east and south of the EB II/III walled town. However a sanctuary located within the walled town in Field XVI was reused during the EB IV period. Likewise, foundational remains from Field IX belong to an earlier phase of EB III. The maximum length of occupation is estimated at 250 years, with a maximum population of 150 inhabitants. Household ceramic repertoire is dominated by serving vessels and storage vessels, whilst the sanctuary repertoire consists predominantly of lamps. Animal remains are dominated by domesticated sheep and goat, with some evidence of hunting. Plant remains contain both annual and perennial crops. The majority of all refuse occurs in courtyards and exterior areas. Trade is confirmed by the presence of locally produced vessels at Numayra to the south, and at Be'er Resisim to the south-west. Cultic practice is affirmed by the presence of a sanctuary and a tomb complex to the south (Beynon *et al.* 1986; Finnegan 1978; Rast and Schaub 1978; Schaub and Rast 1984; Richardson and McCreery 1978). The EB IV settlement represents the remains of a sedentary farming community.

**Be'er Resisim:** its three clusters of curvilinear stone architecture characterize Be'er Resisim. A maximum length of occupation is estimated at 200 years, with a maximum population estimated at 80 inhabitants. Household ceramic repertoire consists of roughly equal proportions of cooking vessels and storage vessels, whilst serving vessels are underrepresented. Animal remains are heavily dominated by juvenile male goats. Plant remains occur predominantly as wild taxa. The great majority of all refuse occurs in open courtyards, centrally located between the clusters of houses. Evidence for limited trade comes in the form of Red Sea shell, Wādī Faynān copper, and ceramic vessels from Bāb adh-Dhrāʿ. There is no evidence for ritual activity at the site (Cohen and Dever 1981).

### Analysis

The Middle Bronze II sites of Tall al-Ḥayyāt and Ḥayrat adh-Dhrāʿ 1 demonstrate a number of key differences despite their contemporaneousness. Fundamental differences include economic scope and strategy, diet, evidence

of ritual activity, type of occupation, assemblage composition and variety, architectural plan and construction, the use of space, social structure, and environmental conditions. The differences pertaining to subsistence, material culture and social structure lead to two possible explanations: 1) The inhabitants of Tall al-Ḥayyāt and Ḥayrat adh-Dhrāʿ 1 shared some material traits in common but belonged to vastly different cultures or societies; or 2) Environmental conditions account for the differences between the two contemporary sites, culturally indistinct.

A comparison of the two EB IV sites further emphasises the lack of cultural or social integration between contemporary sites. Economic, social, cultural, ritual, architectural, dietary, and occupational differences characterize the lack of similarities between Be'er Resisim and Bāb adh-Dhrāʿ. Environmental conditions are not dramatically dissimilar, although Bāb adh-Dhrāʿ was farmed, using water from a perennial spring. The same two explanations may be advanced for the differences between these two EB IV sites: 1) The inhabitants of Be'er Resisim and Bāb adh-Dhrāʿ shared some material traits in common but belonged to vastly different cultures or societies; or 2) Environmental conditions account for the differences between the two contemporary sites.

In contrast to expectations, the greatest observed similarities exist between the MB II site of Tall al-Ḥayyāt and the EB IV site of Bāb adh-Dhrāʿ. A high proportion of perennial fruit crops including olives and grape, confirm that both sites were sedentary, farming communities (Falconer 1995; Schaub and Rast 1984). Ceramics were produced and traded at both sites (Falconer 1987; Beynon *et al.* 1986), and ritual activity is attested by the presence of a temple at Tall al-Ḥayyāt (Magness-Gardiner 1994) and a sanctuary at Bāb adh-Dhrāʿ (Rast and Schaub 1978). Mud-brick, rectilinear architecture, with occasional stone foundations was employed at both sites (Falconer 1995; Rast and Schaub 1978). A comparable population size of 150 inhabitants is estimated for Tall al-Ḥayyāt and Bāb adh-Dhrāʿ. The ceramic assemblages consist predominantly of serving vessels in domestic areas, with a substantial proportion of storage vessels and smaller concentrations of cooking vessels. Cooking areas and trash middens occurred predominantly in courtyard and exterior areas (Falconer 1995; R. T. Schaub, pers. comm.).

Differences between Tall al-Ḥayyāt and Bāb adh-Dhrāʿ include higher relative frequencies of hunted game at Bāb adh-Dhrāʿ (Finnegan 1978) and greater reliance on pig meat at Tall al-Ḥayyāt (Falconer 1995). Spatial distribution of architecture is focused around the temple at Tall al-Ḥayyāt (Magness-Gardiner 1994), whilst at least two concentrations of architecture characterize the plan of Bāb adh-Dhrāʿ (Rast and Schaub 1978). The latter site also contains examples of shared walls between houses, a feature not seen at Tall al-Ḥayyāt. These features show



that both sites subsisted on a mixture of economic strategies, and participated in a market system. Social complexity is attested by the existence of public and ritual structures, and the concentration or abundance of goods in discrete areas suggests social stratification. These similarities exist despite the environmental differences between the two sites, and the dramatically different social settings of MB II and EB IV.

Whilst a number of similarities exist between the sites of Be'er Resisim and Zahrat adh-Dhrā' 1, differences are equally important. Although both sites are characterized by concentrations or clusters of structures in a broader 'agglutinative' plan, architecture at Be'er Resisim is curvilinear (Dever 1985), whilst at Zahrat adh-Dhrā' 1 it is rectilinear (Edwards *et al.* 2001). No evidence of ritual activity has been observed at either site, but social stratification is implied by the quality and size of some architectural units. Pastoralism constitutes a part of the economy at both sites. However, there is no evidence for perennial crops at Be'er Resisim, and occupation was probably only seasonal (Cohen and Dever 1981). In contrast both perennial and annual crops existed at Zahrat adh-Dhrā' 1 (Edwards *et al.* 2001), and occupation was seasonal and probably sedentary at some point in the history of the site. Behavioral differences are expressed in the completely exterior orientation of activity areas at Be'er Resisim (Cohen and Dever 1981), whilst at Zahrat adh-Dhrā' 1, activities such as cooking and sleeping took place exclusively on the interior of structures (Edwards *et al.* 2002). Limited evidence suggests some trade activity for the inhabitants of Be'er Resisim (Cohen and Dever 1981); at Zahrat adh-Dhrā' 1 this evidence is lacking. Assemblage composition shows some similarities, especially in the high concentrations of cooking vessel and low concentrations of serving vessels (Berelov 2001a). However, the assemblage at Be'er Resisim did not contain any restorable items (Cohen and Dever 1981), whilst at Zahrat adh-Dhrā' 1 several cookpots and jars were restorable. The restorability or 'completeness' of an assemblage is often linked to the structure and scheduling of a site's abandonment (Lightfoot 1993). These differences exist despite reasonably comparable environmental conditions, which may have been ameliorated at Zahrat adh-Dhrā' 1 by the presence of a perennial spring. Likewise, trading possibilities may have existed at Be'er Resisim due to its location between the copper mines to the east, the Red Sea to the south, and the northern coastal plain in the north-west. The similarities, largely defined by the marginal economic conditions, occur against a backdrop of vastly different social environments of the EB IV and MB II.

If fundamental differences in economy, society, culture and occupation between sites are to be explained through differences in environmental conditions, then the

two sites with comparable environmental conditions must also be compared. Putting aside the obvious differences in some material classes of culture attributable to distinct periods of time, such as ceramic types from EB IV and MB II respectively, vital features from Bāb adh-Dhrā' and Zahrat adh-Dhrā' 1 may be compared. These two sites belong to successive periods but are located within 1.5 kilometers of one another. Differences between these two sites may be conceived in terms of degrees rather than discrete differences in traits. For instance, concentrations of both one-room and two-room rectilinear architecture may be found at both sites. However examples from Zahrat adh-Dhrā' 1 are constructed entirely from stone and contain sunken floor surfaces, whilst at Bāb adh-Dhrā' structures are constructed primarily of mud brick. Activities such as cooking and sleeping occur on the interior at both sites. However at Bāb adh-Dhrā' cooking also occurs on the exterior. Assemblage composition is vastly different at both sites and trash disposal occurs primarily on the interior at Zahrat adh-Dhrā' 1, which is not the standard at Bāb adh-Dhrā'. Perennial fruit crops were farmed at both sites by harnessing the perennial 'Ayn Dhra' spring. However, olives, a land-extensive crop (Lines 1995), were not farmed at Zahrat adh-Dhrā' 1. Likewise pottery was produced at both sites, but this was limited to the household production cooking vessels at Zahrat adh-Dhrā' 1. Pottery was not traded as it was in the case of Bāb adh-Dhrā'. Importantly, Bāb adh-Dhrā' represents a sedentary population, whilst Zahrat adh-Dhrā' 1 functioned both seasonally and as a year-round settlement. Nevertheless, the presence of a rare storage vessel with an incised zoomorphic motif at Zahrat adh-Dhrā' 1 (Edwards *et al.* 2001), provides the best evidence to date for cultural continuity in the Dead Sea region, since a similar design is found at Bāb adh-Dhrā' in an Early Bronze Age context (Saller 1965). The fundamental economic, occupation, behavioral, social and technological differences between two sites representing continuous occupation on the Dead Sea Plain between the end of the third millennium BCE and the early second millennium BCE suggest two possible scenarios: 1) Environmental changes took place at the conclusion of the third millennium BCE, or 2) The inhabitants of Zahrat adh-Dhrā' 1 represent a new population, distinct in their social structure and culture from the preceding Early Bronze Age population at Bāb adh-Dhrā'.

Finally, significant differences in architecture, assemblage composition, diet and loci of cooking and trash disposal at Tall al-Ḥayyāt and Be'er Resisim demonstrates that these two sites are least alike of the four sites studied. Consequently they meet the general expectation of great dissimilarity between an MB II and EB IV site.

## Discussion

Despite the similarities observed, the overwhelming pat-

tern in the comparison of behavioural features at two MB II sites and two EB IV sites is that all four sites are uniquely different. This result would support the null hypothesis that contemporary sites lack behavioral similarities. Key differences exist between both MB II sites and both EB IV sites respectively. Likewise, the two sedentary sites and the two seasonal sites show profound differences. Finally even the two sites located in the Dead Sea Plain contain several differences in their material culture. These differences have been demonstrated beyond the constraints of both typology and environmental determinism. The fact that Tall al-Ḥayyāt and Ḥahrat adh-Dhrā' 1 are located in dramatically different environments is somewhat mitigated by the similarities witnessed between Tall al-Ḥayyāt and Bāb adh-Dhrā'. However equally abundant differences between contemporary Be'er Resisim and Bāb adh-Dhrā' suggest that environmental determinism cannot be the sole explanation. For Bāb adh-Dhrā' and Ḥahrat adh-Dhrā' 1 are likewise uniquely different. These factors lead to an important consideration: are the differences between Ḥahrat adh-Dhrā' 1 and Bāb adh-Dhrā' 1 the result of a changing environment in the Dead Sea Plain, the introduction of a new culture, or none of the above?

Assessing the likelihood of a changing environment or the introduction of new cultural groups are complicated by the difficulties of gauging environmental change in the record on the one hand (Donahue 1985; Frumkin *et al.* 1994), and detecting ethnic or cultural differences in archaeological record (Jones 1997). Two separate lines of evidence may be advanced in support of both environmental and cultural scenarios: 1) Evidence from tombs, and 2) Evidence from crops.

1. The tombs at Bāb adh-Dhrā' dating from EB I to EB IV comprise two types of construction: 1) Built Charnel Houses, and 2) Rock cut shaft tombs (Rast and Schaub 1989). The only MB II tombs in the entire region were discovered at Dayr 'Ayn 'Abāṭa, 25 kilometers to the south of Ḥahrat adh-Dhrā' 1 (Politis 1993). These tombs are built cairn tombs. Possibly related cairn tombs were observed south of Bāb adh-Dhrā' (Rast and Schaub 1989). This represents a significant departure from a traditionally conservative element of culture (Binford 1971; Ilan 1996). In concert with other changes in material culture, a change in burial practice may represent the introduction of an exogenous population (Berelev 2001b).
2. Changes in agriculture from the EB IV to the MB II shows that the MB II populations were engaged in occasionally opportunistic cultivation of land-intensive perennial fruit crops, in contrast with land-extensive farming of perennial and annual crops during the EB IV (Meegan n.d.). Environmentally imposed limitations to the farming of certain crops in marginal areas,

need not result in severe shifts in the climate. On the contrary, small but sustained changes can result in irretrievably lost crops (Meadows, pers. comm.). This seems fairly likely given the contention that the Dead Sea Plain underwent gradual salinization during the third millennium BCE (Meegan n.d.).

The partial abandonment of the Dead Sea Plain by the EB IV population is supported by, both the increasingly precarious environment, the introduction of new burial customs, changes in material culture, and behaviour. Some of the original inhabitants may have been absorbed by the new Middle Bronze II population, judging by the continuity of certain local material traits. These include rectilinear architecture, incised decoration on pottery, and the maintenance of crops like grape, fig, barley and legumes.

The combination of local traits and economic differences may well explain the behavioural differences observed between the two contemporary Middle Bronze II and EB IV sites. The differences underscore the number of manifestations of social groups and economic strategies during the same period of time, as well as during different periods. Similarly, under the right conditions sites belonging to different periods of time and from different environments may display roughly similar behavioural traits. Such was the case in the observed similarities between Tall al-Ḥayyāt and Bāb adh-Dhrā'.

### Conclusions

This paper sought to explore the potentials of understanding ancient societies and cultures through a general, behavioural paradigm, focusing on social, economic, and consumer practices as well as the use and organization of space. In attempting to search beyond the similarities of contemporary sites, grouped on the basis of typologies, a number of key observations were made. Firstly it was shown that chronological periods commonly viewed as 'urban' may contain both rural and non-sedentary sites, which are vastly different from one another. Likewise, it was shown that periods commonly viewed as non-sedentary or pastoral may produce sedentary farming communities, vastly different from contemporary non-sedentary sites. Surprisingly it was also shown that urban and non-sedentary periods may contain comparable sites. But most importantly these differences and similarities are galvanized by the behavioural patterns observed at each site. Consequently, explanations are not limited to environmental or economic factors, but extended to behavioural ones. These relate to where people cook, where they sleep and where they discard their trash, as much as it relates to ceramic and architectural style and shape.

Specifically this study has shown that profound social and cultural differences existed between sites and regions during both the Middle Bronze II as well as the Early

Bronze IV periods in the southern Levant. Moreover, the transition from the Early Bronze IV to the Middle Bronze II was not the superimposition of a new culture and society over an older one. Instead, the transition is marked by the introduction of a new material culture, together with the preservation of older traditions, including economy and lifestyle. This is seen in the continuity of some Early Bronze IV features in the material culture of the Middle Bronze II in the Dead Sea Plain. Likewise, the maintenance of particular kinds of economic strategy and behaviour previously witnessed in the Early Bronze IV at Bāb adh-Dhrā', continues during the Middle Bronze II at villages like Tall al-Ḥayyāt. In this sense, both behavioural continuity and rupture have affirmed the positions of a number of modern scholars emphasising the fluctuating social and economic strategy in the southern Levant across and between periods (Falconer 2001; Palumbo 2001). Finally this study has encouraged the use of investigative strategies distinct from typologies to classify and group sites along social and cultural lines.

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